Many office occupations open to typists require a skill level above that reached by the disadvantaged urban student who completes the present "clerical" training course. Conventional instruction in typewriting has tended to focus on manipulative factors whereas relatively recent research has shown that cognitive factors (decision making processes) bearing on attractive placement of materials on the page are substantially more important in accounting for skill at realistic typing tasks above the level of simple copying. In view of the need for new instructional materials emphasizing the decision making processes, a 541-frame programed instruction unit was prepared. The program is divided into 14 sections covering horizontal and vertical centering, simple and advanced table typing, business letters, and report typing. The program can be used by anyone who wishes to acquire or upgrade the cognitive skills taught by this program and can be used as a self-instructing unit. (Author/JS)
PROGRAMMED INSTRUCTION FOR DECISION-MAKING ASPECTS OF TYPING TASKS

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Summary

Chronic complaints of shortages of typists and of inadequate skills among them pinpoint a particular need (a) to furnish an occupational skill to the disadvantaged urban student, who presently completes "clerical" training with little more than ordinary copying skill, and (b) to meet the anticipated need, during the 1970's, for "senior" typists.

Conventional instruction in typewriting has tended to focus on keystroking and other manipulative factors, whereas relatively recent research has shown that cognitive factors (decision-making processes) bearing on attractive placement of materials on the page are substantially more important in accounting for skill at realistic typing tasks above the level of simple copying (business correspondence, tables, reports).

In view of the need to devote the bulk of page space in typewriting textbooks to materials for typing and of the sequential nature of the pertinent decision processes, instructional materials on decision processes were prepared in programed form (for use independent of the standard typewriting textbook), in readiness for field trial among disadvantaged high school students. Revisions were made during program preparation on the basis of work done under controlled conditions with individual students. The resulting 541-frame (primarily linear) program uses 190 instructional pages (3 frames to an 8-1/2" x 11" page), with the model answer(s) to each frame appearing alongside the following frame in a down-the-page format. Responses, both composed and selected, are written by the student in the blanks that are provided. These responses represent the mediating decisions (machine settings) for a large number of illustrative typing tasks and, often, the processes by which the subsequent typing should be carried out. Upon completing work at any subsection of the program, the student can execute at the typewriter the sample tasks contained in the program and comparable tasks drawn from the conventional typewriting textbook, as well.

The program is divided into 14 sections (which can be used in a number of orders) devoted to: horizontal and vertical centering, simple and advanced table typing, simple and advanced business letters, report typing, and estimation of copy length for placement purposes. Each of the 14 sections is further divided into one or more subsections, each covering a logical unit of subject matter and of a size judged to be appropriate for one work session (of approximately 10-30 minutes). As self-instructional materials, the program should ideally be worked on outside of formal class meetings (i.e., as homework), freeing the teacher from the large amounts of class time ordinarily devoted to oral explanations about matters of placement of materials on the page and permitting maximum classroom practice at applying at the typewriter the concepts taught by the program. Outside of formal school situations, the program can be used by anyone who wishes to acquire or to upgrade proficiency at the cognitive skills taught by the program.
Problem and Objectives

Typewriting is a skill in enormously widespread use, vocationally and personally. Yet, complaints of shortages of typists and of insufficient skills among them have been chronic (e.g., Wright, 1965). The problem is one of increasing the supply of competent typists. A major potential source of typists is the disadvantaged urban student, numbers of whom presently complete "clerical" training with little more than ordinary copying skills. The school drop-out and the adult job trainee and retrainee are also prominent candidates for typewriting training. Further, the U.S. Department of Labor's Occupational Outlook Handbook (1966-67 edition) has pointed in particular to a special need during the 1970's for "senior typists," who "generally perform work requiring . . . independent judgment; they may work from rough drafts . . . which contain technical material, or they may plan and type complicated statistical tables . . ." The requirement is for skill at the typing tasks of real life, not at line-for-line copying of the perfect print of the typewriting textbook.

In the face of that requirement, complaints about insufficient skills suggest deficiencies in conventional instructional practices for typewriting. The conventional assumption is that keystroking and other manipulative factors are the major ones in proficiency at realistic typing tasks. Relatively recent evidence (see Related Research) strongly suggests that cognitive factors (decision-making behaviors applicable to placement, layout, or arrangement of materials on the page) outweigh manipulative ones in accounting for proficiency at realistic typing tasks, increasingly so as amount of training and level of skill increase.

The meaning of decision-making applied to typewriting can best be given by illustration. For business-letter typing, the typist must decide, before typing, how long the letter is (i.e., how many words, without counting word-by-word). That decided, appropriate side margins must be selected, and the appropriate distance from the top of the page for starting the letter must be determined. The same (horizontal and vertical) marginal questions have to be answered for table typing. In addition, following a decision on appropriate blank space between columns, the appropriate starting point for each column and column heading must be identified. In typing a report containing footnotes, footnote space must be estimated in advance in order to leave room for them at the bottom of the page. As the task grows more complex (e.g., tables with braced headings or with unequal intercolumn spacing, letters or reports containing tables, listings, and the like), the number of decisions and their complexity increase. These "placement" decisions determine the acceptability of the typed product and, as shown by the evidence (see Related Research), they are more consequential than mere keystroking in accounting for task proficiency. For some tasks, more time is spent in making these decisions than in actual typewriter operation. Further, misstrokes can be corrected by erasing; placement errors are rarely correctible.
The mistaken focus on keystroking and other manipulative factors in conventional typewriting instruction and the slighting of explicit practice in making placement decisions probably accounts in large part for employers' complaints about inadequate skills. In recognition of the need not met by available instructional materials, the activity reported here was devoted to the preparation, in readiness for field trial among disadvantaged high school students, of programmed instruction materials dealing with the cognitive aspects of realistic typing tasks: with the pertinent placement decisions, not with keystroking. Should such materials, upon trial, prove to be effective, complaints about insufficient skills could be alleviated. Decision-making programmed materials, side by side with typing textbooks containing large amounts of material for actual typing, would constitute a curriculum in accord with occupational and personal typing needs. The special need for senior typists could be met, and a marketable skill could be put into the hands of urban trainees, whose skills following conventional "clerical" training bear little relationship to actual job requirements above the level of addressing envelopes for mail order houses or filling in insurance premium notices.

Related Research

The pertinent related research furnishes further details on (a) employment trends and needs and the extent of typewriter use in this country, (b) tasks performed by employed typists, (c) the role of cognitive factors in total task proficiency, (d) proficiency levels at terminal stages of conventional training, and (e) characteristics of conventional training for realistic typing tasks.

Employment Trends and Typewriter Use. National surveys by the U.S. Office of Education reveal that typewriting is a skill taught to more than half of all public secondary school students (Wright, 1965). Federal decennial census data (for 1960) showed that 2.29 million persons (3.5% of the labor force) were employed full-time as secretaries, stenographers, and typists (Rutzick and Swerdloff, 1962). Increases had been predicted (U.S. Bureau of Labor Statistics, 1963) and have, in fact, materialized. Occupational use of the typewriter, moreover, is not confined to clerical employment. A survey of the occupational history (over a 1- to 10-year postgraduation period) of 675 (mostly male) graduates of a collegiate school of business (West, 1961) showed that four-fifths of those in accounting, economics, marketing and management found typing skill to be at least moderately useful in their occupations. The enormous extent of vocational and personal use of the typewriter in this country is perhaps best suggested by the estimate by the writer of a business and economics column for a metropolitan newspaper (Porter, 1966) that 35 million Americans use the typewriter. The desirability of training that maximizes skill at real-life uses of the typewriter can hardly be exaggerated.

Tasks Performed by Employed Typists. Studies by Frisch (1953) of employed clerical typists (those without stenographic duties) and by Featheringham (1965) of the posttraining typing activities of those who had a personal typing course in high school agree in identifying the virtual absence of "straight copy work" among employed typists and show,
instead, that (a) the majority of the frequently performed typing tasks in real life call for the placement of materials on the page in accordance with certain conventions and for making decisions about appropriate placement (e.g., of columns and column headings in a table) and that (b) about half of all nonstenographic copy for typing is in longhand or in mixed type and longhand rather than in the perfect print of the typewriting textbook. Specifically, the recent study by Perkins, Byrd, and Roley (1968), which reported the typing tasks carried out by various percentages of office workers in the state of Washington, showed business letters, tabular material, final copy from rough draft or unarranged copy, manuscripts and reports, and the like, to be among the most commonly performed tasks. Such tasks or aspects of them call for making placement decisions, generally in advance of the actual typing.

Role of Cognitive Factors in Total Task Proficiency. The findings of numerous studies, including West (1960) and West and Bolanovich (1963)--summarized by Muhich (1967) and reviewed by West (1967, 1969)--are in agreement in showing enormous discrepancies between performance scores on the artificial school training task of straight copy typing and performance scores on the realistic activities of typing business letters, tables, and such display items as announcements and other work from rough draft copy. Both speed and errors on realistic tasks are a small fraction of speed and errors in straight copy work. The large discrepancies are patently attributable to the decision-making aspects of real-life typing tasks and to the different "set" adopted by the typist for "production" typing (i.e., of realistic tasks) in contrast to straight copy typing. Muhich's analysis of the components of production proficiency (1967), summarized in West (1969, Ch. 13), showed decision-making to play a larger role than machine operation factors in accounting for total task proficiency. Moreover, the role of decision-making increased as amount of training increased (1, 2, and 2+ years of formal typing training among high school and college typists). Illustratively, making one's own placement decisions made the work take 2-1/3 times as long, as compared to work from prearranged copy, requiring no decision-making but only machine operation. Such findings make it apparent that decision-making about matters of placement of materials on the page is at the heart of proficiency at realistic typing tasks.

Proficiency Levels at Terminal Stages of Conventional Training. The contrast between the long-time availability of large-scale data on the proficiency of typists at straight copy work, but the virtually complete absence of data on a comparable scale for realistic typing tasks, demonstrates that insufficient attention to the real objectives of instruction has characterized typing training in this country. The fallacy of the assumption that straight copy skills are highly related to proficiency at realistic typing tasks is as yet little known to (and certainly not acted on by) teachers and employers. Specifically, while ordinary stroking speed is appreciably correlated with speed at production tasks (r's ranging between .50 and .70), error correlations are negligibly small (in the .20's typically), as given in a review of all the existing evidence (West, 1969, pp. 329-334). Illustrative absolute scores show straight copy speeds of 40-60 words per minute (wpm), accompanied by speeds at
realistic typing tasks ranging between about 5 wpm and the middle 20's to low 30's (West, 1969, pp. 335-343). The most comprehensive study completed to date (Crawford, 1956) showed rates on realistic typing tasks by senior-college trainees of 10-13 wpm, accompanied by straight copy speeds in the 50's. Comparable data on a much larger scale have been collected by McLean under U.S. Office of Education Project 8-8-113 (scheduled for reporting by mid-spring, 1970), in which nearly 3,500 persons completing 1, 2, and 2+ years of formal typing training in high schools and community colleges were tested on a battery of realistic typing tasks. Numbers of examinees were unable to complete eight tasks (totaling about 600 words of typing) in five class periods (2 to 2-1/2 hours of actual typing time). That is, numbers of examinees who had completed one and more years of formal typing training performed below 5-wpm levels. Yet, their straight copy speeds were in the 20-40 wpm range.

The available data on proficiency at realistic typing tasks ("production" typing, as it is called) highlight the dominating role of decision processes over keystroking and other manipulative factors and reveal the inadequacy of conventional modes of training for production skill. The gross absence of norms or standards for production tasks (in contrast to the widely established standards for straight copy typing) further supports the inferences drawn here.

Characteristics of Conventional Training for Production Typing. A first step in determining the marginal space that will result in attractive appearance for many realistic typing tasks rests on an estimate of the number of words in the material. Such information is rarely available in the real world, but it routinely accompanies all typing textbook materials (presumably in order to permit rapid scoring of the work for speed). Because the textbooks routinely give word counts, the student is hardly ever required to make length estimates and is rarely taught how to do so. Faced with materials unaccompanied by a word count (as in many of the studies mentioned earlier), the typist often spends exorbitant amounts of time in making marginal decisions or makes wrong decisions in haste and ignorance. For the tabular work that is a large component of the activities of employed typists (P. rkins, et al., 1968), conventional instructional practice is even less to the point. The majority of textbook tables specify intercolumn spacing and other placement data:ls. Muhich's tally of the contents of five major typewriting textbooks (1967) showed an average of less than 1/3 of the textbook letters, tables, and drafts to be unguided (i.e., unaccompanied by placement instructions). The bulk of typewriting instruction appears to be aimed at the routine copying tasks of the lowest levels of clerical typing. The general picture is one of explicit guidance during training, in the face of the total absence of such guidance in real life. Conventional instruction is in sharp contrast to the principle established from empirical findings across many learning tasks that guidance is valuable if confined to small doses entirely restricted to the earliest stages of training (Bugelski, 1956; Stolurow, 1959). One cannot conceive of an employer asking his secretary to type "this 128-word letter" or to "leave 8 spaces between columns in this table." Yet, explicit instructions at that level pervade typing training.
Even when the textbooks provide bases for placement decisions (as in specifying margins for business letters of various lengths), they rarely go beyond that simple level, e.g., by considering factors other than the number of words. In any event, no explicit practice at decision-making is provided. Further, for any given type of task usually only one placement method is described, ordinarily a simple scheme appropriate to the simple textbook tasks, but one that breaks down on the more complex tasks carried out by employed typists.

Conventional training procedures start with exclusive attention to keystroking skills (with periodic attention given to such skills through late stages of training), followed by a slow introduction of realistic tasks (accompanied for months by explicit guidance on some or all matters of placement). Only at terminal stages of second-year training does one find practice activities that correspond more nearly to the work of employed typists: realistic copy unaccompanied by guidance on matters of placement. The general picture is one of too long a focus on the wrong things (manipulative skills), of a drag-out on the right things (decision making), accompanied by the supposition that being given the appropriate machine settings teaches one the processes by which those settings are determined. The typical deferment of fully realistic practice tasks until well into a second year of training is especially shocking in view of the fact that 70 percent of typing instruction in this country is for one year only (Wright, 1964, 1965).

The correlational evidence demonstrates the low relevance of copying skill to performance at consequential tasks, and the low proficiency levels at realistic tasks demonstrates the weakness of the conventional routes to proficiency at such tasks. The preferable rationale is one of earlier teaching of the cognitive components that dominate production typing skill, followed by extensive practice at unarranged materials, to which the learner applies the decision processes learned earlier. Under such a rationale, performance at realistic tasks after one year of training might be little below and sometimes even equal or exceed that following two years of conventional instruction.

Objectives

The rationale just expressed could not be implemented by modification of existing typewriting textbooks without extending them to a length that would be uneconomic. Textbook page space is needed for materials for typing. The substantial amounts of practice (and therefore page space) needed to master the cognitive aspects of typing tasks can best be furnished by separate materials. The sequential nature of the decision processes pertinent to planning the layout of any given typing task point to materials in programed form as most desirable. Even more consequential: "programed instruction" permits each student to progress at his own rate and furnishes immediate feedback for responses. Further, since such materials are intended to be self-instructional, study of the materials outside of class would permit maximizing class time devoted to application of the placement concepts taught by the program to actual typing tasks--rather than to the large amounts of oral teacher explanation of matters of placement that would otherwise be required. Another
possibility is that, with programed decision-making materials available, the typing text could be divested of its guidance features, thereby reducing its length and its cost.

Accordingly, the proximate objective of the present work was to prepare, in readiness for field trial among disadvantaged high school students, "Programed Instruction for Decision-Making Aspects of Typing Tasks." The ultimate objective was to contribute to remedying the central deficiency in conventional typing training and, thereby, to better satisfy employment needs by furnishing a marketable occupational skill to disadvantaged urban students. A by-product objective is the upgrading of typing skills to satisfy the predicted need during the 1970's for senior typists.

Methods and Results

Strictly speaking, the "Result" of this project is the instructional program contained in the appendix immediately following the body of this report. However, the processes by which it was developed and its descriptive characteristics can most conveniently be described jointly. Since the programed materials deal only with decision processes and not with actual typing, the manner in which programed work should be tied to subsequent typing and the role of the teacher in this regard are included. Treated in turn are: identification of the scope of instruction, the role of the program and of the teacher in the acquisition of "production" typing skill, identification of optimum placement rules and processes, organization and packaging of instructional content, selection of an appropriate programing style, format, and language level, and review and tryout during program preparation.

Program Scope. Earlier studies (see Related Research) showed that business letters, tables, and reports constitute the major classes of life uses of the typewriter. In fact, other than purely clerical tasks (such as envelope addressing, form-letter copying, form fill-ins, invoice typing, and such trivia as telephone messages), letters, tables, and reports embrace the majority of life uses of the typewriter. At least the processes and concepts applicable to those three classes of tasks include those found in other tasks. Accordingly, the cognitive or decision processes that apply to page placement and machine settings for business letters, tables, and reports make up the content of the instructional program. "Reports" are taken to mean, broadly, not only items like this project report, but also any prose matter for which ideal placement varies with length (e.g., a several-paragraph announcement for posting on a bulletin board). Applicable to such brief "reports" and to business letters is advance estimation of the page space required; so "estimation of copy length" was also included in the instructional program. In keeping with the finding of large amounts of longhand copy in the work of employed typists, significant amounts of the programed materials to which placement decisions are to be applied are in longhand.

Role of the Program. It was not the intent to preempt the functions adequately served by standard typewriting textbooks, but rather to fulfill vital training requirements not met or not adequately met by conventional training materials. The program is not a repository of practice
materials for typing, but a vehicle for furnishing practice at the mediating (internal, "mental") responses that must intervene between perception of the raw materials and the execution of those raw materials into finished form at the typewriter. Given something to type, the typist must decide where to set the margins before operating the typewriter's margin-setting mechanism. Using that example as an instance, the program teaches where margins should be set, not how to set them. The typing textbook contains business letters for typing; the program does not. It says, instead: "Assume a business letter of 117 words. In your size of type the left margin should be set at __ and the right margin at __. The date should be typed on line __." In the same fashion, the program teaches the adjustments in vertical placement that should be made when a letter contains additional elements (e.g., an "attention" line). But it does not explain what an "attention" line is. The conventional typing textbook should be referred to for such information, before dealing, in the program, with the effects of such an item on letter placement. The program deals with matters of placement, with mental decision processes that apply to marginal and other machine settings for letters, tables, and reports and, when necessary, with conventions of format. The sections of the program devoted to tables necessarily include dozens upon dozens of miniature tables or portions of tables in order to furnish the student with many opportunities to specify the appropriate machine settings. The decisions about placement of materials on the page are the heart of "production" typing, and the programmed materials focus on those placement decisions.

Role of the Teacher. The placement decisions "mediate" (occur in the middle) between perception of the overt stimuli of the raw copy materials and the overt responses of actual typing. For efficient learning, all three elements (overt stimuli, mediating placement decisions, and overt typing responses) must be tied close together in time. The programmed materials provide the first two elements (stimuli and mediators) in close temporal contiguity. But the third element, actual typing, is entirely absent from the program. The student who has access to a typewriter while working on the program can immediately follow his program responses with pertinent actual typing, often frame by frame, thus meeting the requirement of close temporal contiguity between making the placement decisions and executing the typing. But for the student who works on the program at home and has no access to a typewriter until the next day in class, a long time interval intervenes. The student who comes to class unable to type has "forgotten" his homework responses. Instead, he has not yet had an opportunity to tie those responses close in time to actual typing. For that reason, especially for trainees of low ability, the teacher in class should lead students step by step through the actual typing of illustrative tasks, using the program's concepts and processes. In that way, the pertinent mediating processes are tied close in time to overt typing responses. When the program provides materials pertinent for actual typing (as in the sections on tables), those materials should be used. Then one should proceed to the typing of full-scale tasks from the typing textbook. For practice materials not contained in the program (e.g., business letters), the program's mediating processes should be applied step by step to the actual typing of textbook materials.
Placement Rules and Processes. Numerous placement procedures have long been included in typewriting instruction, variously represented in existing typewriting textbooks. The bases for the ones selected (or invented) for use in the program can best be described by example. The typing textbooks of one major publisher prescribe "the backspace method" of table typing; another publisher prescribes "arithmetic." Neither method is optimally efficient for any and all tables. Backspace methods are most convenient for simple tables; arithmetic methods are efficient for some aspects of most tables; for all except the simplest tables, a combination of arithmetic and spacing methods is optimally efficient. However, any one typewriting textbook (or teacher, one supposes) tends to focus on one and only one mode of table placement, apparently with the thought that teaching students more than one way to do a certain thing "confuses" them. Possibly the one-method textbook treatment is deliberately intended as a sales feature that permits distinguishing the book from competing textbooks. Also, insofar as arithmetic methods of table planning require petty arithmetic, backspace methods might be thought preferable for students with arithmetic deficiencies and, therefore, in textbooks aimed at such students. In any event, in the desire to meet all levels of student ability and, more important, to provide methods for typing any and all tables, both backspace and arithmetic methods of table planning are taught in the present program. The methods are contained in separate sections of the program, applied to simple tables. A later section on advanced table typing invokes the use of both methods, as applicable, for the sake of maximum efficiency and speed in planning and executing the typing.

The foregoing instance of table typing illustrates one major criterion for program content: flexibility, adaptability to various levels of student ability and to various task-difficulty levels. Another such instance is the treatment of vertical placement procedures for business letters. Some textbooks teach a "moving" dateline: the position of the date varies with letter length, and distance between date and inside address is fixed. Other texts prescribe date placement a fixed distance from the top of the page regardless of letter length; distance between date and inside address varies with letter length. Presumably, both "moving" and "fixed" datelines are used by employed typists. Accordingly, the present program teaches both methods: branched, so that the teacher (or trainee) can elect one of the two methods. If desired, the second method can be introduced immediately after the first one or after any desired interval following experience with the first method.

Typing textbooks also vary in the precision of their letter placement schemes. Some are fairly gross; others, quite fine. The scheme taught in the present program is one that leads to vertical placement that will rarely, if ever, depart from perfect placement by more than a small fraction of one inch. At the same time, as attested to by users, it is much

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1As of the publication of the present report, the instructional program prepared under this project is at the half-way mark of field testing in three New York City high schools (under New York City, Board of Education, Business Education Proposal No. 1, 1969-70). A report on that field test will be available in the fall of 1970. Participating teachers have reported to the author their special satisfaction with the letter-
simpler than the methods found in the leading typewriting textbooks. The applicable algorithm (see Frame 10-11 or Frame 10-24 of the program) is contained in two readily memorized sentences that free the typist from the need to refer to any table of marginal instructions.

Another instance of flexibility--this one, mandatory--results from the existence of two common sizes of type (pica and elite). The proper objective of typewriting instruction is not school use, but life use. Since the size of type that might be encountered in lifetime use of the typewriter cannot be predicted in advance, an early section of the program teaches the two sizes and furnishes a little practice in using both sizes--verbally, in the program. Thereafter, with occasional exceptions, the learner makes program responses applicable to the size of type on his present typewriter.

Still another instance of flexibility is the section on "Advanced Table Typing." Its subsections deal with separable aspects or varieties of tables, from which the teacher or trainee can make a selection, depending on student ability, level of proficiency sought, and length of course. That section and the one on "Advanced Business Letters" include matters that go beyond what is contained in most nonspecialized typewriting textbooks, extending into some rather demanding "senior" typing tasks. The section on "Manuscript and Report Typing" is at a somewhat more professional level than the treatments included in most typewriting textbooks and might be expected to be of immediate interest to the college or college-bound student. Finally, the section on "Estimation of Copy Length and Centering of Estimated Materials" provides something entirely absent from current typewriting textbooks: explicit procedures for making very close estimates of word length and of number of typed lines required--in advance of actual typing. The estimation procedures have been standard in transcription training of stenographers, but their equal applicability to typewriting seems not to have been appreciated in conventional typing instruction. The gross "judgment" methods occasionally mentioned in typewriting textbooks are so vague as to be virtually meaningless. Reasonably accurate "eye judgment" probably follows from large amounts of experience at more explicit estimation guidelines and might not be a viable initial tactic for trainees, at least not for ones of limited abilities.

A final characteristic that pervades the entire program is the objective of greater precision in placement than is commonly sought in conventional instruction or attained by conventionally taught trainees. Popular opinion to the contrary, on some issues it is just as easy to be just right as approximately right; on other issues, very little extra effort can lead to typed products that have the visual elegance of print. It is, after all, probably the haphazard appearance of some typing that is a significant part of employers' complaints about insufficient skills. Placement scheme and the quick success of students in using it rapidly and skillfully. Interim testing of these students revealed virtually perfect vertical placement of letters by nearly all of them.
Program Organization. The organization and "packaging" of the program have already been partly described. For the purposes of immediate, more detailed discussion the program's contents are listed below.

<table>
<thead>
<tr>
<th>Section</th>
<th>Topic</th>
<th>No. of Frames</th>
<th>No. of Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Centering at the typewriter</td>
<td>19</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>Horizontal centering of single lines</td>
<td>46</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>Vertical centering</td>
<td>34</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>Vertical centering of simple tables</td>
<td>37</td>
<td>13</td>
</tr>
<tr>
<td>5</td>
<td>Tables without column headings (backspace method)</td>
<td>40</td>
<td>14</td>
</tr>
<tr>
<td>6</td>
<td>Tables with column headings (backspace method)</td>
<td>26</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>Tables without column headings (arithmetic method)</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>Tables with column headings (arithmetic method)</td>
<td>31</td>
<td>11</td>
</tr>
<tr>
<td>9</td>
<td>Advanced table typing</td>
<td>105</td>
<td>36</td>
</tr>
<tr>
<td>10</td>
<td>Vertical margins for business letters</td>
<td>34</td>
<td>12</td>
</tr>
<tr>
<td>11</td>
<td>Horizontal margins for business letters</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td>12</td>
<td>Advanced business letters</td>
<td>40</td>
<td>14</td>
</tr>
<tr>
<td>13</td>
<td>Estimation of copy length and centering of estimated materials</td>
<td>45</td>
<td>16</td>
</tr>
<tr>
<td>14</td>
<td>Manuscript and report typing</td>
<td>40</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>541</td>
<td>190</td>
</tr>
</tbody>
</table>

The long, 105-frame section on advanced tables has its own table of contents and is formally divided into 8 subsections. The other 13 sections, as shown above, range from 19 to 46 frames, all but the shortest of which (Sects. 1 and 11) have one or more intermediate "stopping points," thus providing a series of single assignments, each of which can be completed in from 10 to 30 minutes. The sections may be used in a number of orders: e.g., letters before or after tables, reports before or after letters or tables, and so on. In short, the program consists of a comprehensive curriculum from which selection can be made for trainees of varying ability, for various instructional objectives, in courses of various lengths. Since each section begins on a new page, it is readily possible to package selected sections for particular trainees or training objectives: e.g., simple centering (Sections 1-3), simple tables (Sections 4-6 or 4, 7-8 or 4-8), simple letters and tables (Sections 10-11, 4-6 or 10-11,
4, 7-8), simple and advanced letters Sections 10-12), copy estimation and advanced letters and/or report typing (Sections 13, 12 and/or 14), etc.

Program Format. Exclusive of front matter each of the 190 (8-1/2" x 11") program pages contains 3 frames. Each frame is confined within a 3-1/4" x 5" area, bounded by rules. In the present version, a down-the-page format is used. That is, model answers appear alongside (to the left) of the following frame. With a down-the-page format, the eye can readily stray to the model answer in advance. However, the uniform alignment of frames on all pages permits an alternative, turn-the-page format that would prevent inadvertent "cheating." Advance recourse to answers would require deliberate page turning. Down-the-page format is more economical of space, however, if frame depth varies with frame content. For example, the majority of the frames in the present program do not use the full 3-1/4" depth allotted. Thus, many pages could have been formatted 4, 5, or even more frames per page. However, such a format would require the facilities and expertise of a professional printer. The present program was duplicated for field trial by multilith process at a university duplicating service.

When judged helpful and appropriate, model answers are accompanied by an explanation, most often when arithmetic is involved. For example, a frame might require the trainee to specify the left margin setting in a table that is 50 spaces wide. The model answer, with the applicable arithmetic shown after it, appears (for elite type) as: 26 [1/2 of (102 - 50) = 52/2 = 26]. By that tactic, corrective information for wrong answers is furnished to the trainee.

Trainee responses in the program are overt; he is asked to fill in blanks. To permit these longhand responses, blank length is two elite spaces for each longhand character; e.g., if a blank calls for the 6-letter word double as a response, the blank for that response is 12 elite spaces wide. Sufficient vertical space for longhand is provided by the routine use of 1-1/2 vertical spacing of frame lines. Single spacing is used only for lines that do not contain response blanks and, even then, only when space was at a premium.

Program Style and Language Level. Branching is provided for horizontal margin setting for business letters in pica and elite type and for vertical placement of letters using a moving vs. a fixed dateline. With these exceptions, the program is a linear one. Branching, in the sense of routing those who make errors through remedial frames before they return to the main track, was not employed--partly because an already long program would have been made immensely and unmanageably longer. Mainly, however, branching programs do not readily lend themselves to the composed responses that are preferable to selected ones. In life, the typist does not choose from a small number of listed options; he must "compose" a response drawn from an unspecified number of possibilities. In this program selected (multiple choice) responses are used only when it was judged necessary to limit the class within which the response should fall. To illustrate with a response furnished by a trial subject to an early-draft frame: to the item "An up-and-down direction is __________"
the response was "Like this (gesturing with her hand)"--despite an earlier frame that used the terms "horizontal" and "vertical." Accordingly, the frame was revised as: An up-and-down direction is \((\text{horizontal}/\text{vertical})\).  

(The student chooses from among options given in parentheses below the response blank.) With many exceptions of the sort just illustrated, the program is primarily a composed-response one. To recapture some of the benefits of remedial branching--or, strictly speaking, to provide sufficient practice for those who make errors--every concept and process in the program appears and reappears several times, at intervals, in various settings. Nothing is said or done only once and only once. The program has substantial redundancy of process and concept, but not of identical responses to identical stimuli.

After each little subsection of the program, of which there are 48, there is "A little TEST." Each of these consists of uncued, unprompted, unguided materials designed to assess the extent to which the trainee has learned from the program.

Concerning language level or comprehensibility of the program verbiage, the program is intended for those with the reading deficiencies characteristic of the urban disadvantaged student. However, the usual indices of reading level may not be particularly pertinent; nor is it clear how such indices should be applied to prose that contains blanks or to frames containing columnar displays (in the sections on tables) that are not, in the usual sense, read for meaning. Besides, conceptual load, rather than language attributes, might be the more important considerations in programs of this kind. These reservations notwithstanding, syllabic intensity (mean number of syllables per word) and mean number of words per sentence (exclusive of blanks and of displays not to be read for meaning) were computed for every fifth frame in each of the 14 sections of the program, beginning with frame number 5 in each section. For the sample of 105 frames, mean number of syllables per word was found to be 1.37 (SD = .10), which is at the borderline between 7th- and 8th-grade levels, according to Fry (1968). Mean number of words per sentence was 15.2 (SD = 5.1), which is at low 6th-grade levels, according to Fry. Relatively little can be done to reduce the syllable count because of the inevitable abundance of such polysyllables as: horizontal, vertical, centering, typewriter, backspacing, intercolumn, underscore, et al. At the possible cost of some chopiness, sentence length is probably reducible by converting into separate sentences ones that presently consist of a series of clauses separated by semicolons or commas. For example:

As shown above, the typed matter has \(5 + ____ + 5 \) = ____ spaces, and the ICs contain \(3 + ____ \) = ____ spaces, for a total in the longest line of ____ spaces.

could be revised (turning one sentence into three) as:

As shown above, the typed matter has \(5 + ____ + 5 \) = ____

-15-
spaces. The ICs contain \(3 + \_\_\_\_\_ = \_\_\_\_\_\_\) spaces. The total in the longest line is \_\_\_\_\_\_\_ spaces.

Revisions of that sort would reduce the formal measure of sentence length. Whether such changes have any effect on readability is another question.

For the sample of 105 frames, average frame length was 70.9 words or 4.7 sentences. The shorter (1- or 2-sentence) frames typically contain 1 to 3 response blanks. More often, longer frames containing more response blanks were necessary in order to "track" the learner through the sequence of steps or decisions applicable to some piece of work.

Syllabic intensity is an indirect and, in fact, a weak index of vocabulary level. For example, its correlation with word frequency for the vocabulary of written business communication was found to be -.08 (West, 1968). However, some measure of protection against the use of too difficult a vocabulary in the frames was furnished by the trial procedures employed during program preparation and by the editorial suggestions of consultants, described next.

Program Trial. Draft frames were typed on 3" x 5" cards, with model answers on the reverse side. A number of students from two high schools were paid by the hour for serving as trial subjects on draft versions of the program. Each worked with the writer individually, reading aloud and filling in blanks orally, without access to model answers. Oral reading of such materials is substantially more difficult than silent reading, but pauses and stumbling in the reading served to identify awkwardnesses in sentence structure, vocabulary difficulties, and, most important, errors in step size, in the rate at which prompts or hints were "vanished," and in the frequency of review and summary frames. Revisions were made accordingly and the revised version tried on a new subject. Subjects for the early sections had had no typing instruction whatever and were clearly at a disadvantage in relation to intended users of the program, who would have at least two or three months of typing instruction before entering the program. Later sections of the program were tried on subjects whose earlier formal typing instruction covered the matters taught in earlier sections, but not those treated in the sections for which they served as trial subjects. A minimum of two subjects, usually three, worked through successive versions of Sections 1-8, 10-11. It was not possible to secure from the high schools persons whose earlier training extended far enough to permit their use as trial subjects for the latter parts of Section 9 (advanced table typing) or for Sections 12-14. The high schools within easy traveling distance of the writer's office serve a disadvantaged student body for whom a decidedly modest clerical-typing curriculum is provided. With one exception, trial subjects were judged to be youngsters of below-average intellectual capacities (perhaps 85-95 IQ). The one exception was a shorthand major of Puerto Rican extraction who spoke accented English and who whizzed through portions of the difficult Section 9 almost as fast as she could read and nearly faultlessly. If that sample of \(N = 1\) is representative of shorthand majors, the program is an easy one for those whose intellectual capacities extend through shorthand learning.

-16-
Some idea of vocabulary revisions may be gained from an illustrative instance. Version 1 (from a frame on horizontal centering): "... the extra space may be put either at the left or at the right. It does not matter on which side you put it--so long as you are consistent." Version 2 (because the trial subject did not know the meaning of consistent): "...--so long as you always put it on the same side each time: always at the left or always at the right."

Far more striking than deficiencies in vocabulary exhibited by trial subjects were their perceptions about learning from written materials. Each subject read (i.e., made oral speech sounds) with unfailing ease. One, in fact, read with a dramatic flair that would lead one to suppose she were auditioning for a role in a play. Yet, at the start, errors were rife; subjects often could not respond to the blanks or responded incorrectly. Patient questioning by the author, on a sentence-by-sentence basis in a rereading of the first few frames, routinely elicited an "Aha" phenomenon from subjects: "Oh, you mean I 'sposed' to pay attention to what it says?" or "I get it, I have to learn what I'm reading." With that fundamental understanding clarified, matters improved substantially, and large numbers of right answers were forthcoming--however slowly for some subjects and some frames. The matter is mentioned because it is provocative for any instruction of disadvantaged students that requires reading. For some, the difficulties might lie, in some part at least, in attitudes toward reading, in their perceptions of the purposes of reading, rather than in incapacity. To whatever extent attitudes and perceptions may be consequential, a chief role of the teacher who uses programed instruction materials like these is a motivational one.

Following program revisions based on the responses of trial subjects working with the author individually and reading orally, the program sections were edited by two chairmen of Secretarial Studies Departments in two New York City vocational high schools serving disadvantaged students. Their suggestions for stylistic revisions (vocabulary, sentence structure, clarity) were nearly always accepted and further revisions made accordingly. Less frequently--in fact, rarely--accepted was advice to drop completely the treatment of some matters that go beyond what is presently incorporated into the typing curricula of those schools. The author's hope is that with curricular materials addressed to the heart of the proper objectives of instruction, rather more can be accomplished than has been characteristic.

Conclusions

The project was devoted to the development of programed curricular materials for typewriting, in readiness for field trial among disadvantaged high school students. The resulting 541-frame, 190-page PROGRAMED TYPEWRITING materials appear in the appendix to this report, immediately following the References.

In accordance with empirical findings about the greater importance of cognitive over motor factors in accounting for proficiency at realistic typing tasks and in the light of the absence of pertinent training materials in conventional instruction, the present materials are devoted entirely to decision processes that determine attractive placement of the
The materials are in programmed form in order to individualize the instruction, to provide numerous, carefully sequenced opportunities to make the pertinent "placement" responses, to provide immediate feedback for those responses and, to the extent that the program is successfully self-instructional, to free, for more actual typing, class time that would otherwise be spent in explanations by teachers of matters of placement.

The materials provide a comprehensive curriculum and are organized in a fashion that permits selection from and ordering of sections of the program in accordance with student abilities, course objectives, and course length.

The ultimate objective is the reduction of complaints among employers about shortages of and insufficient skills among typists through the furnishing of a marketable skill to disadvantaged urban trainees, who currently complete clerical training with skills that bear little relationship to job requirements. The special demand for senior typists could also be met. The merit of the program for the former purpose involves field trial among disadvantaged urban high school trainees, currently at the midpoint in the classes of teachers whose students will be tested on the same materials used for the testing of their students a year earlier, after conventional instruction. That is, previous students of these teachers in the same schools furnish control-group scores following conventional (nonprogramed) instruction. Criterion scores of their present students, following use of the programmed materials, will constitute experimental-group scores. However, as described in the earlier footnote (pp. 11-12), field trial is being conducted under other auspices, and no results are as yet available for inclusion in the present report.

References


McLean, G. N. Difficulty indices and performance standards for office typing tasks. USOE Project No. 8-B-113. (in preparation)


# Programmed Typewriting

for

Decision-Making Aspects in Vocational and Personal Uses

Leonard J. West  
City University of New York (Division of Teacher Education)

<table>
<thead>
<tr>
<th>Section</th>
<th>Topic</th>
<th>No. of Frames</th>
<th>No. of Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Centering at the typewriter</td>
<td>19</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>Horizontal centering of single lines</td>
<td>46</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>Vertical centering</td>
<td>34</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>Vertical centering of simple tables</td>
<td>37</td>
<td>13</td>
</tr>
<tr>
<td>5</td>
<td>Tables without column headings (backspace method)</td>
<td>40</td>
<td>14</td>
</tr>
<tr>
<td>6</td>
<td>Tables with column headings (backspace method)</td>
<td>26</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>Tables without column headings (arithmetic method)</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>Tables with column headings (arithmetic method)</td>
<td>31</td>
<td>11</td>
</tr>
<tr>
<td>9</td>
<td>Advanced table typing</td>
<td>105</td>
<td>36</td>
</tr>
<tr>
<td>10</td>
<td>Vertical margins for business letters</td>
<td>34</td>
<td>12</td>
</tr>
<tr>
<td>11</td>
<td>Horizontal margins for business letters</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td>12</td>
<td>Advanced business letters</td>
<td>40</td>
<td>14</td>
</tr>
<tr>
<td>13</td>
<td>Estimation of copy length and centering of estimated materials</td>
<td>45</td>
<td>16</td>
</tr>
<tr>
<td>14</td>
<td>Manuscript and report typing</td>
<td>40</td>
<td>14</td>
</tr>
</tbody>
</table>

541 190

**Note**

These materials were developed under a small contract with the U.S. Office of Education (Region II), under Project 9-B-074, in preparation for field trial under contract with the New York City Board of Education (Business Education Proposal No. 1, 1969-70). Local publication of these ready-for-trial materials is as: Research Report 70-2, February 1970.
How to Use These Instructional Materials

These materials are an example of what is called programed Instruction. They are designed so that you can learn from them without the aid of a teacher and are different from ordinary textbooks.

The materials are "programed" in a series of small steps called frames. Each frame gives a bit of information. You show that you have understood the information by filling in one or more missing words in the frame. In that way, you will be paying close attention and will be taking an active role in your learning. After you have filled in the blanks, check your answers against the model answers given alongside the next frame.

A program is not a test. The frames are designed to teach you, not to trick you. You fill in blanks only to see whether you have learned the information given in the frames.

Three features of programed instruction give these materials a simple appearance:

1. The step-by-step presentation of subject matter
2. Your activity in filling in the blanks
3. The immediate checking of your answers against model answers

But it is just these three features that insure that you will learn, PROVIDED you give full attention and complete concentration to each frame. If you skim through the program in a casual way, you will not learn much.

This is what you do:

1. Read each frame carefully and fill in the blanks. Sometimes a frame will have one blank, sometimes several.
2. After you have filled in all the blanks in a frame, check your answers against the model answers shown at the left of the next frame.
   a. Your answers will usually be correct IF you have read the frame with close attention and IF you remember what you learned in earlier frames. If they are correct, go on to the next frame.
   b. If your answers are wrong, read the frame again or refer back to the earlier frame that contains the necessary information. Try to understand why your answers are wrong and why the model answers are the correct ones. In that way you will probably avoid making the same kind of mistake again. Do not erase any wrong answers you may make; instead, draw a light line through your wrong answer and fill in the correct answer above (or below or alongside) your original wrong answer. When you have made the correction, go on to the next frame.
3. Continue in this manner throughout the program:
   Read attentively
   Answer by filling in blanks
   Check your answers against the model answers
   Reconsider your answers if they were incorrect; lightly line out any wrong
   answer and fill in the correct one
   Continue with the next frame

Since a program is not a rest, you have nothing to gain—and much to lose—if you
look at the model answers in advance. Cover the model answers with a card; uncover
and examine them only after you have written in your answers.

In this program each frame has one or more blanks to be filled in. Some examples
of the types of fill-ins are given below. Notice that the model answer is given
alongside (at the left) of the next frame.

<table>
<thead>
<tr>
<th>What You Do</th>
<th>Write Tuesday in the blank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The day after Monday is _ ————_.</td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td></td>
</tr>
<tr>
<td>2. The first president of the U.S. was (a/b/c/d) a. Thomas Jefferson b. Abraham Lincoln c. George Washington d. Woodrow Wilson</td>
<td>Write the letter of the correct answer in the blank—write c (for George Washington)</td>
</tr>
<tr>
<td>c</td>
<td></td>
</tr>
<tr>
<td>3. A week has _ days. (how many?)</td>
<td>Write 7 in the blank</td>
</tr>
<tr>
<td>4. The number of states in the Union is _ (48/49/50)</td>
<td>Select the right answer from the choices given in parentheses and write it in the blank—write 50</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

The four most important points are these:

1. Don't just read the frames; read with close attention.
2. Remember what you learn in each frame so that you can use the information in later frames.
3. Before you fill in a blank, make sure you understand the question.
4. If an answer does not occur to you immediately, don't give up too quickly. THINK about it and try hard to supply an answer before you look at the model answer.
When you complete this section, you should understand the meaning of centering at the typewriter and be able to judge whether typed material is attractively arranged on the page.

Section 1
Centering at the Typewriter

Good typing means more than just striking the right keys at a good speed. A typist's work must also be attractively arranged on the page.

The shaded areas at the left represent business letters typed on ordinary stationery. Of the two, the one that is more attractive is (A/B).

Nearly always, a typed item will be attractive on the page if it is centered. A centered item has as much blank space to the left of it as to the ______ of it and as much blank space above it as ______ it.

For example, the shaded area at the left is centered from side to side because the distance at D equals the distance at (E/F/G). The shaded area is centered up and down because the distance at E equals the distance at (D/F/G).
Vertical means up and down.
Horizontal means from side to side.

Of the two arrows at the left, the one that is horizontal is 
\( (A/B) \)

Let's use H for horizontal and horizontally.
Let's use V for vertical and ______________.
An up-and-down direction is ____________.
\( (H/V) \)

H stands for __________ and, also, __________.
V stands for __________ and, also, __________.
The blank areas around a typed item are called the margins. There are four of them: TM (top margin), BM (bottom margin), LM (left margin), and RM (right margin). In the sketch at the left you can see that the distance at TM = the distance at ___. Also, LM = ___.

LM and RM are the ___ margins. TM and BM are the ___ margins.

A shorter term for horizontal margins is ___ margins. The side margins are the distances to the left and ___ of a typed item. For the distances above and below a typed item, there is no shorter term; they are called the ___ margins.

(one word)
In the sketch at the left, the horizontal or _____ margins are lettered ___ and ___. The other margins, which are lettered ___ and ___, are called the __________ margins.

Horizontal centering is separate from vertical centering. An item could be centered H, but not V. That is, it could have equal side margins, but unequal vertical margins, as in sketch _____ (A/B).

Or it could be centered V, but not H. That is, it could have equal top and bottom margins, but unequal side margins, as in sketch _____ (A/B).

An item that is not centered is said to be "off-center." An item could be centered horizontally (equal side margins) but be off-center vertically (unequal top and bottom margins). If an item has equal top and bottom margins, but unequal side margins, then it is centered _____ but off-center ____(H/V).
Because the side margins are not equal, item ___ is off-center ___.

Because TM does not equal BM, item ___ is off-center ___.

Which one or more of the items below do you believe to be off-center horizontally? ___ Vertically? ___

Which sketch (A, B, C) fits each of the following descriptions?

<table>
<thead>
<tr>
<th>Sketch</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Centered both H and V</td>
</tr>
<tr>
<td>B</td>
<td>Centered V but not H</td>
</tr>
<tr>
<td>C</td>
<td>Centered H but not V</td>
</tr>
</tbody>
</table>
Perfect centering (both H and V) requires that \( LM = RM \) and that \( TM = BM \). It is not necessary that the side margins equal the vertical margins.

Perfect centering—both H and V—is shown at the left in

(only A/only B/both/neither).

The width of an item is its distance from side to side. The depth of an item is its distance from top to bottom. After a number, the quotation mark (') stands for inches. Ordinary stationery, sketched at the left, measures \( 8\frac{1}{2}'' \times 11'' \) (\( 8\frac{1}{2} \) by 11 inches). It is _____ (deeper/wider) than it is _____ (deep/wide).

An item could be perfectly centered, yet be unattractive because it is too narrow (horizontally) in comparison with its depth (vertically), as in sketch ____. Or it could be too wide in relation to its depth, as in sketch ____. A more pleasing relationship between the side and vertical margins is shown in sketch ____.
If the paper on which you are typing is deeper than it is wide, then the typed material on it should be deeper than it is _____, as in sketch ___. On the other hand, if the paper on which you are typing is wider than it is deep, the typed material on it should be wider than it is _____, as in sketch ___.

Here's a little TEST on the main terms and ideas about CENTERING covered in Frames 1 to 18.

1. Side-to-side centering is called _______ centering. It requires equal _______ margins.
2. Up-and-down centering is called _______ centering; it requires equal _____ and _____ margins.
3. On 8½" x 11" stationery, an attractively centered item is one that ____________.
   a. has side margins that equal vertical margins
   b. is deeper than it is wide
   c. is wider than it is deep

1. horizontal
   side (or left and right)
2. vertical
   top (and) bottom
   (either order)
3. b
When you complete this section, you should know:

1. How to determine the size of type on your typewriter.
2. How to find the center point on paper of any width.
3. How to prepare the typewriter for horizontal centering.
4. How to center horizontally by arithmetic.
5. How to center horizontally by backspacing.

Section 2
Horizontal Centering of Single Lines

46 Frames

1 inch

Horizontal centering depends on the size of type. The two common sizes are pica (pronounced "pie-ka," not "peeks") and elite (pronounced "ay-leet," not "ee-light").

You can tell by counting the number of letters in the examples above that one horizontal inch contains ___ pica spaces or ___ elite spaces.

In each horizontal inch of pica type there are ___ spaces. In each horizontal inch of elite type there are ___ spaces.

This is a sample of pica type.
Elite type is shown in this example.

Compared with elite type, pica type is ___ legible (readable). Because the type is smaller, you can get more words on the page in ___ type.
Standard-size stationery or typing paper, sketched at the left, is _ ___ inches wide and _ ___ inches long.

A little x is the "times" sign, as in $2 \times 4 = 8$. But in expressing dimensions, as in $8\frac{1}{2}'' \times 11''$, the x stands for the word ______.

The various scales on the typewriter are marked in typewriter spaces, not in inches. Therefore, to center an item horizontally, you must know how many spaces wide the paper is. You must convert or change inches into spaces.

See the arithmetic at the right. It shows that $\frac{10}{5}$ across $8\frac{1}{2}$ inches of paper, with $10$ pica spaces to the inch, there are $8\frac{1}{2} \times 10$ (which is $8 \times 10 + \frac{1}{2} \times 10$) = ____ spaces.

In elite type, paper is $8\frac{1}{2} \times 12$ = ____ spaces wide.

Note. When you see a * after a word, look at the footnote below.

Here's how to determine the size of type.* Hold the left edge of your paper at zero on the carriage scale or paper bail scale. If the right edge of the paper reaches 85 on that scale, you have ______ type. On the other hand, if it reaches ___, you have ______ type.

*The procedures described here apply only to typewriters with zero at the left edge of the scale.
The center of a 12-inchin ruler is at the 6-inch point (\(\frac{1}{2}\) of 12 inches). The horizontal center of a page that is 102 elite spaces wide is at half of 102, which is ___.

In the same way, the center of a pica page is at \(\frac{1}{2}\) of 85, which is 42\(\frac{1}{2}\). However, the typewriter scale is marked in whole, not half, spaces. For pica type, we must throw away the \(\frac{1}{2}\) and use ___ as the center.

The center point depends on the width of the paper. Only on paper that is 8\(\frac{1}{2}\) inches wide is the pica center at ___ and the elite center at ___.

For each different width of paper there is a different center point. Some personal stationery is 5 inches wide, containing 5 x 10 = ___ pica spaces. Its pica center is at \(\frac{1}{2}\) of ___, which is ___. Its elite center is at ___.

pica
102
elite

51

42
To say that something has been centered horizontally is to say that half of it is to the left of the center and the other half to the _____ of the center. For example, if a 4-letter word were centered horizontally, there would be ____ letters on each side of the _______.

A 6-letter centered word would have ____ letters on each side of the center. A 10-letter word would have ____ letters on each side of the center.

A portion of an elite typewriter scale is shown above, with the word September centered above it. You can see that the numbers on the scale get higher as you go to the _____ and that the beginning of any centered item starts to the _____ of center, at a scale number _____ than the center point.
To center something horizontally, you have to find the point on the carriage scale at which to start the typing. If you start at the correct point, how much of the item will be on each side of the center when you finish typing? 

A horizontally centered 4-letter word would start ____ spaces to the left of center; an 8-letter word would start ____ space to the ______ of center.

If a 4-letter word is to start 2 spaces to the left of center, in pica type (center at 42) it would start at 42 minus 2; that is, at ____ on the carriage scale.

To find the starting point for centering any word, subtract from the center point of the page half the number of letters in the word. For example, a 6-letter word in elite type (center at ____) would start at ____ minus ____, which is ____ on the carriage scale.
The steps in horizontal centering are:

1. Count the number of typewriter strokes in the item to be centered.
2. Divide that number by 2.
3. Subtract the result from center (42 pica, 51 elite).

Apply the above steps to the pica centering of the word typewriter.

Step 1: The word has ____ letters.
Step 2: Half of ____ letters is ____ letters.
Step 3: Subtract ____ from the pica center at ___, resulting in ____.

Here's how to find the starting point for typing any item to be centered horizontally. Count the number of typewriter strokes in the item and subtract _____ that number from the center point.

To center the word Services in elite type, you would subtract ____ from ____ and start to type at ____ on the scale.
An item to be centered horizontally could contain several words and it could include numbers, punctuation marks, or special characters. Therefore you must count everything that takes a space on the page—everything that, when typed, moves the carriage a space. For example, My Story contains ___ letters and ___ space(s) between words—for a total of ___ typewriter strokes.

Notice the stroke count (numbered below the item):

Fall Sale
123456789

From the example above, you can see that the space between words ______ counted.
(is/is not)
The Zoo Story counts as ___ typewriter strokes.

How many typewriter strokes (letters, spaces, numbers, punctuation marks, symbols) are there in each of the following items?

<table>
<thead>
<tr>
<th>Item</th>
<th>No. of Strokes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal Centering</td>
<td>___</td>
</tr>
<tr>
<td>A $50 Bargain</td>
<td>___</td>
</tr>
<tr>
<td>Flight to the Moon</td>
<td>___</td>
</tr>
<tr>
<td>&quot;Spot,&quot; The Friendliest Dog</td>
<td>___</td>
</tr>
</tbody>
</table>
Now count these:

<table>
<thead>
<tr>
<th>Title</th>
<th>No. of Strokes</th>
</tr>
</thead>
<tbody>
<tr>
<td>World's Record</td>
<td></td>
</tr>
<tr>
<td>The Mysterious Stranger</td>
<td></td>
</tr>
<tr>
<td>CBS News</td>
<td></td>
</tr>
<tr>
<td>Washington, D. C.</td>
<td></td>
</tr>
</tbody>
</table>

Now a brief TEST on what you have learned so far.

1. There are _______ common sizes of typewriter type.
   (how many?)
   a. In the larger one, called ______ type, each horizontal inch contains ____ spaces and, across an 8½-inch page, there are ____ spaces.
   b. In the smaller type, called ______, each inch contains ____ spaces and, across an 8½-inch page, there are ____ spaces.

2. In the larger type, the center point is at ___; in the smaller type, at ___.

[Test continued in the next frame.]

1. 2
   a. pica
      10
      85
   b. elite
      12
      102

2. 42
   51

3. To find the starting point for an item to be centered horizontally, you subtract ______ (what from what?)

4. To center Spring Clearance in pica type, you would start to type at ____ on the carriage scale. In elite, a centered World's Fair would start at ____.

[Test continued in the next frame. Or you may wish to continue through Frame 2-38 or 2-44 or 2-46.]
3. Half the number of typewriter strokes from the center point (or equivalent answer)

Note. The diagonal or fraction bar (/) is also a division sign. 12/2 means 12 + 2.

4. 34 \((42 - 16/2)\)
   45 \((51 - 12/2)\)

The arithmetic of counting strokes and subtracting ______ that number from the ________ point has been described only to insure that you understand the thought behind horizontal centering. In actual practice, no typist does arithmetic to center single lines; he lets the typewriter do the arithmetic for him. A first step is to position the carriage at the center point. In the large type called ________, the center is at ___; in the smaller type called ________, the center point is at ___.

You realize, of course, that 42 (or 51) will be at the center of your page if and only if the left edge of the page is exactly at zero at the left edge of the carriage scale. Therefore, first set your paper guide exactly at ______ and insert your paper with its left edge right up against the _________.

(what machine part?)

With paper guide set exactly at ______ and paper inserted up against the guide, get your margins out of the way by setting them to the extreme left and right of the machine. Then clear all tab stops and set a tab stop at 42 (pica) or at 51 (elite)--which are the horizontal center points for paper that is _____ inches wide.
Horizontal centering of single lines by machine (rather than by arithmetic) starts at the center point. Since you have set a tab stop at that point, to reach it from your left margin all you have to do is to depress the ______ key or bar.

You probably remember from an earlier frame in this program that a horizontally centered 8-letter word would start _____ spaces to the _____ of center. For that 8-letter word, instead of subtracting _____ spaces (how many?) from the center point, you could backspace _____ times from the center point.

Assume that you have tabulated to the center point of your page and that you want to center a 6-letter word. Instead of first counting the number of letters in the word, you could backspace once for each two letters in the word. If so, you would backspace _____ times. (how many?)
You do not have to count the number of letters in order to determine how many times to backspace from the point. Instead, just spell the word in groups of two letters. As you spell each 2-letter group, depress the key once.

Just for illustration, a vertical line is used to separate the 2-letter groups, as in the word ceintler. To center that word, you would spell ce and backspace once; then spell nt and backspace again; finally, spell er and backspace a third time. After these backspaces (how many?) your carriage would be at (pica) or at (elite).

The example at the right shows the 2-letter groups and the number of backspaces needed to find the starting point for typing the word.

Mark (in pen or pencil), by inserting vertical lines, the 2-letter groups in each of the words below and write in the blank the number of backspaces needed to position the carriage at the proper starting point for typing.

<table>
<thead>
<tr>
<th>Example</th>
<th>No. of Backspaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertically</td>
<td>5</td>
</tr>
<tr>
<td>Circumstance</td>
<td></td>
</tr>
<tr>
<td>Profit</td>
<td></td>
</tr>
<tr>
<td>Calendar</td>
<td></td>
</tr>
</tbody>
</table>
Spell out loud in groups of 2 and count on your fingers as you spell each group. Estimate how many seconds it takes you to do that for the word November.

How many 2-letter groups are there in November? ____________

Now do arithmetic:
1. Count the number of strokes.
2. Divide that number by 2.
3. Subtract the result from 42 (pica).

Estimate how many seconds it takes you to carry out the three steps listed above for the word Industry.

In pica type you would start to type Industry at ___ on the scale.

Your time estimate for spelling in groups of 2 (Frame 2-33) is surely less than your estimate for doing arithmetic (Frame 2-34). As compared to centering by arithmetic, centering by the backspace method is much _________.

(faster/slower)
When backspacing for each 2-stroke group, you must include everything that, when typed, moves the carriage a space. For example, the groups in My Story (spell them stroke by stroke) are: My space-S tory, for a total of ___ backspaces. For Sale would be spelled as: For-space Sa le, for a total of ___ backspaces. Consider: Profit Statement. Mark it with vertical lines to show that it would require ___ backspaces.

Notice how punctuation and symbols are counted in Discount Sale 10% Off.

Discount space-Sale comma1 0% space-Off

To center the above item you would backspace ___ times. When you finish backspacing, your carriage will be at ____ (pica) or at ____ (elite).

The best way to find the starting point for centering an item horizontally is to (a/b/c)

a. Count the number of typewriter strokes in the item to be centered. Then subtract half that number from the center point.

b. Count on your fingers as you spell by 2's; then subtract your finger count from the center point.

c. Backspace as you spell by 2's--one backspace for each 2-stroke group.

[This frame makes a convenient stopping point; or you may wish to continue through 2-44 or 2-46.]
Every example used so far has had an even number of strokes—so that there is nothing left over when you have completed your spelling by 2's. If the item to be centered contained an odd number of strokes, after spelling by 2's there would be ____ stroke(s) left over.

When centering by backspacing ignore a leftover letter; do not backspace for it. The Zoo Story counts out as: The-space[Zoo-space]Story. For the final y in that item, you ______ backspace. If you backspace correctly, you will backspace ____ times.

Here's a demonstration that backspacing and arithmetic give the same results. Assume elite type and consider My Story. Starting at 51, after backspacing for My you will be at 50; another backspace for space-S will bring you to 49; to will bring you to 48; and ry will bring you to ___. By counting and arithmetic, My Story has ____ strokes; subtracting half that number from ____ also results in ____.
Do not fall asleep over spelling by 2's. Spell fast and backspace rapidly as you spell. But depress the backspace key fully (or the carriage may not backspace). Don't punch the key (or the carriage may back up two spaces instead of one). On an electric typewriter with continuous backspacing, lift your finger off the backspace key after each tap. If you operate the backspace key improperly, your work will be

(a/b/c)

a. Too high
b. Too low
c. Off-center horizontally

Now let's summarize the steps in horizontal centering of single lines.

1. Set the paper guide at ________.
2. Set side margins out of the way. Then clear tab stops and set one at _____ (pica) or at _____ (elite).
3. After setting a tab stop, to reach it from the left margin, depress the ________ key or bar.
4. To find the starting point for typing: depress the ________ key ________ time(s) for each ________ typewriter strokes in the item.

Now a little TEST. Mark each item with vertical lines and fill in the blanks to the right of each item.

Example: September $349
Discount-10% 7 35 44
January 14, 1969
"Hamlet," by Shakespeare

If you have a typewriter at hand, continue with the next two frames. If not, wait until you are at a typewriter.
On your (home, school, or office) typewriter, center and type each of the items below—one below the other in double spacing. Be sure to backspace as you spell by 2's. When you finish typing all three items, move the carriage to the starting point of each item and check the number on the carriage scale against the model answers.

1. How to Center
2. The Story of "Flash," My Siamese Cat
3. A $50 Bargain

If you made any mistakes on the preceding three items, it may be because you lost your place while counting off by 2's. With one finger on the backspace key, keep eyes on copy and, with the index finger of the other hand, point along the item as you spell through it by 2's. Now try these:

1. Balance Sheet, December 31, 1969
2. Summer Travel Bargains
3. Luncheon Special--$1.05
When you complete this section, you should know:

1. How to determine how many typed lines fit on paper of various lengths.
2. How to center a set of lines vertically on the page.
3. How to check your starting line before you type.

Section 3
Vertical Centering

34 Frames

In a horizontally centered item, the left margin equals the right margin. In a vertically centered item, the \( \text{top (=} \text{bottom (either order)}) \) margin equals the \( \text{margin.} \)

Horizontal margins (and the width of the paper) are counted in spaces. Vertical margins (and the depth of the paper) are counted in lines. We type across the page in spaces and down the page in ________.
To center horizontally we first had to determine that, across paper that is $8\frac{1}{2}$ inches wide, there are ____ pica or ____ elite spaces. To center vertically we first have to change into number of lines paper that is ____ inches long or deep.

For horizontal centering, we had to know how many spaces across the page make one inch. For vertical centering, we need to know how many lines down the page fit in one inch. As the examples at the upper left show, in both pica and elite type, 1 vertical inch contains ____ lines. Paper that is 11 inches long therefore contains a total of $11 \times ____ = ____$ lines.

With 6 lines to every vertical inch, government stationery (8" wide and 10" long) is ____ lines long. Personal stationery (5" wide and 8" long) is ____ lines long.
The arithmetic of horizontal centering can be done on the typewriter by using the ____________ key. A different part of the typewriter can be used to do the arithmetic of vertical centering, but the method is a slow one and it is easy to make mistakes. It is better to do your own arithmetic for up-and-down or _______ centering.

If the 5-letter word March were centered horizontally in pica type, it would start at 40 on the carriage scale; that is, there would be 40 spaces in the LM (left margin). In horizontal centering, IM = RM. Therefore, the RM would also contain ___ spaces. Notice that--

LM + typing + RM = total spaces across the page.
That is: 40 + 5 + ___ = ___.

In the same way for vertical centering:

Number of lines in TM (top margin) + Number of lines of typing
Number of lines in BM (bottom margin) = Total lines available on the page
That is, TM + typing + BM should equal (on 11" paper) ___ lines.
Suppose you wanted to center vertically 6 lines of typing. That would leave 66 minus 6 or ___ blank lines for the two vertical margins. Since TM should equal BM, divide the blank lines equally (by 2), resulting in leaving, in each of the vertical margins, ___ blank lines.

Vertical centering requires finding out how many lines of top margin there should be above your first line of typing. To do that:

1. Count the number of lines to be typed.
2. Subtract that number from 66.
3. Divide the difference by 2.

If you apply those three steps to the sketch at the left, you will find that the TM will have ___ blank lines.

(how many?)

Think of starting with $1 (100 cents), spending part of it, and dividing your change equally into two pockets. If so, if you started with $1 and spent 60¢, you would get ___¢ change and would put ___¢ into each pocket.
Your two pockets are like the vertical (top and bottom) margins. But instead of starting with 100 cents, you are starting with ___ lines.

Fix in your mind two numbers: In each vertical inch there are ___ lines and, on a full 8½" x 11" page, ___ lines.

To determine the number of lines in each vertical margin, subtract the number of typed lines from 66 and divide the difference by 2. At the lower left in the sketch, $66 - \frac{6}{2} = \frac{60}{66}$; and $\frac{6}{2} = \frac{30}{66}$. Notice (at the right) that $TM = \frac{30}{66}$, typed lines = ___ , $BM = \frac{30}{66}$, and that $TM + typing + BM = ____$. 
To determine the number of blank lines in each vertical margin, the steps are:

1. Count ________________________________.
   (what?)

2. Subtract ________________________________
   (what from what?)

3. Divide the difference by ____.

---

Fill in the blanks in the right-hand column.

<table>
<thead>
<tr>
<th>Number of Typed Lines</th>
<th>Number of Lines in Top Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

[This frame makes a convenient stopping point; or you may wish to continue through 3-19 or 3-23 or 3-27 or 3-34.]

---

23
(66 - 20) ÷ 2
25
(66 - 16) ÷ 2
16
(66 - 34) ÷ 2
28
(66 - 10) ÷ 2

As shown at the left, if some vertically centered item requires 10 blank lines as a TM, your first line of typing must be on line 11. If you typed on line 10, there would be only ___ blank lines above your first line of typing.
For a 10-line top margin, start to type on line 11. For a 17-line TM, start to type on line 18. For a 23-line TM, start to type on line ___. When you have determined how many blank lines should be in your top margin, start to type ___.

\[
a. \text{ on that line} \\
b. \text{1 line lower down on the page}
\]

The arithmetic at the left applies to the vertical centering of 16 lines. Notice that you first subtract the number of typed lines from ___, resulting in ___. Next, you divide by 2 and find that the TM should contain ___ lines. You start to type 1 line lower down on the page, on line ___. Use the sample arithmetic as a model to figure out that the first of 46 vertically centered lines would be typed on line ___ from the top edge of the paper.

[This frame makes a convenient stopping point; or you may wish to continue through 3-23 or 3-27 or 3-34.]

Sometimes, after subtracting the number of typed lines from 66, an odd number of lines remains for margins. If so, there will be 1 line left over after you divide by 2.

Example: If 5 of 66 lines are used for typing, 61 lines remain for margins. Division by ___ results in ___, with 1 line left over. Throw away the leftover line. Put ___ lines in your TM and start to type on line ___.

\[
\begin{array}{c}
\text{Line 31} \\
\hline
30 \\
\hline
5 \\
\hline
31 \\
\hline
66
\end{array}
\]
When determining the TM for a vertically centered item, if there is 1 line left over after dividing total blank lines by 2, you _______ add it to your TM.

(should/should not)

If some vertically centered item is to have a TM of 25 lines, you should start to type on line _______.

(24/25/26)

Remember that a full sheet of standard-size stationery or typing paper contains _____ lines from top to bottom. Fill in the blanks below.

<table>
<thead>
<tr>
<th>No. of Typed Lines</th>
<th>Total Blank Lines</th>
<th>Start to Type on Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>56</td>
<td>29</td>
</tr>
<tr>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[This frame makes a convenient stopping point; or you may wish to continue through 3-27 or 3-34.]
We want a centered item to be not only attractive, but also easy to read. Therefore, single spacing is rarely used.

Instead, some of the typed lines are usually separated by one or more blank lines. The example at the left contains ____ typed lines + ____ blank lines, for a total of ____ lines.

Just as you count the spaces between words when backspacing for horizontal centering, you count the blank lines between typed lines when you do ______________ centering.

When you double space, you type on every second line. Therefore, double spacing gives you ____ blank line(s) between typed lines. In triple spacing, you type on every third line—leaving, between typed lines, ____ blank lines. In the sketch at the left, the typed lines are numbered and a little x stands for a blank line. In the sketch, the total of typed plus blank lines is ____. Triple spacing is used between the lines that are numbered ____ and ____.
The number of blank lines used to separate typed lines is a matter of judgment—not rule. In the same item, a person might feel that some of the lines should be single spaced, other lines double spaced, and still others triple spaced. In the example in Frame 3-24 (refer to it) the last three lines are _______ spaced, but the first two typed lines are _______ spaced. After the word on, there is a _______ space.

[This frame makes a convenient stopping point; or you may wish to continue through Frame 3-34.]

Quite often, there are not enough lines to be centered to require using a full (66-line or 11-inch) sheet. Sometimes, a half-sheet is used. A half-sheet is ½ of 11 inches, or 5½ inches, long; it is half of 66, or ___ lines long.

When using a half-sheet, instead of subtracting the number of lines of typing from 66, you subtract from ___ to determine the number of lines available for ___ margins. (horizontal/vertical)
The example at the left has ___ typed lines + ___ blank lines, for a total of ___ lines. If it were to be centered vertically on a ½-sheet, you would subtract ___ from ___, resulting in ___.

The TM would contain ___ lines, and the typing would start on line ___.

Mistakes in vertical centering are impossible to correct. Therefore it is wise to check your arithmetic and the correctness of your line count ___ before/after you start to ___ type. Just make sure that: TM + typing + BM = 66 (or, on a ½-sheet, that the total = ___). On a full sheet, if there are 15 lines of typing, then the 51 blank lines divide into 25 and 26.

Here's the check:

\[
\begin{align*}
25 \text{ TM} &+ 15 \text{ typing} \hfill \\
&+ 26 \text{ BM} \\
\hline
&= ?
\end{align*}
\]

A typist was about to center 12 lines vertically on a ½-sheet. His arithmetic showed 9 lines in the TM and 10 lines in the BM. Does TM (9) + typed lines (12) + BM (10) = 33? Therefore, the typist's arithmetic ___ correct.

(yes/no) ___ is/is not
Don't take ages to space down to the starting line. Line up the top edge of your paper with the edge of the scale--so that if you were to strike a key, it would just miss the top edge. Next, set your line space regulator for triple spacing and space down rapidly, counting by 3's (3, 6, 9, 12, etc.) until you are as close as possible to the desired line. Then, reset for single spacing and space down the final line or two.

To reach line 19, use 6 triple spaces + 1 single space.
To reach line 11, use ___ triple space(s) + ___ single space(s). To reach line 24, use ___ triple space(s) + ___ single space(s).

Now a little TEST on vertical centering.

A--full sheet  B--full sheet  C--½-sheet  D--½-sheet

To reach line 17 most rapidly, space down ___ triple space(s) + ___ single space(s).

Note. The diagonal or fraction bar (/) is also a division sign. 12/2 means 12 ÷ 2.

A) (66-10)/2 = 56/2 = 28; and 28 + 1 = 29
B) (66-13)/2 = 53/2 = 26; and 26 + 1 = 27
C) (33-4)/2 = 29/2 = 14; and 14 + 1 = 15
D) (33-7)/2 = 26/2 = 13; and 13 + 1 = 14
5 (triple) + 2 (single)
When you complete this section, you should know:

1. How to center tables vertically.
2. How to type different kinds of headings.
3. How much vertical spacing to use between the parts of a table.

Section 4
Vertical Centering of Simple Tables

All typing must be attractively arranged on the page—that is, centered. In the table at the left, the TM (top margin) equals the RM (right margin) and the IM (left margin) equals the RM (right margin). Also, the space between columns 1 and 2 equals the space between columns ___ and ___.

Before reviewing the methods used for horizontal and vertical centering, remember that one types across the page in SPACES but down the page in LINES. In the side margins (left and right), one speaks of the number of ______. But in the vertical margins (top and bottom) one speaks of the number of ______.
Let's review the method of vertical centering. Compare it with making a purchase and then dividing your change equally into two pockets. If you started with $1 (100 cents) and spent 60¢, you would get ___¢ change and would put ___¢ into each of the two pockets. Compare the $1 with the 66 lines on a full sheet of 8½" x 11" paper. If the table (including blank lines within it) used 16 lines, there would remain for vertical margins ___ lines, and half that number, or ___, lines, would be in the top margin. The typing would start 1 line lower, on line no. ___.

In vertical centering:

- Total lines available down the page
  - Typed + blank lines WITHIN the table
  = Unused lines available for TM and BM

Use that method with the table in Frame 4-1 (refer to it):

- Total lines on an 11-inch page = 11 x 6 = ___
  + Typed blank lines within Table 4-1 = ___
  = Unused lines available for TM and BM = ___

Then: TM = unused lines + 2 = ___. The first line of typing (the heading) starts on the ________ line--on (same/next) line number ___.

If there is a line left over after dividing the unused lines in half, do you add it to your top margin? ___ If the table in Frame 4-1 (refer to it) were typed on a half-sheet, containing half of 66, or ___, lines, then the lines available for TM + BM would be ___ minus ___ = ___. Dividing ___ by ____ results in ___ lines in the TM. The first line of the table (the heading) would be typed on line no. ___.
To center vertically, first count the number of typed + blank lines within the item. In the illustration (in which a little x stands for a blank line), the total is ___.

Then, subtract that number from the total lines available on the page. Finally, divide the difference by 2, resulting in the number of ______ in the (spaces/lines) ______ margin. In centering the illustration above on (top/left) a FULL sheet, the top margin would have ______ (how many?) (spaces/lines)

The steps in vertical centering are:
1. Count ______ (what?)
2. Subtract ______ (what from what?)
3. Divide the difference by ___.
4. Start to type on the ______ line.
   (same/next)

1. the number of typed + blank lines within the item
2. that number from the total available (66 on a full sheet, 33 on a ½-sheet) (or equivalent answers to 1 and 2)
3. 2
4. next

A table contains two main sections: (1) HEADING and (2) BODY. In the body of a table, the COLUMNS go down the page and the ROWS go across the page. In the table at the left, the heading section contains ___ typed lines. The body of the table contains ___ rows and ___ columns.
Legibility (ease of reading) is important. Therefore, unless the table is a very long one, it is common to double space between the rows in the body of the table. In double spacing, you remember, each pair of typed lines is separated by ___ blank line(s). Refer to the table of Frame 4-8. If the three rows of the body of the table were to be double spaced, the body would use up a total of ___ lines.

The number of lines used in double spacing is twice the number of typed lines, minus 1. Four typed lines in double spacing use (2 x 4) - 1 = 8 - 1 = 7 lines. Six double spaced lines would use ___ lines. Nine double spaced lines would use ___ lines.

Perhaps you remember that the two main sections of a table are called the ___________ and the ___________. Perhaps you also remember that the horizontal entries are called _____ and that the vertical entries are called __________.
Let's use SS as the abbreviation for single space, single spaces, single spaced, and single spacing. With D for double and T for triple, DS stands for double space, spaces, spaced, or spacing. TS stands for triple space, spaces, spaced, or spacing. 4SS would mean four spaces; 2DS would mean two spaces.

Another name for heading is title. One speaks of a table heading or of a table "heads," for short.) In addition, a heading can have several parts: a MAJOR head and one or more MINOR or SUBHEADS.

In the table above, the title or major head is ________. The minor or subhead is ________. Notice that the rows in the body and the two heads are ________ and that a TS is used after the ________. (SS/DS/TS) (what part?)

Examine the vertical spacing in the illustration (a) within the heading section, (b) within the body section, and (c) between the two main sections. You can see that in comparison to the blank space within the sections marked a and b, the space between the two main sections--marked c--is ________. (less/the same/greater)
The two main sections of a table are the _______ and the _______. For the sake of attractive appearance, always leave more blank space \( (\text{between/within}) \) sections than _______ sections. If the body of a \( (\text{between/within}) \) table is SS, then _______ after the heading. If the body \( (\text{SS/DS}) \) of a table is DS, then _______ after the heading. \( (\text{SS/DS/TS}) \)

<table>
<thead>
<tr>
<th>heading body</th>
<th>(either order)</th>
</tr>
</thead>
<tbody>
<tr>
<td>between</td>
<td></td>
</tr>
<tr>
<td>within</td>
<td></td>
</tr>
<tr>
<td>DS</td>
<td></td>
</tr>
<tr>
<td>TS</td>
<td></td>
</tr>
</tbody>
</table>

### INVENTORY

For Branch Offices in Dallas, Chicago

The illustration at the left shows only the heading section of a table. In it, the subhead or _______ head contains _______ lines. Because the information in the subhead belongs together, it is typed in _______. Also, because a blank line separates the major heading or _______ from the subhead, between the subhead and the body there will be at least _______ blank lines. \( (\text{how many?}) \)

### Blank lines

Blank lines usually separate one part of a heading from another. An additional way to distinguish the parts is through the use of SOLID CAPITALS (solid caps, for short), as well as of Initial Caps (for the first letter of each important word). In the illustration in the preceding frame (4-16), the title uses _______ caps, but the minor head uses _______ caps. Notice also that each of the two subhead lines is \( (a/b) \).

a. Blocked (lined up) at the left
b. Centered horizontally
A typed line can be made to stand out from other lines in several ways:

a. By centering it horizontally
b. By leaving a blank line above and below it
c. By typing it in SOLID CAPS
d. By **underscoring** (underlining)

Do not combine solid caps with **underscoring**. Use either one or the other, but not both. Of the following three:

a. **INVENTORY**
   the one that is unacceptable
b. **INVENTORY**
   is (a/b/c)
c. *Inventory*

Actually, it is rarely desirable to underscore an item in a table heading. Just centering the item horizontally makes it stand out enough—especially when there is a blank line above and below it. Consider these:

- **Enrolment of Boys and Girls in Typing Classes**
- **Enrolment of Boys and Girls in Typing Classes**

The better of the two above is the one at the (left/right).

Notice (from the version at the right) that the space between words **is not** underscored.

Which of the two titles below seems "easier on the eyes"?

**Hint:** Do not confuse size with ease of reading.

a. **Average Number of Major and Minor Typewriting Errors Made on Each of Four Kinds of Office Typing Jobs by Students at Each of Four Stages of Training**

b. **Average Number of Major and Minor Typewriting Errors Made on Each of Four Kinds of Office Typing Jobs by Students at Each of Four Stages of Training**

The title that seems "easier on the eyes" is (a/b)
Most people think b

Most people find a long string of solid caps difficult to read (because all letters are the same height). Therefore, avoid solid caps except when the item is quite short or to distinguish one part of a heading from another, as in:

- ACME, INC. or Acme, Inc.
- Inventory Sale or INVENTORY SALE

If a table title is long or if there are no subheads to be distinguished from major heads, it is better to use caps.

(solid/initial)

A long table title (one that requires more than 4-5 words) should use solid caps. If a table title should not use solid caps, that title should be underscored.

In a table heading, give the greatest prominence to the most important information (by using solid caps). Use initial caps for the less important parts of a heading. Of the two illustrations in Frame 4-21 (refer to it), the better one is the one at the (left/right).
The table whose headings were just discussed will contain information about the inventory sale, not about the firm (Acme, Inc.). That is why the version at the right (in Frame 4-21) is preferred. In it, the major lead or title is in _______ caps and it appears (solid/initial) _______ (before/after) the minor head. A major head usually comes before a minor head, but can it sometimes follow the minor head? ______

| a. 1969 Enrolment Figures at Taft High School |
| b. 1969 ENROLMENT FIGURES AT TAFT HIGH SCHOOL |
| c. Taft High School 1969 ENROLMENT FIGURES |
| d. TAFT HIGH SCHOOL 1969 Enrolment Figures |

As between a and b, the preferred one is ______.
As between c and d, the preferred one is ______.

In the preceding frame, headings a and c are preferred. In choosing between a and c, select the one whose width is closer to the width of the columns in the body of the table. If the columns containing the enrolment information required about 20-25 spaces (including spaces between columns), the preferred heading would be ______.  

(a/c)

[This frame makes a convenient stopping point; or you may wish to continue through 4-37.]
In the tables used so far in this section the information in the columns is obvious from the table title or subhead. More often, it is desirable and helpful to label the information in each column by using a column heading (abbreviated CH). The heading of the second column in the table at the left shows that 134 is Kent's _______. Are CHs underscored? _______ Are they centered in relation to their columns? _______. 

<table>
<thead>
<tr>
<th>CONTEST WINNERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Kent</td>
</tr>
<tr>
<td>Wilson</td>
</tr>
<tr>
<td>Cox</td>
</tr>
<tr>
<td>Grant</td>
</tr>
</tbody>
</table>

In the tables used so far in this section the information in the columns is obvious from the table title or subhead. More often, it is desirable and helpful to label the information in each column by using a column heading (abbreviated CH). The heading of the second column in the table at the left shows that 134 is Kent's _______. Are CHs underscored? _______ Are they centered in relation to their columns? _______. 

<table>
<thead>
<tr>
<th>NUMBER OF BUSHELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Bushels (in Millions)</td>
</tr>
<tr>
<td>The CH at the left is correct. That CH shows that: (a) Underscoreing _______ the space between words. (includes/excludes) (b) CHs use _______ caps. In a CH of more than 1 line, (c) the lines are _______ and (d) you underscore _______ line across the width of _______ line in the CH.</td>
</tr>
</tbody>
</table>

1. **SALE PRICE**
2. **Number of Males**
3. **Inventory No.**
4. **Shipping Cost**
5. **Cost of Goods**
6. **Average Temperature (in Degrees)**

Of the six column headings at the left, the correct ones are Nos. _______.

Includes _______ initial _______, SS _______. The bottom _______. The longest _______.

**score**

**yes**

**yes**
Compare the two sets of column headings below.

<table>
<thead>
<tr>
<th>City</th>
<th>Average Annual Temperature</th>
<th>Average Annual Rainfall</th>
<th>City Rainfall</th>
<th>Temperature</th>
</tr>
</thead>
</table>

The set of CHs at the right, above, is correct. The rule is:

(a/b)

a. Start all column heads on the top line of the CH that uses the largest number of lines.

b. End all column heads on the last line of the CH that uses the largest number of lines.

Both of the columns at the left are correct. They show that no matter what spacing is used between rows (SS or DS), the CH is always followed by blank line(s). That is, between the CH and the first row of the body, you *

*With 1½ spacing between rows (on a halfspace typewriter), 1½ (or double) spacing after the CH is permissible.

You should be able to tell from the vertical spacing between the parts of the table (shown by the numbered line count) that column headings are considered to be part of the section of a table.
Some typists take longer than necessary to count the number of lines in a table. Here's a time-saver when the rows in the table are to be DS. Starting with the first line of the title, count down by 1's until you reach the last CH line; thereafter, count by 2's. Look at the numbered line count at the left of the table in Frame 4-32. It shows that the last CH line is line no. ___. After that, the line count shows that you should continue to count down by ___.

\[ \begin{align*}
\text{English} & : 1,125 \\
\text{Business} & : 782 \\
\text{History} & : 614 \\
\text{Mathematics} & : 493 \\
\text{Science} & : 377
\end{align*} \]

Now a little TEST

1. The two major sections of a table are the ________ and the ________.
2. Always leave more blank space ________ than ________ the two main sections.
3. Information in a table is presented across the page in ________ and down the page in ________.
4. If an item in a table is typed in solid caps, it ________ also be underscored.

(Test continued in the next frame.)
1. heading
   body
   (either order)
2. between
   within
3. rows
   columns
4. should not

5. title
6. subhead
7. 11
   \[\frac{(33 - 13)}{2} + 2 = \frac{20}{2} = 10;
   \text{and } 10 + 1 = 11\]
8. 21
   \[\frac{(66 - 25)}{2} = \frac{41}{2} = 20;
   \text{and } 20 + 1 = 21\]
9. 2

10. 1
11a. DS
   b. TS
   c. DS
   d. DS
12. 26
   \[\frac{(66 - 16)}{2} = \frac{50}{2} = 25;
   \text{and } 25 + 1 = 26\]

5. Another name for major head is ____________.
6. Another name for minor head is ____________.
7. A table containing 13 (typed + blank) lines, if typed on a half-sheet, would begin on line no. ____.
8. A table containing 25 (typed + blank) lines, if typed on a full sheet, would begin on line no. ____.
9. In the example at the right, the major head is the one on line ____.
   (1/2)
   (Test continued in the next frame.)

10. You could use either solid caps or initial caps + under-scoring for line no. ____.
11. What vertical spacing (SS, DS, or TS) should be used—
   a. Between lines 1 and 2? ____
   b. Between lines 2 and 3? ____
   c. Between lines 3 and 4? ____
   d. Within lines 4-8? ____
12. If typed on a full sheet with correct vertical spacing, the title would start on line ____.

In the table at the left:

<table>
<thead>
<tr>
<th>Office Assignments</th>
<th>May 1, 1969</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department</strong></td>
<td><strong>Room</strong></td>
</tr>
<tr>
<td>Executive</td>
<td>204</td>
</tr>
<tr>
<td>Sales</td>
<td>212</td>
</tr>
<tr>
<td>Purchasing</td>
<td>206</td>
</tr>
<tr>
<td>Accounting</td>
<td>219</td>
</tr>
<tr>
<td>Shipping</td>
<td>140</td>
</tr>
</tbody>
</table>
When you complete this section, you should know:

1. How to center horizontally--by backspacing--tables without column headings.
2. How to check your centering before you type.
3. How to find the starting point for each column.
4. How to type tables so that they will be attractively centered on the page.

Section 5
Tables without Column Headings
(Backspace Method)

An attractively typed table is one that is centered horizontally as well as ___________. You know that a horizontally centered item is one whose _______ margins are equal.

A table displays information in rows and columns. Perhaps you remember that the columns go (across/down) the page, while the rows go (across/down) the page.

Examine the table at the left. It has ___ rows and ___ columns. The first column begins at the LM (____ margin). At the beginning of each column after that, you set a ____________.

Just as you jump 5 spaces to the beginning of a paragraph by tabulating, you also jump from column to column by ______________ across the inter ______ space--the space between columns.
You type a table across the rows, NOT down the _________.

After you type **Massachusetts** in the table above, the next thing you type is _________. After you type **Minn.**, the next thing you type is _________.

The columns in a table should not be so close together that they look jammed; nor should they be so far apart as to cause difficulty in reading from column to _________.

Often, about a ½ inch between columns—(how many?) ___ pica or ___ elite spaces—will be about right. Of course, in a table with many or wide columns, the IC (intercolumn) space might have to be ________ than a half-inch. In a table with just a few or very narrow columns, you could use ________ than a half-inch of ________ space.

Think of a table as containing two elements:

1. Typed matter--the material in the columns.
2. IC space--the space between _________.

To center and type a table, you must locate:

a. The point on the carriage scale at which the first column begins—the _________ margin, and

b. The points at which each later column should begin—so that you can set a _________ for each of the later columns.
To center a table horizontally, you first have to determine how many spaces wide it is. To do that, you first identify the longest item in each column. The sum of the spaces in the longest items + all IC space is the total width of the table.

The total width of the table above is: its IC space + the spaces in Economics Club + the spaces in Glee Club + the spaces in Orchestra.

Tables can be centered horizontally in any of three ways: (a) by backspacing, (b) by arithmetic, or (c) by a combination of backspacing and arithmetic. You already know how to center horizontally by backspacing. You start at the center point (at _____ on a pica machine, at _____ on an elite typewriter). Then you backspace _____ for each ____ letters, characters, and spaces in the line.

The fastest and safest way to center the body of a table by backspacing is:

1. First, backspace for the typed matter across all columns.
2. Next, backspace for all IC spaces.

To center the typed matter, first identify the longest item in each column. Consider:

<table>
<thead>
<tr>
<th>Maine</th>
<th>New England</th>
<th>Augusta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio</td>
<td>Midwest</td>
<td>Columbus</td>
</tr>
<tr>
<td>Washington</td>
<td>Far West</td>
<td>Olympia</td>
</tr>
</tbody>
</table>

In column 1, the longest item is ___________; in column 2, ___________; in column 3, __________.
Be especially careful when identifying the longest item in longhand materials. The item that stretches the longest may not have the most spaces. Check by counting.

President
Secretary
Comptroller

In column 1, the longest item is _______________; it has ___ spaces. In column 2, the longest item is _______________; it has ___ spaces.

Comptroller
11
Williams
8

Jim Al Frank
James Fred Andy
Tom Van Bob

Consider the body of a table to have a "longest line"—made up of the sum of the longest items in each column + all IC space.

In the table above, the longest line consists of the underscored typed matter (James + Fred + Frank) plus the dotted IC space. As shown above, the typed matter has 5 + ___ + 5 = ___ spaces, and the ICs contain 3 + ___ = ___ spaces, for a total in the "longest line" of ___ spaces.

Temporarily ignoring IC space, the longest line in Frame 5-8 consists of: Washington + New England + Columbus. In Frame 5-9 (refer to it), the typed matter in the longest line consists of ____________ + ____________.

Your first step is to determine the starting point for the first column, so that you can set your ____ margin. Consider the longest line of the table of Frame 5-8 (not counting IC space) as:

Washington New England Columbus

Starting at midpoint (42 or 51), backspace "1 for 2"--

Washington New England Columbus

Notice that you do not backspace for the final leftover letter (the s of Columbus) and that the d of England is paired with the ___ of the word ____________, because intercolumn space is, at this stage, _______.

(included/ignored)
COUNT ON YOUR FINGERS AS YOU BACKSPACE MENTALLY for ComptrollerWilliams (Frame 5-9). The sixth PAIR of letters in backspacing for ComptrollerWilliams consists of the letters ____. The last pair consists of the letters ____. There will be a total of _______ backspaces, with (how many?) ______ leftover letter(s).

(one/no)

In backspacing for ComptrollerWilliams in elite type, you would backspace 9 times from 51, ending at 51 - 9 = _____. Having backspaced for the typed matter, you must next backspace for the IC. Assuming 8 spaces between the two columns, and backspacing 1 for 2, you would backspace half of 8, or ____ more times. That would bring you to ____ on the scale. In pica type, you would start to backspace from ____ and would backspace 9 times for the typed matter + ____ times for the IC. Your backspacing would end at ____.

Suppose you wanted to leave 5, instead of 8, spaces between columns in the preceding example. Since you drop a leftover letter or space, in centering 5 IC spaces you would ordinarily backspace ____ times. However, there was 1 leftover letter after backspacing for the typed matter (the final s of Williams). That s--and the fifth space of the 5 IC spaces--make another pair. Therefore, 5 IC spaces + the leftover s make a total of 6 spaces to be centered. After backspacing for the typed matter, you must therefore backspace ____ more times.
A 2-column table has 1 intercolumn. A 5-column table has 4 ICs. A 7-column table has ___ ICs. The number of ICs is always ___ the number of columns. To get total IC space, multiply the width of the IC by the number of ___ IC spaces. To center those spaces, you would backspace half that number, or ___. times.

When you backspace first for the typed matter and next for all IC space, you must be sure not to throw away 2 leftover spaces (1 in the typed matter and 1 in the intercolumns). Assume a table with three 5-space ICs in which there was a leftover space after backspacing for the typed matter. The leftover space plus the total of ___ IC spaces make a total of ___ spaces to be centered by backspacing. You would therefore backspace ___ more times.

Assume a table with a leftover space in the typed matter and two 7-space ICs. To center the total of 14 IC spaces, you would backspace ___ times. If you were to add the leftover space, making 15, you would still backspace ___ times. In other words, when the IC total is an even number, the leftover space from the typed matter should be ___ --because the number of backspaces needed for centering ___ be changed.
Assume a leftover space in the typed matter and three 7-space ICs. Because the IC total (3 x 7) is an _odd_ (odd/even) number, you _should_ (should/should not) add the leftover space.

There will be _22_ (21/22) spaces to be centered, requiring _20_ (10/11) backspaces.

Consider a 5-column table in which each IC has 6 spaces. Assume that after backspacing for the typed matter (but not for the IC space), your carriage was at 32 on the scale. You could continue to backspace for the IC spaces (which total 6 x _20_ = _24_), using _12_ backspaces. But if your arithmetic is faster than your backspacing, instead of backspacing _12_ more times, just subtract _20_ from _32_ and move your carriage directly to _5_ on the scale. Since the first column begins at that point, you set the _odd_ margin there.

A table's "longest line" is the sum of the spaces in the longest item in each column + all IC space. You backspace for that longest line in order to locate the _left_ margin. Consider the 3-column table sketched below:

| 10 | 5 | 25 | 5 | 15 |

In it, the typed matter totals 10 + 25 + 15 = _40_ spaces, and the ICs total _20_ spaces, resulting in a "longest line" of _50_ spaces. To center it, you would backspace _12_ times. In elite type, your backspacing would end at _10_ on the scale, and you would set your _7_ at that point.
The steps in the backspace method are:

1. From the center point, backspace \( \frac{1}{2} \) for the typed matter.

2. Then backspace for half the IC total; OR subtract half the IC total from the point on the scale at which the backspacing for the typed matter ends.

Assume a table in which backspacing for the typed matter ends at 30 on the scale. If there were three 6-space ICs, backspace ____ more times, or subtract ____ from ____ and move your carriage directly to ____ on the scale.

To locate the left margin in a table by the backspace method, backspace (1 for 2)—first for the _________ ________ and then for the _________ ________.

OR, after Step 1, subtract ___________________________ (what?)

from ___________________________ (what?)

Errors in locating the LM could result from:

1. Poor backspacing technique (not depressing the key fully or punching it too hard).

2. Incorrectly identifying the longest item in each column.

3. Faulty spelling by 2's during backspacing.

4. Wrong arithmetic (in multiplying IC space by number of ICs or in forgetting leftover spaces).

5. Confusion about the steps in the backspace process.

If reason No. 5 applies to you now, you should ________:

a. Just go on and hope for the best.

b. Review Frames 1 to 22 in this section.
Now a little test, based on the table below.

1. The longest item in column 1 has ____ spaces; in column 2, ____ spaces; in column 3, ____ spaces.
2. Count on your fingers and backspace mentally to determine that, in backspacing for the typed matter, the eighth backspace would be for the letters ____. At the end, would there be a leftover space? ___

Note. If a typewriter is available, continue with the next three frames. If not, wait until you are at a typewriter.

Before you do any typing—in fact, before you start to backspace to find the LM of a table—be sure to set your margins to the extreme left and right of the carriage and to clear all tab stops. Otherwise, earlier machine settings will get in the way of your present work. Your first steps are:

1. Move margins ____________________________
   (where?)
2. Clear ____________________________
   (what?)

At a (home, school, or office) typewriter, backspace to find the LM for each of the tables below. Remember to backspace first for all typed matter, then for all IC space. One by one, check the end point of your backspacing against the model answers. The space in each IC is at the right.

<table>
<thead>
<tr>
<th>(1)</th>
<th>California</th>
<th>Sacramento</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indiana</td>
<td>Indianapolis</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(2)</th>
<th>Maine</th>
<th>New England</th>
<th>Augusta</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Washington</td>
<td>Far West</td>
<td>Olympic</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(3)</th>
<th>Missouri</th>
<th>Mo.</th>
<th>MO</th>
<th>4,319,813</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Montana</td>
<td>Mont.</td>
<td>MN</td>
<td>674,767</td>
</tr>
</tbody>
</table>

b

1. 15 (Alice Stevenson)
   17 (460 Bullitt Drive)
   11 (San Antonio)

2. n4
   yes

1. to extreme left and right of the carriage
2. all tab stops
See the instructions for Frame 5-26.

<table>
<thead>
<tr>
<th>Typing</th>
<th>Italian</th>
<th>Algebra</th>
<th>History</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shorthand</td>
<td>French</td>
<td>Geometry</td>
<td>Civics</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Kennedy</th>
<th>Massachusetts</th>
<th>Democrat</th>
<th>1961</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Johnson</td>
<td>Texas</td>
<td>Democrat</td>
<td>1963</td>
</tr>
<tr>
<td></td>
<td>Nixon</td>
<td>California</td>
<td>Republican</td>
<td>1969</td>
</tr>
</tbody>
</table>

**Independence Day**

**July 4**

**Veterans Day**

**November 11**

<table>
<thead>
<tr>
<th></th>
<th>1903</th>
<th>Marie Curie</th>
<th>Physics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1953</td>
<td>Winston Churchill</td>
<td>Literature</td>
</tr>
</tbody>
</table>

[Stop here, or continue through 5-32 or 5-40.]
You work across the rows by tabulating from column to column. Therefore, after setting your LM and typing California (see 5-28), you want to find the point at which the second column begins—so that you can set a tab stop at that point. With a 6-space IC (intercolumn), after you type California in column 1, just space ___ times and __________________ for column 2.

(Refer to the table of Frame 5-28.)

Having set a tab stop for column 2, you next type ______________. Then space for the IC and __________

_______________ for column 3. Then type ________.

With row 1 complete and all tab stops set, check your line space regulator. If you want a blank line separating the rows of the table (as is done in most tables that are not very long), set your regulator for __________ spacing. Then just throw your __________ and type across each __________ in turn, tabulating from the end of one __________ to the beginning of the next one. For example, when you finish typing Ohio in the first column of row 2 (see Frame 5-28), you ___ (a/b).

a. Space for the IC
b. Tabulate to column 2

[Stop here, or continue through 5-41.]
In the table of Frame 5-28 the longest item in each column is in the first row. That rarely happens in real life. More often, the longest items are in various rows, as in:

<table>
<thead>
<tr>
<th>Georgia</th>
<th>South</th>
<th>Atlanta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington</td>
<td>Far West</td>
<td>Olympia</td>
</tr>
<tr>
<td>Maine</td>
<td>New England</td>
<td>Augusta</td>
</tr>
<tr>
<td>Ohio</td>
<td>Midwest</td>
<td>Columbus</td>
</tr>
</tbody>
</table>

The longest item in column 1 is in row ____. In column 2, the longest item is in row ____.*

*For the purpose of planning and typing tables, it does not matter in what row the longest item in the last column is located.

For the beginner at table typing, the safe way to work is to set all tab stops before any typing is done. In the table of the preceding frame (refer to it), you would set tab stops for columns ____ and ____ before you type Georgia.

For the table below, pica LM = 20 and each IC = 8 spaces.

<table>
<thead>
<tr>
<th>Georgia</th>
<th>South</th>
<th>Atlanta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington</td>
<td>Far West</td>
<td>Olympia</td>
</tr>
<tr>
<td>Maine</td>
<td>New England</td>
<td>Augusta</td>
</tr>
<tr>
<td>Ohio</td>
<td>Midwest</td>
<td>Columbus</td>
</tr>
</tbody>
</table>

The first tab stop, for column ____, will be set 8 spaces after the longest item in column 1, which is ________.

Here's how to set tab stops before typing: From LM at 20, spell through the longest item in column 1 letter by letter as you tap the space bar once for EACH letter. That will require ____ space bar strokes.
Having tapped your space bar 10 times, once for each letter in *Washington*, another 8 taps (for the IC) will bring you to the beginning of column ___. Set a ___________ at that point.

Notice (preceding frame) that the longest item in column 2 is _______________. Again, space your way through it by tapping your space bar ___ times. Add another 8 taps for the IC and _______________ for column ___.

(Refer to Frame 5-35.)

So far, you have set tab stops for columns 2 and 3, but have not typed any of the items in the table. Now you are ready to type. To type the first-row items that you had previously spaced through (while spelling letter by letter): WITHOUT SPACING DOWN, push your carriage back to the ______ margin, type ___________; then ______ space/tabulate ______ to column ___ and type ______; then ______ to column ___ and type _______.

With the items in row 1 typed, and all tab stops set, if you want a blank line between rows, set your line space regulator for __________ spacing. Then just throw your ______ and type across each ____ in turn, tabulating from the end of one ______ to the beginning of the next one.
Now a little TEST (assume LM properly set and that you want to set tab stops).

<table>
<thead>
<tr>
<th>Ohio</th>
<th>Columbus</th>
<th>Cleveland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delaware</td>
<td>Topeka</td>
<td>Wilmington</td>
</tr>
<tr>
<td>Kansas</td>
<td>Columbus</td>
<td>Kansas City</td>
</tr>
</tbody>
</table>

1. First, _______ (type/space through) _______ (what item?)
2. Then, after spacing for the IC, _______ for column _______. Next, _______ (type/space through) _______ (what item?)
3. When you first reach column 3 (after spacing for the IC), _______. Then, _______ the carriage to type _______.

TEST continued (refer to Frame 5-39).

4. With an IC of 10 spaces, the "longest line" (all typing plus all IC spaces) contains _______ spaces.
   a. To center the longest line in elite type, you would backspace _______ times. LM would be at _______
   b. In pica type, with IC = 7, to center the longest line you would backspace _______ times, resulting in LM at _______.

47 (27 typing + 20 IC)
(Longest items are: Delaware, Columbus, Kansas City--using 8, 8, and 11 spaces.)

4a. 23 (\(\frac{1}{2}\) of 47)
    28 (51 - 23)

4b. 20
    \(\frac{1}{2}\) of (27 typing + 14 IC)
    22 (42 - 20)
When you complete this section, you should know:

1. How to center horizontally—by backspacing—tables with column headings.
2. How to center each column heading in relation to its column.
3. How to type tables with column headings by using forward and backspace methods.

Section 6
Tables with Column Headings
(Backspace Method)

<table>
<thead>
<tr>
<th>Item</th>
<th>Special Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ladies' gloves</td>
<td>$6</td>
</tr>
<tr>
<td>Men's hats</td>
<td>14</td>
</tr>
</tbody>
</table>

To locate the LM (left margin) of a table, you know that you backspace 1 for 2 for the longest item in each column + IC space. In identifying the longest item, consider the CH (column heading) to be part of the column. For example, the longest item in column 2, above, is its CH, __________, containing ____ spaces. With 14 spaces in the longest item in column 1, the total for the typed matter is ____ spaces.

In the table of the preceding frame, the longest "typed matter" is: Ladies' glovesSpecial Price. Backspace it as: La di es 'space gl ov es Sp ec is 1-space Pr ic with (one/no) leftover letter(s). For it, you would back- space (count the pairs above) ____ times. For an IC (intercolumn) of 7 spaces, you would backspace (was there a leftover letter?) another ____ times, for a total of ____ backspaces. In pica type, your LM (left margin) would be at ____ on the carriage scale.
In column 1, the longest item has ___ spaces; in column 2, ___ spaces; in column 3, ___ spaces—for a total in the typed matter of ___ spaces, requiring ___ backspaces to center it. With IC = 8 (and 2 ICs), you would backspace another ___ times, for a total of ___ backspaces. In elite type, your LM (left margin) would be at ___ on the carriage scale.

You have surely noticed that column headings are centered in relation to their columns, as in:

<table>
<thead>
<tr>
<th>Continent</th>
<th>Area (in Square Miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>11,685,000</td>
</tr>
<tr>
<td>North America</td>
<td>9,420,000</td>
</tr>
</tbody>
</table>

A shorter heading is centered ___ a longer column.

A shorter column is centered ___ a longer heading.

The orderly way to type a table is: first, all the column headings; then, the rows below—setting tab stops as you get to them. After you type (and underscore) the heading of column 1 (+ 10 spaces for the IC), you have reached the beginning of column 2—you are at the point on the scale at which ___ will begin. Should you now (Item/Dining table) set a tab stop? ___
You have typed **Inventory No.**, spaced 10 times for the IC, and set a tab stop for column 2. Horizontally, you are at the D of Dining table; but vertically you are still on the heading line above. Since you should type all CHs before you type the rows beneath, you now want to locate the point at which _____ should be typed. You have to find the middle of column 2, so that from that point you can center _____ by backspacing 1 for 2.

To center a short line over (or under) a longer line, you first have to find the middle of the longer line. At the left, above, the longer line is ________________. To find its middle, you start at its beginning and forward space 1 for 2 (tap your space bar once for each two typewriter strokes in it). Since you have just set a tab stop at the beginning of ________________, to find its middle tap your space bar ____ time(s).

Note. The fast way to fill in blanks like the last one is to count on your fingers as you spell mentally by 2's.

You have forward spaced 6 times into the middle of Dining table. Now you want to center _____ above it. Since that CH has _____ letters, you find its starting point by backspacing 1 for 2 _____ time(s). Now type _____ that CH. So far, you have typed the two CHs and set a tab stop for column 2. Now you return to column 1 to center its _____ (heading/column) (over/under) (heading/column).
Item

<table>
<thead>
<tr>
<th>No.</th>
<th>4</th>
<th>2</th>
<th>Column under (its) heading</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH</td>
<td>64</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>CH</td>
<td>419</td>
<td>578</td>
<td></td>
</tr>
<tr>
<td>CH</td>
<td>617</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

At the left is just the beginning of a much longer first column in a table. The CH is typed once—but you will be returning the carriage many times to type the items beneath the CH.

You have typed the long CH and want to find the starting point for the shorter items below. First, find the middle of the longer item by forward spacing (1 for 2) ___ times. Then, to find the starting point for 264, backspace ___ times. NOW: based on the comments at the beginning of this frame, you should ___.

(a/b)    a. Set a tab stop
         b. Reset the LM

Some machine settings are temporary. NEVER KEEP a margin or a tab stop at a point at which only one item begins.

If, in column 1, the CH is longest, after typing it—re— the ____________. The same principle applies to column tab stops. In the column at the right the $ is typed ___ time(s). The tab stop should therefore be set at the ___ of $14—under the ___ 

($/1/4) of Price. If so, when you first tabulate to that column, you must remember to backspace ___ time(s) to type the ___.

(re)set (the) left margin

<table>
<thead>
<tr>
<th>Item</th>
<th>Model</th>
<th>Sale Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Evergreen</td>
<td>$23.95</td>
</tr>
<tr>
<td>1</td>
<td>Cianchester</td>
<td>18.50</td>
</tr>
</tbody>
</table>

REMEMBER: To find the starting point for a line that is to be centered in relation to another line, forward space (1 for 2) into the middle of the longer line; then backspace (1 for 2) for the shorter line.

1. To center Model, first find the middle of ____________
   by forward spacing ___ times; then backspace ___ times.

2. To locate the $ in column 2, forward space ___ times;
   then backspace ___ times.

3. Set a tab stop for column 2 at the ___ of $23.95
The orderly way to type is: first, all the CHs; then, the rows beneath. In the preceding frame (refer to it), with LM set and Model centered and typed, you must next find the starting point for (Sale Price/$23.95). Since you want to stay on the same line, (throw/push back) carriage to LM and FORWARD SPACE 1 for 1 (without typing the word) through the longest item in column 1, which is __________, + the IC space. Then type __________.

To continue the work in an orderly way: after typing the two CHs of the table of Frame 6-11 (refer to it), you need to set a tab stop for column ____. You locate the $ of $23.95 as described in sentence No. 2 of Frame 6-11--and you set a tab stop (there/1 space to the right).

[Stop here, or continue through 6-19 or 6-26.]

What if the CH is the longest item in column 1? Your first step is still to find the LM by backspacing for the longest item in each column + the IC space.

<table>
<thead>
<tr>
<th>Stock No.</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>603</td>
<td>Side chair</td>
</tr>
<tr>
<td>417</td>
<td>Sofa</td>
</tr>
</tbody>
</table>

Find the LM by backspacing 1 for 2 for Stock No. + ______ + IC. Then type ______________. Now space for the IC and ____. a. Type Item  

b. Set a tab stop for Side chair
In the table of 6-14 (refer to it), you have typed the CH for column 1 and have set a tab stop for Side chair. Next, you center Item by forward spacing \underline{_________} into the middle of the longest item in column 2 (which is \underline{_________}) a total of \underline{____} time(s). Then, to find the starting point for Item, you backspace \underline{____} time(s). Type that CH. Then, return to LM and find the starting point for 603 first by forward spacing \underline{____} time(s) and then by backspacing \underline{____} time(s). At that point, \underline{____}.

a. Set a tab stop
b. Reset the LM

In table typing, you work from left to right, doing first what comes first. In the first column of a table, if the CH is the longest item, you

\underline{(a/b)}

a. Type it, starting at LM
b. Center it before typing

When the CH in column 1 is shorter than the items beneath it, you do \underline{(a/b)} (above).

Now consider columns after the first one.

<table>
<thead>
<tr>
<th>State</th>
<th>Region</th>
<th>Capital City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maine</td>
<td>New England</td>
<td>Olympia</td>
</tr>
<tr>
<td>Washington</td>
<td>Far West</td>
<td>Augusta</td>
</tr>
</tbody>
</table>

You do first, what comes first. Therefore, you set a tab stop for New England \underline{____} you type Region. You would set a tab stop for Olympia \underline{____} you type Capital City.
Study carefully the order of the steps in typing the table of the preceding frame.

1. Backspace 1 for 2 (from 42 or 51) for: Washington + New England + Capital City + IC space.
2. Set LM
3. From LM, forward space 1 for 2 into the middle of Washington; backspace 1 for 2 to center State. Type State.
4. Push back to LM and forward space 1 for 1 through Washington + IC space.
6. Forward space 1 for 2 into the middle of New England. Backspace 1 for 2 to center and then type Region.

(continued in the next frame)

Continuing the steps in centering and typing the table of Frame 6-17:

7. Push carriage back to LM; 10. Double space below the tabulate to New England; forward space 1 for 1 through New England + IC space; type Capital City.
8. Push carriage back to the first C of Capital City and forward space 1 for 2 into its middle.
9. Backspace 1 for 2 to center Olympia; set tab stop.

N OW YOU CHOOSE!

These steps seem ___.

a. A pain in the neck.
b. A lot of fun.

[This frame makes a convenient stopping point.]

The centering processes described so far involve much fussy spacing. Often, simple inspection and counting are faster. Just a glance at the example at the left shows that it consists of centering ___ letters over ___ letters over (how many?) (how many?)

letters. Obviously, the difference of ___ letters should be divided equally, with ___ blank space(s) on each side of the shorter item. With the carriage at the H of Huntington, just space ___ (forward/back) ___ time(s) and type Name.
Spaces in Clanchester minus spaces in Clanchester.

Model = ___ - ___ = ___. Divide that difference in half, leaving ___ spaces on each side of Model. That is, start to type Model over the ______ in Clanchester. If this were column 1 of a table, just space in ___ times from LM to type Model. If this were a later column, space ___ times from the tab stop for ______.

The same process applies to:

Capital City

Augusta

Olympia

The spaces in Capital City minus the spaces in Augusta = ___ - ___ = ___. Since the difference is an odd number, in dividing it, put the "larger half" of it at the left of Augusta. Start Augusta (that is, set a tab stop for Augusta) under the ______ of ______ in the CH.

(what letter?)   (what word?)

The simple counting and subtraction described in the preceding three frames is much faster and simpler than fussy forward and backspacing--when the items to be counted are not too long. But in a wide column with a long CH, some typists find spacing methods faster--especially when the materials are in longhand. (About half the materials from which employed typists work is in longhand.)

Would you prefer to count or to forward-and-backspace for the following (check one): count ___; space ___.

Grutes of More Me Which

Northeast Bergen County

Metropolitan New York
Finally a little TEST.

<table>
<thead>
<tr>
<th>Department</th>
<th>Discount</th>
<th>Store</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men’s Clothing</td>
<td>10%</td>
<td>Downtown</td>
</tr>
<tr>
<td>Home Furnishings</td>
<td>15%</td>
<td>Midtown</td>
</tr>
<tr>
<td>Cosmetics</td>
<td>20%</td>
<td>Suburbanite</td>
</tr>
</tbody>
</table>

1. To center Department, forward space ____ times into the middle of ____________; then backspace ____ times.

2. In column 2, the tab stop will be set at the ____.
   a. D of Discount
   b. 1 of 10%

TEST continued (refer to 6-24).

3. By counting (not spacing) in column 3, the heading will start over the ____ of ____.
   (what letter?) (what item?)

4. Which comes first?
   a. Typing Store
   b. Setting a tab stop at the D of Downtown

5. After typing Department, how do you locate the starting point for the D of Discount?

   ____________________________

   ____________________________

Just read this frame; no answers are required.

The simple counting and subtraction described in frames 20 through 22 in this section are often faster than fussy forward and backspacing. For that reason, many typists use a mixture of backspacing and arithmetic in typing tables. They use spacing methods to locate the LM and the starting point for the longest item in each column. Then they switch to counting methods to center a heading over a column or a column under a heading. Practice the various methods and select the ones that seem best for you.

1. 8
   Home Furnishings
   5

2. b

3. 4th letter
   (or second u)
   Suburbanite

4. b

5. Push back to LM; forward space 1 for 1 through Home Furnishings + IC spaces
   (or equivalent wording)
When you complete this section, you should know:

1. How to prepare a plan for tables without column headings that shows the starting point for each column.
2. How to check the correctness of your plan before you type.
3. How to type from the plan.

The backspace method of determining the horizontal layout of tables works nicely with simple tables—especially for persons who prefer to avoid arithmetic. If arithmetic is no problem, then arithmetic methods of planning tables are just as good. For difficult tables, arithmetic is better—because in such tables backspace methods are slow, with many possibilities for mistakes.

By backspace methods you can easily type tables. Arithmetic methods apply to tables.

Horizontally, the body of a table has three elements or parts. As numbered at the left, they are: (1) side margins (left and right), (2) typed matter, and (3) IC (intercolumn) space—the blank space between columns.

If the planning of a table is correct, then: side margins + typed matter + IC (intercolumn) space should equal total spaces across the page.

On 8½" x 11" paper or stationery, in pica type there are ___ spaces across the page; in elite type, ___ spaces.

If some elite table uses 50 spaces for the typed matter + ICs, there will be ___ spaces left for the _________.
To plan a table means to locate the LM (left margin) and the starting point for each column. To do that, you must first determine the number of spaces needed for the typed matter. So: identify the longest item in each column, count its spaces, and add across the columns. Consider:

<table>
<thead>
<tr>
<th>State</th>
<th>City</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>Sacramento</td>
<td>15,707,204</td>
</tr>
<tr>
<td>North Dakota</td>
<td>Bismarck</td>
<td>632,446</td>
</tr>
<tr>
<td>Ohio</td>
<td>Columbus</td>
<td>9,706,397</td>
</tr>
</tbody>
</table>

The longest item in column 1 is ______________; it has ___ spaces. In column 2, the longest item has ___ spaces; and in column 3, ___ spaces. The total is ___ spaces.

To plan tables by arithmetic, you use a horizontal line to represent each column, and you show the number of spaces in each column and between columns, like this:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>10</td>
</tr>
</tbody>
</table>

The sketch shows that typed matter = 20 + 10 + 10 = ___.

ICs (intercolumns) = 2 x 6 = ___.

Total = ___

In elite type, the space remaining for side margins would be 102 - ____ = ____.

The preceding frame shows that:

- Total spaces available on the page
- Spaces used for typed matter and ICs (intercolumns)
- Spaces available for side margins

Since there are two side margins, just divide the marginal space by ____ to determine the point on the carriage scale at which to set the ______ margin. Example: 40 spaces of typed matter + three 5-space ICs total ____ spaces. In pica type, the space remaining for the two side margins = ____ spaces, and the LM would be set at ____.
If an odd number of spaces remains for margins, so that they cannot be identical, it is customary to put the extra space in the left margin. With 31 spaces for side margins, put 16 in the left margin and 15 in the right margin.

With 41 spaces for side margins, set the LM (left margin) at ____. With 49 spaces for margins, set the LM at ____. The "larger half" of 23 is 12. The "larger half" of 33 is ____. If an odd number of spaces remains for the two side margins, put the larger half at the ______. (left/right)

A 2-column table has 1 IC (intercolumn). A 5-column table has 4 ICs. A 3-column table has ____ ICs. The number of ICs is always __________ the number of columns. Usually (but not always), all ICs in a particular table are the same width. With four 8-space ICs, you do not have to add 8 + 8 + 8 + 8. Just multiply ___ x ___ to get a total of ___ IC spaces.

Remember that:

Total spaces across the page - total table width (typed matter + ICs) = spaces available for side margins.

Assume columns of 8, 17, and 11 spaces, with IC = 7 spaces.

+ Typed matter = 8 + 17 + 11 = ____ (Fill in the three missing numbers.)

Intercolumns = 2 x 7 = ____

= Total table width = ____

In pica type, spaces for side margins = 85 - ____ = ____, and LM (left margin) would be set at ____. In elite type, side margin space = 102 - ____ = ____, and LM would be set at ____.

2 left
55
30 (85 - 55)
15 (½ of 30)
21
25
17
left
2
1 less than
4 x 8 (or 8 x 4)
32
At the right of the plan below is a convenient form for the arithmetic of determining the LM. Use exactly that form in planning your own tables.

\[
\text{Elite} \quad 20 \quad 7 \quad 20 \quad 7 \quad 9 = 49 \quad 63 \\
= \frac{14}{63} \quad 2 \frac{39}{20} - 19
\]

The sketch shows the sum of the typed matter to be ___ and the IC sum to be ____ -- for a total table width of ____ spaces. That total is subtracted from total elite spaces across the page, which is ___, and the difference is divided by ___, resulting in LM = ____.

<table>
<thead>
<tr>
<th>Column Spaces</th>
<th>In Each IC</th>
<th>Left Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 8-12-6-20</td>
<td>5</td>
<td>/2 21</td>
</tr>
<tr>
<td>b. 18-23</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>c. 6-9-13-7-10-4</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>d. 7-19-12</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

With arithmetic planning, it is easy to check your work before typing. Once you have figured out LM and RM, just sum across (margins + typed matter + ICs). If you do not get a total of ___ (pica) or ___ (elite), you know you have made an arithmetic error and can recheck. Fill in the

<table>
<thead>
<tr>
<th>LM</th>
<th>RM</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pica</td>
<td>19 16 9 23 18 = ____</td>
<td></td>
</tr>
<tr>
<td>Elite</td>
<td>25 7 7 17 7 12 24 = ____</td>
<td></td>
</tr>
</tbody>
</table>

There is a mistake in the ___ example. The margins should be ___ (left) and ___ (right).

[This frame makes a convenient stopping point.]
So far, arithmetic has been used to determine the LM and to check its correctness before you type. You also use arithmetic (and your table sketch) to locate the starting point for each column (so that you can set _______________).

**Elite**

27 12 8 10 8 10 27

With LM at 27, column 2 begins at 27 + 12 + 8, which, circled below column 2, equals ___. Column 3 begins at 47 + 10 + 8, which equals ___. You would set two tab stops: the first at ___, another at ___.

---

Here's a sketch* for another table:

**Pica**

11 6 5 9 13 5 7 5 8 11

With circles for the points on the carriage scale at which each of the columns begins--and at which you would set ______________--the numbers that you would write in the circles, in turn, are ____, ____, ____, ____.

*A sketch is also called a "table plan"--when it contains all the necessary numbers.

---

Your first check (before inserting tab stop numbers) is to see that: margins + typed matter + ICs = ____ pica spaces. After tab stops are inserted in the plan, carry out a "right-end check"--last tab stop (66) + spaces in last column (8) = 74; and that total (74) + right margin (11) = ___. (Notice, at the right of the plan above, where the 74 is written.) If a "right-end check" turns out correctly, all your tab stops are probably (correct/incorrect).
To carry out a right-end check, add three things:

Beginning point of last column
+ Spaces in longest item in last column
  Spaces in right margin

If your plan is correct, the total will be ___ pica or ___ elite. For this right end of a plan:

\[ 78 + 11 + 12 = \square \] 

If your plan is correct, the total will be ___ pica or ___ elite. For this right end of a plan:

\[ 78 + 11 + 12 = \square \] 

= 102.

Here's another plan, containing an error. Find it and make the corrections by writing the correct numbers in the blanks below the circles.

Notice that IF the last tab stop (76) is correct, a right-end check should show that 76 + 7 + 18 = ____ . If not, you know there is a mistake (in the last column/somewhere).

**FIRST**, check side margins to see whether:

side margins + typed matter + ICs = total spaces on page (85 pica or 102 elite). If not, correct the margins.

**SECOND**, check tab stops, one by one.

Now hunt for the error(s) below. Put the correct number(s) in the blank(s) below the plan.
Check the side margins you insert tab stop numbers in the plan. After tab stop numbers are inserted, carry out a right-end check. If that check does not total pica or elite spaces, check all tab stops.

If the margins are wrong, can the tab stops be right?  
If the margins are correct, can the tab stops be wrong?  

When your table plan is complete and has checked out correctly, you are ready to type—almost. First you must:

1. Clear previously set ______ and lock the right margin at extreme right—you don't need a RM in tables.  
2. Set regulator for the desired vertical spacing.

Then—according to your table plan—set your ______ margin and a ______ for each column after the first one.  
Now, type across each ______ in turn, tabulating from the end of one ______ to the beginning of the next one.

For the table below (either in pica or elite), fill in the plan numbers for: (1) column widths, (2) side margins, (3) tab stops. Then do a right-end check. (IC = 5)

<table>
<thead>
<tr>
<th>Column Widths</th>
<th>Side Margins</th>
<th>Tab Stops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics Club</td>
<td>Thursday</td>
<td>Room 319</td>
</tr>
<tr>
<td>Glee Club</td>
<td>Tuesday</td>
<td>Auditorium</td>
</tr>
<tr>
<td>Mathematics Club</td>
<td>Monday</td>
<td>Room 258</td>
</tr>
<tr>
<td>Sewing Circle</td>
<td>Wednesday</td>
<td>Room 407</td>
</tr>
</tbody>
</table>

--- 5 --- 5 --- 5 ---
TEST continued.

Same instructions as preceding frame, but with IC = 8. Choose either pica or elite type.

<table>
<thead>
<tr>
<th>Elite</th>
<th>19</th>
<th>14</th>
<th>10</th>
<th>5</th>
<th>9</th>
<th>5</th>
<th>16</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>83</td>
<td>102</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pica</th>
<th>16</th>
<th>5</th>
<th>10</th>
<th>5</th>
<th>14</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>85</td>
<td>75</td>
<td>85</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Asia</th>
<th>Mt. Everest</th>
<th>29,028</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>Mt. McKinley</td>
<td>20,370</td>
</tr>
<tr>
<td>Africa</td>
<td>Mt. Kilimanjaro</td>
<td>19,340</td>
</tr>
</tbody>
</table>

Did you make an error in either of the two TEST frames because you miscounted the number of spaces in the longest item in some column? (No answer required.)

If such an error is made, you should understand that: even if your plan checks out and even if you type according to your plan, your work will be off-center.

You should conclude from the above that it is especially important to identify correctly the longest item in each column and then carefully count ____________.
When you complete this section, you should know:

1. How to prepare a plan for tables with headings that shows the starting point for each column and column heading.
2. How to check the correctness of the plan before you type.
3. How to type from the plan.

## Section 8

### Tables with Column Headings

(Arithmetic Method)

<table>
<thead>
<tr>
<th>State</th>
<th>Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arkansas</td>
<td>Little Rock</td>
</tr>
<tr>
<td>Connectic</td>
<td>Hartford</td>
</tr>
</tbody>
</table>

Excluding the CHs (column headings) -- State and Capital -- a pica plan for the table above, including a right-end check, would show:

The plan shows LM at ____, an IC (in-tercolumn) of ____ spaces, a tab stop at $29 + 11 + 6 = \text{____}$, and that: beginning of last column (46 + spaces in last column (11) + spaces in right margin (28) = ____.

Notice, also, that the CHs are ________ in relation to their columns.

---

A table plan is really a set of instructions for making machine settings (LM and tab stops). To be complete, the plan should also show the point on the carriage scale at which each other element or part of the table begins.

The table plan in the preceding frame (refer to it) shows that Little Rock begins at ____ on the carriage scale and that a tab stop should be set at that point. But the plan does not yet show where each of the CHs (column headings) begins. That is, it does not show the starting point for typing ______________ and ______________.

Also, the tab stop for column 2 is written BELOW the horizontal line in the plan because it marks the starting point for something that will be typed ______ the CH.
State
Capital
below (or synonym)

To center a short CH over a longer column, find the difference in length between the two; put half the difference on each side of the CH.

In column 1, above, the longest item is _______________, containing ___ spaces. The CH uses ___ spaces. The difference is ___ spaces. Put half that difference, which is ___ spaces, on each side of the CH, like this: 3 5 3
A centered State starts ___ spaces after the starting point of __________________________. Connecticut

The preceding frame (refer to it) shows that the CH for column 1 should begin ___ spaces to the right of LM. Because that number is the starting point for a CH, which is typed above the column, you record it on your plan ______ the horizontal line, like this

In column 2, Capital has ___ strokes, and Little Rock has ___ strokes. With half the difference on each side of Capital, that CH will start ___ spaces after the beginning of column 2. That CH will start at ___ on the carriage scale.

Here's the full plan for the table of 8-3:

```
<table>
<thead>
<tr>
<th></th>
<th>32</th>
<th>48</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>11</td>
<td>28</td>
</tr>
<tr>
<td>6</td>
<td>46</td>
<td>57</td>
</tr>
<tr>
<td>3</td>
<td>57</td>
<td>85</td>
</tr>
</tbody>
</table>
```

Notice that CH numbers are written (above/below) the line and are (circled/underscored). Tab stop numbers go (above/below) the line and are (circled/underscored). The 57, shown at the right of the plan above, is part of the right-end check and is the sum of ___ + ___.
First, make machine settings:

You do not set tab stops because you will not be returning to those points once the CHs are typed.

With LM and tab stop set, the plan tells you to type:

the CH of column 1 at ___ and the CH of column 2 at ___.

When you next type across the rows below the CHs, you get from column 1 to column 2 by _____.

---

The 5-space difference between Washington and State is divided to the left (of State) and ___ spaces to the right. The 3-space difference in the right-hand column above is divided ___ to the left and ___ to the right (of City).

It does not matter whether you put the "larger half" of an odd number at the left or at the right--so long as you always put it on the same side: always left or always right.

Do the two examples above agree with that rule? ___

---

In centering each of the CHs above, the number of blank spaces to the left would be: before State, ___; before City, ___; before Region, ___. The same principle applies when the CH is longer than the column below. To the left of Trenton, there should be ___ blank spaces.
3 (larger half of 10 - 5)
5 (larger half of 13 - 4)
4 (larger half of 13 - 6)
3 (larger half of 12 - 7)

In the plan below, first fill in all the tab stop numbers (in the circles); then do a right-end check. Finally, fill in the CH numbers (in the short blanks).

In identifying the longest item in each column, the CH is part of the column. The longest item in column 2, above, is its CH, containing ___ spaces. The first step in table planning (before tab stops and CH numbers) is to determine the side margins. For the table above, fill in the missing numbers in the plan below (column widths and elite margins).

After the side margins, you next locate the beginning of the longest item in each column, like this: LM (37) + column 1 (9) + IC (10) bring you to the beginning of column 2, at 56. BUT the longest item in column 2 is the CH; so 56 is written ___ on the line. Next, the right-end check:

56 + column 2 (9) = ___, which, added to the RM of ___ totals ___.

Note. The diagonal or fraction bar (/) is also a division sign. 74/2 means 74 ÷ 2.
above
65
37
102

Not yet shown in the plan are the CH number for column 1 and the tab stop for column 2. Since, as the plan above shows, Singapore begins at ___, a centered City would begin at ___. Since, as the plan shows, Continent begins at ___, for the items below to be centered beneath their CH, a tab stop should be set at ___. In the little blank above column 1, you would write ___; in the circle, ___.

The complete table plan above tells you to do the following things in the following order:
(1) Set LM at ___. (2) Set tab stop at ___. (3) Type City, starting at ___. (4) Type Continent, starting at ___. Next, double space below the CH line; set line space regulator for desired spacing; then type the items in the rows, moving from column 1 to column 2 by ___________.

To carry out a right-end check as soon as you know the plan number for the longest item in the last column.

<table>
<thead>
<tr>
<th>Item</th>
<th>Stock No.</th>
<th>Stock No.</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stapler</td>
<td>214</td>
<td>214</td>
<td>Stapler</td>
</tr>
<tr>
<td>Desk pad</td>
<td>137</td>
<td>137</td>
<td>Desk pad</td>
</tr>
</tbody>
</table>

(Desk pad)
Here are the steps in table planning:

1. Insert column widths and ICs. Subtract their total from 102 (or 85) and divide the difference between the two side margins.

2. Add across, starting at LM, and show the starting point for the longest item in each column--as a CH number if the CH is longer; otherwise, as a tab stop number.

3. Make a right-end check: starting point of last column + spaces in last column + RM. If the total is not 102 (or 85), go back to the beginning and find your mistake(s).

4. Finally, insert all other CH and tab stop numbers.

In the table plan of Frame 8-15 (refer to it) the last two numbers inserted were ___ and ___.

Now a little TEST. Follow the steps of 8-16.

Complete the plan for the table below, including side margins and a right-end check--using either pica or elite.

<table>
<thead>
<tr>
<th>President</th>
<th>Born</th>
<th>Native State</th>
</tr>
</thead>
<tbody>
<tr>
<td>T. Jefferson</td>
<td>1743</td>
<td>Virginia</td>
</tr>
<tr>
<td>A. Lincoln</td>
<td>1809</td>
<td>Kentucky</td>
</tr>
</tbody>
</table>

[This frame makes a convenient stopping point; or you may wish to continue through 8-21 or 8-24 or 8-31.]
At the left is just the beginning of a much longer first column in a table. The CH is typed once—but you will be returning the carriage many more times to type the items below the CH. You don’t want to have to tabulate after every carriage throw.

SO: After you have typed the CH and located the point at which 264 begins, you should

(a/b)

a. Set a tab stop there

b. Reset LM there

The numbers in the column above should start under the ______ of the CH.

(what letter?)

The plan for the table above shows that when the CH is the longest item in the first column of a table, its starting point is shown as a ______ number ________ the first column in the plan. Because the LM will be reset, the LM number in the plan shows the starting point for ______. The tab stop for column 2 will be set at ______.

(a/b)  

a. 30 + 9 + 7 = 46

b. 33 + 9 + 7 = 49

The first part of a plan for the table at the left shows:

<table>
<thead>
<tr>
<th>Highest Mountains</th>
<th>Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everest</td>
<td>29,028</td>
</tr>
<tr>
<td>Aconcagua</td>
<td>22,834</td>
</tr>
<tr>
<td>McKinley</td>
<td>20,320</td>
</tr>
<tr>
<td>Kibo</td>
<td>19,340</td>
</tr>
<tr>
<td>Elbrus</td>
<td>18,481</td>
</tr>
</tbody>
</table>

The plan shows that at 36 you type ______. Since ______, LM should be reset to center the first column under its CH, the number that should be written in the LM blank in the plan above is ______. You reset the LM ______ you type the CH of column 1.
Now a little TEST.

Complete the plan below for the table at the left—including a right-end check. Follow the steps of Frame 8-16 (refer to it) and take into account the frames on page 7. Choose either pica or elite type.

[Stop here; or continue through 8-24 or 8-31.]

### Price

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pica</td>
<td>28</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>48</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Elite</td>
<td>37</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>66</td>
<td>102</td>
</tr>
</tbody>
</table>

The principle of not setting a margin at a point at which only one item will be typed (Example: for the CH when it is the longest item in column 1) also applies to tab stops in columns after the first one. In the column of prices above, the $ is typed ___ time(s). The tab stop should therefore be set at the ____($/3/4) of $34, and your table plan should show it at the scale number ___ spaces after the CH number for Price. If so, when you first tabulate to that column to type $34, you must remember to backspace ___ time(s) and type ___.

Regular Price | Sale Price
---|---
5 6,40 | 5 7
6 70 |

If the CH of column 1, above, begins at 40 on the carriage scale, the tab stop for that column should be set at ___. If the CH of column 2 begins at 58, the LM for that column should be reset at ____.
Now a little TEST.  

Complete the plan for the table below, including a right-end check, using either pica or elite type. Try to do so without referring to Frame 8-16.

<table>
<thead>
<tr>
<th>Club</th>
<th>Membership</th>
<th>Sponsor</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics</td>
<td>112</td>
<td>Mr. Hartman</td>
<td>$6</td>
</tr>
<tr>
<td>Carpentry</td>
<td>43</td>
<td>Mr. Spence</td>
<td>$15</td>
</tr>
</tbody>
</table>

[Stop here; or continue through 8-31.]

Some typists prefer to use a mixture of arithmetic planning and backspace methods for typing tables with column headings. They make an arithmetic plan to locate the starting point for the longest item in each column. They then use backspace methods to center short headings under longer columns or short under longer columns or short under longer columns.

A plan for "longest items only" shows:

Not yet shown on the plan are the starting point for the CH of column ___ and the tab stops for columns ___ and ___--because they will be located by the __________ method.
To center one item in relation to another (a CH in relation to its column or vice versa)--without counting or arithmetic--you must first find the midpoint of the longer item. From it, you then center the shorter item by backspacing 1 for 2 in the usual way.

To find the midpoint of an item: from its first letter, just FORWARD SPACE 1 2. To find the midpoint of No. of Members in the table, the preceding f. me, just start at the N of that CH, which, according to the plan in Frame 8-26, is at ___ on the scale. Next, spelling by 2's, forward space ___ times. Then, center 212,817 by backspacing ___ times.

To center New York under Headquarters, you would start (according to the plan in Frame 8-26--refer to it) at ___ on the scale. Next, you would ______ space ___ times. (forward/back)

Finally, you would ______ space ___ times. At that point, you would ______ space ___ times. (forward/back)

a. Type the heading
b. Set a tab stop

To center Group over Voters' League you would start (according to the plan in Frame 8-26--refer to it), at ___. Then you would ______ space ___ times, and next ______ space ___ times. At that point, you would ______ space ___ times. (forward/back)

(a/b)  a. Type the heading
b. Set a tab stop
In pica type (with IC = 10), the S of Stock No. would start at 26 on the scale. To center the longest item below that CH, you would forward space ___ time(s), then backspace ___ time(s). At that point, you would ___

(a/b/c/d)

a. Set a tab stop
b. Reset the LM
c. Type the CH
d. Type 56

Now a little TEST.

For the numbers at which the longest item in each column begins, plus a right-end check. Assume machine settings at the $, rather than 1 space to the right of it.

<table>
<thead>
<tr>
<th>Earnings</th>
<th>Federal Tax</th>
<th>FICA</th>
<th>Net</th>
</tr>
</thead>
<tbody>
<tr>
<td>$550</td>
<td>$103.03</td>
<td>$26.40</td>
<td>$478.57</td>
</tr>
</tbody>
</table>

To locate the $ in column 2, start at ___ on the scale, forward space ___ times, then backspace ___ times.

<table>
<thead>
<tr>
<th>Elite</th>
<th>28 41</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>5 11 5 6 7 27 57 68 75 102</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pica</th>
<th>19 32</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>5 11 5 6 7 19 48 59 66 85</td>
</tr>
</tbody>
</table>

41 (elite) or 32 (pica)

5

3
When you complete this section, you should be able to type the kinds of tables and parts of tables listed in the table of contents in the next frame.

Section 9
Advanced Table Typing

Here is a table of contents for this section.

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Frames</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Two- and three-line column headings</td>
<td>1-10</td>
</tr>
<tr>
<td>b. Braced headings</td>
<td>11-34</td>
</tr>
<tr>
<td>c. Unequal intercolumn spacing</td>
<td>35-50</td>
</tr>
<tr>
<td>d. Blocking columns under a table title</td>
<td>51-61</td>
</tr>
<tr>
<td>e. Table footnotes</td>
<td>62-65</td>
</tr>
<tr>
<td>f. Tables in business letters</td>
<td>66-80</td>
</tr>
<tr>
<td>g. Tables in side-bound manuscripts and reports</td>
<td>81-91</td>
</tr>
<tr>
<td>h. Intercolumn spacing</td>
<td>92-105</td>
</tr>
</tbody>
</table>

The CH (column heading) at the left contains several lines. Notice that each of the shorter lines is centered in relation to the longest line in the heading.

The longest CH line is of Letter. It has ___ strokes; in Body uses ___ strokes. The difference of ___ strokes is divided equally on either side of in Body. So: begin in Body ___ space(s) after the ___ in of Letter. In the same way: of Letter minus Words = ___ strokes—so that on each side of Words there should be ___ blank space(s).
To center one line in relation to another, just count the number of typewriter strokes in each line. Then put half the difference on each side of the shorter line. (See the illustration.)

If a 6-stroke item is to be centered over a 10-stroke item, on each side of the shorter item there should be \[ \frac{1}{2} \] blank spaces. With a 10-stroke and an 18-stroke item, there should be, on each side of the shorter item, \[ \frac{1}{2} \] blank spaces.

### 9-2

<table>
<thead>
<tr>
<th>Average Gain (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ \frac{5}{6} ]</td>
</tr>
</tbody>
</table>

### 9-3

<table>
<thead>
<tr>
<th>Words in Body</th>
<th>If you use arithmetic and prepare a table plan before you type, the plan should show the starting point for each CH line.</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>If your plan shows that \textit{in Body} (in the CH at the upper left) begins at 30 on the scale, it should also show that the \textit{W} of \textit{Words} begins at [ _ ], as shown below.</td>
</tr>
<tr>
<td>31</td>
<td>The [ 7 ] in the plan is the number of strokes in the longest item in the column (\textit{in Body}). The circled [ 32 ] is the point at which 100 starts--the point at which you set a [ _ ].</td>
</tr>
<tr>
<td>30</td>
<td>[ 32 ]</td>
</tr>
</tbody>
</table>

### 9-4

<table>
<thead>
<tr>
<th>Words in Body</th>
<th>If a plan for a table that includes the column at the left shows that \textit{Words in} begins at 30, it should also show that \textit{Body} begins at [ _ ].</th>
</tr>
</thead>
<tbody>
<tr>
<td>86</td>
<td>\textit{Body} is typed below \textit{Words in}; therefore, its starting point should be shown in your plan [ _ ] the 30.</td>
</tr>
<tr>
<td>(below/above)</td>
<td>[ _ ]</td>
</tr>
</tbody>
</table>

Following the model of the plan in the lower right corner of the preceding frame (refer to it), fill in the CH numbers for the column at the upper left in this frame. Write the two CH numbers just above the little blank. \[ \_ \]
<table>
<thead>
<tr>
<th>Annual Rainfall</th>
<th>Average Temperature</th>
<th>Elite Margins</th>
</tr>
</thead>
<tbody>
<tr>
<td>If Rainfall begins at 36 on the scale, <strong>Annual</strong> should begin at <strong>____</strong>. Over what letter in <strong>Temperature</strong> should the <strong>A</strong> of <strong>Average</strong> be typed? <strong>____</strong>. The <strong>E</strong> of <strong>Elite</strong> should appear over the <strong>____</strong> of <strong>Margins</strong>.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>(in Square Miles)</td>
</tr>
<tr>
<td>15,730,420</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

The longhand numbers in the CHs above show the number of blank spaces to the left and right of the typed item. Notice that when an odd number of strokes (3 and 7) is divided, the extra space may be put either at the left or at the right. It does not matter on which side you put it—so long as you always put it on the same side each time: **always at the left or always at the right**.

Among the three CHs above, the one that does not obey the rule about extra space is No. **____**.

<table>
<thead>
<tr>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>(The extra space is at the right of <strong>Area</strong> but at the left of 15,730,420.)</td>
</tr>
</tbody>
</table>

The second of the two ways to center shorter CH lines is by forward and backspacing. You forward space "1 for 2" into the middle of the longer item; then you backspace 1 for 2 to find the starting point for the shorter item, like this:* (1) To find the middle of **Words in**, start at the **W** and tap the space bar once for each two strokes in **Words in**, using a total of **____** taps. (2) Then, to find the starting point for **Body**, backspace 1 for 2 a total of **____** times.

*To fill the blanks that follow, spell mentally by 2's as you count on your fingers.
When you use spacing methods to center a shorter item in relation to a longer item, you start by __________ (forward/back) spacing 1 for 2 into the middle of the __________ (shorter/longer) item; then you __________ space 1 for 2 to find the __________ (forward/back) starting point for the __________ (shorter/longer) item. Where the __________ (shorter/longer) backspacing ends, start to type the __________ (shorter/longer) item.

Using forward and backspacing methods to center shorter CH lines, in column 1, above, you would first forward space into the middle of __________ a total of ___ times; then, to center __________, backspace ___ times. To center Average, first find the midpoint of __________ by forward spacing ___ times; then backspace ___ times. In the last column, forward space ___ times into the middle of __________; then backspace ___ times.

Now a little TEST.

1. The N in Net should be typed over the ___ in Sales. (what letter?)
2. On each side of Tax there should be ___ blank spaces.
3. To center Population by spacing methods, you would forward space ___ times, then backspace ___ times.

[End of subsection on 2- and 3-line column headings]
1. 2
2. 2
3. 7
5

A heading that embraces or spans or covers several other CHs is called a "braced heading" or "spanner heading." Above, the braced head is (Subject/Registration) Boys and Girls fit nicely below (with a few blank spaces between them), and they are blocked at the left and right of the heading.

Side Margins is called a _______ head(ing). If Left and Right are blocked under Side Margins, Left will start under the S of Side Margins. For Right to end under the final s of Side Margins, it must begin under the _____ of Side Margins. (what letter?)

In the table above, would you have to plan in advance how many spaces to leave between Left and Right? ____

The strange-looking illustration just to the left shows the easiest way to determine the starting point for a CH that is to be blocked at the right of a heading. Here's how to do it:

Position the carriage in the space after the final s of Test Scores and backspace through it--letter by letter--as you spell the CH that is to be blocked below it. If you do that, when you finish spelling Women, you will be at the _____ of Test Scores. If Men were to be blocked (what letter?) at the right, you would spell backwards to the ____ of Test Scores.
With a 1-line braced head and 1-line CHs blocked beneath the braced head, a separation between the braced head and its CHs is permissible, but not required. Separation is by underscoring or by a blank line or by both.

No separation is used in illustration no. 1. Only a blank line is used in no. 2. Only underscoring is used in no. 3. Both underscoring and a blank line are used in no. 4. Are all four illustrations correct? No. 1.

Which one do you like best? No. 4.

<table>
<thead>
<tr>
<th>Examination Grades</th>
<th>Notice at the left that the longest item (sometimes the CH, sometimes not) is blocked under the _______ head(ing). In the left-hand column ________ is blocked. At the ________ is blocked. Because both CHs (Name and (Grade/B) ________ blocked, a blank line between the ________ necessary. (is/is not)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Grade</td>
</tr>
<tr>
<td>Collins</td>
<td>B</td>
</tr>
<tr>
<td>Franklin</td>
<td>A</td>
</tr>
<tr>
<td>Grant</td>
<td>C</td>
</tr>
</tbody>
</table>

The illustrations show that a blank line between the braced head and its CHs must be used when the CHs ________ blocked; that is, when the CHs ________ the longest items in their columns. In the illustration at the right, underscoring or a blank line (or both) between the braced head and its CHs would be ________.

(wrong/permissible)
So far, we have considered 1-line braced heads with 1-line CHs. When the number of lines in the braced head differs from the number of lines in the CHs below, you MUST use as a separator either a blank line only, as in No. ___ above; or underscoring only, as in No. ___; or both, as in No. ___ above.

Up to now, we have considered columns that fit within the width of the braced head. When the braced head is SHORTER than the columns it spans as in the two illustrations above, underscoring as a separator is ________ and a blank line is ________. The underscoring runs across the width of the ________. Of the two illustrations above, the correct one is No. ___. Notice also that with a shorter braced head, if the CHs below are not the longest items in their columns, the braced head is separated by _________.

When a braced head is shorter than the columns it spans, the underscoring that separates it from its columns should run from the left edge of the left-hand column to the right edge of the right-hand column. Of the two illustrations above, the correct one is No. ___. Notice also that with a shorter braced head, if the CHs below are not the longest items in their columns, the braced head is separated by _________.

<table>
<thead>
<tr>
<th>Price</th>
<th>Regular</th>
<th>Sale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>Regular</td>
<td>Sale</td>
</tr>
<tr>
<td>$8</td>
<td>$7</td>
<td>$0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pacific Coast</th>
<th>Pacific Coast</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>State</td>
</tr>
<tr>
<td>California</td>
<td>California</td>
</tr>
<tr>
<td>Sacramento</td>
<td>Sacramento</td>
</tr>
</tbody>
</table>

(only underscoring/only a blank line/both)
2

both

Note. Use in the blanks either P (Permissible) or R (Required).

1. When the braced head is at least as wide as blocked CHs below:
   a. If both use 1 line, underscoring or a blank line or both, as a separator, is ___.
   b. If the number of lines in the braced head differs from the number of the CHs below, underscoring or a blank line or both is ___.

2. If a braced head is wide enough for the columns beneath it—but if the longest item in some column is wider than its CH—to separate the braced head from its CHs, underscoring is ___ and a blank line is ___.

3. When the braced head is shorter than the columns below:
   a. If the CHs are the longest items in their columns, underscoring is ___ and a blank line is ___.
   b. If the CHs are not the longest items in the columns, underscoring is ___ and a blank line is ___.

4. Whether or not columns (or CHs) can be blocked under a braced head, to separate the braced head from its CHs the use of both underscoring and a blank line is always ___.

[This frame makes a convenient stopping point; or you may wish to continue through the end of this subsection, Frame 9-24]

---

Freshman Team

<table>
<thead>
<tr>
<th>Starters</th>
<th>Alternates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bellini</td>
<td>Green</td>
</tr>
<tr>
<td>Conklin</td>
<td>Heinrich</td>
</tr>
<tr>
<td>Henderson</td>
<td>Rosario</td>
</tr>
</tbody>
</table>

Notice at the left that when a braced heading is narrower than the columns it spans, it is centered over them. Notice also the spacing and underscoring after the braced head. Here's how to center the braced head:

Column 1 uses ___ spaces; column 2 uses ___ spaces; and between columns there are ___ spaces—for a total of ___ spaces. Freshman Team uses ___ spaces. Now divide in half the difference between total spaces and the spaces in Freshman Team. The result is to leave at the left of the braced head ___ blank spaces.
Note. The diagonal or fraction bar (/) is also a division sign. 10/2 means 10 + 2.

---

### At Home Games

<table>
<thead>
<tr>
<th>Opponent</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Princeton</td>
<td>November 8</td>
</tr>
<tr>
<td>Yale</td>
<td>December 6</td>
</tr>
<tr>
<td>Harvard</td>
<td>December 13</td>
</tr>
</tbody>
</table>

At the left is part of a football schedule, showing 5 spaces between columns.

To center At Home Games over the pair of columns, note that Princeton + intercolumn space + December 13 = ___ + ___ + ___, for a total of ____ spaces. The braced head has ____ spaces. If you divide the difference by 2, you will see that at the left of the braced head there should be ____ blank spaces. Therefore, start At Home Games lined up over the ____________ of Princeton.

(what letter?)

---

### Away from Home Games

<table>
<thead>
<tr>
<th>Opponent</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown</td>
<td>November 15</td>
</tr>
<tr>
<td>Columbia</td>
<td>November 22</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>November 27</td>
</tr>
</tbody>
</table>

Across the two columns at the left, including IC (intercolumn) space, there is a total of ____ spaces. The braced head contains ____ spaces.

If you divide the difference of ____ spaces in half, you will find that, to the left of the braced head, there should be ____ spaces. The braced head should start lined up over the ____ of Pennsylvania. From the LM (or tab stop) at the beginning of the left-hand column, to find the starting point for Away, space forward ____ times.

---

### FOOTBALL SCHEDULE

<table>
<thead>
<tr>
<th>At Home</th>
<th>Away from Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Princeton</td>
<td>November 8</td>
</tr>
<tr>
<td>Yale</td>
<td>December 6</td>
</tr>
<tr>
<td>Harvard</td>
<td>December 13</td>
</tr>
</tbody>
</table>

If properly centered, the A in At Home should be lined up over ___________ in Princeton. The A in Away from Home should be lined up over the ___________ in Pennsylvania.

(what letter?)

(what letter?)
In the preceding four frames the braced head was centered by counting spaces. It can also be centered by forward and backspacing.

To center At Home over the first pair of columns in the preceding frame (refer to it), forward space 1 for 2 through Princeton + December 13 + the 3-space IC (intercolumn); then backspace 1 for 2 through At Home. Count on your fingers and spell by 2's mentally to determine that, to center At Home, you would forward space ___ times; then backspace ___ times.

The fastest way to type tables like that of Frame 9-25 requires you to space up and down between one line and another, like this:

1. Center the title; then space down to the Princeton line.
2. From IM (Elite 24, Pica 15), type Princeton + 3 IC spaces; then set tab stop.
3. Turn down to December 13 line and type it + 6 IC spaces; set tab stop.
4. Type Pennsylvania (same line as December 13) + 3 IC spaces.
5. Set tab stop and type November 27 (same line).

Notice that you set tab stops as you go along and that the first thing typed in each column is the item. (first/longest)

6. For the various headings (braced and CHs), turn to the proper line for each. Then, either by forward and backspacing or by counting and arithmetic, CENTER--
a. Each CH over its column
b. Each braced head over its pair of columns
7. To underscore the first braced head, line up over the 3 of December 13 and strike an underscore; then push back to IM and underscore up to the last one. Use the same process to underscore the second braced head. $\text{Start by lining up over the ___ in ___ (what word?)}$
8. With all headings typed and tab stops set, turn to row 1 and type. Remember to tabulate past items already typed.
In a table with just a few rows, it is easy to space up and down from one line to another in order to type first the longest item in each column. But with many rows, finding the right line each time might be troublesome. Therefore, instead of typing each longest item, just space through it: 1 space bar tap for each stroke in the longest item.

In the table of Frame 9-25 (refer to it), instead of typing Princeton, from LM up the space bar ___ times + 3 IC spaces. Set tab stop and then space through December 13, using ___ space bar taps, and so on. In that way, (a/b).

a. Moving up and down from line to line is easier
b. You stay on the same line

<table>
<thead>
<tr>
<th>Name</th>
<th>Items Typed</th>
<th>Increase in Errors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Olivetti</td>
<td>6</td>
<td>75</td>
</tr>
</tbody>
</table>

When the CHs in a table vary (braced and not braced, 1 line and more than 1 line), it is the CHs, not the braced heads, that are lined up.* If the longhand column at the right were to be added to the table, Grade would be typed on the same line as

(Name/Items Typed/Increase in).

*Unless the table is ruled horizontally and vertically.

Federal Reserve Discount Rate

<table>
<thead>
<tr>
<th>1968</th>
<th>1969</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The columns spanned by the braced head above are too far apart. If the braced head is broken up into 2 lines, line 2 will contain the word(s) ______________________, and the longer of those 2 lines will be the ______ one.

(first/second)

If the "year" columns are blocked under the longer of the 2 braced head lines, 1969 will start under the ______ of ______.

(what letter?)(what word?)
Discount Rate

first

second e (of) Reserve

Federal Reserve

Discount Rate

1968    1969

Now a little TEST.

<table>
<thead>
<tr>
<th>Price</th>
<th>Discount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular</td>
<td>Sale</td>
</tr>
<tr>
<td>$140</td>
<td>$126</td>
</tr>
<tr>
<td>$14</td>
<td>10</td>
</tr>
</tbody>
</table>

1. If you center Price by spacing methods, you would forward space ___ times; then backspace ___ times.
2. If you center Price by counting methods, the P in Price should be lined up over the ___ in Regular.
3. If you block the pair of columns under Discount, between the 4 of $14 and the 1 of 10, there will be ___ blank spaces.

[Test continued in the next frame.]

4. The braced head must be underscored in the heading at ___ (left/right).
5. A blank line to separate the braced head from the CHs below is ___ desirable in the heading at ___ (left/right).

[Test continued in the next frame.]

6. Varsity should start lined up over the ___ in Dellapico. (what letter?)
7. Second should start lined up over the ___ in ___. (what word?)
8. Team Members should start lined up over the ___ in Dellapico.
9. Must there be a blank line after Team Members? ___

[End of subsection on braced headings]
6. e
7. h (in) Thompson
8. a (or p)
9. yes (because the CHs are not the longest items in their columns)

<table>
<thead>
<tr>
<th>Item</th>
<th>Regular</th>
<th>Sale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swim suits</td>
<td>$16.25</td>
<td>$14</td>
</tr>
<tr>
<td>Beach hats</td>
<td>4.50</td>
<td>3</td>
</tr>
</tbody>
</table>

Just above, the columns that belong together are Nos. (1-2/2-3).

When unequal IC (intercolumn) spacing is used, it is convenient and attractive for the wider spacing to be twice as wide as the narrower spacing. If, above, 5 spaces had been left between columns 2 and 3, then between columns 1 and 2, you should leave ____ spaces.

<table>
<thead>
<tr>
<th>County</th>
<th>Republican</th>
<th>Democratic</th>
<th>Liberal</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>35,465</td>
<td>96,817</td>
<td>3,945</td>
</tr>
<tr>
<td>Guernsey</td>
<td>111,378</td>
<td>212,977</td>
<td>2,996</td>
</tr>
</tbody>
</table>

If you decide to leave 2 spaces between columns 2 and 3, then between columns 3 and 4, leave ____ spaces; and between columns 1 and 2, ____ spaces.

Count the number of typewriter strokes in the braced head and across the 3 columns below (including the 2-space ICs). A centered braced head would start over ____ of ____ (what letter?)

<table>
<thead>
<tr>
<th>Student</th>
<th>Test 1</th>
<th>Test 2</th>
<th>Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jane Hillman</td>
<td>34</td>
<td>36</td>
<td>2</td>
</tr>
<tr>
<td>Diane Wicks</td>
<td>38</td>
<td>37</td>
<td>-1</td>
</tr>
</tbody>
</table>

Here's how the columns under the braced heads are planned. The braced head uses 22 strokes; Test 1 + Test 2 + Gain use 16 strokes. The difference = ____ strokes and is divided equally between the 2 ICs under the braced head. Therefore, after blocking Test 1 at the left of the braced head, just space ____ times before typing Test 2. The first column is separated from the braced columns by ____ spaces.
Name | Test 1 | Test 2 | Gain
--- | --- | --- | ---
Gross Typing Speed in WPM

The braced head above is 25 strokes wide. The CHs below total 16 strokes. Can the difference of ____ strokes be divided equally? ____ As shown by the dots: between Test 1 and Test 2 there are ____ spaces. Between Test 2 and Gain there are ____ spaces. Does the width of ICs sometimes have to differ by 1 space? ____

BIRTH DATES OF OUR PRESIDENTS

<table>
<thead>
<tr>
<th>President</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington</td>
<td>1732</td>
</tr>
<tr>
<td>John Adams</td>
<td>1735</td>
</tr>
<tr>
<td>Jefferson</td>
<td>1743</td>
</tr>
<tr>
<td>Hayes</td>
<td>1822</td>
</tr>
<tr>
<td>Garfield</td>
<td>1831</td>
</tr>
<tr>
<td>Arthur</td>
<td>1830</td>
</tr>
</tbody>
</table>

Tables with braced headings are not the only ones that sometimes require unequal IC spacing. As illustrated above, unequal spacing should be used whenever the information groups itself naturally into separate sets of columns. In fact, the table above does not even need ordinary column headings because the information in the columns is made clear from the _________ of the table.

<table>
<thead>
<tr>
<th>Temperature (in Degrees)</th>
<th>Humidity (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Season</strong></td>
<td><strong>High</strong></td>
</tr>
<tr>
<td>Spring</td>
<td>66</td>
</tr>
<tr>
<td>Summer</td>
<td>84</td>
</tr>
</tbody>
</table>

Below the first braced head, the High and Low columns are separated by ____ spaces. To make the second braced head exactly as wide as the first one, its columns are also separated by ____ spaces. Between the two braced heads is _______ space; and, after the unbraced column (Season), _______ space.
The more complicated of the tables shown in Frames 11 through 40 require planning by arithmetic methods. The simpler ones could be done by backspacing.

To find the left margin by arithmetic: once you have decided on IC space, just subtract typed matter + IC space from the total across the page and divide the difference by 2.

**Example:** In the table of 9-40 (refer to it), its width consists of: Season + 12 IC spaces + (in Degrees) + 8 IC spaces + High + 5 IC spaces + Low, for a total of ____.

On ordinary stationery, the LM (left margin) on your typewriter would be set at ____.

In finding the LM of the table in Frame 9-25 by arithmetic methods (refer to it), the typed matter totals ____ spaces, and the ICs total ____ spaces, for a grand total of ____ spaces. On your typewriter the LM would be set at ____.

Backspace methods could be used for the table of Frame 9-39 (refer to it). Assume 3 IC spaces between columns within a set, and 6 IC spaces between the two sets of columns, for a total of ____ IC spaces. Just backspace (1 for 2) for: Washington + 1732 + Garfield + 1831. Then, for the total of ____ IC spaces, backspace ____ more times. Count on your fingers and spell (by 2's) mentally to determine that there will be a total of ____ backspaces—so that the LM on your typewriter would be set at ____.

With 6 spaces after column 1 (in Frame 9-37, refer to it), the table would require ____ backspaces; LM would be set at ____.
### Student Information

<table>
<thead>
<tr>
<th>Name</th>
<th>Row</th>
<th>Seat</th>
<th>Class</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kent, John</td>
<td>3</td>
<td>4</td>
<td>Junior</td>
<td>78</td>
</tr>
<tr>
<td>Macleod, Fred</td>
<td>2</td>
<td>6</td>
<td>Sophomore</td>
<td>82</td>
</tr>
</tbody>
</table>

1. If **Row** and **Seat** are blocked under **Assignment**, those two columns will be separated by ___ spaces.

2. Therefore, the same number of blank spaces should be left between **Sophomore** and ________.

3. If so, the two **School Record** columns will stretch across ___ spaces.

4. In the table of the preceding frame, assume 5 spaces between the two pairs of braced columns and 8 spaces after the unbraced column. Using also, the model answers to the preceding frame, the entire table is ___ spaces wide.

5. On your typewriter, the LM for that table would be set at ___.

6. If you triple space after the table title, double space the rows of the table, and leave 1 blank line after the braced heads, the table is ___ lines long.

7. If centered on a ½-sheet, it would start on line ___; on a full sheet, it would start on line ___.

---

1. 3 \[Assignment - (Row + Seat) = 10 - (3 + 4) = 10 - 7 = 3\]

2. Average (longest item in last column)

3. 19 \[Sophomore + 3 + Average = 9 + 3 + 7 = 19\]

4. \(56 \ (12 + 8 + 10 + 5 + 19)\)

5. Elite 24 \(\frac{1}{2} \text{of } (102 - 54) = \frac{48}{2} = 24\) \(= 24\)

6. 11

7. \(12 \left[\frac{1}{2} \text{of } (33 - 11) + 1\right]\)

   \(\begin{array}{l}
   \text{Pica} 23 \left[\frac{1}{2} \text{of } (42 - 19) \right] \\
   \text{(Pica) 23 (42 - 19)}
   \end{array}\)

   \(\begin{array}{l}
   \text{(elite) 32 (51 - 19)} \\
   \text{(pica) 23 (42 - 19)}
   \end{array}\)

   \(\begin{array}{l}
   \text{(elite) 31 (51 - 20)} \\
   \text{(pica) 22 (42 - 20)}
   \end{array}\)

---

The fastest way to type the table of Frame 9-44 (refer to it) requires you to space up and down between one line and another, like this:

1. Center the title; then space down to the CH line (Name, Row, etc.)

2. From LM (Elite 24, Pica 16), tap the space bar once for each stroke in the longest item in column 1.

3. Space 8 times.

4. Type and underscore **Row**.

5. Space 3 times; type and underscore **Seat**.

6. Space 5 times; set tab stop.

7. Space (don't type) 1-for-1 through **Sophomore + 3 IC** spaces. Then type and underscore **Average**.

8. Type and underscore **Assignment**, lined up over **Row**.
(Typing steps for the table of Frame 9-44 continued.)

9. Either by forward and back spacing or by counting and arithmetic, CENTER----
   a. Name over Macedo, Fred
   b. Class over Sophomore
   c. Seating over Assignment
   d. School Record over its two columns

10. Be sure to underscore the second braced head from the S of Sophomore to the final e of Average.

11. Finally, set tab stops for columns 2, 3, and 5--
   a. At the o of Row
   b. At the e or a of Seat
   c. At the first e or r of Average

12. Turn down to row 1, set for double spacing, and type the rows of the table.

Now a little TEST.

<table>
<thead>
<tr>
<th>Freshman</th>
<th>History</th>
<th>Earth</th>
<th>Science</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>No. %</td>
<td>No. %</td>
<td>No. %</td>
<td>No. %</td>
</tr>
<tr>
<td>A</td>
<td>4 10</td>
<td>3 5</td>
<td>7 7</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>8 20</td>
<td>15 25</td>
<td>23 23</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>16 40</td>
<td>27 45</td>
<td>43 43</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>8 20</td>
<td>17 20</td>
<td>20 20</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>4 10</td>
<td>3 5</td>
<td>7 7</td>
<td></td>
</tr>
</tbody>
</table>

1. If the No. and % columns are blocked under History, between those 2 columns there will be ____ blank spaces.

[Test continued in the next frame]

2. If you leave twice as much space between the sets of braced columns, they will be separated by ____ spaces.

3. If column 1 is followed by twice as many blank spaces as are left between the sets of braced columns, total IC space (excluding spaces between No. and %) = ____.

4. The width of the entire table is ____ spaces, and LM on your typewriter would be set at ____.

5. The underscore below the last braced head is ____ spaces wide.

[Test continued in the next frame]
2. 4 (2 x 2)  
3. 16 \[8 \text{ after column } 1 \]
\[2 x 4 + 4 + 4\]  
4. 45 \[16 \text{ IC spaces } + \]
\[8 + 7 + 7 + 7\]  
29 \text{ (elite)}  
\[\frac{1}{2} \text{ of (102 - 45)}\]  
20 \text{ (pica)}  
\[\frac{1}{2} \text{ of (85 - 45)}\]  
5. 7 \[\text{ from the N of No. } \]
\text{ to the right edge of the % column}\]  

6. 4  
5  
6  
7  
7  

7. 17  
9 \[\frac{1}{2} \text{ of (33 - 17)} + 1\]  
25 \[\frac{1}{2} \text{ of (66 - 17)} + 1\]  

TEST continued (based on the table of 9-48).  
Assume: (a) a 1-line table title--distribution of Freshman Grades in Two Subjects, (b) a blank line after the braced heads, and (c) a double-spaced body.  

6. If the title (followed by triple spacing) is line 1,  
Earth is on line ____; History is on line ____; Freshman, one line ____; Grades, on line ____; No. and % are on line ____.  
7. With a double-spaced body, the entire table is ____ lines long. If centered on a \(\frac{1}{2}\)-sheet, it would start on line ____; on a full sheet, on line ____.

[End of subsection on unequal intercolumn spacing]

STATES AND THEIR CAPITALS  

| Alabama | Montgomery |
| Alaska  | Juneau     |  

Whenever possible, CHs should be blocked under a braced head. In the same way, as shown at the left, columns should be blocked under the ______ of a table--whenever they will fit and still leave a reasonable number of IC spaces.

To find the starting point for the last column--so that you can set a ______--position the carriage in the space after the table title and backspace 1 for 1 as you spell the longest item in the column. Or, as shown by the longhand above the title, start at the final S and point backwards with your pencil point as you spell Montgomery. Either way, you will find that a tab stop should be set at of _____.

(what letter?)  (what word?)

EUROPEAN CAPITAL CITIES  

<table>
<thead>
<tr>
<th>Country</th>
<th>Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>Stockholm</td>
</tr>
<tr>
<td>Norway</td>
<td>Oslo</td>
</tr>
</tbody>
</table>

Of course you know that the longest item in a column is blocked. In the example at the left, the word that should end under the last letter of the table title is _______. The word that starts (Capital/Stockholm)

under the E of European is (Country/Sweden). A centered Capital will start over the ______ of Stockholm.

(what letter?)
PRESIDENTIAL BIRTH YEARS AND STATES
The title at the left uses 35 strokes. As shown by the underscored stroke count below the table, the typed matter uses 10 + 4 + 13 = ___ strokes. Remaining for ICs are 35 - ____ = ____ strokes. Equal division of these remaining strokes puts, between columns, ____ strokes. After typing Washington, space ____ times and set a tab stop for column ___; after typing 1732, space ____ times and set a tab stop for column ___.

27
(35 -) 27 = 8
4 (8 + 2)
4
2
4
3

10 [40 - (8 + 12 + 10) = 40 - 30 = 10 ]
5 [10 + 5]

DISTRIBUTION OF FRESHMAN GRADES IN TWO SUBJECTS
To block columns under a table title, you have to count and use arithmetic to determine (a) whether all columns will fit under the title and (b) how much space to leave between columns, like this:

<table>
<thead>
<tr>
<th>Grade</th>
<th>History</th>
<th>Earth</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Pass</td>
<td>36</td>
<td>90</td>
<td>57</td>
</tr>
<tr>
<td>Fail</td>
<td>4</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

Strokes in table title = 47
Typed matter (5 + 7 + 7 + 7) = (Fill in the two blanks.)
Intercolumn space =

To leave about twice as much IC space after the unbraced column as between the braced columns, put, between the braced heads, ____ spaces and, after column 1, ____ spaces.
The sketch for the table of Frame 9-55, below, shows how to divide the 21 IC spaces among the columns.

\[
\begin{array}{cccc}
\times & \times & \times & \\
\end{array}
\]

With \( x \) standing for an unknown number of spaces between columns, we want \( x \) spaces between columns 2 and 3 and between columns 3 and 4. Between columns 1 and 2, we want twice as much space--two \( x \)'s worth. All together, there are 4 \( x \)'s that have to be divided into 21 IC spaces.

\[
21 + 4 \text{ (to the nearest whole number)} = 5.
\]
That is, \( x = 5 \) and \( xx = 10 \). But \( 10 + 5 + 5 = 20 \); so change the 10 to 11.

Check: \( 11 + 5 + 5 = 21 \).

If there had been a total of 17 IC spaces, after column 1 you would leave ____ blank spaces.

In tables like that of 9-55, first count strokes in the typed matter; then do the arithmetic of determining IC space. When you are ready to type, it is easiest to type the longest item in each column first; then turn the roller up or down a line to type shorter items, like this:

In 9-55 (refer to it): (1) Turn down to the Grade line and type it. (2) Space ____ times, turn up ___ line(s), and type __________. (3) Space ____ times and type __________. (4) Space ____ times to the last column and type ____ underscores. (5) Then fill in the missing items (Both, Earth, No., %). (6) Finally, set tab stops at the beginning of each No. column and each ____ column.

For vertical centering, the table of Frame 9-55 (refer to it) might be sketched as shown at the left, in which a little \( x \) stands for a blank line. As shown, after the table title you (double/triple) braced head is typed in ________ spacing. Thereafter, you ________ space. As sketched, the table is ____ lines long. If centered on a half sheet, the table would start on line ____; on a full sheet, on line ____.
Now a little TEST (columns blocked under title).

Seasonal Temperature and Humidity Highs and Lows

<table>
<thead>
<tr>
<th>Season</th>
<th>Temperature</th>
<th>Humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
<td>66</td>
<td>70</td>
</tr>
<tr>
<td>Summer</td>
<td>84</td>
<td>75</td>
</tr>
</tbody>
</table>

1. If High and Low are blocked under Temperature and if the Humidity columns are to be as wide as the Temperature columns, columns 4 and 5 will stretch across _____ spaces; between columns 4 and 5 there will be _____ spaces.

[Test continued in the next frame]

TEST continued (based on the table of 9-59).

2. The Season, Temperature, and Humidity sections, in turn, use _____ + _____ + _____, for a total of _____ spaces.
   a. If the columns are blocked under the 48-space table title, there remain for ICs _____ spaces.
   b. For about twice as much space after the unbraced head as between the braced heads, the braced heads should be separated by _____ spaces, and after column 1 there will be _____ spaces.
   c. The first braced head will start under _____ of _____.
      (what letter?)
      (what title word?)

[Test continued in the next frame]

TEST continued (see preceding two frames).

3. The High of column 4 will start under the _____ of _____.
   (what title word?)

4. The underscore below the last braced head is _____ spaces wide.

5. If there is triple spacing below the title and double spacing thereafter, the table uses _____ lines. If centered on a ½-sheet, it would start on line _____.

[End of subsection on blocked columns]
An occasional footnote may be shown by a * (star or asterisk), and a second footnote by ** (double star). But it is better to number footnotes serially* (1, 2, 3, ..., etc.) or to letter them serially (a, b, c, ..., etc.).

In tables that contain numbers, serial lettering is preferred to serial numbering. Mark the first table footnote with a raised a, the second one with a raised ___, the third one with one with a raised ___, and so on.

---

*Serially means in a series—in one-after-the-other order.

```
<table>
<thead>
<tr>
<th>BRANCH OFFICE SALES</th>
<th>Footnote signs are raised a line.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office</td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Sales(^a) 8.5(^b)</td>
</tr>
<tr>
<td>Boston</td>
<td>6.1(^c)</td>
</tr>
</tbody>
</table>

---

\(^a\) In millions of dollars.
\(^b\) Gross
\(^c\) Net

To separate footnotes from the body, a single space below the last row of the body, type 10 ____________________.

Footnotes are typed in __________ paragraphs. ____________________ (one/separate)

Each footnote is ____________________ spaced. ____________________ (single/double)

Between footnotes, use ____________________ spacing. ____________________ (single/double)

Each footnote is indented 3 or 5 spaces, like a ____________________.

---

In the table of Frame 9-63 (refer to it), does any footnote extend beyond the right-hand edge of the table? ______

1 Boston
2 ________
3 ________
4 ________ a In millions
5 of dollars
6 ________ b Gross

Notice the line count at the left. Do the blank lines after Boston and the 10 underscores count as separate lines? ______

With the vertical spacing as shown in Frame 9-63 (refer to it), the entire table uses ______ lines. If centered on a \(\frac{1}{2}\)-sheet, it would start on line ______; on a full sheet, on line ______.
Now a little TEST.

SOME 1969 NOBEL PRIZE WINNERS

| Name          | Field       | Country
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Samuel Beckett</td>
<td>Literature</td>
<td>Ireland</td>
</tr>
<tr>
<td>ILO</td>
<td>Peace</td>
<td></td>
</tr>
<tr>
<td>Murray Gell-Mann</td>
<td>Physics</td>
<td>America</td>
</tr>
</tbody>
</table>

Born in Ireland but has lived mostly in France.

With vertical spacing as at the left, the table is ___ lines long. Without the footnotes, it would be ___ lines long. Centered on a ½-sheet, the table (with footnotes) would start on line ___.

The wavy lines at the left represent lines of typing in the body of a letter. The short straight lines are the rows of a table.

Depending on how wide the columns are in relation to the length of the WL (writing line) in the letter, the outside columns of the table could be blocked at the letter margins, as sketched in the example, or columns could (upper/lower) be indented from the letter margins, as in the (upper/lower) example.

Usually, but not always, tables in letters are quite short (not many rows). Also, they often do not have titles--because the earlier part of the letter describes what is in the table. Sometimes, there are not even column headings. For these reasons (but mostly to save space), table rows are often typed in single spacing--but you do double space after CHs, if there are any. In other words, when a letter contains a table, its rows (may/must) be single spaced. If there is enough room, table rows should be (single/double) spaced.
You always double space between paragraphs. That is, each paragraph is separated from the next one by blank line(s). A table in a letter is treated like a paragraph. That is, above the table and below the table you leave blank line(s).

If it is obvious at a glance that a table—including IC space—will easily fit within the letter margins, then it can be planned and typed by the backspace method in the usual way. From 51 or 42, which are the points for elite and pica type, just backspace (1 for 2): first for the typed matter in the columns, then for the IC space. Where the backspacing ends is where the column begins. At that point you can either (which?) set or temporarily reset the.

If you prefer arithmetic planning to backspacing, remember that a available table space is not the width of the page (102 elite or 85 pica spaces), but the width of the WL* in the letter.

Above, the WL = 85 - 20 = spaces. The table uses 18 + 7 + 10 = spaces. Remaining for table margins are 65 - = spaces, putting, in each table margin, spaces. With the letter LM at 20, the table LH is at 20 + = . Set a tab stop for column 2 at . Here's the check: 15 + 18 + 7 + 10 + 15 = .

*WL means Writing Line—the number of spaces between the left and right margins.
As illustrated in the last sentence of the preceding frame, one check of your table plan is that:

\[ \text{LM} + \text{typed matter} + \text{IC space} + \text{RM} = \text{WL}. \]

as in: \[ 15 + (18 + 10) + 7 + 15 = 65 \]

Also carry out a right-end check, as shown below. Notice that:

\[ \frac{20}{35} \]\n\[ \frac{15}{35} \] \[ \frac{10}{15} \] \[ \frac{7}{15} \] \[ \frac{60}{65} \]

that: \( \text{beginning of last column (60) + last column (10) + table RM (15) = } \frac{85}{85} \) which is the end point of the \( \text{table/letter WL} \).

When a table will obviously fit within letter margins, you can use any reasonable amount of IC space. But if the table is likely to be a "tight squeeze," you have to figure out how much IC space is available. Just subtract the typed matter in the table from the WL and divide the remainder among the ICs.

Assume letter margins that result in WL = 60 spaces and 4 table columns of 18, 12, 8, and 10 spaces. The typed matter in the table totals \( \text{____ spaces} \). Remaining for ICs are \( \text{____ spaces} \). Since, in a 4-column table, there are \( \text{____ ICs} \), each IC should be \( \text{____ spaces wide} \).

Sometimes, the space available for ICs cannot be divided equally among the ICs. To permit equal ICs, you could extend the table a space or two beyond the right-hand margin of the letter or end it a space or two short of the right margin. Or, instead, allow the ICs to differ by 1 space. For example, if 14 IC spaces have to be divided among 3 ICs, the ICs would be 5, 5, and \( \text{____ spaces wide} \). If 17 spaces were to be divided among 3 ICs, the IC widths would be \( \text{____}, \text{____}, \text{____} \).
The preceding example results in a table that is blocked under the WL of the letter. Such tables are planned like those that are blocked under a table title (see Frames 51 through 61). Use as the maximum width of the table (including IC space) the width of the WL in the letter. But do not type tables in that way unless you need all the space available. For example, with WL = 60 and two table columns of 10 spaces each, the table should not be blocked. Otherwise, there will be too much space in the margins/between columns.

In letters, you may remember, the right margin is set 3 spaces past the point at which you want the WL to end. A SHORT pica letter would have RM set at 68, but you would probably end your WL at 68 - 3 = ___. With LM at 20, the WL is ___ spaces wide. For a MEDIUM-length pica letter, consider its WL to equal 10 more or ___ spaces wide. For a LONG letter, add another 10 spaces to the WL, making it ___ spaces wide. If you use pica type, memorize the three WLs. For short, medium, and long letters, they are ___, ___, and ___ spaces wide.

At least a few lines in the body of a letter would probably be typed all the way out to the RM. For the convenience of using round numbers for elite WLs (when a table is to be blocked below the WL), consider the WL to run from LM to RM. With elite margins for a short letter at 25 and 80, the WL is ___ spaces long. For medium-length letters, the WL is 10 spaces longer, or ___ spaces. For long letters, add another 10, making the WL ___ spaces long. If you use elite type, memorize the three WLs. For short, medium, and long letters, they are ___, ___, and ___ spaces long.
Side margins in letters usually depend on the number of words in the body (or message) of the letter. But if a wide table will not fit within the usual letter margins, simply reduce the letter margins and make the WL longer. For example, assume a letter whose pica margins would ordinarily be set at 20 and 65, but which contains a table that requires 55 spaces. For that letter, side margins of 55 and 65 should be set. In letters with tables, you should check the table width (before/after) you set side margins for the letter.

Now a little TEST.

Assume a SHORT letter that includes the table below (IC = 5).

<table>
<thead>
<tr>
<th>Leave</th>
<th>Flight No.</th>
<th>Depart</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>AA 416</td>
<td>3:00 p.m.</td>
</tr>
<tr>
<td>Minneapolis</td>
<td>NW 86</td>
<td>5:30 p.m.</td>
</tr>
</tbody>
</table>

1. Including IC space, the total width of the table = ___ spaces. If you center it by backspacing, you will backspace ___ times, and the table LM (for the size of type on your typewriter) will be at ___ on the carriage scale. The CH for column 2 will start at ___.

[Test continued in the next frame.]

TEST continued (short letter--your size of type).

In column 1 of the table of 9-78, change Minneapolis to Detroit and prepare an arithmetic plan for the table just like the longhand one in Frame 9-71 (refer to it).

2. Using letter margins for a short letter in your size of type, your plan should show that the table LM should be set at ___ and that tab stops for columns 2 and 3 should be set at ___ and ___.

[Test continued in the next frame.]
Assume the table below blocked under the WL of a short letter in your size of type.

<table>
<thead>
<tr>
<th>From</th>
<th>Airport</th>
<th>Flight No.</th>
<th>Depart</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>La Guardia</td>
<td>American 416</td>
<td>3:00 p.m.</td>
</tr>
<tr>
<td>Chicago</td>
<td>O'Hare</td>
<td>United 86</td>
<td>5:15 p.m.</td>
</tr>
</tbody>
</table>

3. If you count the strokes in the typed matter of the table and subtract from the WL of the letter, you will find that the space available for ICs totals ____. The 3 ICs would contain ____, ____, and ____ spaces. The table LM would be at ____ and the tab stop for column 2 would be at ____.

A table in a report or manuscript is typed just like a table in a letter. Like an ordinary paragraph it is preceded and followed by ____ blank line(s). If a report or manuscript (abbreviated ms.; plural is mss.) uses equal side margins, then the center point for table typing is the horizontal center of the page. On standard size paper, the center point on your typewriter is at ____.

It is quite common to bind longer reports at the left side (by staples, for example) or to enclose them in a binder or folder—just as the pages of a book are bound within hard covers. If so, in order not to hide the left edges of the typing, side-bound mss. use a left margin that is wider than the right margin. With a 1" right margin, the left margin would be 1½" or 2". For a 1½" LM on your typewriter set the LM at ____; for a 2" LM, set it at ____.
In reports, the horizontal center for table typing is not the center of the page, but the center of the writing line. As shown at the left, with elite margins (in a side-bound ms.) of 18 and 90, the WL (writing line) is 90 - 18 = ____ spaces long. Its center is at 18 + ½ of 72, which equals ____.

In the same way, the center of the pica WL is at 15 + ½ of 60, which equals ____. With side margins set as above, if you center tables by the backspace method, in elite type you would start backspacing from ____; in pica, from ____.

Assume a side-bound elite ms. with LM = 2" and RM = 1". The WL has 8½" minus 3" = 5½" or 66 spaces. If a table in such a report were simple enough to center by backspacing, you would start to backspace from LM + half the spaces in the WL; that is, from ____ on the carriage scale. In pica type (10 spaces to the inch), with LM = 2" and RM = 1", the WL would be 8½" - 3" = ____ inches or ____ spaces long. Its midpoint would be at ____ on the carriage scale.

In a report, the available table space is not the width of the page (102 elite or 85 pica), but the spaces in the WL. At the left, the WL = ____ spaces, and the 2-column table uses 10 + 8 + 14 = ____ spaces.

Remaining for table margins are 72 - ____ = ____ spaces. Each of the two table margins therefore = ____ spaces. Since the report LM is at 18, the table LM would be set at 18 + ____ = ____. A tab stop for column 2 would be set at ____. Check: 20 + 10 + 8 + 14 + 20 = ____.
As illustrated in the last sentence of the preceding frame, one check of your table plan is that:

\[ LM + \text{typed matter} + \text{IC space} + \text{RN} = WL \]

as in: \( 20 + (10 + 14) + 8 + 20 = 72 \)

Also carry out a right-end check, as shown below. Notice that: beginning of last column (56) + last column (14) + table RM (20) = ___, which is the end point of the table/report WL.

Sometimes a table is wide enough to use up the full width of the WL in the report. If so, you must determine in advance how much space is available for ICs; then block the table.

Above, a 2" LM and a 1" RM lead to an elite WL of ___ spaces. The typed matter in the columns uses ___ spaces. Remaining for ICs are ___ spaces. With 3 ICs, each one would contain ___ spaces. Column 1 would start at ___, column 2 would start at ___.

Sometimes the space available for ICs cannot be divided equally among the ICs. To permit equal ICs, you could extend the table a space or two beyond the right margin of the report--or end it a space or two short of the RM. Instead, you could allow the ICs to differ by 1 space. For example, if 11 spaces have to be divided among 3 ICs, the ICs would be 4, 4, and ___. If 16 spaces were to be divided among 3 ICs, the IC widths would be ___, ___, and ___.

As illustrated in the last sentence of the preceding frame, one check of your table plan is that:

\[ LM + \text{typed matter} + \text{IC space} + \text{RN} = WL \]

as in: \( 20 + (10 + 14) + 8 + 20 = 72 \)

Also carry out a right-end check, as shown below. Notice that: beginning of last column (56) + last column (14) + table RM (20) = ___, which is the end point of the table/report WL.

Sometimes a table is wide enough to use up the full width of the WL in the report. If so, you must determine in advance how much space is available for ICs; then block the table.

Above, a 2" LM and a 1" RM lead to an elite WL of ___ spaces. The typed matter in the columns uses ___ spaces. Remaining for ICs are ___ spaces. With 3 ICs, each one would contain ___ spaces. Column 1 would start at ___, column 2 would start at ___.

Sometimes the space available for ICs cannot be divided equally among the ICs. To permit equal ICs, you could extend the table a space or two beyond the right margin of the report--or end it a space or two short of the RM. Instead, you could allow the ICs to differ by 1 space. For example, if 11 spaces have to be divided among 3 ICs, the ICs would be 4, 4, and ___. If 16 spaces were to be divided among 3 ICs, the IC widths would be ___, ___, and ___.
Technical or professional reports often have several (or many) tables. For that reason it is customary to number tables serially (in 1-2-3 order)—using Arabic (not Roman) numbers. The table number is usually centered a double space above the table title. Compare:

Table 12

Table XII. AVERAGE TYPING SPEED

The preferred way to label tables is shown in the example at the ___ ___ ___ ___ above.

(left/right)

Now a little TEST.

Assume a report with LM of 1\(\frac{3}{4}\)" and RM of 1" (using the size of type on your typewriter). Also assume IC = 6 in the table below, included in that report.

<table>
<thead>
<tr>
<th>Table 3</th>
<th>EFFICIENCY RATINGS OF EMPLOYEES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Rating</td>
</tr>
<tr>
<td>Arthur Henry</td>
<td>Excellent</td>
</tr>
<tr>
<td>William Goldman</td>
<td>Very good</td>
</tr>
</tbody>
</table>

1. The report WL is ___ spaces long.
   a. The center point of the WL is at ___ on the scale.
   b. The table, including IC space, uses ___ spaces.

   [Test continued in the next frame]

3. To center the table of 9-90 by backspace methods, you would backspace (from the center point of the WL at ___) a total of ___ times—resulting in a table LM set at ___. The second column would begin at ___.

4. In column 1 of the table change William Goldman to William Gold and change the IC from 6 to 5. Write an arithmetic plan for the table like that of Frame 9-86.

   Your plan should show the table LM set at ___, and tab stops for columns 2 and 3 set at ___ and ___.

5. The sixth table in a series is preferably numbered ___.(b/VI)

   [End of subsection on tables in side-bound reports]
3. 54 (elite); 45 (pica)
   22 (½ of 45)
pica 23 (45 - 22)
ellie 32 (54 - 22)
pica 44 (23+15+6)
ellie 53 (32+15+6)

4. Elite (LM 34; tabs 51 and 65)
   18 12 9 5 9 16
   34 51 63 74 90
   Pica (LM 25; tabs 42 and 56)
   15 12 5 9 5 10
   25 42 56 65 75

5. 19 (50 - 31)
   6, 6, 7 (any order)

In real life, it is the typist who must decide how much space to leave between columns in a table. If the body of a table is to be blocked under its title (or under the writing line of a letter or report), arithmetic is used to determine in advance the IC space. For example, if a 4-column table whose typed matter totals 31 spaces is to be blocked under a 50-space table title, there remain for ICs ____ spaces. These would be divided among the 3 ICs as follows: ____, ____, and ____.

GOVERNMENT OFFICIALS--1970

<table>
<thead>
<tr>
<th>State</th>
<th>Governor</th>
<th>Senator</th>
</tr>
</thead>
</table>

The information above is grouped into two pairs of columns, more widely separated from the "State" column. In tables that require unequal IC space, use a "2 to 1" rule. Whatever the narrowest IC space is, double it for the next wider space and double it again for still wider space. As shown by the dots above, the narrowest IC uses ____ spaces. Between the "Governor" and "Senator" columns are ____ spaces and, after the "State" column, ____ spaces.

Following a 2-to-1 rule for the table above, if 4 spaces are left between columns 1 and 2, between columns 3 and 4 leave ____ spaces and, between columns 2 and 3, ____ spaces. If you centered the table sketched above by backspace methods, after backspacing for the typed matter, for the total IC space you would backspace another ____ times.
In tables that require unequal spacing, follow the 2-to-1 rule whenever there is enough space to do so. Otherwise, reduce the difference in spaces, but try to assign a difference that the eye can see. Compare:

A) 12 3 6 3
B) 8 3 5 3

Strict 2-to-1 spacing is shown in example (A/B) above. Reduced (but still different) IC spacing is illustrated in example (A/B).

In tables that are blocked (under the table title or under the writing line of a letter or report), to determine the IC space subtract the typed matter in the table from the width of the title or WL and divide the difference among the ICs. In a table with columns of 8-12-20 spaces blocked under a 50-space title, each IC should contain ___ spaces.

If unequal IC spacing is desired, make it as close as possible to 2-to-1: x spaces and xx spaces. With 50 - (8 + 12 + 20) = 10 IC spaces to be divided by three x's, x = 10 + 3 = 3. Use 3 spaces between columns 2 and 3 and, between columns 1 and 2, 10 - 3 = ___ spaces. With 20 IC spaces to be divided: ___ xxxx ___ xx ___ x leave, between columns 1 and 2, ___ spaces.

A table that is not blocked (under a table title, for example) and that does not require unequal IC spacing can use any reasonable IC space. Often, about a half-inch between columns will be about right. A half-inch equals ___ elite or ___ pica spaces.

There is a slight advantage to using an even number of IC spaces. Then, no matter how many ICs there are, the total will always be an even number—avoiding a leftover space. As between a 5- or a 6-space IC, it is more convenient to use ___; as between an IC of 7 or 8, use ___.
Of course, in a table with many or wide columns, you might not be able to leave as much as a half-inch, or ___ spaces, between columns. On the other hand, in a narrow 2-column table typed on a full 8½" sheet of standard-size paper, the side margins would be much too wide if you left, between columns, only ___ spaces.

The columns are crowded too close together in the illustration at the ___ (left/right).

A 2-column table with very wide columns could require more horizontal space than a 5-column table with very narrow columns. More often, the more columns there are, the wider the table is likely to be. Therefore, it is not sensible to use the same IC space in all tables. In general, the fewer the columns, the ___ the IC space. If an IC ___ of 10 spaces is used in a 2-column table, in a 3-column table you should probably use between columns ___ than 10 spaces.

There will sometimes be exceptions (when the columns are unusually wide or unusually narrow), but the spacing listed in the table below will often lead to attractive work.

<table>
<thead>
<tr>
<th>No. of Columns</th>
<th>IC Space Between Columns</th>
<th>If the table at the left were to be typed on full 8½&quot; paper, between columns there should be _____ spaces. For the table of Frame 9-90 (refer to it), use an IC of ____ spaces.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>10-12</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>6-8</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4-6</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>6+</td>
<td>2-4</td>
<td></td>
</tr>
</tbody>
</table>
Of course you know that in tables (and in all typing) unless there is no other way to fit the materials across the page, side margins should not be less than 1 inch (on each side). A 3-column table would ordinarily use an IC of ____ spaces. But if the columns were very wide and you found that leaving that amount of IC space resulted in a left margin (pica or elite) at 8 on the carriage scale, what should you do? _________________.

When you have selected an IC for a table that looks quite wide, _______. a. Check what the LM will be before you type (a/b) b. Start to type and hope for the best

Columns should not be so far apart that the eye "loses its place" as it reads across a table row. Therefore, avoid leaving more than about 10-12 spaces between columns. If more than that is unavoidable, use "leaders"--a series of spaced periods that "lead" the eye across a gap, as in the table of contents for this section (Frame 9-00, refer to it). In Frame 9-00, the longest leader is the one after the subsection entitled _________________.

Notice that the spaced periods ______ lined up vertically. (are/are not)

To line up leaders vertically, after you type the last word in the first item, space once. Then look at the carriage scale to see whether you are at an odd- or at an even-numbered space. Whichever it is, start each leader in a space that is also odd (or even). But be sure to leave at least 1 blank space before the first period. Then alternate periods with space-bar taps--stopping 2 or 3 spaces short of the column after the leaders.

Horizontal centering at the typewriter ... 19
Table typing in reports ... 31

After striking the s of reports in line 2, above, your carriage is at 28 on the scale. Your first period should start at (28/29/30)
30 (the first even-numbered space after leaving 1 blank space)

1. If a 5-column table whose typed matter totals 48 spaces is to be blocked under a .52-space table title, the IC widths will be ___, ___, ___, and ___.
2. If unequal IC spacing is in a 2-to-1 ratio, if the narrowest IC is 5 spaces wide, the next wider IC will have ___ spaces.
3. With exceptions (for very wide or very narrow columns), a 3-column table should use an IC of ___ space; a 4-column table, an IC of ___ spaces.

(Test continued in the next frame)

TEST continued. 9-105

1. 3, 3, 4, 4 (any order)
2. 10
3. 6-8
4. 4-6

4. To block the table sketched below under a 45-space title

\[
\begin{array}{c|c|c|c|c}
10 & xx & 8 & x & 6 \\
\end{array}
\]

between columns 1 and 2, leave ___ spaces.

5. The row of periods used to carry the eye across a wide IC space is called a(n) ___________. After each period there is __________.

(another period/a space)

[End of subsection on IC spacing]
When you complete this section, you should know:

1. How to center vertically business letters of various lengths—according to each of two different letter arrangements:
   a. Distance from top of page to date varies with letter length
   b. Distance from date to inside address varies with letter length

Section 10
Vertical Margins for Business Letters

10-1
An attractively arranged business letter is one whose horizontal and vertical margins are appropriate to the length of the letter. The longer the letter, the (more/less) space it will take on the page. The more space the letter takes on the page, the (wider/narrower) the margins.

10-2
The attractiveness of the business letters you type will depend, in part, on whether you make the right decisions about how much space to leave in the ____________.
You have to make decisions about the side, or horizontal, margins. You also have to make decisions about the top and bottom, or **vertical** margins. In a letter, the first thing typed is the date. The **TM** (top margin) in a letter, as illustrated at the left, is the distance from the top of the page to the top margin.

In connection with vertical margins, there are two basic letter arrangements. In one of them, the date is considered part of the letter. Its distance from the top of the page changes with the length of the letter. The date line "moves" up or down—according to how long the letter is. It can therefore be called a "moving date line."*

As compared to a short letter, a longer letter takes more space on the page; therefore, its date would be typed **(higher)** on the page.

*In the other letter arrangement, the date is typed a fixed distance from the top of the page—regardless of the length of the letter. "Fixed" date lines are discussed in Frames 21 to 30 later in this section.

The longer of the two letters at the left is letter **(A)**. Therefore its date line is **(higher)** on the page. The letter with the wider margins is **(A)**, the one that is **(shorter)**.
A "moving date line" is one whose distance from the top of the page depends on the length of the letter. Examine the sketch at the left. Notice that after the date (no matter how long the letter is), in order to reach the next part of the letter, called the __________, you space down ___ times.

In a "moving date line" letter style, after you type the date, you space down ___ times to the __________. As the length of the letter changes, the position of the date line __________ change, whereas the number of line spaces after the date __________ change.

In an ordinary letter, the amount of space it will take on the page depends almost entirely on how many WORDS are in the body (or message) of the letter. As compared to a 150-word letter, a 120-word letter would take ___ space on the page. Therefore, its date line would be ___ on the page. In letters of any length, ___ after you type the date you space down ___ times and then type the __________.
In typewriting textbooks, with few exceptions, there is a word count alongside each letter. It shows how many words are in the letter (a) as a whole and (b) in its body or message. To determine the length of a letter in a typing textbook, do you have to count or guess or estimate the number of ________ in the body or ________ of the letter? (yes/no)

But can you imagine any employer asking his typist to:
"Please type this 137-word letter for me"? (yes/no)

In another section of this program, estimating the length of a letter (and other kinds of typed material) will be discussed. For now, whether you estimate letter length by yourself or use the word count in typing textbooks, you must know how many words are in the ________ of a letter--because the length of the letter determines the location of the ________.

There is a simple rule that tells you how many lines from the top edge to type the date. The location of the date depends on the number of ________ in the ________ of the letter. Here's the rule.

**RULE:** For a letter of up to 60 words, put the date on line 22. For each additional 20 words or fraction of 20 words, raise the date 1 line.

If words = 60 or less, date line = 22. For 61 to 80 words, the date goes up 1 line to line 21. For 81-100 words, go up another line to line ___; for 101-120 words, place the date on line ___, and so on.
For a letter of 60 words or less in the message, the distance from the top of the page to the date is ___ lines.
The date is raised 1 line for each additional ___ words or fraction of ___ words.

For a letter of longer than 60 words, we want to know how many lines above line 22 to type the date. We want to know how many lines to _______ line 22.
(add to/subtract from)

Assume a letter whose message contains 96 words. To locate its date line, count on your fingers. Count by 20's, starting at 60, until you pass 96. Start with a closed fist and straighten a finger for each 20, like this:
"60" ... "80" (1 finger) ... "100" (2 fingers). Subtract the number of straightened fingers from the line number on which a letter of up to 60 words is placed; that is, subtract from ____. For the 96-word letter, the date would be placed on line ____ - 2 = ____.
Count on your fingers as you read this frame.
Assume a letter of 128 words. Count: "60" . . . "80" (1 finger) . . . "100" (2 fingers) . . . "120" (3 fingers) . . . "140" (4 fingers). Place the date for that 128-word letter on line 22 - 4 = line ___. For a letter of 103 words you would straighten ____ fingers, and its date would be on line ____.

To determine the location of the date line, start your count at ___ and point or straighten your first finger when you reach ___. For a 106-word letter you would stop your count at ______. That is -- using the 20-word group (100/120) 101-120 as an example -- you stop your count when you reach the ______ border of the group that contains the number of words in the ______ of the letter.

All you have to remember to locate a moving date line in a letter is:
1. Start to count at ___.
2. Count by ___'s, straightening a finger for each ___.
3. Subtract the number of straightened fingers from the line number on which the date of a letter of up to 60 words would be located; that is, subtract from ___.

The count of course applies to the number of ______ in the ______ of a letter.
Count on your fingers and fill in the blanks.

<table>
<thead>
<tr>
<th>Words in Body</th>
<th>No. of Fingers</th>
<th>Date Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>157</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>116</td>
<td></td>
<td></td>
</tr>
<tr>
<td>92</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Don't fall asleep in counting by 20's. And don't take ages to space down to the date line. Line up the top edge of your paper with the edge of the scale--so that if you were to strike a key, it would just miss the top edge of the paper. Then set your line space regulator for triple spacing and space down rapidly, counting by 3's, (3, 6, 9, 12, etc.), until you are as close as possible to the desired line. Then reset for single spacing and space down the final line or two.

To reach line 19, use ___ triple spaces + ___ single space(s). To reach line 20, use ___ triple spaces + ___ single space(s). To reach line 18, use ___ triple spaces + ___ single space(s).

Fill in the blanks below.

<table>
<thead>
<tr>
<th>Date Line</th>
<th>Number of Carriage Returns from the Top Edge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Triple + Single</td>
</tr>
<tr>
<td>Example</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
</tr>
</tbody>
</table>

[This frame makes a convenient stopping point.]
The second of the two basic letter arrangements uses a "fixed date line." In it, regardless of the length of the letter, the date is placed 14 lines from the top edge of the page. What varies with letter length is the distance between the date and the next part of the letter-- the

<table>
<thead>
<tr>
<th>Letter A</th>
<th>Letter B</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Letter A" /></td>
<td><img src="image2.png" alt="Letter B" /></td>
</tr>
</tbody>
</table>

In the two letters at the left, the distance from top-of-page to the date line (is/is not) the same.

But because the longer of the two letters at the left is (A/B), in it, the distance from date to inside address is (less/greater).

A "fixed date" is on the 14th line from the top edge of the paper. From there, the number of line spaces down to the inside address depends on the number of ________ in the ________ of the letter. If some letter uses 9 line spaces between date and inside address, a shorter letter will use ________ line spaces. As the length of a letter increases, the distance between date and inside address ________.

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 + 2</td>
<td></td>
</tr>
<tr>
<td>7 + 0</td>
<td></td>
</tr>
<tr>
<td>5 + 1</td>
<td></td>
</tr>
<tr>
<td>6 + 1</td>
<td></td>
</tr>
</tbody>
</table>
For a fixed date line, the rule for the number of times to space down after the date is identical in its basis to the rule for a moving date line.

RULE: For a letter of up to 60 words, use 12 line spaces between date and inside address. For each additional 20 words or fraction of 20 words, reduce the number of line spaces by 1.

If words (in body) = 60 or less, use 12 line spaces after the date. For 61 to 80 words, use 11 line spaces; for 81-100 words, use ___ line spaces; for 101-120 words, use ___ line spaces, and so on.

No matter how many words are in the body of a letter, a "fixed" date line is on line ___. For a letter of up to 60 words, space down ___ lines after the date. For each additional ___ words or fraction of ___ words, space down 1 line ___.

(more/less)

Assume a letter whose message contains 84 words. Use the same counting technique that was described for letters with a moving date line. That is, begin at 60 and count by 20's until you pass 84. Start with a closed fist and straighten a finger for each 20. For example: "60" ... "80" (1 finger) ... "100" (2 fingers). Subtract the number of fingers from the number of line spaces between date and inside address used for a 60-word letter; that is, from ___. For the 84-word letter, after typing the date on line ___, you would space down ___ - 2 = ___ times.
Count on your fingers as you read this frame.

Assume a letter of 144 words. Count: "60" . . . "80" (1 finger) . . . "100" (2 fingers) . . . "120" (3 fingers) . . . "140" (4 fingers) . . . "160" (5 fingers). After typing the date on line , for the 144-word letter space down 12 - 5 = 7 times to the inside address. For a letter of 117 words, you would straighten ___ fingers and space down ___ times after the date.

Start your count at ___ and point or straighten your first finger when you reach ___. For a 128-word letter, you would stop your count at ___. That is--using the 20-word group 121-140 as an example--you stop your count when you reach the ______ border of the group that includes the number of ______ in the ______ of the letter.

All you have to remember about fixed-date-line letters is:

1. Type the date on line ____.
2. Start to count at ___.
3. Count by ___'s, straightening a finger for each ___.
4. Subtract the number of fingers from the number of lines that would be used between date and inside address in a letter of up to 60 words; that is, subtract from _____.

The count of course applies to the number of ______ in the ______ of a letter.
Count on your fingers and fill in the blanks.

<table>
<thead>
<tr>
<th>Words in Body</th>
<th>No. of Line Spaces To Inside Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>12</td>
</tr>
<tr>
<td>117</td>
<td></td>
</tr>
<tr>
<td>139</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td></td>
</tr>
<tr>
<td>124</td>
<td></td>
</tr>
<tr>
<td>92</td>
<td></td>
</tr>
<tr>
<td>157</td>
<td></td>
</tr>
</tbody>
</table>

Both fixed date line and moving date line procedures are in common use. If you expect to get a job as a typist, it is a good idea to master both procedures, so that you can use the procedure preferred by your employer.

With a moving date line, the thing that changes with the length of the letter is ____________________________.

With a fixed date line, what changes is ____________________________.

The selection of letter margins (both vertical and horizontal) depends on the length of the letter. The procedures described here (and in the next section for side margins) are based on the average letter. They will not lead to perfect results for all letters.

Fortunately, you can lower a letter that turns out to be too high on the page by lowering the reference initials—the initials that identify (sometimes) the dictator or signers of the letter and (always) the person who ______ the letter.
Before you type the reference initials (and while your letter is still in the typewriter) check your top and bottom margins. If they seem equal, type the reference initials on the same line as the typed signature or title of the writer of the letter. If the letter seems high, _______ raise/lower the initials from 1 up to (but not more than) about 4 lines. The main thing is to check your vertical margins _______ you type the initials. (before/after)

Now a little TEST.

1. For a letter of up to ___ words, a moving date is on line ___, and you space down ___ times after the date.

2. In a letter of 128 words, a moving date would be on line ___, and you would reach it by ___ triple spaces + ___ single space(s).

3. A fixed date is always on line ___.

4. For a fixed-date letter of up to ___ words, space down ___ times after the date; for a 98-word letter, space down ___ times.

1. 60  

2. 18  

3. 14  

4. 60
When you complete this section you should know:

Where to set side margins for letters of various lengths--so that the resulting letter will be horizontally well placed on the page.

---

Section 11

Horizontal Margins for Business Letters

22 Frames

---

Vertical placement of a letter depends on letter length. Horizontal or side margins for a letter also depend on the number of ________ in the ________ of a letter.

---

Vertical placement of a letter changes by 1 line for every 20 words in the body. Side margins or horizontal placement of business letters changes with every 100 words. That is: short letters are those with up to 100 words; medium length letters have up to 100 more words; that is from 101 to ___ words; long letters are those with more than ___ words.
For the purposes of horizontal placement, letters are considered to have three lengths: Short, ________, and ________. Short letters are those with up to _____ words. The next length includes those that contain from ___ to ___ words. Finally, there are letters that contain more than ___ words.

In deciding on the horizontal placement or side margins for letters, consider what is called the writing line: the number of spaces between the left and right margins. If pica margins for some letter were set at 10 (left) and 75 (right), the writing line would be 75 - 10 = ___ spaces long. If elite margins for some letter were set at 25 (left) and 80 (right), that letter would have a 55-space ________.

Horizontally, you can think of a letter as consisting of:

\[
\text{LM (left margin)} + \text{writing line} + \text{RM (right margin)}.\]

Those three items should total 85 pica or 102 elite spaces across the page.

If you use a pica writing line of 45 spaces, then 85 - 45 = ___ spaces remain to be divided equally between the two side margins. LM would be set at ____. Since LM should equal RM, the writing line (the lines of typing in the body of the letter) should end as close as possible to 85 - ____, which equals ____.
The preceding frame illustrates that:
side margins + writing line = total spaces across the page.
Some typists think of horizontal placement of letters in terms of the length of the writing line. Others prefer to think in terms of the width of the margins. In either case, the longer the letter, the __________ the writing line and the __________ the side margins.

Everything discussed so far applies equally to pica and elite typewriters. At this point it will be more convenient to discuss margin setting for the two sizes of type separately. Therefore, if your typewriter uses pica type, continue with this and the following frames. If your typewriter uses elite type, skip this and the next 8 frames and go NOW to Frame 11-16.

In pica type there are 10 spaces to the horizontal inch and--across paper that is 8½ inches wide--a total of ____ spaces. Since 1 inch contains ____ pica spaces, for a 1-inch LM, set the LM at ____; for a 2" LM, set it at ____.

For a short letter (of up to ____ words), use a 2" LM. That is, set the LM at ____. For each additional 100 words (or fraction of 100 words), make the LM a HALF-inch ______. REMEMBER: As letter length increases from short to medium to long, progressively reduce the LM a _______ inch at a time. In pica type, a half-inch (half/full) contains ____ spaces.
For a short letter, set LM at 20. For a medium-length letter, make the LM narrower by _____ inch(es) or ____ spaces; set it at 20 - _____ = ____. For a long letter (200+ words in the body), reduce the LM by another ____ spaces; set it at ____.

In a short letter, if LM = 20, then RM should also equal _____. Each line in the body of the letter should end as close as possible to 85 - ____, which equals _____. In a medium-length letter, LM = ___, and the lines in the body of the letter should end as close as possible to 85 - ____, which equals _____. In a long letter, whose LM is at ___, the lines in the body should end as close as possible to _____.

In pica type, as letter length increases from short to medium to long, the end of the WLs (writing lines) move up 5 spaces at a time from 65 to ____ to ____. But if you set your RM at one of these points (and try to reach it on each line), you would often run into the RN and have the annoyance of frequent use of the margin release key. To avoid that, set your RM 3 spaces past the point at which you want your WL to end. For a short letter, set the RM at 65 + 3 = _____. For a letter of 101-200 words, set the RM at ____; for 200+ words, set RM at ____.
Read across each row of the table below.

<table>
<thead>
<tr>
<th>Letter</th>
<th>Inches</th>
<th>Pica Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>WL</td>
</tr>
<tr>
<td>Short</td>
<td>2</td>
<td>4½</td>
</tr>
<tr>
<td>Medium</td>
<td>1½</td>
<td>5½</td>
</tr>
<tr>
<td>Long</td>
<td>1</td>
<td>6½</td>
</tr>
</tbody>
</table>

Notice, above, that for every increase in letter length:
- the WL gets ___ by ___ inch or ___ spaces; (shorter/longer)
- while each side margin gets ___ by ___ inch (narrower/wider) or ___ spaces.

Study closely the summary of pica margin setting for business letters. Read it line by line.

<table>
<thead>
<tr>
<th>Letter</th>
<th>Length</th>
<th>Side Margins</th>
<th>Set LM</th>
<th>End WL</th>
<th>Set RM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short</td>
<td>-100</td>
<td>2</td>
<td>20</td>
<td>65</td>
<td>68</td>
</tr>
<tr>
<td>Medium</td>
<td>101-200</td>
<td>1½</td>
<td>15</td>
<td>70</td>
<td>73</td>
</tr>
<tr>
<td>Long</td>
<td>200+</td>
<td>1</td>
<td>10</td>
<td>75</td>
<td>78</td>
</tr>
</tbody>
</table>

Letter length increases in groups of ____ words. With increases in letter length, LM is reduced ____ spaces at a time.

Every time you type a letter, you could refer to a table like that in the preceding frame to determine where to set your side margins. But you really shouldn't have to do so. All you need do is MEMORIZE: "short--20--5." The "short--20" means: for short letters, set LM at ____. The "5" means: for medium length letters reduce the LM by ____ spaces and, for long ones, by another ____ spaces. Whatever LM is, to locate RM just subtract LM from total spaces across the page, which is ____, and add ____ spaces.
Now a little **TEST**

Reread the preceding frame and its model answers. Try to answer these test questions by using the "short--20--5" formula. Try not to have to refer to Frame 11-13.

<table>
<thead>
<tr>
<th>Words in Body</th>
<th>Set Margins at Left</th>
<th>Right</th>
<th>Were you able to answer the 3 questions without referring to Frame 11-13?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 148</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. 68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. 231</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[This frame ends this section for those who use pica typewriters. The remaining frames deal with elite type.]

There are 12 elite spaces to the horizontal inch. Across an 8 1/ 2-inch page there would be a total of ___ spaces. If the side margins for some business letter were to be set at 25 (left) and 80 (right), the LM would contain ___ spaces and the RM would contain ___ - 80 = ___ spaces. In this instance it seems that LM ___ equal (does/does not) RM.

Typists rarely type all the way out to the RM because it is annoying to have to use the margin release key. They generally stop a few spaces short of the RM---about 3 spaces short. In the illustration in the preceding frame (side margins at 25 and 80), many of the lines would probably end about 3 spaces short of 80, at ___. If so, the RM would contain 102 - ___ = ___ spaces, which ___ equal (is/is not) to LM.
The tendency of typists to end each line a few strokes short of the RM permits margin settings for elite type that are easy to remember. For short letters (of up to ___ words) set LM at 25 and RM at 80. For each increase of 100 words (or fraction of 100 words) make each side margin 5 spaces __________. For a letter of 101-200 words, (narrower/wider)
LM would be at 25 - ___ = ___ and RM would be at 80 + ___ = ___. For a letter of 200+ words reduce each side margin by another ___ spaces; set the LM at ___ and the RM at ___.

Study closely the summary of elite margin setting for business letters; read it line by line.

<table>
<thead>
<tr>
<th>Letter Length</th>
<th>Words</th>
<th>Elite Margins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short</td>
<td>-100</td>
<td>25 80</td>
</tr>
<tr>
<td>Medium</td>
<td>101-200</td>
<td>20 85</td>
</tr>
<tr>
<td>Long</td>
<td>200+</td>
<td>15 90</td>
</tr>
</tbody>
</table>

Letter length increases in units of ___ words. With increases in letter length, the width of each side margin is progressively __________ spaces at a (reduced/increased) (how many?) time.

In elite type, short letters use margins of ___ and ___.
A letter of 136 words would use margins of ___ and ____.
A letter of 243 words would use margins of ___ and ___.

77
(102 -) 77 = 25
is

100
narrower
(25 -) 5 = 20
(80 +) 5 = 85
5
15 (20 - 5)
90 (85 + 5)

100
reduced
5
It is not necessary to memorize three sets of margins. Just MEMORIZE "25--80--5." The "25" and "80" are the margins for short letters, ones of up to ___ words. The "5" means: for medium length letters (of ___ to ___ words) each side margin should be made (narrower/wider) by ___ spaces; and for letters of more than ___ words, by another ___ spaces.

<table>
<thead>
<tr>
<th>Left</th>
<th>Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>20</td>
</tr>
<tr>
<td>2.</td>
<td>25</td>
</tr>
<tr>
<td>3.</td>
<td>15</td>
</tr>
</tbody>
</table>
When you complete this section, you should be able to center, vertically, business letters with additional or special features, such as:
- Extra paragraphs
- An attention or subject line
- A table
- A series of numbered paragraphs
- An enclosure listing

<table>
<thead>
<tr>
<th>Moving Date Line*</th>
<th>Fixed Date Line**</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>For a letter of up to 60 words, type the date on line 22. For each added 20 words or fraction of 20 words, raise the date 1 line. After the date, space down 4 lines to the inside address.</strong></td>
<td><strong>Place date on line 14 regardless of letter length. For up to 60 words, space down 12 lines to inside address. For each added 20 words or fraction of 20 words, reduce the distance to inside address by 1 line. For a letter of 107 words, between date and inside address space down ___ lines.</strong></td>
</tr>
</tbody>
</table>

For a letter of 96 words, the date is on line ____.

---

*See Section 10, Frames 5 to 18.

**See Section 10, Frames 21 to 30.

Moving 20 (22 - 2)
Fixed 9 (12 - 3)

The placement of a letter on the page depends mainly on the number of ______ in the ________ of the letter. However, some letters have additional features or elements that must be taken into account in deciding on vertical placement; that is, on the distance from the top of the page to the _______ or on the distance between the ______ and the inside address.
For an ordinary letter of up to 60 words, a "moving" date
is on line ___ from the top edge of the page, and you
space down ___ times to the inside address. A fixed date
is on line ___, and you space down ___ times to the in-
side address. For each additional 20 words or fraction of
20 words, the date line (or the distance between date and
inside address) is __________ by __________ line(s).
(increased/reduced) (how many?)

The vertical placement rules given in Frame 12-1 for an
ordinary letter assume:

1. A 2-paragraph letter
2. A 3-line inside address
3. No firm name below the closing
4. Identifying or reference initials on the same line as
   the typed signature or title and nothing below that

If a letter has more than two paragraphs, or if the inside
address has more than ____ lines, or if there is a firm
name below the closing, or if there is anything below the
typed signature or ________ (Example: an enclosure list-
ing), adjustments must be made in the __________
placement of the letter. (horizontal/vertical)

Each paragraph in a letter must have a blank line before it.
When you base vertical placement on words in the body, are
blank lines between paragraphs taken into account? _____
An extra inside-address line might use only 3 or 4 words.
But does it take as much vertical space as a full line in
the body of a letter? ____ Consider this list of enclo-

Encs. 3
1--Check
2--Form
3--Envelope

sures. Are the lines used for the enclo-
sures taken into account in the rule for
vertical placement of an ordinary let-
ter? _____
### 12-6

At the left, if there were no firm name, John Tracy would be on line no. ____. A firm name adds ___ lines to the depth of a letter.

The enclosures, including the blank line just above them, add ___ lines to the depth of the letter.

EXTRA lines total ___.

### 12-7

<table>
<thead>
<tr>
<th>(1)</th>
<th>Enc.</th>
<th>Fred Cook</th>
</tr>
</thead>
<tbody>
<tr>
<td>mp</td>
<td></td>
<td>Manager</td>
</tr>
</tbody>
</table>

All four of the illustrations at the left are correct.

A blank line above Enc. is (permissible/required).

The example that has no extra lines is no. ____.

Example no. 2 has ____ extra lines.

Example no. 4 has ____ extra lines.

### 12-8

You can see from the four illustrations in the preceding frame that, if the dictator's name is typed, his identifying initials _____ necessary.

(are/are not)

If you want to lower a letter that seems too high, you can lower the reference initials by a few lines. Ordinarily, as shown by the illustrations in the preceding frame, the reference initials should be typed ___.

(a/b)

a. A double space below the typed signature or title

b. On the same line as the typed signature or title
Dear Sir:

The amount shown on . . .

Subject: Invoice #147

The amount shown . . .

You can see from the examples above that a Subject line adds ____ lines to the depth of the letter.

The Kenwood Company
Attention: Mr. Cook
1400 Broadway
New York, NY 10019

Gentlemen:

To speed the sorting of mail, the post office uses an Optical Character Reader (OCR) that requires envelope addresses to be single spaced—including an Attention line, if any. The letter could be typed in the same way; OR, to make it stand out, an Attention line could be typed as at the right, above, preceded and followed by ____ blank line(s). If so, an Attention line adds ____ EXTRA line(s) to the depth of a letter.

Assume a letter that has additional features (extra paragraphs or extra inside-address lines, an attention or subject line, a listing of enclosures). If you were to base vertical placement only on the number of words in the body of the letter, the letter would be too ____ on the page.
Assume that the dashed line at the left crosses the page at its vertical center.

If 2 lines are to be centered vertically, line 1 is typed ___ line(s) above the center.
If 4 lines are to be centered vertically, line 1 is typed ___ line(s) above the center. In other words, for every TWO added lines, you raise the starting line by ___ line(s). To put it another way, raise the starting line by half the number of added lines. To center vertically a letter with 8 added lines, raise the letter by ___ lines.

A moving date line for a letter of 96 words would ordinarily be on line _____. If that letter has a Subject line, it would be ____ line(s) longer. Therefore, the date would be ____________ by ___ line(s); type the date on line (raised/lowered) no. ____

Using a fixed date line in a letter of 128 words, you would ordinarily space down after the date (to the inside address) ___ times. If that letter had an Attention line, it would be ____ line(s) longer. Therefore, the distance from the date to the inside address should be ____________ by (increased/reduced) ___ lines. Between date and inside address, space down ___ times.
An odd line added to a letter is treated just like an odd, leftover space in horizontal centering: you ignore it. For 4 added lines in a letter, raise the letter by ____ line(s). For 5 added lines, also raise the letter by ____ line(s). A letter with a Subject line and a list of 5 enclosures (preceded by a blank line) would be raised by ____ line(s).

For a 2-paragraph letter with a 3-line inside address and nothing below the typed signature or title of the dictator, vertical placement is based entirely on __________________________ (what?). If the letter has additional elements or features not taken into account by the vertical placement rules for an ordinary letter, you must ___ the letter by ____ line(s) (lower/raise) for each ____ added line(s).

The vertical placement rules allow for the blank line between paragraphs in a 2-paragraph letter—but not for the blank lines that separate additional paragraphs. Above the 2-paragraph allowance, a 3-paragraph letter has ____ extra paragraph(s). A 5-paragraph letter has ____ extra paragraph(s) and, therefore, ____ EXTRA blank line(s). A 5-line inside address has ____ EXTRA inside-address line(s).
Before you type a letter, check for these extras:

1. Does the inside address have more than ____ lines?

2. Between the inside address and the salutation, is there a(n) __________ line?

3. Between the salutation and the body, is there a(n) __________ line?

4. Does the body have more than ____ paragraphs?

5. Does the letter contain, in SOLID CAPS a double space below the closing, a __________?

6. Is there anything to be typed below the dictator's __________ or __________?

Fill in the blanks:

1. 3
2. Attention
3. Subject
4. 2
5. FIRM NAME
6. signature (or) title (either order)

Extra Lines

4-line inside address ______
Subject line ______
4 paragraphs ______
A firm name ______
2 enclosures listed, with a blank line preceding ______

TOTAL ______

A letter with all five of the above features would be raised by ____ line(s).

To determine the location of a moving date line (or the spacing to the inside address after a fixed date line), FIRST consider the words in the body. NEXT, consider extra lines, if any. Assume a letter of 84 words that contains 4 extra lines. For 84 words, a moving date would be on line ____. Because of the 4 extra lines the date should be raised to line no. _____. For 84 words, a fixed date would be followed by ____ line(s). Because of the 4 extra lines, space down ____ line(s) to the inside address.
Date

Gentlemen:

Subject: xxxxxx

Enc. 3

rt John Lane

Encs. 3

The number of EXTRA lines in the letter at the left is ___.

For those extra lines the letter should be raised ____ line(s).

If the body of that letter has 117 words, a moving date would be on line no. ____.

With a fixed date on line ____ space down after the date ____ line(s).

Now a little TEST.

Assume: (a) a 5-line inside address, (b) a subject line, (c) 4 paragraphs, (d) 3 listed enclosures, and (e) 152 words in the body.

1. The letter described above has ____ EXTRA lines.

2. Without the extra lines, in typing the 152-word letter
   a. A moving date would be on line ____.
   b. A fixed date would be followed by ____ line spaces.

3. With the extra lines--
   a. A moving date would be on line ____.
   b. A fixed date would be followed by ____ line spaces.

[This frame makes a convenient stopping point.]

Some letters contain tables.

At the left, the table contains the equivalent of about 10 words of typing; but those 10 words use _____ lines.* (how many?)

Does the number of words in a table show how many vertical lines of space it will use? ____

*Not counting--yet--a blank line above and below the table.
A table in a letter uses more vertical space than is measured by the number of words in the table. If you base vertical placement of a letter with a table only on the words in the body (including the table), the letter will be too ________ on the page. For correct vertical placement of a letter containing a table, you must consider the number of ________ in the table. You must consider the table ________ the words in the body. (as part of/separate from)

Suppose that the body of a letter (including a 20-word table) contains 130 words and that the table uses 4 lines. FIRST, decide vertical placement as if the letter had no table; base it on 130 - 20 = ___ words. For it, a moving date would be on line ___; a fixed date would be followed by ___ line spaces. NEXT, consider the table as EXTRA lines. For 4 extra lines, you would raise a moving date or reduce the line spaces after a fixed date by ___ lines. The result so far (not counting extra paragraphs yet) is: moving date on line ___; fixed date followed by ___ line spaces.

In some typing textbooks, a cumulative word count (from date through initials) is at the right of lines in unarranged business letters. Words in the body are in parentheses at the end of the letter. At the left, the word-count column shows 17 words in line 1, 33 words in lines 1 + 2, and so on. The table runs from word 56 to word ___.

Including the table, the body contains ___ words. Without the table, the body contains ___ words.
The body of the letter in the preceding frame, minus its table, contains 110 words. For it, a moving date would ordinarily be on line ____; a fixed date would be followed by ____ line spaces to the inside address. But because of the 4-line table the letter must be raised by ____ lines. The result for this letter so far* is a moving date on line ____; a fixed date would be followed by ____ lines down to the inside address.

*Not yet counting extra paragraphs

---

Some typing textbooks do not show a line-by-line word count, but only words in the body (in parentheses at the end of the letter). In such books, just count the number of dictionary words in the table and subtract that number from total words in the body. The table at the left has ____ words. The body of the letter contains ____ words. Minus the table, the body contains ____ words.

---

The body of the letter in the preceding frame, minus its table, contains 90 words. For it, a moving date would ordinarily be on line ____; a fixed date would be followed by ____ line spaces to the inside address. However, for the 3-line table, the letter must be raised by ____ line(s). The result for this letter so far* is a moving date on line ____; a fixed date would be followed by ____ lines down to the inside address.

*Not yet counting extra paragraphs
A table in a letter counts as a paragraph because it is preceded and followed by a blank line. The letter of Frame 12-23 (refer to it) should therefore be considered to contain ___ paragraphs.

In unarranged business letters in typing textbooks, new paragraphs (after the first one, which is UNMARKED) are shown as: (Par.) OR the par. sign is used (%).

The letter sketched at the left contains ___ pars., or ___ EXTRA pars. The table contains ___ lines. The letter has a total of ___ EXTRA lines.

The table contains 15 words (to be subtracted from words in the body). Considering extra lines in the letter at the left, a moving date would be on line __. A fixed date (on line ___) would be followed by ___ line spaces.

In business letters, table rows are sometimes single spaced sometimes double spaced. Sometimes there is a table title, sometimes not. Sometimes there are column headings, sometimes not. In any case, be careful to count the actual number of vertical lines needed for the table, including blank lines, if any, within the table. A single-spaced table with 4 rows and 1-line column headings (but no title) contains a total of ___ lines. If the rows were double-spaced, the table would contain a total of ___ lines.
In some letter styles, paragraphs are blocked. In other styles, paragraphs are indented (usually 5 spaces). You can tell from the illustration in Frame 12-23 (refer to it) that when a letter contains a table, the letter will look more attractive if the paragraphs are ___________.

(blocked/indented)

Now a little TEST.

1. The letter at the left contains ___ EXTRA paragraphs.

2. The table contains about ___ words and uses ___ lines.

3. A moving date for the letter would be on line no. ___.

4. A fixed date would be on line no. ___ and would be followed by ___ line spaces.

[Test continued in the next frame]

TEST continued.

1. 3

2. 9

3. 17 [Line 20 for 98 words (107 - 9), minus ½ of 6 lines (3 extra pars. and 3-line table)]

4. 14

5. The table contains ___ words.

6. The body of the letter (without the table) contains ___ words.

7. The letter has ___ extra lines.

8. A moving date is on line ___.

9. After a fixed date, space down ___ lines.

Assume double spacing for the table.

[This frame makes a convenient stopping point.]
Some letters include numbered pars.
In one style, such paragraphs are indented from both letter margins, as in the example.

In another style, only the first line of each numbered par. is indented at the left only; otherwise, the lines use the letter margins, as in the sketch.

In such letters, the unnumbered pars. (as in both sketches) should be ________.

Whether or not you indent numbered paragraphs from both letter margins, the unnumbered paragraphs should be ________.

If you do indent numbered paragraphs from both letter margins, you have to keep an eye on the typing to make sure that you stop each line about 5 spaces short of the margin. At the left, you could either set a tab stop for the beginning of each line or you could temporarily reset the ________.
In deciding on the vertical placement of a letter with numbered paragraphs, usually all you have to consider (besides words in the body) is the total number of paragraphs.

But if there are many numbered pars. or long ones (indented from both sides), raise the letter by 1 line for each TEN lines (or 50 words) in the numbered pars. Otherwise, the letter might be too __________. (high/low)

For the letter at the left, a moving date would be on line ___. A fixed date would be followed by ___ line spaces.

### Now a little TEST

1. At the left, example ___ is preferred; example ____ is wrong. (a/b/c)

2. For the letter below, a moving date is on line ___; after a fixed date (on line ___), space down ___ line(s).

---

17 [Line 19 (for 112-word body) minus 2, which is 1/2 of 3 extra pars. + 1 line for 11 lines of numbered pars.]

7 [Down 9 (for 112-word body) minus 2, which is 1/2 of 3 extra pars. + 1 line for 11 lines of numbered pars.]

19 (Line 20 for 83 words minus 1 for 2 extra pars.)

14

9 (Down 10 for 83 words minus 1 for 2 extra pars.)
When you complete this section, you should be able to:

- Estimate the number of words in a piece of copy
- Select appropriate side margins
- Determine how many typed lines will be needed
- Center the work vertically on the page

Section 13
Estimation of Copy Length
and Centering of Estimated Materials

45 Frames

Most of the materials in typewriting textbooks are accompanied by a word count. The word count makes it easy to score the work for speed and it helps the student to make decisions about arranging work on the page when arrangement depends on the number of words or lines in the copy. But in real life do you suppose an employer would instruct his typist to "leave 8 spaces between columns" in some table or "To type this 137-word letter for me"? If an employed typist is given a letter to type, do you suppose she counts all of its words, one by one?

Another important difference between typewriting textbooks and the materials from which an employed typist works is that, in the job, nearly half of the materials are in longhand. Sometimes, that longhand might be quite clear; sometimes it might be difficult to read, with corrections and crossings out. In typewriting textbooks, nearly everything is perfectly printed. About how much of on-the-job typing is from longhand?
The employed typist does not count words one by one. It takes too much time and is not necessary. Instead, he makes an estimate or guess. How? By counting the number of dictionary words on each of 3 or 4 lines selected AT RANDOM,* taking an average of those counts, and multiplying that average by the number of lines. Consider this example:

Line 1 of this frame contains 11 words. Line 4 has 12 words; line 5 has ____ words. The total for those 3 lines is ___. Dividing that total by 3 results in an average (to the nearest whole word) of ____ words per line. This frame (without the footnote) has 12 lines. Total words in those 12 lines can be estimated as 12 x ____ = ____ words.

*At random means: not according to any fixed plan or pattern—not in some regular way or order.

---

The first 12 lines of the preceding frame were estimated to contain 132 words. Actually (counting each blank to be filled in as 1 word*), the 12 lines contain 131 words. The difference is only ____ word(s). If a business letter of 131 words were estimated to contain 132 words, would that make any difference in the horizontal or vertical margins you would use? ____ As compared to counting words one by one, estimating is accurate enough, and it is (more exact/faster)*

*In these frames, count each blank to be filled in as one word—except when more than one word is required in the blank.

---

Remember that at random means: not in any regular way. So don't count the first 3 or 4 lines or the last 3 or 4 lines. Instead, skip around. In a 15-line set, you might count lines 1, 4, 11, and 13. Or you might count lines 2, 8, and 14. Jot down your count for each line, like this: From the column of numbers at the right, you should be able to tell at a glance (without doing any arithmetic) that the average number of words per line is ____.
If you cannot see at a glance what the average of a set of numbers is, add them up and divide the sum by the number of numbers. Example: the average of 8, 11, 12, 10 is:

\[
\frac{8 + 11 + 12 + 10}{4} = \frac{41}{4}
\]

The three typed lines just above this one contain words. Dividing that total by 3 results (to the nearest whole word) in ___.

If you count any three or four lines of the longhand in Frame 13-2, you will see that the average number of words per line is ___. Suppose you had to estimate total words in that frame (counting the first typed line as if it had been in longhand). Since total words = number of lines times average number of words per line, the result is: ___ x ___ = ___ words.

If a line ends with a divided word, count it as a whole word if most of the word is on that line. Otherwise, do not count it. In line 4 of Frame 13-1 (refer to it), would you count the last divided word as a full word? ____ How about the last divided word in line 9 of that frame? Would you count it as a full word? ____

If the larger part of a divided word begins a line, count it as a full word. In Frame 13-1 (refer to it), line 2 should be counted as containing ___ words. In Frame 13-30 (refer to it), line 4 contains ___ words.

Note. The frame actually contains 67 words.
When you count lines, do not count a fraction of a line as a full line. For example, Frame 13-7 (refer to it) contains ___ lines. The last line contains (count one by one) ___ words. With an average of 11 words per full line in that frame, total words should be estimated as 6 x 11 plus the words on the last line. The total is ___ words.

In Frame 13-8 (refer to it), line 6 (which ends the first paragraph) is not a full one. Line 10 (which ends the second paragraph) is also not full. On lines that are not full (or almost full), count the words one by one and add them to your count for full lines.

The 8 full lines in Frame 13-8 average 12 words per line. Total words in that frame, including the words on the two partial lines, should be estimated as ____.

Some lines might contain many short words; other lines might contain longer words. That is why it is necessary to count several lines (three or four) in order to estimate average words per line. For example, in Frame 13-1 (refer to it), line 3 contains ___ words. But line 4 contains ___ words. You should therefore count an additional two lines in that frame to determine that the average line has ___ words and to estimate total words in that frame as _____.

(how many?)
Whether you are working from longhand or from perfect
print or from previously typed material, to estimate total
words in the copy, FIRST count the number of dictionary
words on each of at least _____ lines. SECOND, if
(how many?)
the count on those lines varies quite a bit, count another
____ lines. THIRD, determine the _______ number of
words per line. FOURTH, _______ that number by
(+/−/+;−)
(what?)

When you type mainly from the same sort of materials, you
quickly learn how many words per line typically appear in
those materials.

For example, from you work on the earlier frames in this
section, perhaps you already know that in many (but not all)
of these frames, the average typed line contains ____
words.*

In the same way, you might get to know that your employer
typically writes, say, 8 words of longhand on each line.
If he writes on a ruled pad containing 25 lines on a page,
then each of his pages contains about ____ words. A half-
page of his writing would contain about ____ words.

*If you do not know, just count a few lines in this frame.
Estimation of length of copy is a necessity for the personal typist, as well as for the employed one. You might draft in longhand an important personal letter or a term paper or report for a high school or college course--before typing it. Suppose you were instructed to write a report of at least 1,500 words. If you draft in longhand, writing 10 words per line on a 30-line ruled page, you would know that each full longhand page contains ____ words. So, for at least 1,500 words, you would have to write at least ____ pages.

When you know how many words per line typically appear in your (or your employer's) longhand, you should ____.

a. Continue to count 3 or 4 lines and take an average for each piece of work.

b. Just multiply the number of lines (or pages) by the number of words that you have found from past experience to be typical per line (or per page).

The longhand in Frame 13-2 averages 7 words per line. The typed lines in these frames often average about 11 words per line. As compared to typing, longhand uses ____ space.

If 20 lines of longhand are typed, the number of typed lines will be ____ than the number of longhand lines.
For business letters, you would apply the usual placement rules (about side margins and date line) to your estimate of the number of words in the body of the letter.*

If you estimate the body of some letter to contain 120 words in your size of type you would set side margins at ___ and ___. A letter of up to 100 words would use side margins at ___ and ___. For more than 200 words, set side margins at ___ and ___.

*If you use PICA type, for the remainder of this section of the program assume RM set at the end of the writing line, not 3 spaces past it. Example: for short PICA letters, margins should be stated as 20-65, not 20-68.

Now a little test.

1. Frame 13-15 (refer to it) contains ___ full lines and averages ___ words per full line. Including the final partial line, the frame should be estimated to contain a total of ___ words.

2. Frame 13-12 (refer to it) contains ___ full lines and averages ___ words per full line. All together, the frame should be estimated to contain ___ words.

3. If Frame 13-12 were to be centered on a page (using letter margins), the side margins in your size of type should be set at ___ and ___.

All work should be attractively arranged (centered) on the page. For some kinds of work (but not in business letters), after you have estimated total words, you must:

1. Select appropriate side margins. The more words to be typed, the ___ the side margins and the ___ the WL (writing line).

2. Then determine the number of words that can be typed per line, using those side margins. The longer the WL, the ___ words can be typed per line.
1. narrower
   longer
2. more

When you have selected side margins and know how many words of typing will fit, on the average, on each typed line, you next--

3. Determine how many lines of typing will be required.
   For example, if your side margins permit 10 words per line and you have 150 words to be typed, you know that the work will require ____ lines of typing.

4. Then, to determine vertical margins, subtract the lines used from the total available on the page and divide the difference by _____. For example, to center vertically 15 single-spaced lines of typing on a half sheet, in the top margin there would be ____ blank lines, and you would start to type on line ____.

3. 15 (150 ÷ 10)
4. 2
   9 [½ of (33 - 15)]
   10

Here, in order, are the questions to be answered in order to center material on the page:

   1. How many words are to be typed?
   2. What side margins should be used?
   3. With those margins, how many words fit on a line?
   4. How many lines of typing will be required?
   5. How many lines are left for vertical margins?

Let's start with Step 2. Suppose you had to type an announcement containing only ordinary paragraph material for posting on a school or office bulletin board. Use the side margins that apply to business letters. If you estimate 150 words in the announcement, in your size of type you would set LM at ____ and RM at ____.

(elite) 20 - 85
(pica) 15 - 70

The next question is: How many words fit per line? The answer is based on the fact that the average word in the English language requires 5½ to 6 typewriter strokes. To take that into account in determining typed words per line, divide the number of spaces in the WL by 5; then subtract 1.

With a WL of 60 spaces, 60 ÷ 5 = 12, and 12 - 1 = 11. With a 60-space writing line, you will be able to type, on the average, ____ words per line.

With elite side margins at 20-85, the WL is ____ spaces long, and you can type an average of ____ words per line.

With pica side margins at 15-70, the WL is ____ spaces long, and you can type an average of ____ words per line.
For the 150-word announcement referred to in Frame 13-22, in your size of type you would set side margins at ___ and ___, resulting in a WL of ___ spaces. With that WL you will average ___ words per line. The 150 words of typing will therefore require ___ typed lines.*

* A fraction of a line takes the same vertical space as a full line. So count any final fraction of a line as a full line.

Once you know how many lines of typing will be used, vertical centering is done in the usual way. To find the distance from the top for the first line of typing, just subtract lines used from the total available on the page, divide the difference by 2, and add 1. To center vertically 13 single-spaced lines on a half sheet, start on line ___. To center 10 double-spaced lines on a full sheet (requiring twice the number of typed lines, minus 1), start on line ____.

Remember that the side margins used for business letters of various lengths are also used when any ordinary paragraph material has to be centered on the page. MEMORIZE the fact that for up to 100 words of material you should set side margins (in your size of type) at ___ and ___, giving you ___ words per line. For 101-200 words, set side margins at ___ and ___, resulting in ___ words per line. For more than 200 words, set side margins at ___ and ___, in which you can fit ___ words per line.

<table>
<thead>
<tr>
<th>Elite</th>
<th>20 - 85</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>65</td>
</tr>
<tr>
<td>12</td>
<td>[(65 ÷ 5) - 1]</td>
</tr>
<tr>
<td>13</td>
<td>(150 ÷ 12)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pica</th>
<th>15 - 70</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>55</td>
</tr>
<tr>
<td>10</td>
<td>[(55 ÷ 5) - 1]</td>
</tr>
<tr>
<td>15</td>
<td>(150 ÷ 10)</td>
</tr>
</tbody>
</table>

| ___     | ___     |
| 11      | 11 [½ of (33 - 13), + 1] |
|         | 24 [½ of (66 - 19), + 1] |
Suppose you decide to use side margins that will make some piece of work take 20 lines. You must make certain to type full lines, to type all the way out to your right margin on each line (except for a partial final line). Otherwise, your work will be unattractive because your right margin is ragged and uneven. Also—because you did not type full lines—the work will actually take \( \) than 20 lines and will be too \( \) on the page.

Remember that dividing total words by average number of words per line results in number of typed lines. You must also take into account any blank lines that might be required (for example, between single-spaced paragraphs or after a heading that precedes the paragraphs). In fact, if there is a heading, count it as a separate line, apart from the lines required for typing the paragraphs.

Assume 15 single-spaced lines in 3 paragraphs, plus a 1-line heading to be followed by 1 blank line. Total lines = \( \) . If centered vertically on a \( \) sheet, start to type on line \( \) .

At the left is a sketch of an announcement for posting on an office bulletin board. It has \( \) paragraphs.

If these paragraphs contain an estimated 95 words, set side margins at \( \) and \( \) .

You will get \( \) words per line and use, for the paragraphs alone, \( \) TYPED lines.

Using single spacing (but double spacing after the heading and between paragraphs), the announcement will use a total of \( \) lines. If centered on a half-sheet it should start on line \( \) .
If the announcement of the preceding frame had 120 words, you would set side margins at ___ and ___, resulting in ___ words per typed line. The paragraphs in the announcement would require ___ typed lines. Using double spacing (but a triple space after the heading), on a full sheet you would type the heading on line ___.

By now you may have recognized that for short, medium, and long materials (to 100, 101-200, 200+ words), with elite margins you average 10, 12, and ___ words per typed line. With pica margins you average 8, 10, and ___ words per typed line. You can save a little time if you ___.

1. Memorize those figures.
2. Figure them out each time.

Often, the last line in a paragraph is not a full one. If you do not take that into account, your estimate of typed lines might be too low, and your work could turn out to be too __ on the page. You can be more exact if you ___.

1. Estimate words paragraph by paragraph.
2. Select side margins based on the total for all pars.
3. Figure out number of typed lines par. by par.; then total for all pars.

The preceding steps take into account that--using side margins that allow 10 typed words per line--a paragraph that contains an estimated 24 words will use (in single spacing) ___ lines of depth on the page.
If the paragraphs in the preceding frame had not been estimated one by one, your estimate of total typed lines would have been 1 line less. This is too small a difference to care about. But if there were many paragraphs, quite a large difference can result.

With a 14-word WL, 224 words would require 16 lines. But if the 6 pars. contained 23, 36, 44, 58, 33, and 30 words (total = 224), the number of typed lines needed for each par., in turn, would be: ___ ___ ___ ___ ___ and ___, for a total of ___ typed lines. Assuming double spacing and centering on a full sheet, for 16 typed lines you would start on line ___. But when you estimate par. by par., the starting line is line no. ___.

If the materials use only 2 or 3 paragraphs, don't bother to estimate typed lines paragraph by paragraph. But if there are 4 or more paragraphs, it pays to estimate one by one.

In Frame 13-31 (refer to it), there are ___ numbered paragraphs and ___ other paragraphs, for a total of ___ paragraphs. In that frame, estimating typed lines paragraph by paragraph would/would not be desirable.

Here are the steps in estimating copy length. Read them several times until you have them firmly in mind.

1. Count the number of dictionary words on each of ___ full lines.
2. Get the average words per line, multiply by the number of full lines, and add the words on incomplete lines. The result is an estimate of _____________.
3. Select side margins based on total words. Use the same margins that are used for ________________.
4. Determine typed words per line. Example: With a WL of 55 spaces, you get ___ typed words per line.
5. To determine total typed lines, divide the result of Step ___ by the result of Step ___.

12-34
The 5 steps listed in the preceding frame apply to materials that have only a few paragraphs. If there are more than a few paragraphs (4 or more), you should estimate words \( \frac{(55 \div 5) - 1}{(a/b)} \). Then estimate typed lines \( (a/b) \):

a. For the paragraphs together
b. Paragraph by paragraph

Now a little TEST.

1. In Frame 13-31 (refer to it) the full lines average 11 words per line, and the frame contains ____ paragraphs.

2. On the basis of 11 words per full line, the first par. should be estimated to contain ____ words. The numbered pars. contain, in turn, ____ , ____ , and ____ words. The last par. contains an estimated ____ words. The frame totals an estimated ____ words. Therefore, in your size of type set side margins at ____ and ____.

3. With those side margins you can type ____ words per line.

(Test continued in the next frame.)

Test continued.

(Check the model answers to Frame 13-37 before continuing.)

4. The number of typed lines required for each of the five pars. is, in turn, ____ , ____ , ____ , ____ and ____ for a total of ____ typed lines.

5. Assuming a 1-line heading (followed by a blank line) and double spacing between single-spaced pars., the frame uses a total of ____ lines.

6. If centered on a full sheet, type the heading on line ____ .

(Test continued in the next frame.)
Apply to Frame 13-32 (ignoring the sketch at the left) the steps you just used for Frame 13-31.

7. The frame averages ___ words per full line and contains ___ full lines. Including partial lines, the frame totals ___ words. Side margins set at ___ and ___ result in ___ words per full typed line.

8. Typed lines for the pars., in turn, are ___ ___ ___ ___ ___ ___ for a total of ___ typed lines.

9. Centered on a 1/2-sheet (and using the vertical spacing shown in the frame), start to type on line ___.

[This frame makes a convenient stopping point.]

Business-letter margins have been recommended for use in this section of the program because persons who type many business letters quickly learn those margins. But for ordinary paragraph materials (not business letters) that have to be attractively centered on the page, you might prefer margins that give you writing lines of 50 or 60 or 70 spaces (instead of 45, 55, 65, or 75). In fact, 60 is always usable instead of 55 and 65 (but not instead of 45 or 75)—in both pica and elite type.

For a 60-space WL set the side margins 30 spaces on each side of center: for elite type set them at 51 - 30 and at 51 + 30; that is, at ___ and ___. Remember, however, that a 60-space WL gives you ___ typed words per line.

Here is an alternative to using business-letter margins when paragraph materials are to be attractively centered on the page. In both pica AND elite type—

use a 50-space WL for up to 100 words. In your size of type, set margins at ___ and ___, resulting in ___ typed words per line.

For 101 to 200 words, use a 60-space WL. Set side margins in your size of type at ___ and ___, resulting in ___ typed words per line.*

*Materials of more than 200 words are discussed in the next frame.
Because side margins should not be less than 1 inch on each side, you should not use more than a 65-space line in pica type. Therefore, in pica type use a WL of not more than 60 or 65 spaces for materials of more than ___ words.

In elite type, on the other hand, for more than 200 words use a 70-space WL. Set elite side margins at ____ and ____, resulting in ____ typed words per line.

To center ordinary paragraph materials, you can choose between using business-letter margins or a round-number WL (50, 60, 70 spaces). In your size of type--

1. For up to 100 words, use EITHER letter margins of ____ and ____ OR (with WL = ____ ) margins of ____ and ____.
2. For 101-200 words, use EITHER letter margins of ____ and ____ OR (with WL = ____ ) margins of ____ and ____.
3. For more than 200 words, use EITHER letter margins of ____ and ____ OR (with WL = ____ ) margins of ____ and ____.
4. A WL of more than 65 is not permitted in type. (elite/pica)

If you use a round-number WL for materials of 124 words, you would set side margins (in your size of type) at ____ and ____. With those margins, each full typed line would average ____ words. The 124 words would require ____ typed lines. Centered in double spacing on a full sheet, you would start to type on line ____.
Now a little TEST.

1. The 3 numbered pars. of Frame 13-38 (refer to it) average 11 words per full line and contain an estimated total, including partial lines, of ____ words.
2. For those 3 pars. use a round-number WL of ____ spaces and set side margins at ____ and ____. On each full typed line you would average ____ words.
3. The 3 pars. would require, in turn, ____, ____, and ____ typed lines. Double spaced on a ½-sheet, you would use a total of ____ lines and start to type on line ____.

1. \[70 \ (5 \times 11) + 7 + 7 + 1\]
   Note. Actual total is 68.
2. \[50\]
   (Elite) 26 - 76
   (Pica) 17 - 67
   \[9 \ (50 + 5) - 1\]
3. 4, 4, and 2 (total = 10)
   \[19 \ (2 \times 10) - 1\]
   \[8 \ (\frac{1}{2} \times (33 - 19)) + 1\]
When you complete this section, you should know:

What horizontal and vertical margins to set for bound and unbound reports
Where to number pages
How to type headings in a report
How to type footnotes in a report

A manuscript (abbreviated ms., plural is mss.) or a report is always typed in double spacing, using margins of 1 inch all around* (left, right, top, bottom). For a 1" margin in your size of type, the left margin would be set at ___ and the RM at ___. Since, in both pica and elite type, 6 single-spaced lines make 1 inch, to have a top margin of exactly 1 inch the first line of typing on each page would be on line ___.

*Unless the ms. is bound—at the left side or at the top.

Nearly always, mss. or reports are typed on 8½" x 11" paper. With 6 vertical lines to an inch, standard-size paper is ___ lines long. To have a bottom margin of exactly 1 inch, the last line of typing should be on line no. ___.
In double-spaced typing, if you start each page on line 7 you will type on odd-numbered lines (7, 9, 11, and so on). If so, will you type on line 60? Therefore, make the top margin a little more than 1 inch. Start each page 1 line lower, on line _. Then, in double-spaced typing on even-numbered lines (8, 10, 12, and so on) you can end on line 60, and the margin will be exactly 1 inch at the (top/bottom).

In a printed book every page (except the first and last one in each chapter) starts the same distance from the top of the page and ends the same distance from the bottom of the page. A typed ms. or report should aim at the same even-ness. Start each page on line _ and end each page on line _. If you do that, the number of double-spaced lines on each page will equal _. *

*Arithmetic Hint. From line 8 through line 60 inclusive is 53 lines. You type on every other line, including the first and last lines.

Type page numbers in any of the 3 positions shown at the left. Of the 3, the most convenient is: top right, as shown at (A/B/C).

Top numbering is a double space above the first line of typing; bottom numbering is a double space below the last line of typing.

For typing that starts on line 8, top numbering would be on line _. Bottom numbering would be on line _.
Page numbers may be typed either with or without surrounding hyphens: either 5 or -5-. If a page number is not centered at the bottom, then it is blocked at the right, lined up with the right margin. Just move the carriage to the right margin and back up the necessary number of spaces. To type page number -14-, just back up from the right margin ___ spaces. Or you could set a tab stop. With an elite RM at 90, for page -14- and all other 2-digit page numbers, set a tab stop at ___.

It is better to put the page number at the right (top or bottom) than at the center (bottom). In that way, a person can find a particular page just by flipping the edges of the pages. If you use bottom numbering (either center or right), there is a risk of the paper sliding out of the typewriter or becoming crooked as you space as far down on the page as line 62 for the page number—especially when carbon copies are made. Therefore, the best of the three possible positions for the page number is ___ (bottom center/ bottom right/top right).

Many typewriters have an attachment which, when set in a certain way before you insert paper, tells you how far from the bottom of the page you are. There are also numbered backing sheets or special line-counting rulers that can be purchased. Otherwise, to avoid typing too far down on the page, you have to check as you approach the bottom.

One way to check is to count the number of double spaced lines you have typed. Stop when you have typed ___ (how many?). Another way is to make a light pencil mark about 1 1/4" from the bottom of each page (at the right edge).* When you see that mark, you know you are approaching line no. ____.

*Of course you erase the mark after the page is typed.
The title of a report (and sometimes the name of its author) are often typed at the top of the first page. A page number at the top of that page would reduce the attractive appearance of the title line. For that reason, the first page of a report is either left unnumbered or its number is typed at the bottom of the page.

The title page may use a top margin of 1½ inches on that page.* On all later pages, use a 1-inch top margin.

When the title of a report is typed at the top of the first page, there is another special feature that applies to that page; that is, use a top margin of 1½ inches on that page.* Type the title of the report starting on line ___.

*On all later pages, use a 1-inch top margin.

14-10

HOW TO TYPE REPORTS AND MANUSCRIPTS

Frank R. Walker

10

11

12

13

14

15

16 This is the first line of typing in the report

As shown by the line count above, the top margin (above the report title) is ____ inch(es). Between title and author you ________________ space. To reach the first ms. (single/double/triple) line, use (what spacing?) ________________.

If page 1 has a title, can you fit 27 lines of ms. on that page? ___
If a report has a separate cover page or title page,* there is no need to repeat title and author on page 1 and no need to leave a deeper top margin on the first page. If there is a separate title page, start page 1 on line ____. If there is no title repeated on page 1, should its page number be typed at top right? ____

*See any typewriting textbook or style manual for the content and design of a title or cover page for a report.

It is quite common to enclose longer reports in a binder* or folder—just as the pages of a book are bound within hard covers. If so, in order not to hide the left edges of the typing, side-bound mss. use a left margin of 1½ or 2 inches (the other margins remain 1 inch). For a 1½-inch LM on your typewriter, set the LM at ____; for a 2-inch LM, set it at ____.

*A report—especially a short one—does not have to be placed in a binder. But a binder keeps the report clean and makes a good impression.

Most reports—if they are bound at all—are bound at the left side, requiring a left margin of ____ or ____ inch(es). Legal documents and some types of business reports are bound at the top, requiring a top margin of 1½ or 2 inches (the other margins remain 1 inch). For a 1½-inch top margin, start to type on line ____. For a 2-inch top margin, you would start each page on line ____. However, if you prefer to type on even-numbered lines, start 1 line higher on the page, on line ____.
To avoid typing too far down on the page, as you approach the bottom you should check the number of typed lines.* In an unbound ms. (typing in double spacing from line 8 to line 60), you can fit ___ lines on a page. In a top-bound report using a top margin of 1½ inches, each page starts on line ___ so that a page contains ___ typed ms. lines. In a report with a top margin of 1 line less than 2 inches, you start on line ___ and can fit on each page ___ typed lines.

*Or watch for your light pencil mark made about ___ inches from the bottom of the page, at the right edge.

A bound report uses a wider side (or top) margin on all pages (the other three margins remain 1 inch). Only very long reports (about 100 pages or more) require a 2-inch margin on the bound side or edge. In a side-bound report of less than 100 pages, set LM at ___. In a top-bound report of less than 100 pages, start each page on line ___. If a report or term paper for a high school or college course is to be bound, it should be bound, using ___ inch(es).

If a high school or college student works hard at a report, he hopes that his instructor has read it carefully—as revealed by comments written in the margins by the instructor. To permit room for comments (even if you do not put your report in a binder), be generous with marginal space. Use a 1½-inch LM—and even a 1¼-inch RM, too. But keep the top and bottom margins at 1 inch. For margins of 1½ inches on each side, set the margin stops in your size of type at ___ and ___.
It was pointed out in Section 9g (Frame 83) that the horizontal center of a side-bound ms. page is not the center of the page, but the center of the writing line. For example, with (elite) margins in a side-bound ms. at 18 and 90, the WL (writing line) is \(90 - 18 = 72\) spaces long. Its midpoint is at \(18 + \frac{1}{2} \) of \((90 - 18)\), which equals \(45\). With pica side margins of 15 and 75, the midpoint of the WL is at \(38\). To center horizontally the title of a report or of a section of it, you would start to backspace from the center of the page/WL.

Now a little TEST.

1. The abbreviation for manuscript is _____.
2. In an UNbound report, set side margins in your size of type at ____ and _____. The first line on each page is typed on line ____ and you can type on a full page ____ double-spaced lines.
3. In a short side-bound report, make the ____ margin wider. Set it at ____ on the scale. (which?)
4. In a long top-bound report, start each page on line ____.
5. Of the three positions for page numbers, the preferred position is _____________.

[Test continued in the next frame]

6. In an unbound report, a page number at the top is on line _____. After it, you _________ space down to the first ms. line. A page number at the bottom is a _________ space below the last line of typing.
7. With a 1\(\frac{1}{4}\)-inch left margin, horizontal centering in a report is done by backspacing from _________ on the carriage scale. (what point?)
8. If the report title is on the first page, that page may be numbered (where?) _____________________.

[This frame makes a convenient stopping point.]
Especially in a long report, it is very helpful to the reader if the various sections of the report have headings. These headings should show the organization of the report—in the same way that an outline does.

The headings for major sections are centered horizontally (using initial caps for important words) and should not be underscored. Triple space before each new centered heading and double space after it. Consider these examples:

1. ORGANIZATION OF A REPORT
2. Organization of a Report
3. Organization of a Report

Of the three, the correct centered heading is (3/1/2/3).

The next level of heading (for a subsection within a major section) is a Side Heading. It is typed at the left margin (using initial caps for important words and solid underscoring), preceded by a triple space and followed by a double space, like this:

This is the last line of ms. before a side heading.

--- Triple space

Side Heading

--- Double space

Here is the first line of ms. after a side head.

Is the space between words in a side head underscored? No. Does the ms. after a side head begin a new par.? Yes.

The third and final level of heading it is possible to display in a typed ms. is a Paragraph Heading—for subdivisions of a section headed by a .de head. Example:

Last line of a paragraph preceding a paragraph heading.

Paragraph Head. A paragraph head is indented like a paragraph, followed by a period (plus two spaces), with ms. continuing on the same line.

A new centered or side head is preceded by triple spacing. But a paragraph heading is preceded by an ordinary space. A paragraph head underscored. (Is/is not)
Of the three kinds of heads (C = Centered, S = Side, P = Par.), which one or more of them—

1. Is underscored? ______
2. Is preceded by a triple space? ______
3. Is followed by a double space? ______
4. Is followed by a period, with ms. continuing on the same line? ______

The first three levels in an outline use Roman numbers, capital letters, and Arabic numbers, like this:

1. Centered head

   A. Side head

   1. Paragraph head

In a report, type a Roman-numbered item in an outline as a ___ head; type a capital letter outline item as a ___ head; type an Arabic-numbered outline item as a ___ head.

---

If you are typing on even-numbered lines, triple spacing to a new side or ____________ heading will put you on an odd-numbered line. Depending on the headings on any ms. page, you could be changing a number of times between odd- and even-numbered lines. So: you will not necessarily and each page on line 60. To avoid typing below line 60, an odd-numbered last line would be line ___.

The extra blank lines (before some headings) also mean that you cannot check your closeness to the bottom by counting 27 typed lines. Instead, roll the paper backwards and look to see how much space remains. Or use a ruler and stop when the distance from the top edge of the page is ____ inches. Or watch for your light pencil line drawn about ____ inches from the bottom edge.

Because headings on a ms. page could move you back and forth between odd- and even-numbered lines, you have a choice for the starting line on each page. Assuming an unbound ms., you could start each page on line 7 and end either on line 59 or line 60; or you could start one line lower, on line ___, and end either on line ___ or line ___. But no matter what appears on a ms. page, the first line on all pages should be the same: either line ___ or line ___.

---

*Except on page 1 when it contains the report title and except in top-bound reports, which start lower down.
Report Writing

I. Unbound Mss.

A. Side Margins
   1. IIA would be typed as a ____ head. Before it, you ____; after it, use _____. Is it underscored? _____.

B. Vertical Margins

II. Bound Mss.

A. Side Bound
   1. Short
   2. Long

B. Vertical Margins

1. Heading II would be a ____ head. Before it, you ____; after it, use _____. Is it underscored? _____.

2. IIA2 would be a ____ head. Before it, you ____. Is it underscored? _____.

3. Ms. would continue on the same line after _____. (IA/IIA)

[This frame makes a convenient stopping point.]

In a formal report, the sources of the facts or information presented are usually given in footnotes.¹ These are numbered serially² and typed at the bottom of the page. As shown below, each footnote is typed in ____ spacing; between footnotes, there is a ______ space. Just above the footnotes is a divider line. It consists of 10 (or 15 or 20) strokes of the ______ key.

¹See any typewriting textbook or style manual for information on the content of footnotes.

²In 1-2-3 order.

The serial numbering of footnotes applies throughout a report. You do not start with number 1 on each new page. If there is one footnote on page 1, two on page 6, and one on page 8, the footnote on page 8 will be number ____. Since all ms. pages should use a bottom margin of 1 inch, on any page containing footnotes the last line of the last footnote should be on line no. _____.

¹A footnote belonging to a page must be begun on that page, but not necessarily finished. A long footnote might have to be continued at the ____ of the next page.
To end the last footnote on line 60, you MUST estimate in advance how many lines will be needed for footnotes—INCLUDING BLANK LINES AND THE DIVIDER LINE.

To find the last possible line of ms. (before the divider), subtract the footnote total from 60.

As shown by the line count above, the footnotes require (from divider line to last line) ____ lines. To leave enough room for them, the typing that precedes the footnotes must end no lower on the page than line ____.

In counting footnote lines, the divider line counts as 1 line and the blank line after it counts as a second line. After that, just count lines of typing in the footnotes (including a blank line between footnotes). In Frame 14-28 (refer to it), the footnotes use ____ lines.

If some page had three footnotes, using, in turn, 1, 3, and 2 typed lines, the total needed for footnote lines (including all blank lines and the divider line) would be ____. On that page, the last line of ms. preceding the footnotes could not be lower than line ____.

In Frame 14-30 (refer to it), the divider line is a single line below the last ms. line on line 53; it is on line _____. If the ms. typing had been on even-numbered lines, to keep the divider line on line 54 (where it MUST be in order to end the footnotes on line 60), the last line of ms. on that page would have to be line ____. After it, to reach line 54, you would ________ space down. (single/double/triple)
To locate the last possible ms. line, you could subtract the number of footnote lines from 60. But a safer method is to locate the divider line position by subtracting from 61. The footnotes in Frame 14-28 (refer to it) contain ___ lines. The divider line before the footnotes should be on line ___. If the ms. typing were on odd-numbered lines, the last ms. line would be no. ___; if on even-numbered lines, the last ms. line would be no. ___, and you would _____ space down to the divider line. (single/double)

The first row of the table below shows that for two footnotes (containing 1 and 2 typed lines), 6 lines of footnote space are required, placing the divider on line 55. Fill in the blanks in the table.

<table>
<thead>
<tr>
<th></th>
<th>Typed Footnote Lines</th>
<th>Total Footnote Lines</th>
<th>Divider Line on Line No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>1, 2</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>b.</td>
<td>4</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>c.</td>
<td>2, 2, 3</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>d.</td>
<td>2, 4</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>e.</td>
<td>1, 1, 3</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>f.</td>
<td>2, 1, 3</td>
<td>___</td>
<td>___</td>
</tr>
</tbody>
</table>

As you reach each footnote sign during your typing of a ms. page, make a note of how many typed lines the footnote will require. In that way, you can determine when to stop the ms. typing and start the footnotes. If you underestimate the space needed for footnotes, you will fall below line ___ (or will have to carry part of the last footnote over to the ___ of the next page). If you overestimate, your bottom margin will be ___ than 1 inch. (more/less)
Assume that some very brief report uses only half a page or that the last page in a longer report is only half full. Assume also that that page contains one or more footnotes. Those footnotes still appear at the bottom of the page, ending on line 60—not a line or two below the last typed ms. line on that page. Even if the final ms. line were, say, on line 20 on that page, if there were one 1-line footnote and one 3-line footnote, the divider line should be typed on line ___ and the footnotes should end on line ___.

Now a little TEST.

The footnotes at the left use ___ lines, The divider should be on line ___.
The last odd-numbered ms. line before the footnotes would be no. ___, followed by a _________ space to the divider line. The last even-numbered line before the footnotes would be no. ___, followed by a _________ space to the divider line.

There are many ways to show references in footnotes. One widely used style is illustrated below.


Footnote references contain, in order: author, title, publication information.

Book titles (footnote 1) and magazine or journal titles (footnote 2) are __________. The journal (in quotes/underscored) volume number appears after the year of publication and is also ______________.
Now a little TEST (based on Frame 14-38).

(Refer to the preceding frame.)

1. In a footnote reference, the author's name is given first.

(first name/last name)

2. The city of publication and the name of the publisher are given in a reference to a

(book/journal article)

3. Mr. Morrison's article begins on page 15 and ends on page ___.

4. The punctuation mark that follows each of the three main sections (author, title, publication information) is a _________.

TEST continued.

(Use Frame 38 as a model and be careful about punctuation.)

As footnote 3, write below a reference to a book entitled "Know Your Typewriter" by David Kent, published in 1968 by Rand & Sims, located in Chicago.

Assume that Mr. Kent's work was an article published on pages 11 to 15 of the March 1968 issue (volume 9) of "Office Machines." As Foot. 4, write a reference for it below.
