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ABSTRACT

The guide is one of a series developed in a pilot project to integrate career education concepts with subject matter in secondary grades. The units are designed to reveal career orientation aspects of traditional topics within five major subject areas: English, social studies, mathematics, science, and health and physical education. The lesson plans are presented in brief outline form, but activities range from those of short duration to several weeks. All provide broad objectives, performance objectives, lesson procedures, and materials and resources in all media. The units in mathematics directed to grades 8-12 cover machinist work, transportation, buying and selling stocks, sports statistics, sales, estimation, contracting, travel, percentage, rational numbers, home maintenance and purchase, checking accounts, linear measure, computers, surveying, mathematician careers, space, architecture, psychology, vacations, pythgorean theorem, and drafting. (MDW)

RADFORD CITY SCHOOL'S CAREER EDUCATION PROJECT
RADFORD, VIRGINIA 24141

INTRODUCTION TO SECONDARY CAREER EDUCATION ACTIVITIES

The Career Education Program of the Radford City Schools is a pilot project of research and development for career education techniques and materials. It is funded through a grant from the United States Office of Education which extends until December 14, 1974.

The activity approach was utilized to implement career education concepts on the secondary level. The activities were developed in five major subject areas which include Mathematics, English, Science, Health and Physical Education and Social Studies.

The intent of the activities is to assist in re-focusing traditional subject matter content to the extent that career orientation evolves as the original content is presented.

Some career activities are short in duration while others may consume several weeks.

MATHEMATICS

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"DRAFTSMAN"

GRADE: 8
SUBJECT: ALGEBRA I - PART I

BROAD OBJECTIVE:

Mathematics is important in the field of drafting.

PERFORMANCE OBJECTIVE:

1. The student will learn how a designer produces a scale drawing.

2. The student will become aware of the use of geometric figures in design.

LESSON PROCEDURE:

1. The student will become familiar with simple scale drawings and construction of geometric figures.

2. A designer will speak to the class concerning basic techniques of original drawings of a proposed structure. He will also relate to the class specifics of his job. The students will be interested in the nature of his job, required training, salaries, and outlook of designers.

3. This unit will include a project that requires each student to make a scale drawing of a miniature golf course. Eighteen holes will be set in a 150' square. The student can use any geometric design for the greens.

4. Each project will be displayed so that others can appreciate the students creativity.

MATERIALS AND RESOURCES:

Textbook:

Junior High School Mathematics. Laidlaw Brothers, 1968.

Poster board, compass, straight edge, protractor, magic markers

Resource Person:

A designer

Films:

Educational Motion Pictures:
62809 Measuring. 16 minutes BW-1970E
39904 Measurement. 11 minutes CO/BW 1966 El-JH-CORE

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"CONTRACTING BUSINESS"

GRADE: 8
SUBJECT: MATH 3, ALGEBRA I - PART I

BROAD OBJECTIVE:

Mathematics is essential to the contracting business.

PERFORMANCE OBJECTIVE:

Students will recognize the importance of area and perimeter in the business of selling wall and floor coverings.

LESSON PROCEDURE:

1. The students will do exercises that relate to area and perimeter of rectangles.

2. An individual who sells carpet, fencing, paneling and wall paper will explain how to measure homes for these items. He will also explain the qualifications and working conditions of his job.

3. As a project the students will decide the amount of carpet, wall paper, paint, and paneling needed for various rooms of a six room house. Specific dimensions will be given for each room.

MATERIALS AND RESOURCES:

Textbook:

Junior High School Mathematics. Laidlaw, Brothers, 1968.

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"PERCENTAGE"

GRADE: 8
SUBJECT: ALGEBRA I - PART I

BROAD OBJECTIVE:

Percent is necessary in many careers.

PERFORMANCE OBJECTIVE:

The student will become familiar with percent usage in banking and real estate.

LESSON PROCEDURE:

1. The students will learn to compute interest and work single reading problems relating to percents.

2. A local banker will be invited to briefly explain types of loans, types of savings accounts, how stock is obtained, how interest is computed, and a resume' of his duties.

3. A real estate agent will be invited to speak to the class about the role of percentages in selling property and commission distribution.

4. The class will do a sample problem to determine the amount of money the seller, listing agent, selling agent, sales manager, broker, and agency will receive when a house is sold.

MATERIALS AND RESOURCES:

Textbook:

Junior High School Mathematics. Laidlaw Brothers, 1968.

Resource People:

A banker
A real estate agent

Filmstrips:

SVE Educational Filmstrip: Interest, Banking and Investing. A539-4
Buying and Selling. A539-2

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"RATIONAL NUMBERS"

GRADE: 8
SUBJECT: MATH 8; ALGEBRA I - PART I

BROAD OBJECTIVE:

Many careers involve a working knowledge of rational numbers.

PERFORMANCE OBJECTIVE:

The students will become familiar with the use of rational numbers that relate to consumer buying, piece goods, and carpentry supplies.

LESSON PROCEDURE:

1. The unit will begin after the student understands the four basic operations on rational numbers. The student can adequately manipulate these numbers and are aware of how rational numbers relate in size to each other.

2. Four stations will be set up in the classroom:

   The grocery store will contain products that are alike but prices and volumes differ. (Ex. Three cans of peas that differ in size and price).

   The fabric shop will contain swatches of fabric priced by the yard and piece. Ribbon will be priced by the foot, yard, and inch.

   The carpenters shop will include pieces of wood priced by the foot, wrenches, nails, and sockets.

   The students will use these stations to play "The Shoppers Game". Rules for the game: Three persons will act as salespeople in the shops. Three persons will by buyers. The buyer will spin a classroom quiz type wheel to get his buying instructions.

   Sample problem: Buy 21/2 yds. of the most expensive fabric from the fabric shop. After the purchase and tax, how much change would one receive from a ten dollar bill?

   The seller tries to outwit the buyer during the transaction. If he succeeds and knows the correct answer, the seller gets a point. If he fails and the buyer knows the right answer, he wins the point. A team wins when five points are accumulated.

MATERIALS AND RESOURCES:

Textbook:

Junior High School Mathematics. Laidlaw Brothers, 1968.

Grocery containers
Pieces of fabric and ribbon
Wrenches, sockets, nails, pieces of wood
Classroom quiz wheel
Play money

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"SALES PERSONNEL"

GRADE: 8
SUBJECT: MATH 8

BROAD OBJECTIVE:

To develop student understanding of the math skills needed by sales personnel.

PERFORMANCE OBJECTIVE:

Each student will be able to determine the correct amount of change to be given back to a person who makes a purchase.

LESSON PROCEDURE:

A cashier in a store or a sales person from a store will come in and speak to the class about uses of math by sales personnel, proper procedures for making sales, and in general, the mechanics of being a sales person and meeting the public.

After the resource person has talked to the class, there will be a discussion of the procedures used to make change. This discussion will center around how a cashier adds rather than subtracts to determine how much change a person should receive back after a purchase. The student practice will include having each pupil act as a cashier, using play money and change, and determine for himself the amount of change a person will receive back after a purchase.

MATERIALS AND RESOURCES:

Resource Person:

Cashier or sales person from a store.

Play money and change

Text:

Eicholz, O'Daffer, Brumfiel, and Shanks. Basic Modern Mathematics. Addison-Wesley Publishing Co., Reading, Mass., 1965.

Film:

"Professional Selling Practices; Personalize Your Presentation". Bureau of Teaching Materials, State Department of Education, Richmond, Virginia 23216.

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"ESTIMATION"

GRADE: 8
SUBJECT: MATH 8

BROAD OBJECTIVE:

To develop student understanding of the importance of estimation in various occupations.

PERFORMANCE OBJECTIVE:

The student will be able to estimate to the nearest multiple of 10, 100, and 1000 and be able to identify occupations involved with estimating.

LESSON PROCEDURE:

The students will be introduced to estimation through class discussion and lecture. One presentation will deal with estimating the number of marbles or beans in a jar. Another project will be involved with guessing the price of certain objects, such as cars, tables, lamps or houses. The student will then be taught how to estimate numbers to the nearest multiples of 10, 100 and 1000.

After the students understand estimation and how it relates to math, then a resource person such as a house builder, plumber, professional mover, or any other person who makes bids to estimate the price of their services, will come in and talk to the students about their job. This resource person should relate to the students the uses of math in his job, and how estimation related to his services.

MATERIALS AND RESOURCES:

Some type of container and beans or marbles.

Text:

Eicholz, O'Daffer, Brumfiel and Shanks. Basic Modern Mathematics. Addison-Wesley Publishing Co., Reading, Mass., 1965.

Resource Speakers:

Building contractor, plumber, electrician, or mover.

Prices of various objects used in class discussions.

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"LANGUAGE OF MATHEMATICS TO COMMUNICATE"

GRADE: 8
SUBJECT: MATH 8; ALGEBRA I, PART I

BROAD OBJECTIVE:

Every individual needs the language of mathematics to communicate.

PERFORMANCE OBJECTIVE:

The student will become aware of the necessity of numbers in his environment.

LESSON PROCEDURE:

1. This activity will be administered during the first month of school on Friday to eighth grade math students who are taking Math 8 and Algebra I, Part I.

2. The students will take ten minutes and list the ways numbers are involved in his daily activities. The student will keep this list as part one of this project.

3. As an assignment the students will be asked to keep a detailed activity log (being very specific as to when, where, and how many) over a weekend.

4. On Monday, the student will write a brief paper explaining his weekend activities. He must be specific and avoid the use of numbers.

5. After his attempt to write the paper, the student will revise his list in part one.

MATERIALS AND RESOURCES:

None necessary

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"SPORTS STATISTICIAN"

GRADE: 8 AND 9
SUBJECT: MATH 8 AND 9, ALGEBRA I, PART I

BROAD OBJECTIVE:

To develop student understanding of the importance of math to a sports statistician.

PERFORMANCE OBJECTIVE:

Each student will be able to identify and perform mathematical operations needed to compute statistics for athletic contests.

LESSON PROCEDURE:

At the beginning of this lesson, the teacher will have a sports statistician from a local newspaper come to speak to the class about his job and how he obtains data and computes statistics for a basketball game. After this presentation by the resource speaker, there will be a class discussion of and student practice in computing statistics for athletic contests.

The teacher will set aside one day each week in which he will bring to class all the data from the previous week's basketball games and allow the students to work up the statistics for the games. Some of the statistics which can be figured in basketball are field goal percentage, free throw percentage, team percentages, individual player's point averages, team point averages, team defensive average, and many others. This lesson could be used for football and baseball also, and have the students work with data related to these sports.

As a final activity for this unit each student will have to watch some type of athletic contest and collect and analyze his own data.

MATERIALS AND RESOURCES:

Resource Speaker:

Local newspaper sports statistician or T V or radio sportscaster.

Data from sports contests.

Charts used to record data for a sports contest.

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"TRANSPORTATION"

GRADE: 8 AND 9
SUBJECT: MATH 8 AND 9, ALGEBRA I, PART I

BROAD OBJECTIVE:

To develop student understanding of the uses of math by truck drivers and other transportation related occupations.

PERFORMANCE OBJECTIVE:

Each student will be able to compute miles per gallon of gas, wages earned, rate, time, and distance and identify their importance in jobs related to transportation.

LESSON PROCEDURE:

At the beginning of this lesson, the teacher will introduce the students to rate, time, and distance and have them solve problems related to these areas. The students will also be taught how to figure the number of miles per gallon of gasoline a car will go and how to find weekly and monthly salaries of hourly wage personnel.

After the students have completed this lesson on computing rate, time, distance miles per gallon, and hourly wage salaries, then a truck driver or some other person involved in road travel will come to speak to the class. This resource speaker will explain to the class the uses of math in his occupation, the procedures of his job, and the qualifications and abilities needed to obtain a job in his field.

MATERIALS AND RESOURCES:

Maps and rulers

Resource Speaker:

Truck driver, taxi driver or salesman

Text:

Eicholz, O'Daffer, Brumfiel and Shanks. Modern General Mathematics. Addison-Wesley Publishing Co., Reading, Massachusetts, 1965.

Film:

"Truck Driver", #54108. Bureau of Teaching Materials, State Department of Education, Richmond, Virginia 23216.

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"VACATION TRIP"

GRADE: 8 AND 9
SUBJECT: MATH

BROAD OBJECTIVE:

1. To develop student awareness of the importance of math in planning leisure time activities.

2. To provide student experience in planning a vacation trip.

PERFORMANCE OBJECTIVE:

Each student will be able to plan a budget for a trip and properly prepare a financial statement of expected expenses.

LESSON PROCEDURE:

Each student will bring to class a poster or an advertisement of some place he would like to visit in the United States. This place must be at least 600 miles away and not more than 1000 miles. After choosing the destination, the student will plan a trip there. The trip must last for at least six days and five nights. The vacation budget will be planned for two people taking the trip.

After choosing the destination, each student will chart his course on a map. Each student should have a map illustrating the route.

The teacher will make out a form that the students will complete as they work on their project. This form will involve determining the most economical and efficient method of transportation, the cost of lodging and food, etc.

After each student has completed his planning for the trip, he will make a brochure explaining the details of his trip. This brochure will include relevant information from the trip form completed by the student.

As a final activity, the students will display and explain their brochures in the class.

MATERIALS AND RESOURCES:

1. Newspapers and magazines - to obtain ideas, and posters of places.

2. Hotel brochures and rates - can be obtained from local hotels - preferrably nationally known hotels, such as Holiday Inn, Marriott, Ramada, etc.

MATERIALS AND RESOURCES: (Continued)

3. Maps of United States - can be obtained from service stations - best source is probably the Automobile Association of America(AAA).

4. Rulers - for determining distances on the map.

5. Train rates and schedules.

6. Plane rates and schedules.

7. Bus rates and schedules.

8. Menus - from hotel restaurants preferrably.

9. The Chamber of Commerce.

10. Vacation trip form - attached.

VACATION TRIP

I. 1. Destination _____
2. Departure Date _____
3. Arrival Date _____
4. Distance to be traveled
   a. One way _____ miles
   b. Round trip _____ miles

II. Transportation
1. Plane
   a. Cost of round trip ticket $_____
   b. Departure time _____
   c. Arrival time _____
   d. Total length of flight _____ hrs. _____ min.
   e. Point of departure _____
   f. Point of arrival _____
   g. Rent-A-Car
      A. Cost per day $_____ per mile _____¢
      B. Number of days will use car _____
      C. Approximate number of miles will travel in car___
      D. Approximate total cost of rental car $_____

2. Train
   a. Cost of round trip ticket $_____
   b. Departure time _____
   c. Arrival time _____
   d. Total length of train trip _____ hrs. _____ min.
   e. Point of departure _____
   f. Point of arrival _____
   g. Expected Rent-A-Car cost $_____

3. Bus
   a. Cost of round trip ticket $_____
   b. Departure time _____
   c. Arrival time _____
   d. Point of departure _____
   e. Point of arrival _____
   f. Total length of bus trip _____ hrs. _____ min.
   g. Expected Rent-A-Car cost $_____

4. Car
   a. Miles per gallon gasoline car obtains _____
   b. Number of miles to be traveled _____
   c. Number of gallons of gas to be used _____
   d. Cost per gallon gas _____¢
   e. Total gas cost $_____
   f. Availability of gas good _____ fair _____ poor _____
   g. Total cost of running car (approximately 15¢ per mile for gas and wear and tear) $_____

5. Mode of transportation will use _____
   Why? _____

III. Motels (must stay in at least two different ones)

a. Name and location of motels
   1. _____
   2. _____

b. Telephone numbers (for reservations - include area codes)
   1. _____ 2. _____

c. Restaurant with motel
   1. _____ 2. _____

d. Cost per day of motel (double room)
   1. $_____ 2. $_____

e. Number of nights will spend there
   1. _____ 2. _____

f. Total cost of each motel
   1. $_____ 2. $_____

g. Total motel cost for trip
   $_____

IV. Food

a. Number of breakfasts _____
b. Number of lunches _____
c. Number of dinners _____
d. Approximate cost of breakfast (for two) $_____
e. Approximate cost of lunch (for two) $_____
f. Approximate cost of dinner (for two) $_____
g. Cost of breakfast for trip $_____
h. Cost of lunch for trip $_____
i. Cost of dinner for trip $_____
j. Total cost of meals on trip $_____

V. Places of interest to visit on trip (at least three)

1. _____
2. _____
3. _____

VI. Miscellaneous expenses (entertainment, snacks, etc.)
$_____

VII. Total cost of entire trip $_____

Amount of trip can charge on credit card
(gas, possibly motel) $_____

Amount of cash will need $_____

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"BUYING AND SELLING STOCKS"

GRADE: 9
SUBJECT: MATH 9 AND ALGEBRA I, PART I

BROAD OBJECTIVE:

To develop student understanding of the mechanics of buying and selling stocks.

PERFORMANCE OBJECTIVE:

Each student will be able to look in the newspaper listing of stocks and determine the worth of a particular stock.

LESSON PROCEDURE:

As an introduction to this lesson there will be a short explanation by the teacher on what stocks are and how their worth is figured. After the teacher's lesson, a stock broker will be invited to speak to the class on investing money, how stocks are bought and sold, local stocks of interest, what to look for when buying stocks, and the duties and responsibilities of his job.

As a final activity for this unit, each student will be given $1000 play money to buy stocks with from the teacher. The student must buy at least two different stocks and no more than three, and at least five shares of each. To determine the current prices of the stocks and which stocks they would like to buy, the students will look in the newspaper listing of stocks. After the students have purchased their stock, they must follow the ups and downs of their stock every day in the newspaper. Each pupil will keep a daily log on the price of his stock and how much money he is making or losing.

This project will last for four weeks. At the end of that time, each student must determine how much money they made or lost on their stock and if they would like to keep or sell their stock. Every stock used by the students will be put on the blackboard along with how much money was made or lost on the stock, so that everyone can see how stocks rise and fall.

MATERIALS AND RESOURCES:

Newspapers
Daily log sheet for each person.

Resource Person:

Stock Broker

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"MATHEMATICS FOR COMPUTERS"

GRADE: 9
SUBJECT: ALGEBRA I

BROAD OBJECTIVE:

Knowledge of mathematics is necessary for many careers.

PERFORMANCE OBJECTIVE:

The computer programmer uses mathematics.

LESSON PROCEDURE:

1. Class should study Digital Computer Methods as a part of the regular curriculum or as an enrichment unit.

2. Invite a speaker from the computer science department of a university, or a computer programmer from a local industry.

3. Show a film on computers, or plan a field trip to the data processing department of a local business.

MATERIALS AND RESOURCES:

Resource Person:

Computer programmer or computer science speaker.

Film:

"Computer Revolution", #19709. Bureau of Teaching Materials, State Department of Education, Richmond, Virginia 23216.

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"MACHINIST"

GRADES: 9 - 12
SUBJECT: ALGEBRA

BROAD OBJECTIVE:

Student awareness of mathematical abilities needed in some fields of industry.

PERFORMANCE OBJECTIVE:

To enable the student to recognize the mathematical competence needed by a machinist in the areas of his work.

LESSON PROCEDURE:

This will not deal with one particular aspect of algebra but with the course as a total. A resource person who is a machinist will be invited to tell of his mathematical background, and how he uses the different parts of algebra in his work as a machinist.

MATERIALS AND RESOURCES:

Resource Person:

Machinist

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"PYTHAGOREAN THEOREM"

GRADE: 9, 10, 11
SUBJECT: GEOMETRY

BROAD OBJECTIVES:

1. To help students gain some understanding of how Geometry (one small phase) can be used in a practical situation.

2. To correlate one of the concepts of Geometry to practical situations.

PERFORMANCE OBJECTIVE:

1. The student will be able to apply the Pythagorean Theorem to practical situations such as: (a) obtaining a square (90°) corner without the aid of a delicate instrument, (b) roughly being able to mark off a rectangle shaped area, (c) roughly being able to lay off foundation for building, (d) being able to check and see if some object is vertically alined, etc.

LESSON PROCEDURE:

To make students aware of the importance of the Pythagorean Theorem, each geometry class will spend a class period laying off square corners and checking to see when a pole is vertically alined. Each class will be broken down into groups of three students per group. Each group will have the following equipment to work with: (1) 9 short stakes, (2) a hammer, (3) one pole about 6 ft. in length, (4) up to 100 ft. of rope (cord, etc.).

Each group will erect at least two square corners with different leg measure for each corner. Also, they will erect one 6 ft. pole and make sure that it is vertically alined with the ground.

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"TRAVEL EXPENSE"

GRADE: 10
SUBJECT: MATH

BROAD OBJECTIVE:

In todays world people are constantly involved with travel.

PERFORMANCE OBJECTIVE:

The student will be able to plan a trip including the figuring of mileage, time, expenses, and incidentals involved with travel.

LESSON PROCEDURE:

Each student will select a spot somewhere in the continental U. S. where he would someday like to vacation. After selecting the spot, he will figure by use of maps the following:

1. Total distance traveled
2. Amount of gas
3. Time for travel
4. Lay-over
5. Food expense
6. Lodging expense
7. Incidental expenses

MATERIALS AND RESOURCES:

Maps
Atlas
Brochure of travel spots

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"PURCHASING A HOME"

GRADE: 10
SUBJECT: MATH 10

BROAD OBJECTIVE:

Most productive citizens are involved either directly or indirectly with the purchase of a home.

PERFORMANCE OBJECTIVE:

The student will be able to compute interest, amount of insurance, taxes, legal fees, and the amount of payment involved with the purchase of a home.

LESSON PROCEDURE:

Each student will select two houses which he would like to own.

He will research the areas of competitive prices, present interest rates, and current tax rates.

From the research he will compute the following:

(1) Price of house
(2) Amount of down payment
(3) Term of loan
(4) Interest rate
(5) Insurance needed
(6) Taxes
(7) Amount of payment

RESOURCES AND MATERIALS:

Resource People:

Real Estate Agent
Loan Officer from Bank

Text:

McNelly, A. E.; Olson, Milton C. Business and Consumer Arithmetic. 6th Edition. Prentice-Hall, 1969.

Materials:

Payment Book

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"CHECKING ACCOUNTS"

GRADE: 10
SUBJECT: MATH 10

BROAD OBJECTIVE:

Most careers require people to have and be able to use a checking account.

PERFORMANCE OBJECTIVE:

The student will be able to write checks correctly, fill out deposit slips, balance a checking account, and coordinate reconciliation statements.

LESSON PROCEDURE:

To start the unit on checking accounts, a banker will be brought in to explain the uses and procedures of checking.

The students will then be shown how to write checks correctly and will write checks for common bills (electric, phone, etc.).

Next the students will be shown the proper method for filling out deposit slips.

After the check and deposit slips are filled out, the students will be given bank statements and reconciliation statements and show the relationship between the two and how each is read and computed.

As a final "check", the students will be given a case of written checks, deposits, and service charges and will be asked to balance the bank statement.

MATERIALS AND RESOURCES:

Samples of bank statements, checks, stubs, deposit slips, and reconciliation statements.

Text:

McNelly, A. E.; Olson, Milton C. Business and Consumer Arithmetic. 6th Edition. Prentice-Hall, 1969.

Resource Person:

Cashier or Banker

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"MAINTAINING A HOME"

GRADE: 10
SUBJECT: MATH 10

BROAD OBJECTIVE:

Regardless of a chosen career, people will be involved with the maintenance of some type of dwelling.

PERFORMANCE OBJECTIVE:

The student will be able to estimate the cost of specific maintenance repairs such as painting, wallpapering, carpeting, and tile.

LESSON PROCEDURE:

Each student will draw detailed floor plans of their homes.

From these plans, they will figure areas to be covered and the square footage.

From these figures the student will compute the cost of each covering.

MATERIALS AND RESOURCES:

Text:

McNelly, A. E.; Olson, Milton C. Business and Consumer Arithmetic. 6th Edition. Prentice-Hall, 1969.

Materials:

Samples of coverings and cost (from Central Lumber Company or The Carpet Shop).

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"LINEAR MEASURE"

GRADE: 10
SUBJECT: MATH

BROAD OBJECTIVE:

Everyone needs a working knowledge of the concept of linear measure.

PERFORMANCE OBJECTIVE:

The student will be able to apply the concept of linear measures to a job task.

LESSON PROCEDURE:

A group of students will draw a scale drawing of a football field.

From this drawing they will mark and line off the football field for Thursday and Friday night games.

MATERIALS AND RESOURCES:

1. 100 foot tape measure
2. Paint sprayer
3. Blueprint of field markings
4. Boundary markers

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"MATHEMATICS IN SPACE"

GRADE: 10, 11, or 12
SUBJECT: ALGEBRA II OR MATH ANALYSIS

BROAD OBJECTIVE:

Mathematics has applications in many fields.

PERFORMANCE OBJECTIVE:

The principles of analytic geometry are used by aerospace engineers.

LESSON PROCEDURE:

1. Class should have recently completed a unit on conic sections.

2. Invite an Aerospace Engineer to speak to the class on the applications of analytic geometry to his work. The training necessary and the opportunities open for his field should be covered, as well as other opportunities for a career in aerospace.

3. On the day following the speaker, the class might have an open discussion on the ideas and careers presented to them.

MATERIALS AND RESOURCES:

Resource Person:

Aerospace Engineer

Films:

"Space Probes", #37305. Bureau of Teaching Materials, State Department of Education, Richmond, Virginia 23216.
"Science in Space", #15612. Bureau of Teaching Materials, State Department of Education, Richmond, Virginia 23216.
"Father of Space Age - Robert Goddard", #43808. Bureau of Teaching Materials, State Department of Education, Richmond, Virginia 23216.

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"ARCHITECTURE"

GRADES: 10 - 12
SUBJECT: ALGEBRA II

BROAD OBJECTIVE:

Student awareness of mathematical abilities needed in certain specialized occupations.

PERFORMANCE OBJECTIVE:

To enable the student to recognize the mathematical background that is needed by a person in the field of architecture.

LESSON PROCEDURE:

This will not deal with one particular part of Algebra, and thus there will be no one particular unit or lesson to study. A resource person in the field of architecture will be asked to tell of his own mathematical background. He will be asked to relate some parts of his job to the parts of algebra and geometry that the students have had, and show where these are necessary in his work.

MATERIALS AND RESOURCES:

Resource Person:

Resource person in the field of architecture.

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"MATHEMATICS FOR LAND SURVEYORS"

GRADE: 11 or 12
SUBJECT: TRIGONOMETRY

BROAD OBJECTIVE:

An understanding of mathematics is essential to land surveyors.

PERFORMANCE OBJECTIVE:

Surveying a piece of land in order for a plot to be drawn requires knowledge of geometry and trigonometry.

LESSON PROCEDURE:

1. Class should have completed a unit on the solutions of triangles using trigonometry.

2. Invite a Certified Land Surveyor to speak. He might discuss the training necessary, positions available, and some representative problems he can solve using trigonometry and other mathematics.

3. Class should spend the day following the visit from the surveyor in solving typical problems confronted by the surveyor.

MATERIALS AND RESOURCES:

Resource Person:

Certified Land Surveyor

Material:

Sample plots to display.

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"MATHEMATICS FOR PSYCHOLOGISTS"

GRADE: 11 or 12
SUBJECT: ADVANCED ALGEBRA/TRIGONOMETRY OR MATH ANALYSIS

BROAD OBJECTIVE:

Mathematical statistics has applications necessary to psychologists.

PERFORMANCE OBJECTIVE:

The analysis of test data requires the use of mathematics.

LESSON PROCEDURE:

1. Administer a short achievement test to students, or use heights of class members.

2. Using the scores from the test, or the heights, have the students make a frequency distribution of the scores, find the mean, medians, and mode, standard deviation, etc.

3. Each student is to evaluate his score in relation to the scores of his classmates.

4. The local school psychologist will make a presentation on the use of mathematical statistics in his work, both in group and individual testing.

MATERIALS AND RESOURCES:

Short achievement test which can be administered by classroom teacher.

Resource Person:

Local school psychologist, or other psychologist from the area.

RADFORD CITY SCHOOLS CAREER EDUCATION PROGRAM

"MATHEMATICIAN"

GRADE: 12
SUBJECT: MATH ANALYSIS OR ADVANCED ALGEBRA/TRIGONOMETRY

BROAD OBJECTIVE:

Mathematicians are necessary in many fields.

PERFORMANCE OBJECTIVE:

Mathematicians may seek employment either in theoretical or applied fields, as well as in closely related areas, such as the sciences or engineering.

LESSON PROCEDURE:

1. Have each student choose a career in which a knowledge of higher mathematics is necessary. Avoid duplication by having students indicate their choice from a list supplied by the teacher.

2. Students are to do research on their selection. This should include finding out the required training for the position, what type of work is involved, and the availability of employment. Students should write to sources of career information, and interview or write to someone in the field.

3. When all reports are complete, each student should present his findings to the class.

MATERIALS AND RESOURCES:

SRA Occupational Briefs, 259 E. Erie St., Chicago, Ill. 60611.

Occupational Outlook Handbook, U. S. Department of Labor and Statistics Bulletin 1700.

Careers Inc., Career Kit, Largo, Florida.