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ABSTRACT

A survey test in mathematics was administered to all pupils (N=5,557) in grade 6 of Vancouver schools. The three parts of the test--computation, concepts, and problems, were given in separate sessions. The same test was given in 1969. The median scores in 1972 for the three subtests and for total score were somewhat lower than those in 1969. A larger number of students had perfect scores in 1972 than in 1969. Students above the 90th percentile performed slightly better than did their counterparts in 1969. Students in both years performed least well on the concepts subtest. Local norms and ranges of scores corresponding to letter grades are provided. (For related document, see TM 002 474.) (KM)

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RESEARCH REPORT

Survey of Achievement in Mathematics in
Year Six of Vancouver Schools,
May 29 - June 2, 1972

June 22, 1972

E. N. Ellis

Research Report 72-11

Department of Planning and Evaluation
Board of School Trustees
1595 West 10th Avenue
Vancouver 9, B. C.

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SURVEY OF ACHIEVEMENT IN MATHEMATICS IN YEAR SIX OF
VANCOUVER SCHOOLS, MAY 29 - JUNE 2, 1972

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SURVEY OF ACHIEVEMENT IN MATHEMATICS IN YEAR SIX OF
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Summary

This report includes:

1. a summary of results on the Vancouver Survey Test in Mathematics (Form 69),
2. a comparison of results with those of 1969,
3. tables of local norms,
4. a discussion of the findings.

In general, pupils in Grade 6 of Vancouver schools performed somewhat less well than did pupils in 1969 on this test.

Introduction

A survey test in Mathematics, designed by a committee of principals and teachers, was administered to all pupils (N=5,557) in Grade 6 of Vancouver schools during the week of May 29 - June 2, 1972.

The test was based on the Mathematics 6 curriculum guide and it was designed in 1969 to assess the work covered to the middle of May. It had three parts, given in separate sessions:

- Part 1, "Computation" - 36 items. (Time 35 minutes)
- Part 2, "Concepts" - 24 items. (Time 35 minutes)
- Part 3, "Problems" - 12 items. (Time 35 minutes)

A copy of the test is included with this report. The same test was given in 1969.

Summary of Results

The principal findings of the survey appear in Table I.

TABLE I: SUMMARY OF RESULTS, SURVEY TEST IN MATHEMATICS (FORM 69)
GRADE 6, VANCOUVER SCHOOLS, MAY 29 - JUNE 2, 1972.
(Results for 1969 are in brackets)

	"Computation"	"Concepts"	"Problems"	"Total"
No. of schools	71 (67)	71 (67)	71 (67)	71 (67)
No. of pupils	5,557 (5,168)	5,546 (5,162)	5,546 (5,160)	5,524 (5,157)
Possible score	36	24	12	72
Median score	20.5 (22.2)	12.2 (12.8)	7.1 (7.4)	39.9 (42.2)
Median as %age	56.9% (61.7)	50.7% (53.3)	59.4% (61.7)	55.4% (58.6)
No. of "Perfect" scores	22 (13)	18 (9)	213 (201)	8 (5)
No. of "Zero" scores	8 (6)	4 (5)	32 (16)	0 (0)

A Comparison of Results with Those of 1969

The median scores in 1972 for the three subtests and for total score were somewhat lower than those in 1969.

A larger number of students had perfect scores in 1972 than in 1969.

The most able students (i. e., those above the 90th percentile) performed slightly better than did their counterparts in 1969.

In terms of the percentage correct, students in both years performed least well on the "Concepts" test.

TABLE II: SCORES ON THE SURVEY TEST IN MATHEMATICS (FORM 69) GRADE VI, CORRESPONDING TO SELECTED PERCENTILE LEVELS, GRADE VI, VANCOUVER SCHOOLS, MAY 29 - JUNE 2, 1972

Percentile	Part 1 "Computations" (N=5,557)	Part 2 "Concepts" (N=5,546)	Part 3 "Problems" (N=5,546)	TOTAL SCORES (N=5,524)
99	35.6	23.3	12.0	69.5
95	32.9	21.0	11.3	63.8
90	31.0	19.3	10.7	59.6
85	29.4	18.0	10.1	56.5
80	28.0	17.0	9.7	53.6
75	26.7	16.0	9.2	51.2
70	25.5	15.2	8.7	48.8
65	24.3	14.3	8.3	46.5
60	23.0	13.6	7.9	44.3
55	21.8	12.9	7.5	42.0
50	20.5	12.2	7.1	39.9
45	19.2	11.5	6.7	37.7
40	17.9	10.8	6.3	35.5
35	16.5	10.1	5.9	33.2
30	15.1	9.4	5.4	30.9
25	13.7	8.7	5.0	28.4
20	12.2	7.9	4.5	25.8
15	10.5	7.1	3.9	22.9
10	8.5	6.1	3.3	19.7
05	6.0	4.8	2.3	15.1
01	2.1	2.7	0.7	8.0

Local Norms

ERIC Percentile norms appear in Table II and the ranges of scores corresponding to letter grades in Table III.

TABLE III: Ranges of Scores Corresponding to Letter Grades, Survey Test in Mathematics (Form 69) - Grade VI, Vancouver Schools, May 29 - June 2, 1972

Letter Grade	Part 1 "Computation"	Part 2 "Concepts"	Part 3 "Problems"	TOTAL SCORE
A	33-36	21-24	12	64-72
B	27-32	17-20	10-11	52-63
C+	24-26	14-16	8- 9	45-51
C	18-23	11-13	7	36-44
C-	14-17	9-10	5- 6	29-35
D	6-13	5- 8	3- 4	16-28
E	0- 5	0- 4	0- 2	0-15

Discussion

The performance, in 1972, of Grade 6 pupils on the Vancouver Survey Test in Mathematics (Form 69) was slightly below that of pupils in Grade 6 three years earlier. The subtest scores for 1972 are generally lower than those in 1969, except at the top end of the distribution where they are slightly higher. The greatest differences were at the lower ends of the distributions, where pupils scored considerably lower in 1972. There are more perfect scores in 1972 and at the same time more "zero" scores on the "Computation" and "Problems" subtest.

In 1969 the pupils performed best on "Computation" and "Problems" and least well on "Concepts". This year the performance was best on "Problems" and again least well on "Concepts".

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SURVEY TEST

in

MATHEMATICS
(Form 69)

GRADE 6

PART 1 -- COMPUTATION

Time Limit: 35 minutes

Pupil's Name _____
(First Name) | (Last Name)

School _____ Date _____

Division Number _____

Score:

Part 1 _____

Part 2 _____

Part 3 _____

Do each calculation in the space provided. Place the answer in the column at the right.

1. $\frac{1}{3} + \frac{1}{3} = n$	2. $302 \times 4 = n$	1. <u>n =</u> 2. <u>n =</u>
3. $14 \overline{) 728}$	4. $\$20 - \$1.75 = n$	3. _____ 4. <u>n = \$</u>
5. $\begin{array}{r} 21 \\ - 3\frac{1}{5} \\ \hline \end{array}$	6. $.04 \overline{) 36}$	5. _____ 6. _____
7. $8\frac{1}{2} \div 2 = n$	8. $\begin{array}{r} 304 \\ \times 206 \\ \hline \end{array}$	7. <u>n =</u> 8. _____
9. $\begin{array}{r} 7\frac{1}{3} \\ + 2\frac{5}{6} \\ \hline \end{array}$	10. $.4 \times .07 = n$	9. _____ 10. <u>n =</u>
11. $\frac{3}{8}$ of 64 = n	12. $12 \div \frac{1}{3} = n$	11. <u>n =</u> 12. <u>n =</u>
13. $1.4 \div 100 = n$	14. $\frac{7}{20} = \frac{n}{100}$	13. <u>n =</u> 14. <u>n =</u>
15. $15 + 156 + 4003 + 1 = n$	16. $\begin{array}{r} 4\frac{1}{5} \\ - 1\frac{1}{4} \\ \hline \end{array}$	15. <u>n =</u> 16. _____

FOLD ON DOTTED LINE

17. $\frac{5 + 20}{5} = n$	18. $12 \times 2\frac{2}{3} = n$	17. <u>n =</u> 18. <u>n =</u>
19. $45 \overline{) 1809}$	20. $9 \overline{) \$73}$ (ANSWER TO NEAREST CENT)	19. _____ 20. \$ _____
21. 32% of 700 = n	22. n% of 96 = 24	21. <u>n =</u> 22. <u>n% =</u> %
23. 18 is $\frac{2}{3}$ of what numeral?	24. $n - 383 = 617$	23. _____ 24. <u>n =</u>
25. $15 \times n = 930$	26. Solve for n: $\frac{30}{90} = \frac{25}{n}$	25. <u>n =</u> 26. <u>n =</u>
27. $\begin{array}{r} \$7.50 \\ \times \quad 56 \\ \hline \end{array}$	28. $\begin{array}{r} 928 \\ \times \quad 76 \\ \hline \end{array}$	27. \$ _____ 28. _____
29. .45 changed to a common fraction is		29. _____

30. How many hours and minutes are there from 10:45 a.m. to 1:20 p.m. ?	30. <u> </u> hr. <u> </u> min.
31. $8.75 + 20.4 + .763 + 2 = n$	31. <u> </u> n =
32. Write as a decimal fractional numeral: Eight hundred and seven thousandths.	32. <u> </u>
33. $72 = 200\%$ of n	33. <u> </u> n =
34. Write in numerals: Four hundred seventy-two thousand, twenty	34. <u> </u>
35. $40 \text{ sec.} + 30 \text{ sec.} = \underline{\hspace{1cm}} \text{ min. } \underline{\hspace{1cm}} \text{ sec.}$	35. <u> </u> min. <u> </u> sec.
36. Find n $\frac{1}{2}$ of 8 = $\frac{1}{3}$ of n	36. <u> </u> n =

Score

SURVEY TEST

in

MATHEMATICS
(Form 69)

GRADE 6

PART 2 -- CONCEPTS

Time Limit: 35 minutes

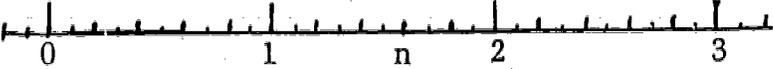
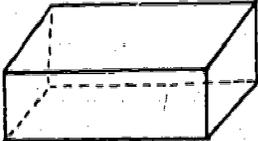
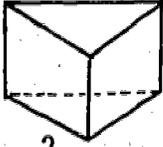
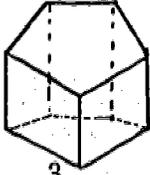
Pupil's Name _____
(First Name) (Last Name)

School _____ Date _____

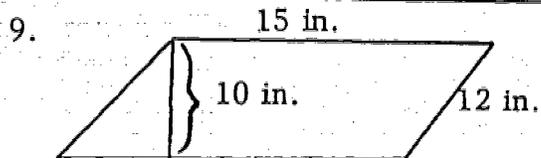
Division Number _____

Score:

Part 2 _____

<p>1. Find the missing numeral:</p> <p>224, 112, 56, <u>n</u></p>	<p>1. <u>n =</u></p>
<p>2. How many quarters are there in \$5.00?</p>	<p>2. <u> quarters</u></p>
<p>3. Write the numeral which is half way between</p> <p>$\frac{3}{10}$ and $\frac{2}{5}$</p>	<p>3. <u>n =</u></p>
<p>4.</p>  <p>What decimal fractional numeral is a name for n?</p>	<p>4. <u>n =</u></p>
<p>5. In which of the following does the numeral 5 have the greatest value?</p> <p>(a) .05 (b) 5.62 (c) 305 (d) 56</p>	<p>5. <u> </u></p>
<p>6. $(17 \times 40) = (10 \times 40) + (n \times 40)$</p>	<p>6. <u>n =</u></p>
<p>1</p>  <p>2</p>  <p>3</p>  <p>7. The term that best describes all of the above figures is</p> <p>(a) polygon (b) sphere (c) prism (d) pyramid (e) none of these</p> <p>8. The figure that could have 5 identical faces is</p> <p>(a) figure 1 (b) figure 2 (c) figure 3 (d) none of these</p>	<p>7. <u> </u></p> <p>8. <u> </u></p>

FOLD ON DOTTED LINE



The altitude of this parallelogram is 10 in.
What is its area?

9. _____

10. In this sequence, find the next numeral.

1, 3, 7, 15, n

10. n = _____

In questions 11, 12, 13, 14, place in the boxes
>, or < to make true statements.

11. $\frac{11}{3}$ $\frac{11}{2}$

11.

12. $\frac{3}{4}$ $66\frac{2}{3}\%$

12.

13. 1.04 1.014

13.

14. 6 weeks 42 days

14.

15. In the statement $7 + n < 10$, n is one of the whole numbers.
List all the values of n which makes the statement true.

15. n = _____

16. One of the following is another way of writing 3460.

Is it:

- (a) 3 thousands and 460 tens?
- (b) 34 hundreds and 6 ones?
- (c) 3 thousands and 46 tens?
- (d) 34 hundreds and 60 tens?
- (e) none of these?

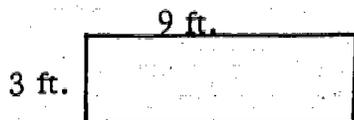
16. _____

17. Which of the following numbers has the smallest value?

- (a) .011 (b) .101 (c) .11 (d) .1

17. _____

18.



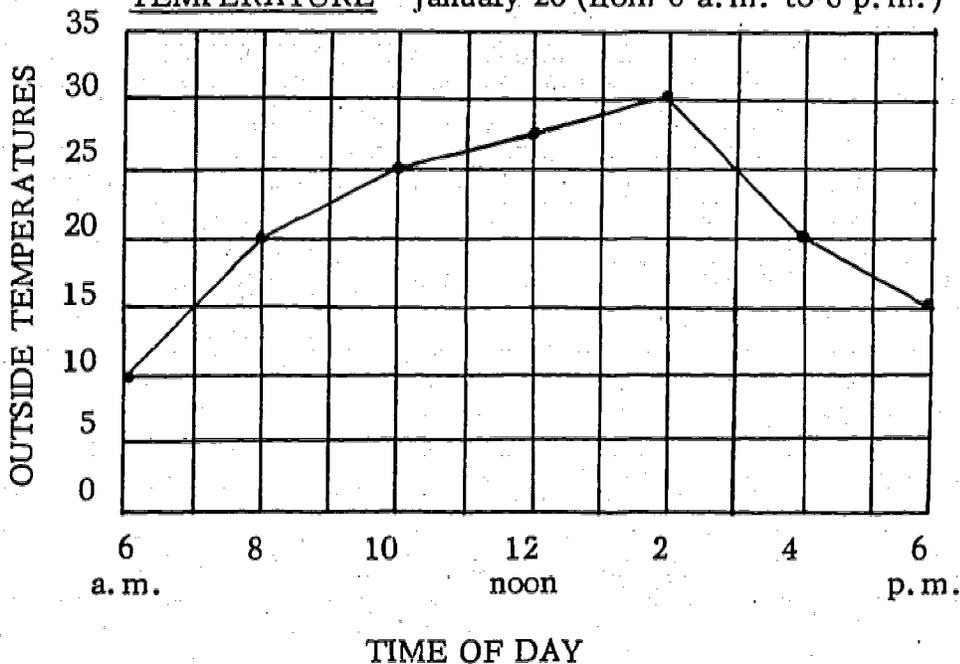
As a ratio, compare the length and width of this rectangle.

18. _____

19. $146 \times 272 = 272 \times n$

19. $n =$ _____

TEMPERATURE - January 20 (from 6 a.m. to 6 p.m.)



20. Was the temperature rising or falling at 10 a.m. ?

20. _____

21. How many times between 6 a.m. and 6 p.m. was the temperature 25° ?

21. _____

22. In which two-hour period was there the greatest fall in temperature?

22. _____

23. 6,666,666 rounded to the nearest hundred thousand is

23. _____

24. This is a drawing of a tin can. Its top is a circle. The tin can is:



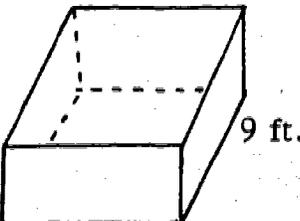
- (a) a cone (b) a cylinder (c) a sphere
 (d) a half sphere (e) none of these

24. _____

SURVEY TEST IN MATHEMATICS -- GRADE 6

PART 3 - PROBLEMS

Time Limit: 35 minutes

<p>1. How far will a car travel in 4 hours, if it travels at 45 M. P. H. ?</p>	<p>1. _____ miles</p>
<p>2. Joan needs 360 sheets of paper. The paper comes in packages each containing 15 sheets. How many packages will she need to buy?</p>	<p>2. _____ packages</p>
<p>3. Joan babysat 4 hours on Monday, 3 hours on Wednesday, and $2\frac{1}{2}$ hours on Friday. She is paid 60¢ per hour. How much did she earn for her work?</p>	<p>3. \$ _____</p>
<p>4.  How many cubic yards of earth can this box hold when filled?</p>	<p>4. _____ cu. yd.</p>
<p>5. Danny saved \$8.00 for a roadrace set. This was only $\frac{1}{5}$ of what he needed. What is the cost of the set?</p>	<p>5. \$ _____</p>
<p>6. A number of items were bought at the following prices: \$2.16, \$.78, \$.98, \$7.35. How much change would be left from a \$20 bill?</p>	<p>6. \$ _____</p>
<p>7. David had 40 tickets to sell for the school fair. He sold 40% of them. How many tickets did he sell?</p>	<p>7. _____ tickets</p>

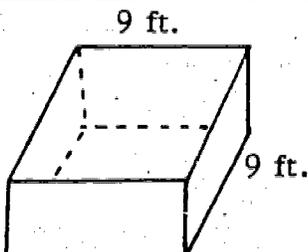
In the following problems, give equations only (you need not calculate the answer).

Example: Bill sold 8 tickets to the school concert and Betty sold 7. How many did they sell altogether?

Equation:

$8 + 7 = n$ OR $n = 8 + 7$

8. Of the 550 children at Elm School, 110 eat lunch at school.

packages each containing 15 sheets. How many packages will she need to buy?	2. _____ packages
3. Joan babysat 4 hours on Monday, 3 hours on Wednesday, and $2\frac{1}{2}$ hours on Friday. She is paid 60¢ per hour. How much did she earn for her work?	3. \$ _____
4.  How many cubic yards of earth can this box hold when filled?	4. _____ cu. yd.
5. Danny saved \$8.00 for a roadrace set. This was only $\frac{1}{5}$ of what he needed. What is the cost of the set?	5. \$ _____
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7. David had 40 tickets to sell for the school fair. He sold 40% of them. How many tickets did he sell?	7. _____ tickets

In the following problems, give equations only (you need not calculate the answer).

Example: Bill sold 8 tickets to the school concert and Betty sold 7. How many did they sell altogether?

Equation:

$8 + 7 = n$ OR $n = 8 + 7$

8. Of the 550 children at Elm School, 110 eat lunch at school. What percent of the students eat lunch at school? (equation only)	8. _____
9. Joan bought 3 models for \$1.75 each. Bill bought the same models at another store for \$6.15. How much more did Bill pay than Joan? (equation only)	9. _____
10. In a basketball shooting contest, Bill made 80% of the shots he tried. 32 of his shots were in the basket. How many shots did he try? (equation only)	10. _____
11. Mary is wrapping prizes for her party next week. How many pieces of ribbon, each $\frac{3}{4}$ of a yard long, can she cut from a roll containing $5\frac{1}{4}$ yards? (equation only)	11. _____
12. A swimming pool filled contains 14,400 gallons of water. It takes 6 hours to fill the pool. How much water goes into the pool every hour? (equation only)	12. _____



Score _____