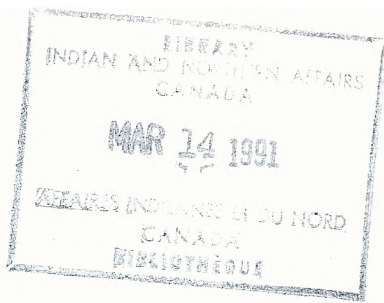


**MANITOBA**  
**mathematics**  
**ASSESSMENT**  
**may 1981**

VOLUME I I

INTERLAKE/CROSS LAKE AREA

E96.65  
.M36  
M352  
v.2



VOLUME II

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VOLUME

I	Manitoba Region - Test Data
II	Interlake/Cross Lake Area, Test Data Grades 3, 6 & 9
III	Thompson District, Test Data Grades 3, 6 & 9
IV	Island Lake Area, Test Data Grades 3, 6 & 9

## INTRODUCTION

The testing programme, instituted by the Minister of Education and implemented in May of 1978 with the first assessment in Mathematics, is cyclical in nature.

This second series of the Mathematics Assessment Program was administered in May 1981. The results for Grade 6 and 9 in the Federal Schools were machine scored in the same manner as the Provincial Schools sample. Grade 3 were marked by the teachers and tabulated by hand in Regional Office, hence no item analysis is available. No Grade 12 students in the Federal Schools wrote any of the three Grade 12 Mathematics Assessments.

Computer lists by student names and by school for mean performance will be forwarded under separate cover to the appropriate schools for retention along with the students answer sheets for Grades 6 and 9. The Grade 3 student booklets have been sent under separate cover to the appropriate schools.

TABLE 1

## Indian Affairs Sample of Tests

Grade	*Number of Students Eligible Manitoba Region (October 31, 1980)	Number of Tests Scored				
		Thompson	Interlake	Island Lake	TOTAL	Percent
3	676	83	178	159	420	62.1
6	551	99	141	107	347	62.9
9	316	33	71	71	175	55.4

\* Number of eligible students is based on the Nominal Roll figures for October 1980

As the tests were administered in May "break-up", some students would be prevented from attending school and there were probably students who had left school since the October Nominal Roll count.

The Provincial preliminary report has included a most important cautionary note quoted here:

"A WORD OF CAUTION ABOUT THE ASSESSMENT PROGRAMS

All measurements of human performance are estimates of actual skills. When assessed, these skills are approximations of what actually occurs within the learner. Every effort has been made to minimize errors of assessment but they can occur in a number of ways: the specification of skills and objectives, the selection of materials and production of test questions, the weighting of questions, the interpretation of questions by student, the presentation of results, and the interpretation of these results. Furthermore, the intent of the assessments is to obtain estimates of the performance of Manitoba students in general. Individual student diagnosis or grading on the basis of the tests should be attempted only in conjunction with other tests and assessments.

In the interpretation of results it should be noted that it is not possible to attribute performance strengths and weaknesses to specific aspects of instruction, such as programming or teaching. In addition, a variety of societal factors must be considered when interpreting the results. The interpretations presented in this report provide an initial set of criteria on the performance of Manitoba students."

SUMMARY OF THE TEST DATA

The mathematics tests were designed to provide data on a number of objectives within major topic areas. The topic areas were consistent throughout the four grade levels but different objectives were identified within the topics as being pertinent to the grade levels. Students scores were obtained on subtests each comprising one objective if there were a sufficient number of items,

and several objectives or the topic itself if there were too few items for an objective.

The topic areas are identified below with an indication of the ones that were assessed in the various tests.

<u>Topic Area</u>	<u>Grade Level Test</u>			
	<u>3</u>	<u>6</u>	<u>9</u>	<u>12-General</u>
Number Systems, Operations, and Properties	x	x	x	x
Measurement	x	x	x	x
Geometry	x	x	x	x
Graphing	x	x		
(Graphing and Statistics)*			x	x
Algebra	-	-	x	x
Consumer Applications	-	-	-	x

\*At the grade 9 and 12 levels graphing includes statistics.

NOTE: Formats of the analysis sheets, test pages, charts, and error definition sheets are borrowed directly from the Provincial preliminary report.

RECOMMENDATIONS

1. There is a need to improve comprehension as related to problem solving.
2. Vocabulary of mathematics needs to be extended, varied, and presented prior to teaching a lesson similar to the pre-teaching needed in a language lesson.
3. Analysis of why some schools' performance was better than others and a dissemination of their methods.
4. The need to develop test-taking skills, eg. start immediately, work quickly for the entire allowed time.
5. - Daily checking of work and homework assignments leading to diagnostic/prescriptive teaching.
6. Field superintendents to work closely with principals to develop strategies with their teachers necessary to improve the mathematics performance.
7. The utilization of teachers with mathematics background to assist other teachers in each school.
8. Three travelling mathematics resource teachers to correct the deficiencies identified in this report.



## CHART 1

## GRADE 3

	Knowledge and Computation		Comprehension		Application	
	Items	#	Items	#	Items	#
I. Number Systems, Operations and Properties						
I.A Concepts of Whole Numbers			70-72	3		
I.B Place Value			17-19,98-100	6		
I.C1 Addition of Whole Numbers	1-6	6	28,29	2		
I.C2 Subtraction of Whole Numbers	30-35	6	30	1		
I.D1 Multiplication of Whole Numbers	7-16,95,96	12				
I.D2 Division of Whole Numbers	89-94,97	7				
I.E Fractions and Decimals			27,86-88	4		
I.G Patterns					20-22,73-75	6
I.H Applications					23-26,76-79	8
I. TOTALS		31		16		14
II. Measurement						
II.A Linear Measurement	34,53,54,55	4	31,35,51,52,68,69	6	32,33	2
II.BC Area, Volume, and Capacity			40,41	2	36,37	
II.EFG Money, Time, and Temperature	42,43,60,61,63,64	6	44	1		
II.H Applications					38,39,56,57	4
II. TOTALS		10		9		8
III. Geometry			45,46,47,49,58,59,62	7	48,50	2
IV. Graphing					65,66,67	3
TOTALS		41		32		27

Table 3

INTERLAKE/CROSS LAKE

MATHEMATICS ASSESSMENT PROGRAM 1981

FINAL TEST SCORES - GRADE 3

Subtests and Number of items per Subtest:

SCHOOL	Number Systems, Operations, and Properties									Measurement			Geometry	Graphing	
	I.A <sub>3</sub>	I.B <sub>6</sub>	I.C1 <sub>8</sub>	I.C2 <sub>7</sub>	I.C1 <sub>12</sub>	I.D2 <sub>7</sub>	I.E <sub>4</sub>	I.G <sub>6</sub>	I.H <sub>8</sub>	II.A <sub>12</sub>	II.BC <sub>4</sub>	II.EFG <sub>7</sub>	II.H <sub>4</sub>	III.9	IV.3
Cross Lake n = 52	71/156	155/312	224/416	147/364	338/624	144/364	64/208	127/312	69/416	266/624	67/208	169/364	30/208	219/468	51/156
Poplar River n = 17	16/51	47/102	34/136	51/119	165/204	19/119	22/68	50/102	19/136	106/204	19/68	67/119	9/68	75/153	21/51
Little Black River n = 7	2/21	7/42	33/56	9/49	38/84	1/49	1/28	9/42	5/56	18/84	10/28	13/49	2/28	20/63	1/21
Pauingassi n = 7	6/21	11/42	35/56	12/49	45/84	2/49	4/28	6/42	3/56	33/84	5/28	15/49	1/28	14/63	6/21
Little Grand Rapids n = 14	23/42	55/84	82/112	28/98	121/168	26/98	19/56	44/84	26/112	98/168	27/56	53/98	18/56	99/126	20/42
Bloodvein n = 14	18/42	36/84	73/112	33/98	100/168	9/98	15/56	27/84	21/112	60/168	15/56	44/98	5/56	57/126	12/42
Total	243	552	841	451	1321	379	257	456	316	1063	281	612	150	827	211
Possible	534	1068	1424	1246	2136	1246	712	1068	1424	2136	712	1246	712	1602	534
% Correct	46	52	59	36	62	30	36	43	22	50	39	49	21	52	40

n = number of students

Table 3

INTERLAKE/CROSS LAKE

MATHEMATICS ASSESSMENT PROGRAM 1981

FINAL TEST SCORES - GRADE 3

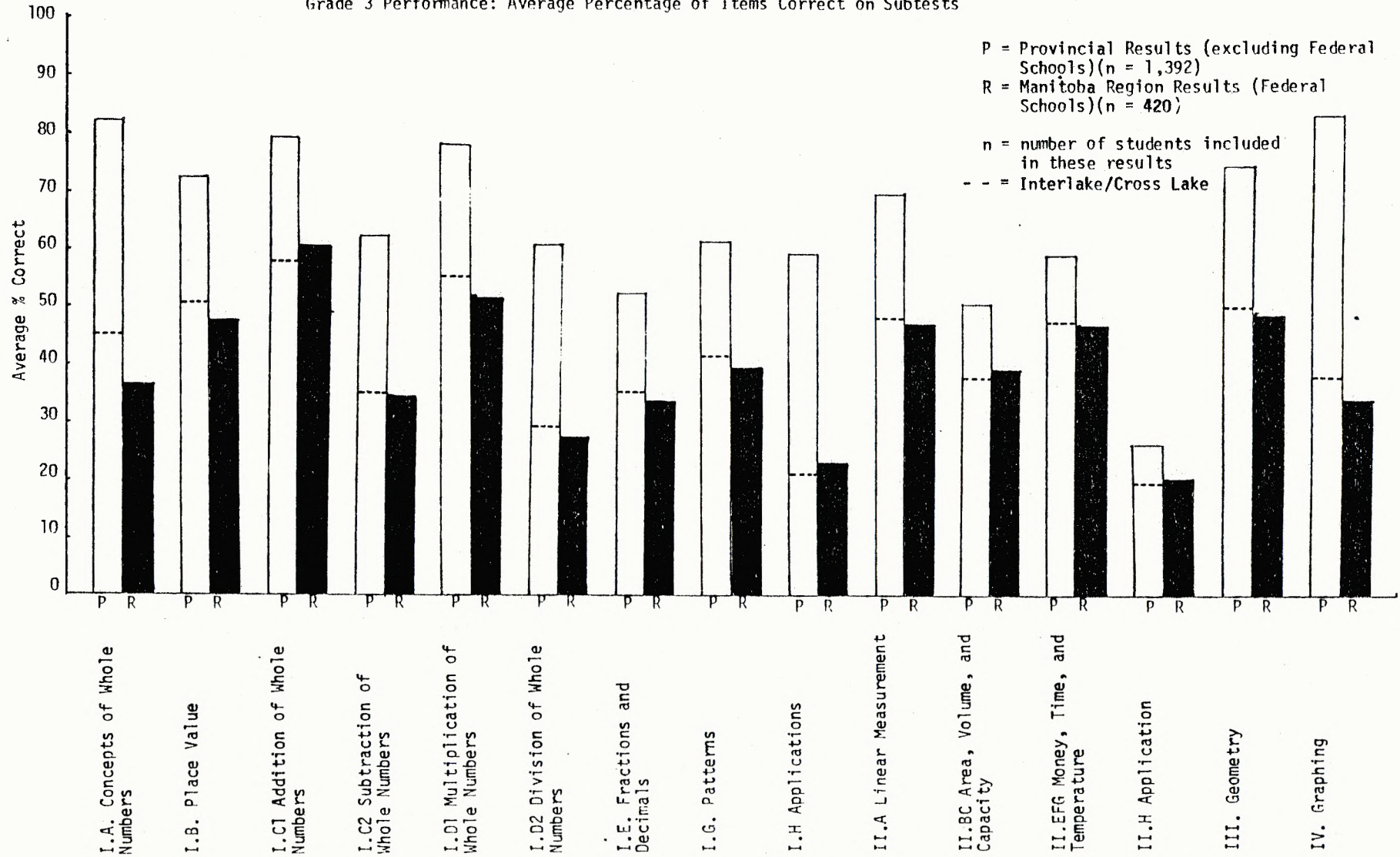
Subtests and Number of items per Subtest:

SCHOOL	Number Systems, Operations, and Properties									Measurement			Geometry	Graphing	
	I.A <sub>3</sub>	I.B <sub>6</sub>	I.C1 <sub>8</sub>	I.C2 <sub>7</sub>	I.C1 <sub>12</sub>	I.O2 <sub>7</sub>	I.E <sub>4</sub>	I.G <sub>6</sub>	I.H <sub>8</sub>	II.A <sub>12</sub>	II.BC <sub>4</sub>	II.EFG <sub>7</sub>	II.H <sub>4</sub>	III.g	IV.3
Fisher River n = 18	33/54	57/108	89/144	51/126	117/216	38/126	30/72	53/108	47/144	144/216	40/72	66/126	23/72	89/162	30/54
Lake St. Martin n = 12	27/36	56/72	77/96	49/84	123/144	67/84	32/48	49/72	52/96	114/144	34/48	55/84	22/48	82/108	22/36
Little Saskatchewan n = 4	9/12	15/24	27/32	15/28	23/48	0/28	5/16	12/24	14/32	35/48	10/16	17/28	7/16	30/36	9/12
Pine Creek n = 11	17/33	43/66	61/88	25/77	93/132	43/77	33/44	29/66	24/88	71/132	24/44	49/77	11/44	72/99	17/33
Jackhead n = 9	12/27	37/54	47/72	15/63	79/108	23/63	17/36	22/54	15/72	58/108	10/36	34/63	13/36	37/81	11/27
Easterville n = 13	9/39	33/78	59/104	16/91	79/156	7/91	15/52	28/78	21/104	60/156	20/52	30/91	9/52	33/117	11/39

n = number of students

GRAPH 9

Grade 3 Performance: Average Percentage of Items Correct on Subtests



INTERLAKE/CROSS LAKE

GRADE 6

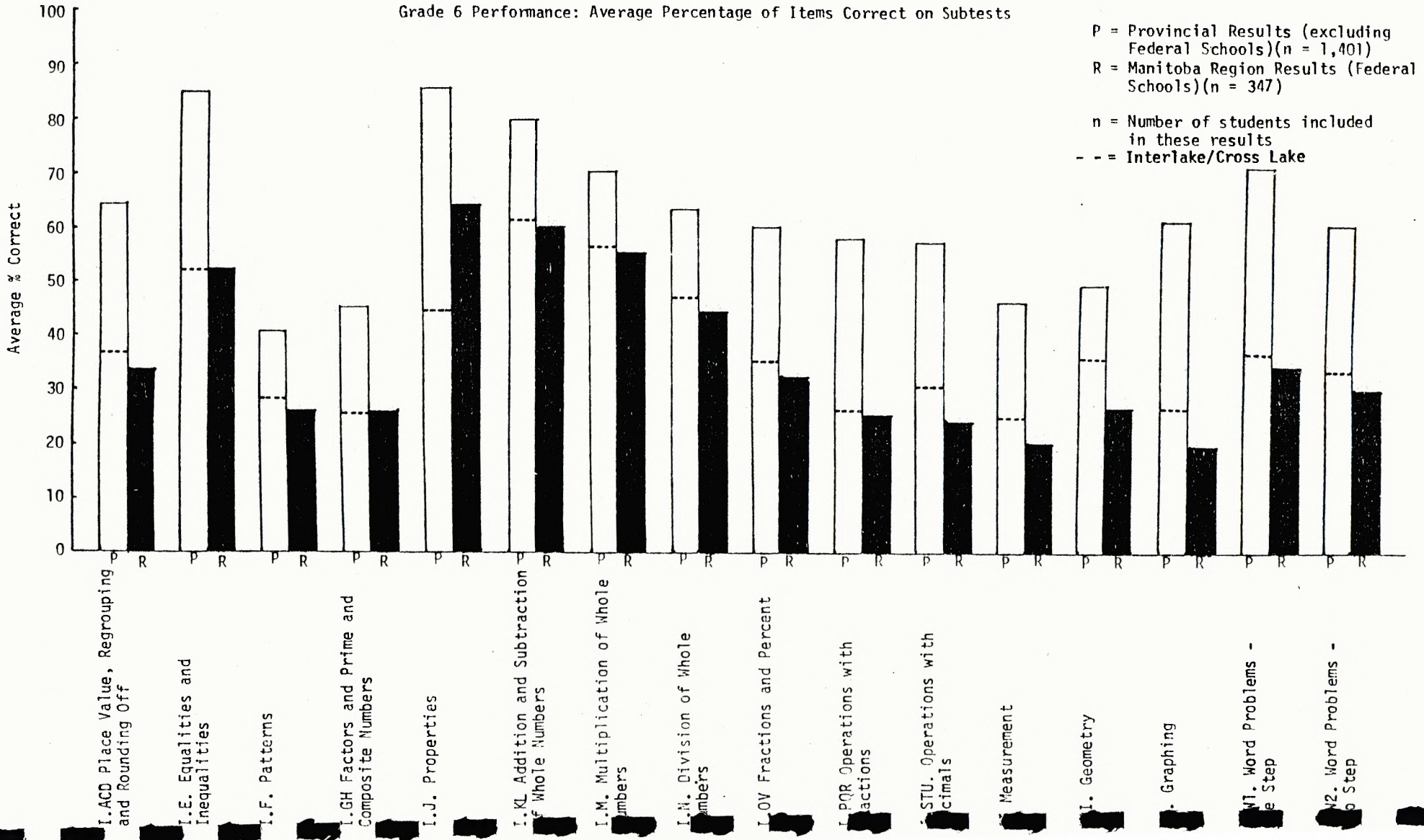
## CHART 2

## GRADE 6

	Knowledge and Computation		Comprehension		Application	
	Items	#	Items	#	Items	#
I. Number Systems, Operations and Properties						
I.ACD Place Value, Regrouping, and Rounding Off			1-8	8		
I.E Equalities and Inequalities			9-12	4		
I.F Patterns			13	1		
I.GH Factors and Prime and Composite Numbers	14-18	5				
I.J Properties			19-23	5		
I.KL Addition and Subtraction of Whole Numbers	24, 25, 26, 30, 31, 32	6	27	1	28, 29, 33, 34	4
I.M Multiplication of Whole Numbers	35-40	6	41	1	42, 43	2
I.N Division of Whole Numbers	44-48, 50-52	8			49	1
I.OV Fractions and Percent			54-60	7	53	1
I.PQR Operations with Fractions	61-63, 65-69	8			64, 70	2
I.STU Operations with Decimal	74-77	4	71-72, 73, 79	4	80	1
I. TOTALS		37		31		11
II. Measurement			78, 81-88	9		
III. Geometry			89-94	6		
IV. Graphing					95-98	4
TOTALS		37		46		15

GRAPH 10

Grade 6 Performance: Average Percentage of Items Correct on Subtests



CODING FOR COMPUTER SCORING FOR MATHEMATICS ASSESSMENT  
FEDERAL SCHOOLS - Grades 6 and 9  
MAY 1981

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Interlake/Cross Lake

CODE	SCHOOL NAME
5301	Fisher River School
5302	Lake St. Martin School
5303	Little Saskatchewan School
5304	Pine Creek School
5305	Cross Lake School
5306	Poplar River School
5307	Little Black River School
5308	Pauingassi School
5309	Jackhead School
5310	Little Grand Rapids School
5311	Bloodvein/Miskoosepi School
5312	Easterville School

Island Lake

CODE	SCHOOL NAME
5401	Garden Hill School
5402	George Knott School (Wasagamack)
5403	Gods Lake Narrows School
5404	Gods River School
5405	Oxford House School
5406	Red Sucker Lake School
5407	St. Theresa Point School

Thompson

CODE	SCHOOL NAME
5501	Lac Brochet School
5502	Pukatawagan School
5503	Shamattawa School
5504	Split Lake School
5505	Tadoule Lake School
5506	York Landing School
5507	Roland Lauze School (Nelson House)





Grade 6 Performance: Average Percentage of  
Items Correct on Subtests

Subtest within Topic Area	No. of Items	Average Percentage Correct		
		Females	Males	Combined
<b>I. Number Systems, Operations and Properties</b>				
I.ACD Place Value, Regrouping, and Rounding Off	8	64.1	65.9	64.8
I.E Equalities and Inequalities	4	66.8	86.5	86.3
I.F Patterns	1	43.0	41.0	42.0
I.GH Factors and Prime and Composite Numbers	5	45.6	45.8	45.6
I.J Properties	5	88.6	85.4	87.0
I.KL Addition and Subtraction of Whole Numbers	11	85.6	80.5	82.8
I.M Multiplication of Whole Numbers	9	79.0	74.7	76.6
I.N Division of Whole Numbers	9	69.6	62.2	65.4
I.OV Fractions and Percent	8	60.5	61.6	60.8
I.PQR Operations with Fractions	10	58.4	55.8	56.9
I.STU Operations with Decimal	9	59.7	55.2	57.1
II. Measurement	9	43.7	48.6	46.0
III. Geometry	6	49.8	49.7	49.5
IV. Graphing	4	60.0	63.8	61.5
I.W1 Word Problems - One Step	6	74.8	70.3	72.2
I.W2 Word Problems - Two Step	6	64.7	59.8	62.0

Grade 9 Performance: Average Percentage of  
Items Correct on Subtests

Subtest within Topic Area	No. of Items	Average Percentage Correct		
		Females	Males	Combined
<b>I. Number Systems, Operations and Properties</b>				
I.A.1. (a-e) Basic Operations	16	59.1	55.4	56.9
I.A.2. and I.C. Order and Word Problems	4	62.5	63.8	62.8
I.A.3., I.A.4., and I.B. Square Roots	5	45.0	49.6	47.2
II. Measurement	3	50.0	56.7	53.0
III. Geometry				
III.A. Basic Constructions	2*	47.5	50.8	48.7
III.B. Angles and Parallel Lines	4	45.8	42.8	44.0
IV. Algebra				
IV.A.1. Terminology	3	58.7	55.3	56.7
IV.A.2. Exponents	5**	39.8	42.4	40.3
IV.A.3. Simplifications	11**	59.4	55.5	57.0
IV.A.4. Substitutions	5	65.0	59.8	62.0
IV.8. Equations	14	54.9	52.4	53.4
IV.C. Word Problems	4	50.3	53.0	51.5
V. Graphing and Statistics				
V.A. Arithmetic Mean	2	71.0	70.0	70.5
V.B. Graphing	3	54.7	55.3	54.7

\* Total score for the two construction items is 6.

\*\* Item 40 was changed from IV.A.2. to IV.A.3. (see Volume III for details).

PRODUCTION DATE 08/10/81

DEPARTMENT OF EDUCATION

GRADE NINE MATHEMATICS

PROVINCIAL ASSESSMENT PROGRAM

**Skill Areas**

ID	NAME	BASIC OPER	ORDER WORD	SQUARE ROOTS	MEASUR EMENT	ANGLES LINES	TERMIN OLOGY	EXPON ENTS	SIMPL LIFY	SUBST ITUTE	EQUAT IONS	WORD PROBS	ARITH MEAN	GRAPH ING	RAW SCORE
53010	Child's name	8	2	2	1	2	2	3	5	5	8	1	1	1	41 # of correct answers
	PERCENTAGES for correct responses	50.0	50.0	40.0	33.3	50.0	66.7	50.0	50.0	100.0	57.1	25.0	50.0	33.3	51.9
		6	2	2	0	1	2	1	4	0	4	1	2	1	26
	PERCENTAGES	37.5	50.0	40.0	0.0	25.0	66.7	16.7	40.0	0.0	28.6	25.0	100.0	33.3	32.9
		6	1	0	2	2	0	2	0	0	4	1	1	2	21
	PERCENTAGES	37.5	25.0	0.0	66.7	50.0	0.0	33.3	0.0	0.0	28.6	25.0	50.0	66.7	26.6
		4	0	1	1	1	0	3	7	3	7	4	0	2	33
	PERCENTAGES	25.0	0.0	20.0	33.3	25.0	0.0	50.0	70.0	60.0	50.0	100.0	0.0	66.7	41.8
		8	1	0	1	2	1	0	5	1	6	2	2	1	30
	PERCENTAGES	50.0	25.0	0.0	33.3	50.0	33.3	0.0	50.0	20.0	42.9	50.0	100.0	33.3	38.0
		9	2	2	1	1	1	2	6	4	7	2	2	1	40

The computer sheets with the child's name listed give you the number of correct responses for each subtest or skill area. The percentage of these correct answers is printed immediately below.

## Sheet 4

08/18/81 ITEM ANALYSIS PAGE 01

SCHOOL INSTRUCTOR CLASS SECTION  
ISLAND LAKE REGION ISLAND LAKE REGION MATH GRADE SIX MATH GRADE SIX

TEST	QUESTION	RESPONSE	POSITION	TOTAL STUDENTS	DATE TESTED		
MATH GRADE SIX	NUMBER	1ST	2ND	3RD	4TH	5TH	6TH
1	1	a 29%	b 17%	c * 51%	d 3%	e 1%	omitted NR
1	2	18%	19%	26%	* 37%	1%	
1	3	28%	6%	* 11%	54%		1%
1	4	5%	6%	7%	* 41%	37%	5%
1	5	* 52%	14%	6%	27%	1%	
1	6	19%	* 53%	16%	12%		1%
1	7	33%	20%	* 21%	24%	1%	
1	8	33%	* 17%	15%	32%		3%
							1%

Item analysis for Grades 6 and 9 indicates each question and an asterisk is placed by the correct response.

eg. Item 18 of the correct response was "b". Note for remedial purposes that most students incorrectly chose answer "d" and a large number chose answer "a". The test questions and the students' of your area responses to each skill are tabulated for quick reference in the Appendices "C" and "D" for Grades 6 and 9 respectively.

1	17	7%	25%	9%	* 55%	1%	3%
1	eg. 18	24%	* 28%	7%	39%		2%
1	19	* 74%	8%	8%	8%		1%
1	20	10%	* 71%	8%	7%		3%
1	21	20%	8%	10%	* 58%		3%

ERROR CLASSIFICATION KEY

Basic fact:	(Grade 3 only) error due to use of incorrect basic computation fact.
Calculation:	correct operation used with minimal computation error.
Defn:	error due to lack of knowledge of the definition identified.
Integer operation:	errors in the use of integers due to incorrect operation or incorrect procedure within the correct operation.
Method:	incorrect method used to solve the problem. (calculations correct)
Operation:	incorrect operation (addition, subtraction, multiplication, division) used in the question.
Procedure:	correct operation or algorithm with error in its application.
Reversal &/or zero subtr. error:	(Grade 3 only) reversal in subtraction of numbers and/or error in subtraction involving a zero.
Sign:	incorrect sign in final answer.
Translation:	error in reading and comprehending the question.
Unidentifiable:	(Grade 3 only) cause of error could not be identified.
Unidentifiable:	(Grades 6,9,12) response is not identified by a single cause of error.

"/" symbolizes "and/or"

I. Number Systems, Operations, and Properties  
I.ACD Place Value, Regrouping, and Rounding Off

1. The numeral 500 069 is equivalent to
- A) five hundred sixty-nine
  - B) five thousand sixty-nine
  - C) five hundred thousand sixty-nine
  - D) five million sixty-nine
2. Seven million twenty thousand thirty-four, written as a numeral is
- A) 720 034
  - B) 7 002 034
  - C) 7 200 034
  - D) 7 020 034
3. The numeral 524.013 is written as
- A) five hundred twenty-four and thirteen tenths
  - B) five hundred twenty-four and thirteen hundredths
  - C) five hundred twenty-four and thirteen thousandths
  - D) five hundred twenty-four and thirteen
4. The place value of the digit 3 in the numeral 534 896 201 is
- A) thousand
  - B) ten thousand
  - C) hundred thousand
  - D) ten million
  - E) hundred million
5. Which of the following equals 5 thousands + 8 tens + 6 ones?
- A) 5086
  - B) 50 086
  - C) 50 806
  - D) 5 000 806
6. Which of the following does not rename 160?
- A)  $4 \times 40$
  - B)  $16 + 10$
  - C)  $200 - 40$
  - D)  $90 + 40 + 30$



I. Number Systems, Operations & Properties  
I.ACD Place Value, Regrouping, and Rounding Off (Continued)

7. 830 659 rounded to the nearest thousand is
- |            |            |
|------------|------------|
| A) 830 000 | C) 831 000 |
| B) 830 100 | D) 840 000 |

8. 43.086 rounded to the nearest hundredth is
- |          |          |
|----------|----------|
| A) 43.00 | C) 43.10 |
| B) 43.09 | D) 43.11 |





I. Number Systems, Operations, and Properties  
I.E. Equalities and Inequalities

9. 7605 is less than

- A) 7056                      C) 7560  
B) 7065                      D) 7650

10. 16 085 is greater than

- A) 16 090                      C) 16 100  
B) 16 001                      D) 16 729

11. Which of the following is true?

- A)  $40 < 29$                       C)  $71 < 96$   
B)  $75 > 81$                       D)  $34 > 39$

12. Which of the following is true?

- A)  $25 < 19$                       C)  $63 > 69$   
B)  $31 > 35$                       D)  $72 > 64$



I. Number Systems, Operations, and Properties  
I.F Patterns

13. What is the next numeral in the sequence 1, 4, 9, 16, \_\_\_\_\_?

A) 21

C) 25

B) 23

D) 36



I. Number Systems, Operations, and Properties  
1.GH Factors and Prime and Composite Numbers

14. The prime factors of 36 are  
A) 2 and 3                      C) 6 and 3  
B) 2 and 19                     D) 3 and 4
15. The prime factors of 12 are  
A) 1 and 12                     C) 3 and 4  
B) 6 and 2                      D) 2 and 3
16. The common factors of 16 and 20 are  
A) 2                                C) 1, 2, 4  
B) 4                                D) 1, 2, 4, 8
17. The greatest common factor of 42 and 63 is  
A) 1                                C) 9  
B) 7                                D) 21
18. The least common multiple of 6 and 14 is  
A) 28                               C) 54  
B) 42                               D) 84



I. Number Systems, Operations, and Properties  
I.J Properties

19.  $863 + 92 = 92 + n$ , then  $n$  must be
- A) 863                      C) 62  
B) 562                      D) 2
20. In  $(84 + 26) + 13 = 84 + (n + 13)$ , the value of  $n$  is
- A) 16                      C) 36  
B) 26                      D) 46
21. In  $(n \times 32) \times 15 = 89 \times (32 \times 15)$ , the value of  $n$  is
- A) 15                      C) 78  
B) 32                      D) 89
22. Which of the following is true?
- A)  $301 + 0 = 3010$                       C)  $420 + 0 = 0$   
B)  $79 + 0 = 79$                       D)  $10 + 0 = 100$
23. Which of the following is true?
- A)  $40 \times 1 = 401$                       C)  $12 \times 1 = \frac{1}{12}$   
B)  $39 \times 1 = 139$                       D)  $400 \times 1 = 400$



## INTERLAKE/CROSS LAKE

SUBTEST : I. Number Systems, Operations & Properties  
I.J Properties

GRADE 6

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS		
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response
19. a)	Correct	<u>56</u>	22. a)	Additive identity	9			
	b) Commutative prop.	17		b) Correct	<u>69</u>			
	c) Commutative prop.	17		c) Additive identity	9			
	d) Commutative prop. Omit	10 0		d) Additive identity Omit	12 0			
20. a)	Associative prop.	16	23. a)	Mult. prop. of 1	10			
	b) Correct	<u>52</u>		b) Mult. prop. of 1	3			
	c) Associative prop.	15		c) Mult. prop. of 1	13			
	d) Omit	0		d) Correct Omit	<u>71</u> 0			
21. a)	Associative prop.	24						
	b) Associative prop.	16						
	c) Associative prop.	17						
	d) Correct Omit	<u>43</u> 0						





I. Number Systems, Operations & Properties  
I.KL Addition and Subtraction of Whole Numbers (Continued)

30. Subtract: 457  
- 106

- A) 251                      C) 563  
B) 351                      D) 3501

31. Subtract: 5806  
- 2438

- A) 3368                      C) 3468  
B) 3378                      D) 3478

32. Subtract: \$45.00  
- \$14.25

- A) \$14.70                      C) \$31.75  
B) \$30.75                      D) \$59.25

33. Jerry sells papers on the corner. Monday he sold 42 papers; Tuesday he sold 28. He makes 5¢ on each paper. How much more money did he make on Monday than on Tuesday?

- A) 60¢                      C) 70¢  
B) 65¢                      D) 75¢

34. Sam delivers papers to 172 families in apartment blocks. The total number of families in these buildings is 329. How many families do not get papers from Sam?

- A) 157 families                      C) 267 families  
B) 167 families                      D) 501 families



I. Number Systems, Operations, and Properties  
I.M Multiplication of Whole Numbers

35. Which one of the following is true?

A)  $9 \times 7 = 54$

C)  $11 \times 9 = 109$

B)  $8 \times 9 = 81$

D)  $7 \times 12 = 84$

36.  $3 \times 4 \times 8 =$

A) 92

C) 96

B) 94

D) 98

37.  $745 \times 100 =$

A) 745 000

C) 7450

B) 74 500

D) 745

38.  $0 \times 374 =$

A) 0

C) 3740

B) 374

D) 3074

39. Multiply:  $\begin{array}{r} 203 \\ \times 132 \\ \hline \end{array}$

A) 2796

C) 26 796

B) 3036

D) 260 796

40. Multiply:  $\begin{array}{r} 327 \\ \times 268 \\ \hline \end{array}$

A) 11 118

C) 87 636

B) 86 636

D) 89 636













I. Number Systems, Operations & Properties  
I.N Division of Whole Numbers (Continued)

50. Divide:  $9\overline{)3330}$

A) 340	C) 360
B) 350	D) 370

51. Divide:  $4\overline{)424}$

A) 16	C) 106
B) 101	D) 160

52. Divide:  $8\overline{)32064}$

A) 48	C) 4008
B) 408	D) 4080



I. Number Systems, Operations, and Properties  
I.OV Fractions and Percent

53. John drives an average speed of 70 km an hour. How many hours will it take him to drive 280 km?
- A) 4 hours                      C) 210 hours  
B) 40 hours                     D) 19 600 hours
54. A set of equivalent fractions for  $\frac{3}{4}$  is
- A)  $\frac{6}{8}, \frac{9}{12}, \frac{15}{16}$                       C)  $\frac{6}{8}, \frac{8}{12}, \frac{15}{16}$   
B)  $\frac{5}{8}, \frac{8}{12}, \frac{15}{16}$                      D)  $\frac{6}{8}, \frac{9}{12}, \frac{12}{16}$
55.  $\frac{21}{30}$  reduced to lowest terms is
- A)  $\frac{10}{15}$                               C)  $\frac{11}{20}$   
B)  $\frac{7}{10}$                                 D)  $\frac{3}{10}$
56.  $3\frac{4}{5}$  when written as an improper fraction is
- A)  $\frac{12}{5}$                                 C)  $\frac{23}{5}$   
B)  $\frac{6}{5}$                                  D)  $\frac{19}{5}$
57.  $\frac{7}{11}, \frac{5}{11}, \frac{2}{11}$  and  $\frac{3}{11}$ , reordered from smallest to largest, is
- A)  $\frac{2}{11}, \frac{3}{11}, \frac{5}{11}, \frac{7}{11}$                       C)  $\frac{2}{11}, \frac{5}{11}, \frac{3}{11}, \frac{7}{11}$   
B)  $\frac{7}{11}, \frac{5}{11}, \frac{3}{11}, \frac{2}{11}$                      D)  $\frac{2}{11}, \frac{3}{11}, \frac{7}{11}, \frac{5}{11}$
58. Which of the following is true?
- A)  $\frac{1}{6} > \frac{1}{3}$                               C)  $\frac{1}{2} > \frac{5}{8}$   
B)  $\frac{2}{5} < \frac{3}{10}$                             D)  $\frac{3}{4} < \frac{7}{8}$



I. Number Systems, Operations & Properties  
I.OV Fractions and Percent (Continued)

59. Which of the following is true?

A)  $\frac{1}{2} < \frac{1}{3}$

C)  $\frac{2}{5} < \frac{2}{3}$

B)  $\frac{2}{3} > \frac{3}{4}$

D)  $\frac{5}{6} < \frac{2}{3}$

60. 20%, written as a fraction, is

A)  $\frac{2}{100}$

C)  $\frac{20}{100}$

B)  $\frac{80}{100}$

D)  $\frac{40}{100}$





I. Number Systems, Operations, and Properties  
 I.PQR Operations with Fractions

61. The sum of  $\frac{2}{9} + \frac{5}{9}$  is

A)  $\frac{7}{9}$

B)  $\frac{7}{18}$

C)  $\frac{10}{9}$

D)  $\frac{1}{3}$

62. Add:  $3\frac{1}{2} + 2\frac{1}{3} =$

A)  $6\frac{5}{6}$

B)  $5\frac{1}{6}$

C)  $6\frac{1}{6}$

D)  $5\frac{5}{6}$

63. Add:  $49\frac{2}{5}$   
 $+ 11\frac{1}{4}$

A)  $60\frac{3}{9}$

B)  $60\frac{13}{20}$

C)  $60\frac{1}{10}$

D)  $60\frac{1}{3}$

64. Mrs. Smith baked 48 cookies. Billy ate  $\frac{3}{8}$  of the cookies and Betty ate  $\frac{1}{8}$  of the cookies. In all, how many cookies were eaten?

A) 16 cookies

B) 18 cookies

C) 20 cookies

D) 24 cookies

65. Subtract:  $\frac{7}{8} - \frac{3}{8} =$

A)  $\frac{4}{8}$

B)  $\frac{2}{8}$

C)  $\frac{10}{8}$

D)  $\frac{5}{8}$

66. Subtract:  $\frac{5}{8} - \frac{1}{4} =$

A)  $\frac{3}{8}$

B)  $\frac{4}{4}$

C)  $\frac{1}{8}$

D)  $\frac{4}{8}$



I. Number Systems, Operations & Properties  
I.PQR Operations with Fractions (Continued)

67. Subtract:  $7 - \frac{5}{6} =$

A)  $7\frac{1}{6}$

C)  $\frac{2}{6}$

B)  $5\frac{1}{6}$

D)  $6\frac{1}{6}$

68. Multiply:  $\frac{7}{8} \times 72 =$

A) 56

C) 64

B) 63

D) 72

69. Multiply:  $12 \times 2\frac{3}{4} =$

A)  $14\frac{3}{4}$

C) 33

B) 30

D) 34

70. Mario bought a pizza to treat his friends. One-eighth of the pizza has 185 calories. How many calories are there in  $\frac{1}{4}$  of a pizza?

A)  $92\frac{1}{2}$  calories

C) 555 calories

B) 370 calories

D) 1480 calories



I. Number Systems, Operations, and Properties  
I.STU Operations with Decimal

71. 3.008, written in words, is

- A) three and eight                      C) three and eight hundredths  
B) three and eight tenths              D) three and eight thousandths

72.  $0.03 + 0.005 + 0.2$ , written as a sum, is

- A) 0.235                                  C) 0.352  
B) 0.253                                  D) 0.523

73.  $0.03 + 0.002$ , written as a sum, is

- A) 0.032                                  C) 0.32  
B) 0.302                                  D) 3.20

74. Add:    0.6  
              0.8  
              + 0.9

- A) 0.023                                  C) 2.3  
B) 0.23                                    D) 23

75. Subtract:    6.00  
                     - 3.56

- A) 1.54                                    C) 2.54  
B) 2.44                                    D) 3.44

76. Subtract:    195.3 - 0.304 =

- A) 194.004                                C) 194.996  
B) 194.096                                D) 195.004







## INTERLAKE/CROSS LAKE

SUBTEST: I. Number Systems, Operations &amp; Properties

GRADE

6

I.STU Operations with Decimal (Continued)

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS		
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response
77. a)	Correct	<u>7</u>						
	b) Mult. by powers of 10	15						
	c) Mult. by powers of 10	50						
	d) Mult. by powers of 10	24						
	Omit	0						
79. a)	Correct	<u>44</u>						
	b) Renaming and regrouping	13						
	c) Renaming and regrouping	18						
	d) Renaming and regrouping	11						
	e) Renaming and regrouping	11						
	Omit	0						
80. a)	Renaming and regrouping	8						
	b) Correct	<u>34</u>						
	c) Renaming and regrouping	23						
	d) Renaming and regrouping	15						
	e) Unidentifiable	16						
	Omit	0						

## II. Measurement

78. In the metric system of measurement, what does the prefix "centi" mean?

- A) 100 times the unit of measure
- B) 10 times the unit of measure
- C) 0.1 of the unit of measure
- D) 0.01 of the unit of measure
- E) 0.001 of the unit of measure



81. About how long is the crayon shown above?

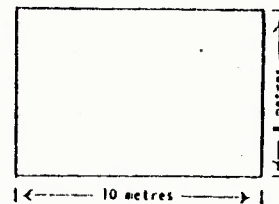
- A) 10 millimetres
- B) 1 centimetre
- C) 10 centimetres
- D) 1 metre
- E) 10 metres

82. The length of a side of a square is 6 centimetres. What is the perimeter of the square?

- A) 12 centimetres
- B) 24 centimetres
- C) 36 centimetres
- D) 24 square centimetres
- E) 36 square centimetres

83. What is the area of the figure shown below?

- A)  $80 \text{ km}^2$
- B) 36 km
- C)  $80 \text{ m}^2$
- D) 36 m
- E)  $80 \text{ nm}^2$



84. One kilogram has the same mass as

- A) 0.001 gram
- B) 10 grams
- C) 100 grams
- D) 1 gram
- E) 1000 grams

INTERLAKE/CROSS LAKE  
SUBTEST: II. Measurement

GRADE 6

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS		
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response
78. a)	Metric prefixes	13	83. a)	Units	10			
	b) Metric prefixes	30		b) Procedure/Defn: area	18			
	c) Metric prefixes	17		c) Correct	<u>27</u>			
	d) Correct	<u>15</u>		d) Procedure/Defn: area	27			
	e) Metric prefixes	18		e) Units	13			
	Omit	0		Omit	0			
81. a)	Measurement estimation	10	84. a)	Unit conversion	11			
	b) Measurement estimation	15		b) Unit conversion	16			
	c) Correct	<u>50</u>		c) Unit conversion	26			
	d) Measurement estimation	11		d) Unit conversion	23			
	e) Measurement estimation	10		e) Correct	<u>18</u>			
	Omit	0		Omit	0			
82. a)	Procedure/Defn: perimeter	23						
	b) Correct	<u>29</u>						
	c) Procedure/Defn: perimeter	17						
	d) Units	21						
	e) Procedure/Defn: perimeter and units	5						
	Omit	0						

## II. Measurement (Continued)

85. Which unit should be used to determine how much a glass holds?

- A) litre  
B) millimetre  
C) metre  
D) millilitre  
E) gram

86. A gram has the same mass as

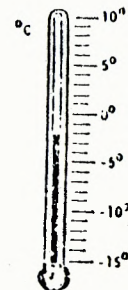
- A) 1 kilogram  
B) 0.1 kilogram  
C) 0.01 kilogram  
D) 0.001 kilogram  
E) 0.0001 kilogram

87. One month is about what fraction of a year?

- A)  $\frac{1}{30}$   
B)  $\frac{1}{365}$   
C)  $\frac{1}{12}$   
D)  $\frac{1}{52}$   
E)  $\frac{1}{24}$

88. What temperature does the thermometer below show?

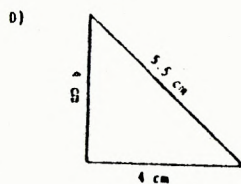
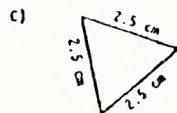
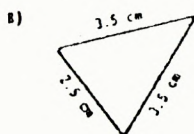
- A)  $0^{\circ}\text{C}$   
B)  $5^{\circ}\text{C}$  below zero  
C)  $2^{\circ}\text{C}$  below zero  
D)  $2^{\circ}\text{C}$  above zero  
E)  $3^{\circ}\text{C}$  below zero



PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS		
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response
85. a)	Metric unit use	22	88. a)	Temp. reading	7			
b)	Metric unit use	22	b)	Temp. reading	31			
c)	Metric unit use	20	c)	Correct	<u>27</u>			
d)	Correct	<u>16</u>	d)	Temp. reading	13			
e)	Metric unit use	15	e)	Temp. reading	16			
	Omit	0		Omit	0			
86. a)	Unit conversion	44						
b)	Unit conversion	17						
c)	Unit conversion	19						
d)	Correct	<u>10</u>						
e)	Unit conversion	5						
	Omit	0						
87. a)	Measurement: days of month	18						
b)	Measurement: day	23						
c)	Correct	<u>35</u>						
d)	Measurement: week	15						
e)	Unidentifiable	4						
	Omit	0						

## III. Geometry

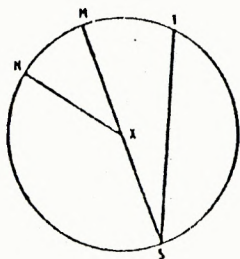
89. Which of the triangles shown below is a scalene triangle?



90. If X is the centre of the circle shown below, which segment is the diameter?

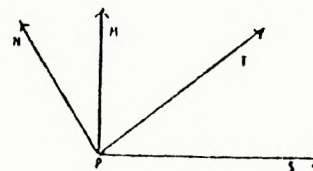
- A)  $\overline{MX}$   
B)  $\overline{TS}$   
C)  $\overline{NX}$

- D)  $\overline{SX}$   
E)  $\overline{MS}$

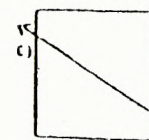
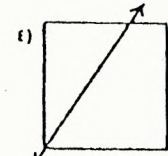
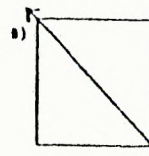
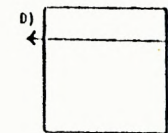
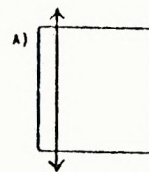


91. Which angle in the diagram below is an obtuse angle?

- A)  $\angle TPS$   
B)  $\angle TPM$   
C)  $\angle SPM$   
D)  $\angle SPN$   
E)  $\angle MPN$



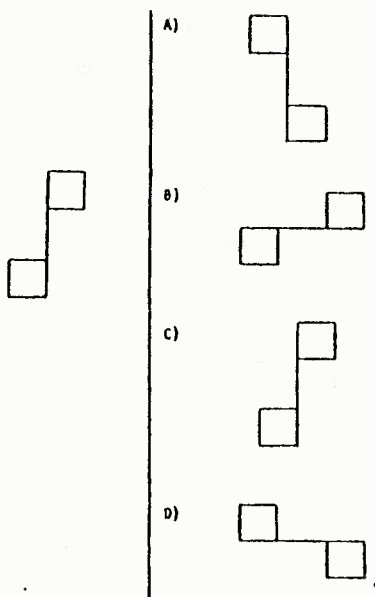
92. Which figure shows a line of symmetry for a square?



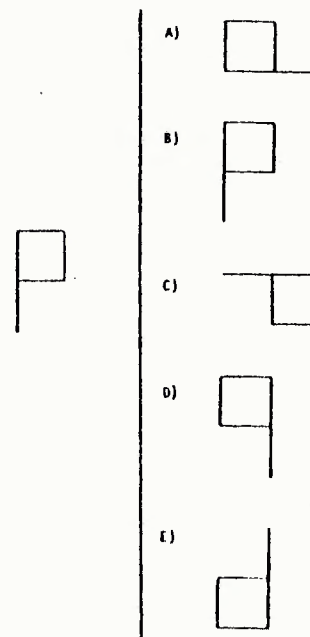


## III. Geometry (Continued)

93. Which figure on the right is a slide image of the figure on the left?



94. Which figure on the right is a flip image of the figure on the left?

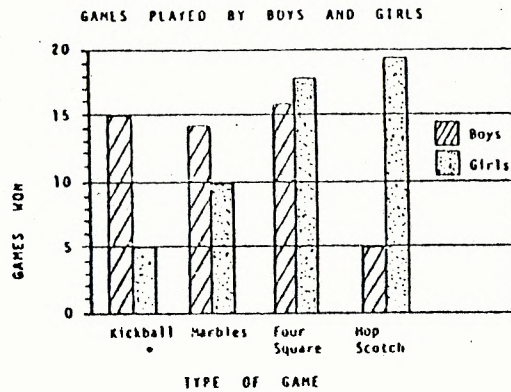






## IV. Graphing

The next two questions refer to the graph shown below.



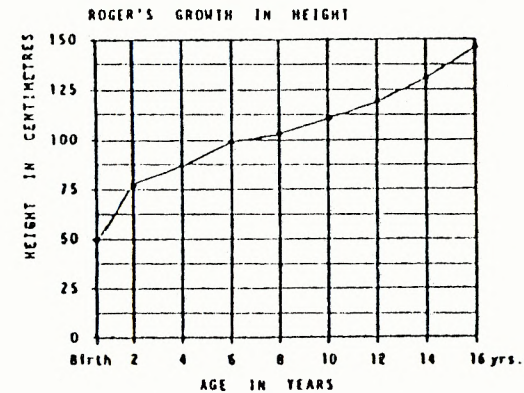
95. In which game did the boys win ten more games than the girls?

- A) Kickball  
 B) Marbles  
 C) Four Square  
 D) Hop Scotch  
 E) None of the above

96. In which game did the boys win 18 games?

- A) Kickball  
 B) Marbles  
 C) Four Square  
 D) Hop Scotch  
 E) None of the above

The next two questions refer to the graph shown below.



97. Between which ages did Roger grow the most?

- A) Birth and 2 years  
 B) 4 years and 6 years  
 C) 10 years and 12 years  
 D) 12 years and 14 years  
 E) 14 years and 16 years

98. Between which ages did Roger grow the least?

- A) 2 years and 4 years  
 B) 6 years and 8 years  
 C) 8 years and 10 years  
 D) 10 years and 12 years  
 E) 12 years and 14 years

INTERLAKE/CROSS LAKE  
SUBTEST: IV. Graphing

GRADE 6

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS		
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response
95. a)	Correct	<u>34</u>	98. a)	Reading of graph	28			
b)	Reading of graph	13	b)	Correct	<u>29</u>			
c)	Reading of graph	17	c)	Reading of graph	13			
d)	Reading of graph	16	d)	Reading of graph	11			
e)	Reading of graph	10	e)	Reading of graph	8			
	Omit	0		Omit	0			
96. a)	Reading of graph	16						
b)	Reading of graph	12						
c)	Reading of graph	29						
d)	Reading of graph	10						
e)	Correct	<u>22</u>						
	Omit	0						
97. a)	Correct	<u>17</u>						
b)	Reading of graph	9						
c)	Reading of graph	14						
d)	Reading of graph	13						
e)	Reading of graph	36						
	Omit	0						

08/18/81

## ITEM ANALYSIS

PAGE 01

SCHOOL  
CROSS LAKE\*INTERLAKEINSTRUCTOR  
CROSS LAKEACLASS  
MATH GRADE SIX

SECTION

TEST  
MATH GRADE SIXTOTAL STUDENTS  
143DATE TESTED  
80/ /81

SUB TEST	QUESTION NUMBER	RESPONSE POSITION					6TH	NRR
		1ST a)	2ND b)	3RD c)	4TH d)	5TH e)		
1	1	29%	17%	* 47%	6%			
1	2	20%	15%	25%	* 39%	1%		
1	3	19%	20%	* 24%	36%	1%		
1	4	5%	7%	13%	* 36%	38%	1%	
1	5	* 50%	8%	7%	32%	2%		
1	6	15%	* 55%	15%	15%	1%		
1	7	24%	23%	* 22%	29%		1%	
1	8	25%	* 29%	14%	30%	1%	1%	
1	9	29%	13%	10%	* 49%		1%	
1	10	17%	* 44%	8%	30%			
1	11	11%	15%	* 59%	14%		1%	
1	12	10%	13%	16%	* 60%	1%		
1	13	29%	27%	* 29%	14%			
1	14	* 20%	25%	43%	11%	1%		
1	15	31%	29%	22%	* 17%		1%	
1	16	9%	20%	* 29%	38%	1%	2%	
1	17	6%	18%	20%	* 55%	1%	1%	
1	18	29%	* 15%	10%	45%		1%	
1	19	* 56%	17%	17%	10%			
1	20	16%	* 52%	15%	17%			
1	21	24%	16%	17%	* 43%		1%	
1	22	9%	* 69%	9%	12%		1%	
1	23	10%	3%	13%	* 71%	2%		

am - red  
NRR

08/18/81

## ITEM ANALYSIS

PAGE 02

SUB TEST	QUESTION NUMBER	RESPONSE POSITION					NRR
		1ST	2ND	3RD	4TH	5TH	
1	24	1%	6%	* 89%	3%		
1	25	6%	* 78%	3%	10%	1%	1%
1	26		* 91%	3%	6%	1%	
1	27	* 62%	15%	10%	10%	2%	
1	28	5%	* 65%	27%	3%		
1	29	* 15%	3%	78%	4%		
1	30	6%	* 87%	2%	4%	1%	
1	31	* 59%	13%	20%	7%		
1	32	3%	* 63%	28%	6%	1%	
1	33	8%	7%	* 41%	44%		
1	34	* 32%	8%	10%	49%	1%	
1	35	8%	10%	7%	* 73%	1%	
1	36	10%	10%	* 73%	7%		
1	37	15%	* 61%	11%	13%		
1	38	* 64%	25%	8%	3%		1%
1	39	10%	10%	* 73%	6%		1%
1	40	6%	18%	* 63%	10%	2%	1%
1	41	15%	26%	* 46%	11%	1%	1%
1	42	13%	22%	17%	* 45%	1%	1%
1	43	* 23%	16%	24%	34%	1%	1%
1	44	* 58%	10%	16%	12%	2%	1%
1	45	* 43%	3%	24%	27%	1%	1%
1	46	* 50%	17%	17%	15%		1%
1	47	7%	13%	15%	* 62%	1%	1%
1	48	8%	24%	21%	* 45%	1%	1%
1	49	10%	* 34%	24%	30%		2%

08/18/81

## ITEM ANALYSIS

PAGE 03

SUB TEST	QUESTION NUMBER	RESPONSE POSITION						NRR
		1ST	2ND	3RD	4TH	5TH	6TH	
1	50	8%	22%	14%	* 54%	1%	1%	
1	51	24%	20%	* 45%	10%		1%	
1	52	13%	21%	* 48%	17%		1%	
1	53	* 33%	17%	22%	25%	1%	1%	
1	54	26%	22%	16%	* 34%	1%	1%	
1	55	8%	* 35%	22%	33%	1%	1%	
1	56	33%	22%	17%	* 24%	1%	2%	
1	57	* 39%	31%	15%	14%		1%	
1	58	19%	21%	30%	* 29%		1%	
1	59	33%	23%	* 18%	22%	1%	2%	
1	60	15%	8%	* 66%	8%	1%	2%	
1	61	* 42%	34%	15%	7%		2%	
1	62	10%	41%	21%	* 24%	2%	2%	
1	63	49%	* 29%	14%	5%	1%	2%	
1	64	24%	19%	29%	* 24%	1%	3%	
1	65	* 62%	13%	10%	11%		3%	
1	66	* 8%	64%	10%	15%		2%	
1	67	25%	10%	47%	* 15%	1%	2%	
1	68	22%	* 21%	22%	31%	1%	3%	
1	69	41%	16%	* 24%	16%	1%	2%	
1	70	36%	* 29%	17%	13%	1%	4%	
1	71	22%	24%	27%	* 24%	1%	3%	
1	72	* 23%	18%	40%	14%	1%	3%	
1	73	* 38%	21%	25%	13%	1%	3%	
1	74	8%	47%	* 24%	17%	1%	3%	
1	75	5%	* 57%	6%	28%	1%	3%	

08/18/81

## ITEM ANALYSIS

PAGE 04

SUB TEST	QUESTION NUMBER	RESPONSE POSITION					NRR
		1ST	2ND	3RD	4TH	5TH	
1	76	13%	21%	* 26%	36%	1%	3%
1	77	* 7%	15%	50%	24%	1%	3%
1	78	13%	30%	17%	* 15%	18%	6%
1	79	* 44%	13%	18%	11%	11%	3%
1	80	8%	* 34%	23%	15%	16%	3%
1	81	10%	15%	* 50%	11%	10%	3%
1	82	23%	* 29%	17%	21%	5%	6%
1	83	10%	18%	* 27%	27%	13%	4%
1	84	11%	16%	26%	23%	* 18%	6%
1	85	22%	22%	20%	* 16%	15%	5%
1	86	44%	17%	19%	* 10%	5%	6%
1	87	18%	23%	* 35%	15%	4%	5%
1	88	7%	31%	* 27%	13%	16%	6%
1	89	* 37%	13%	26%	17%		7%
1	90	17%	16%	20%	13%	* 26%	8%
1	91	22%	15%	18%	* 23%	13%	9%
1	92	17%	* 50%	8%	16%	2%	8%
1	93	18%	8%	* 55%	10%		8%
1	94	8%	40%	11%	* 25%	7%	9%
1	95	* 34%	13%	17%	16%	10%	10%
1	96	16%	12%	29%	10%	* 22%	10%
1	97	* 17%	9%	14%	13%	36%	10%
1	98	28%	* 29%	13%	11%	8%	10%

\* DENOTES CORRECT RESPONSE      NRR = NON-READABLE RESPONSE





































INTERLAKE/CROSS LAKE

GRADE 9



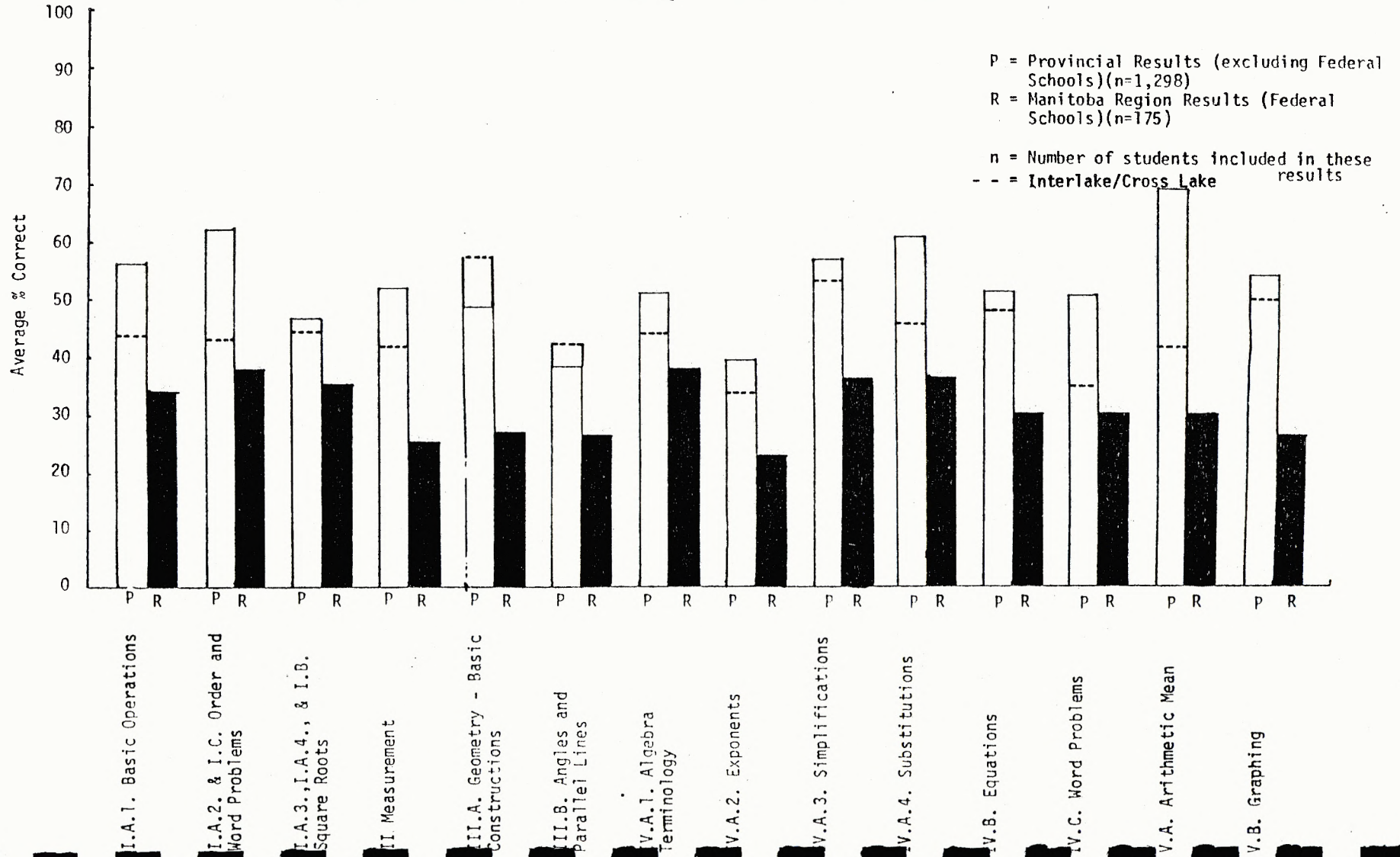
## CHART 3

## GRADE 9

	Knowledge and Computation		Comprehension		Application	
	Items	#	Items	#	Items	#
I. Number Systems, Operations, and Properties						
I.A.1 Basic Operations	1-3,6-10,13,14,18	11	12,15,19,25,53	5		
I.A.2 Order and & I.C Problems			5,11	2	24,55	2
I.A.3 } Square Roots	16,17	2	20,47	2	48	1
I.A.4 } Square Roots						
I.B } Square Roots						
I. TOTALS		13		9		3
II. Measurement					46,49,78	3
III. Geometry						
III.A Basic Constructions			80,81	2		
III.B Angles and Parallel Lines	51	1	50	1	52,74	2
III. TOTALS		1		3		2
IV. Algebra						
IV.A.1 Terminology	28	1	23,30	2		
IV.A.2 Exponents	27,33	2	21,22,26,40	4		
IV.A.3 Simplifications	34,35,36,38,39,57,58,59	3	37,56	2		
IV.A.4 Substitutions			41-45	5		
IV.B Equations			29,60-72	14		
IV.C Word Problems					31,32,73,79	4
IV. TOTALS		11		27		4
V. Graphing and Statistics						
V.A Arithmetic Mean			4	1	54	1
V.B Graphing			75,77	2	76	1
V. TOTALS				3		2
TOTALS		25		42		14

GRAPH 11

Grade 9 Performance: Average Percentage of Items Correct on Subtests



ERROR CLASSIFICATION KEY

Basic fact:	(Grade 3 only) error due to use of incorrect basic computation fact.
Calculation:	correct operation used with minimal computation error.
Defn:	error due to lack of knowledge of the definition identified.
Integer operation:	errors in the use of integers due to incorrect operation or incorrect procedure within the correct operation.
Method:	incorrect method used to solve the problem. (calculations correct)
Operation:	incorrect operation (addition, subtraction, multiplication, division) used in the question.
Procedure:	correct operation or algorithm with error in its application.
Reversal &/or zero subtr. error:	(Grade 3 only) reversal in subtraction of numbers and/or error in subtraction involving a zero.
Sign:	incorrect sign in final answer.
Translation:	error in reading and comprehending the question.
Unidentifiable:	(Grade 3 only) cause of error could not be identified.
Unidentifiable:	(Grades 6,9,12) response is not identified by a single cause of error.

"/" symbolizes "and/or"

I. Number Systems, Operations & Properties  
I.A1 (a-e) Basic Operations

1. The sum of  $17.23 + 3.1 + 2.607$  is

- |             |           |
|-------------|-----------|
| A) 0.00743  | O) 22.937 |
| B) 0.022937 | E) 23.61  |
| C) 7.430    |           |

8. The product of  $-0.3$  and  $-0.2$  is

- |            |           |
|------------|-----------|
| A) $-0.06$ | O) $0.06$ |
| B) $-0.6$  | E) $0.6$  |
| C) $-0.5$  |           |

2. The sum of  $-42 + (-19) + 82$  is

- |           |          |
|-----------|----------|
| A) $-143$ | D) $59$  |
| B) $-21$  | E) $143$ |
| C) $21$   |          |

3. The quotient of  $70 \div 0.001$  is

- |           |              |
|-----------|--------------|
| A) $0.07$ | D) $7000$    |
| B) $7$    | E) $70\,000$ |
| C) $700$  |              |

6.  $(-18)$  subtract  $(-6)$  is

- |          |         |
|----------|---------|
| A) $-24$ | C) $12$ |
| B) $-12$ | O) $24$ |

7. Which of the following equals  $8$ ?

- |                  |                  |
|------------------|------------------|
| A) $2 - (-6)$    | D) $(-5) - (3)$  |
| B) $(-2) + (-6)$ | E) $(-5) - (-3)$ |
| C) $(2) + (-6)$  |                  |

INTERLAKE/CROSSLAKE  
 SUBTEST: I. Number Systems, Operations & Properties  
 I.A1 (a-e) Basic Operations

GRADE 9

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS							
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response					
1. a)	Procedure	0	6. a)	Operation	27								
	b)	Place value		1	b)				Correct	44			
	c)	Procedure		1	c)				Sign	21			
	d)	Correct		<u>97</u>	d)				Integer operation	8			
	e)	Calculation		0					Omit	0			
	Omit	0											
2. a)	Operation: subt.	8	7. a)	Correct	<u>35</u>								
	b)	Sign		4	b)							Sign	37
	c)	Correct		<u>63</u>	c)							Integer operation	7
	d)	Integer operation		1	d)	Sign	7						
	e)	Integer operation		23	e)	Integer operation and sign	14						
	Omit	0		Omit	0								
3. a)	Div. by powers of 10	35	8. a)	Sign	11								
	b)	Div. by powers of 10		4	b)							Sign and place value	8
	c)	Div. by powers of 10		7	c)							Operation	32
	d)	Div. by powers of 10		17	d)				Correct	<u>35</u>			
	e)	Correct		<u>34</u>	e)				Place value	13			
	Omit	3		Omit	0								

I. Number Systems, Operations & Properties  
 I.A.1. (a-e) Basic Operations (Continued)

9. The quotient of  $-3792 \div 48$  is

- A) -79  
 B) 79  
 C) 86  
 D) -86  
 E) -94

10.  $2\frac{3}{4} + 1\frac{1}{2} =$

- A)  $\frac{4}{3}$   
 B)  $\frac{33}{8}$   
 C)  $\frac{11}{6}$   
 D)  $\frac{5}{4}$   
 E)  $\frac{5}{2}$

12. Evaluate  $\frac{6 + 24}{(2)(5)} - \frac{(4)(8)}{7 + 9} =$

- A) 2  
 B) -2  
 C) 0  
 D) 1  
 E) -1

13.  $\left(\frac{5}{3}\right)\left(\frac{12}{5}\right)\left(\frac{9}{8}\right)$  is equivalent to

- A)  $\frac{15}{4}$   
 B) 2  
 C) 4  
 D)  $\frac{9}{2}$   
 E) 3

14.  $\frac{3}{8}$  is equivalent to

- A) 3.8  
 B) 0.38  
 C) 0.735  
 D) 0.375  
 E) 2.666

15.  $0.\overline{27}$  is equivalent to

- A)  $\frac{27}{99}$   
 B)  $\frac{27}{90}$   
 C)  $\frac{27}{100}$   
 D)  $\frac{27}{9}$   
 E)  $\frac{27}{900}$

18. 0.025 written as a percent is

- A) 25%  
 B) 2.5%  
 C) 0.25%  
 D) 2.25%  
 E) 1.25%

19. The value of  $-|-4| - |-2| =$

- A) 2  
 B) -2  
 C) -8  
 D) 6  
 E) -6

25. The decimal equivalent of  $\frac{3}{11}$  is

- A)  $0.\overline{27}$   
 B)  $0.2\overline{7}$   
 C)  $0.0\overline{27}$   
 D) 3.66  
 E)  $0.3\overline{6}$

## INTERLAKE/CROSSLAKE

SUBTEST: I. Number Systems, Operations &amp; Properties

GRADE 9

I.A.1. (a-e) Basic Operations

(Continued)

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS		
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response
9. a)	Correct	<u>85</u>	13. a)	Reduction	14	18. a)	Place value	25
b)	Sign	4	b)	Reduction	7	b)	Correct	<u>18</u>
c)	Calculation and sign	4	c)	Reduction	13	c)	Place value	55
d)	Calculation	1	d)	Correct	<u>48</u>	d)	Procedure	0
e)	Calculation	3	e)	Reduction	15	e)	Procedure	0
	Omit	3		Omit	3		Omit	1
10. a)	Unidentifiable	6	14. a)	Procedure	28	19. a)	Absolute value	8
b)	Procedure: reciprocal	32	b)	Procedure or rounding	21	b)	Absolute value	20
c)	Correct	<u>51</u>	c)	Reversal of digits	3	c)	Operation: mult.	10
d)	Procedure: convert to improper fraction	7	d)	Correct	<u>45</u>	d)	Absolute value	44
e)	Procedure: convert to improper fraction	4	e)	Procedure	3	e)	Correct	<u>18</u>
	Omit	0		Omit	0		Omit	0
12. a)	Procedure	20	15. a)	Correct	<u>13</u>	25. a)	Correct	<u>42</u>
b)	Procedure	17	b)	Procedure	3	b)	Repeating bar	17
c)	Procedure	13	c)	Procedure	73	c)	Place value	8
d)	Correct	<u>35</u>	d)	Procedure and place value	11	d)	Procedure and repeating bar	20
e)	Procedure	11	e)	Procedure and place value	0	e)	Procedure and place value	13
	Omit	4		Omit	0			

I. Number Systems, Operations & Properties  
I.A.1. (a-e) Basic Operations (Continued)

53. The value of  $|-3| + |-2| - |6|$  is
- |        |       |
|--------|-------|
| A) 1   | D) 11 |
| B) -11 | E) 5  |
| C) -1  |       |









I. Number Systems, Operations & Properties  
I.A.3., I.A.4, and I.B. Square Roots

16. Which of the following numbers is irrational?

- A) 0.181818 ...      D) 0.111 ...  
B)  $0.\overline{89}$       E)  $\sqrt{5}$   
C)  $\sqrt{9}$

17.  $\sqrt{441}$  is equivalent to

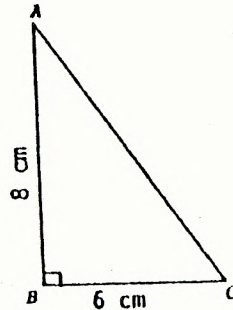
- A) 19      D) 21  
B) 29      E) 41  
C) 31

20. The square root of 65 is between

- A) 7 and 7.5      D) 8.5 and 9  
B) 7.5 and 8      E) 9 and 9.5  
C) 8 and 8.5

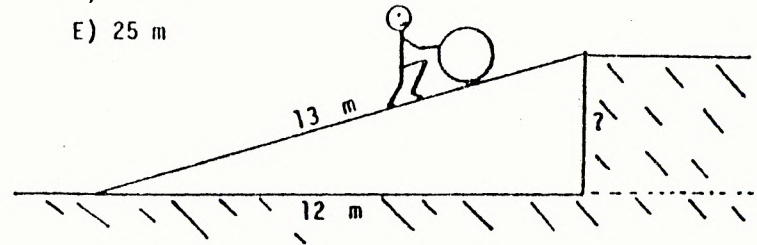
47. In the diagram the length of the hypotenuse is

- A) 8 cm  
B) 6 cm  
C) 10 cm  
D) 100 cm  
E) 14 cm



43. If the bottom of a 13 metre ramp is 12 metres from the loading platform, how high is the platform?

- A) 1 m  
B) 5 m  
C) 8 m  
D) 12.5 m  
E) 25 m



## INTERLAKE/CROSSLAKE

SUBTEST: I. Number Systems, Operations & Properties  
I.A.3., I.A.4., and I.B. Square Roots

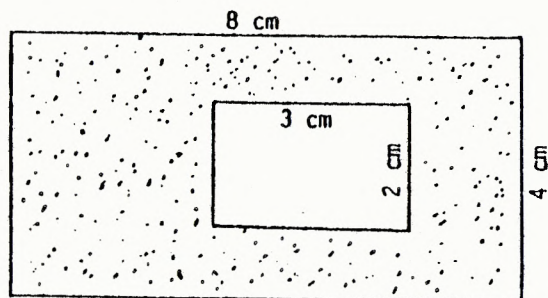
GRADE 9

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS				
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response		
16. a)	Rational number	20	47. a)	Pythag. relation not used	13					
	b)	Rational number		32	b)				Pythag. relation not used	3
	c)	Perfect square		3	c)				Correct	<u>44</u>
	d)	Rational number		10	d)				Pythag. relation: $a^2 + b^2 = c$	14
	e)	Correct		<u>32</u>	e)				Pythag. relation not used	25
		Omit		3					Omit	1
17. a)	Concept: square root	3	48. a)	Pythag. relation not used	13					
	b)	Concept: square root		10	b)				Correct	<u>35</u>
	c)	Concept: square root		1	c)				Unidentifiable	7
	d)	Correct		<u>65</u>	d)				Pythag. relation not used	10
	e)	Concept square root		18	e)				Pythag. relation: $a^2 + b^2 = c$	32
		Omit		3					Omit	3
20. a)	Concept: square root	21								
	b)	Concept: square root	21							
	c)	Correct	<u>44</u>							
	d)	Concept: square root	8							
	e)	Concept: square root	3							
		Omit	3							

## II. Measurement

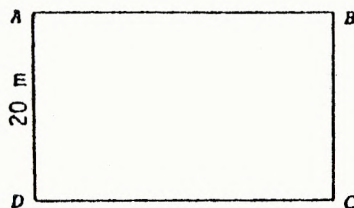
46. The area of the shaded region of the diagram is

- A)  $10 \text{ cm}^2$
- B)  $26 \text{ cm}^2$
- C)  $16 \text{ cm}^2$
- D)  $38 \text{ cm}^2$
- E)  $32 \text{ cm}^2$



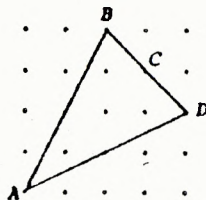
49. The perimeter of the rectangle  $ABCD$  is 100 metres. The width is 20 metres. The length is

- A) 80 m
- B) 40 m
- C) 30 m
- D) 25 m
- E) 60 m



78. What is the area of the enclosed region?

- A) 6 square units
- B) 6.5 square units
- C) 7 square units
- D) 7.5 square units
- E) 8 square units



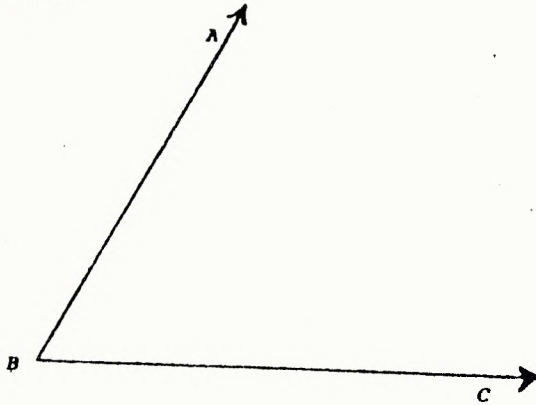
INTERLAKE/CROSS LAKE  
SUBTEST: II. Measurement

GRADE 9

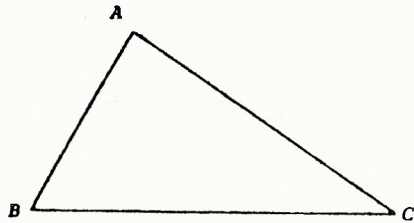
PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS		
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response
46. a)	Method: subt. dimensions	1	78. a)	Correct	<u>35</u>			
b)	Correct	<u>34</u>	b)	Area estimation	17			
c)	Method: total area $\div 2$	7	c)	Area estimation	15			
d)	Method: add areas	8	d)	Area estimation	10			
e)	Method: total area	49	e)	Area estimation	18			
	Omit	0		Omit	4			
49. a)	Method/Defn: perimeter	23						
b)	Method/Defn: perimeter	7						
c)	Correct	<u>56</u>						
d)	Defn: rectangle	6						
e)	Method: 2 x length	8						
	Omit	0						

III. Geometry  
III.A. Basic Constructions

80. Bisect the given angle.



81. Construct a triangle congruent to the given  $\triangle ABC$ .





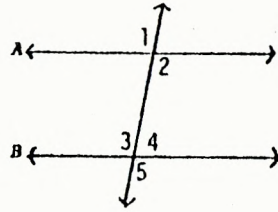
## III.A. Basic Constructions

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	
80.	3 = correct and accurate	62		2 = SAS, correct method, but some inaccuracy					
	3 = correct and accurate (alternative method)	4		2 = ASA, correct method, but some inaccuracy					
	2 = correct method (arcs and segments correct) but some inaccuracy.	6		2 = alternative method, correct method but some inaccuracy					
	1 = incomplete or incorrect step.	17		1 = SSS, incomplete or incorrect step					14
	0 = several incorrect steps Omit	11		1 = SAS, incomplete or incorrect step					
81.	3 = SSS, correct and accurate	55		1 = ASA, incomplete or incorrect step					
	3 = SAS, correct and accurate			0 = several incorrect steps					11
	3 = ASA, correct and accurate			Omit					17
	3 = alternate method, correct and accurate								
	2 = SSS, correct method but some inaccuracy	3							

III. Geometry  
III.B. Angles and Parallel Lines

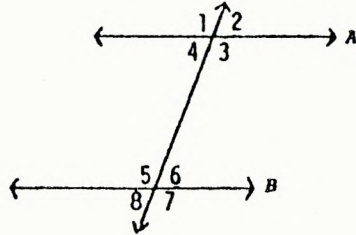
50. If line  $a$  and line  $b$  are parallel, and  $m\angle 2 = 130^\circ$ , then  $m\angle 4$  is

- A)  $40^\circ$   
B)  $50^\circ$   
C)  $60^\circ$   
D)  $65^\circ$   
E)  $70^\circ$



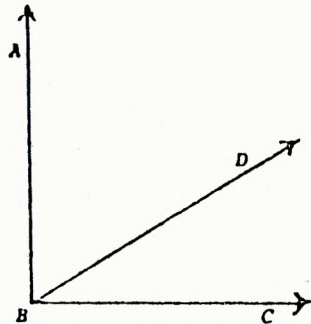
51. If line  $a$  and line  $b$  are parallel, then a pair of exterior angles is

- A)  $\angle 2$  and  $\angle 7$   
B)  $\angle 1$  and  $\angle 5$   
C)  $\angle 7$  and  $\angle 3$   
D)  $\angle 2$  and  $\angle 6$   
E)  $\angle 8$  and  $\angle 3$



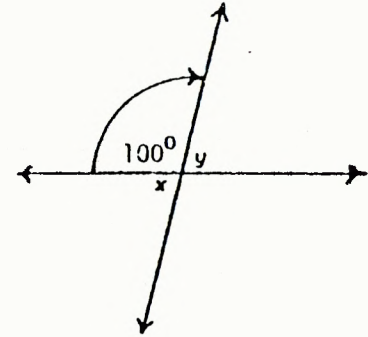
52.  $\angle ABC$  is a right angle. The measure of  $\angle ABD$  is twice the measure of  $\angle CBD$ . What is the measure of  $\angle ABD$ ?

- A)  $20^\circ$   
B)  $30^\circ$   
C)  $40^\circ$   
D)  $50^\circ$   
E)  $60^\circ$



74. In the figure,  $m\angle x + m\angle y =$

- A)  $80^\circ$   
B)  $110^\circ$   
C)  $140^\circ$   
D)  $160^\circ$   
E)  $180^\circ$



## INTERLAKE/CROSS LAKE

SUBTEST: III. Geometry

GRADE 9

## III.B. Angles and Parallel Lines

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS		
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response
50. a)	Defn: corresponding angles	10	52. a)	Unidentifiable	1			
	b) Correct	<u>48</u>		b) Method: incorrect angle	25			
	c) Defn: corresponding angles	8		c) Calculation/Defn: right angle	15			
	d) Defn: corresponding angles	18		d) Calculation/Defn: right angle	8			
	e) Defn: corresponding angles	15		e) Correct	<u>49</u>			
	Omit	0		Omit	0			
51. a)	Correct	<u>48</u>	74. a)	Method: m of one angle	41			
	b) Defn: exterior angles	17		b) Unidentifiable	7			
	c) Defn: exterior angles	7		c) Calculation/angle measure	8			
	d) Defn: exterior angles	13		d) Correct	<u>28</u>			
	e) Defn: exterior angles	15		e) Calculation/angle measure	13			
	Omit	0		Omit	3			

IV. Algebra  
IV. A.1. Terminology

23. Which of the following statements is false?

- A) In  $3^2$ , the exponent is 2      C) In  $4^3$ , the base is 3  
B) In  $5^3$ , the exponent is 3      D) In  $4^3$ , the base is 4

28. The numerical coefficient in  $24x^3y^2$  is

- A) 24      D) 3  
B)  $x^3y^2$       E) 2  
C)  $xy$

30. The monomial in the following list is

- A)  $4.6xy + 7x^2y^2$       D)  $\frac{1}{2}x^2yz$   
B)  $-6d + 8c$       E)  $-12mv + 6ab$   
C)  $\frac{3}{7}x^2 + \frac{2}{7}y^2$

INTERLAKE/CROSSLAKE  
 SUBTEST: IV. Algebra

GRADE 9

## IV. A.1. Terminology

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS		
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response
23. a)	Defn: exponent/base	1	30. a)	Defn: monomial	14			
	b) Defn: exponent/base	4		b) Defn: monomial	25			
	c) Correct	<u>70</u>		c) Defn: monomial	21			
	d) Defn: exponent/base	23		d) Correct	<u>30</u>			
	Omit	1		e) Defn: monomial	10			
			Omit	0				
28. a)	Correct	<u>34</u>						
	b) Defn: numerical coefficient	31						
	c) Defn: numerical coefficient	31						
	d) Defn: numerical coefficient	1						
	e) Defn: numerical coefficient	3						
Omit	0							

## IV. Algebra

## IV. A.2 Exponents

21. 64 is equivalent to
- A)  $4^4$                       D)  $8^8$   
B)  $2^5$                       E)  $32^2$   
C)  $2^6$
22. In scientific notation, the number of days in 1000 years (1 year = 365 days; ignore leap years) is
- A)  $3.65 \times 10^3$               D)  $365 \times 10^3$   
B)  $3.65 \times 10^5$               E)  $365 \times 10^5$   
C) 36 500
26. The value of  $5^0$  is
- A) 5                          D) -1  
B) -5                        E) 0  
C) 1
27.  $\left(-\frac{1}{3}\right)^3$  is equivalent to
- A)  $\frac{1}{9}$                         D)  $-\frac{1}{27}$   
B)  $-\frac{1}{9}$                       E)  $\frac{1}{27}$   
C)  $-\frac{1}{6}$
33. When simplified,  $(a^2b^4)(ab^3)$  is
- A)  $a^2b^{12}$                       D)  $ab^6ab^3$   
B)  $a^3b^7$                       E)  $ab$   
C)  $a^2b^7$

INTERLAKE/CROSSLAKE  
 SUBTEST: IV. Algebra  
 IV. A.2. Exponents

GRADE 9

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS		
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response
21. a) b) c) d) e)	Exponent calculation	6	26. a) b) c) d) e)	Concept	52			
	Exponent calculation	1		Concept	3			
	Correct	<u>58</u>		Correct	<u>15</u>			
	Exponent calculation	18		Concept	0			
	Exponent calculation Omit	17 0		Concept Omit	30 0			
22. a) b) c) d) e)	Place value	13	27. a) b) c) d) e)	Exponent calculation and sign	6			
	Correct	<u>14</u>		Exponent calculation	32			
	Place value and Defn: scientific not.	15		Exponent calculation	7			
	Defn: scientific not.	51		Correct	<u>52</u>			
	Place value and Defn: scientific not. Omit	7 0		Sign Omit	3 0			
			33. a) b) c) d) e)	Procedure: mult. exponents	20			
				Correct	<u>34</u>			
				Procedure: add exponents	14			
				Procedure	25			
				Procedure: subt. exponents Omit	6 1			

IV. Algebra  
IV.A.3. Simplifications

34. A simpler form of  $2a(3 - 4b)$  is
- A)  $6a - 4b$                       D)  $6a - 6b$   
 B)  $5a - 4b$                       E)  $6a - 8ab$   
 C)  $5a - 8b$
35. A simpler equivalent expression for  $-2x + 3y - 5x - 7y$  is
- A)  $7x - 10y$                       D)  $-7x - 4y$   
 B)  $-7x - 10y$                       E)  $-3x - 4y$   
 C)  $7x - 4y$
36.  $(4a - 2b)(3)$  is equivalent to
- A)  $24ab$                               C)  $7a - 5b$   
 B)  $12a - 6b$                       D)  $6ab$
37.  $-4(x - 7) - 5$  is equivalent to
- A)  $4x - 33$                       D)  $-4x + 23$   
 B)  $4x + 23$                       E)  $-4x - 12$   
 C)  $-4x - 33$
38. Simplify  $(7a^4)(-6b^3)$ .
- A)  $-42a^4b^3$                       D)  $-a^4b^3$   
 B)  $42a^4b^3$                       E)  $-42ab^7$   
 C)  $-42(ab)^{12}$
39.  $6x + 5y - 3x - 4y =$
- A)  $3x + 9y$                       D)  $9x + y$   
 B)  $3x - 9y$                       E)  $3x + y$   
 C)  $9x - 9y$



## IV.A.3. Simplifications

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS				
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response		
34. a)	Distributive	27	37. a)	Integer operation	3					
	b)	Distributive and procedure: add terms		7	b)				Integer operation	8
	c)	Procedure		1	c)				Integer operation	21
	d)	Procedure		4	d)				Correct	<u>39</u>
	e)	Correct		<u>61</u>	e)				Integer operation	28
	Omit	0		Omit	0					
35. a)	Integer operation/sign	13	38. a)	Correct	<u>45</u>					
	b)	Integer operation		14	b)				Sign	15
	c)	Sign		13	c)				Procedure	10
	d)	Correct		<u>56</u>	d)				Procedure: Subt. numerals	10
	e)	Integer operation		4	e)				Procedure	20
	Omit	0		Omit	0					
36. a)	Distributive	21	39. a)	Integer operation	8					
	b)	Correct		<u>62</u>	b)				Integer operation	8
	c)	Procedure: add terms		0	c)				Integer operation	18
	d)	Procedure		17	d)	Integer operation	7			
		Omit		0	e)	Correct	<u>58</u>			
				Omit	0					

## IV Algebra

## IV.A.3. Simplification (Continued)

40. When simplified,  $2(3a - 4) - 3(3 - a) =$
- A)  $3a - 17$                       D)  $5a - 17$   
 B)  $5a - 13$                       E)  $9a - 17$   
 C)  $5a + 5$
56.  $12x + 16y =$
- A)  $12(x + 16y)$                   D)  $2(6x + 16y)$   
 B)  $4(3x + 4y)$                   E)  $12(x + 4y)$   
 C)  $4(3x + 6y)$
57. A simpler form of  $-6x(2y + 2x - 2w)$  is
- A)  $-12x - 12xy - 6xw$           C)  $-12x^2 - 12xy + 12xw$   
 B)  $-12x^2 + 12xy + 12xw$       D)  $-12x^2 - 12xy - 12xw$
58. The quotient of  $\frac{24x^3y^2}{-6x}$  is
- A)  $-4x^2y^2$                       D)  $-4xy$   
 B)  $4x^2y^2$                         E)  $-4^3y^2$   
 C)  $4xy$
59. The product of  $(x + 3)(x + 2)$  is
- A)  $2x + 5$                         D)  $x + 5$   
 B)  $x^2 + 5x + 6$                   E)  $x^2 + 6$   
 C)  $x^2 + 6x + 5$

## IV.A.3 Simplifications (Continued)

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS				
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response		
40. a)	Sign distributive	18	58. a)	Correct	<u>49</u>					
	b)	Distributive		7	b)				Sign	15
	c)	Distributive		10	c)				Procedure: div. of variable and sign	7
	d)	Distributive		20	d)				Procedure: div. of variables	6
	e)	Correct		<u>45</u>	e)				Procedure: div. of variables	20
	Omit	0		Omit	3					
56. a)	Distributive	17	59. a)	Distributive	4					
	b)	Correct		<u>69</u>	b)				Correct	<u>54</u>
	c)	Calculation		3	c)				Procedure	4
	d)	Distributive		10	d)				Distributive	10
	e)	Calculation		1	e)				Distributive	27
	Omit	0		Omit	1					
57. a)	Procedure: mult. of terms	10								
	b)	Sign	8							
	c)	Correct	<u>55</u>							
	d)	Sign	23							
		Omit	3							



INTERLAKE/CROSSLAKE  
SUBTEST: IV. Algebra

GRADE 9

## IV.A.4. Substitutions

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS		
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response
41. a)	Correct	<u>38</u>	44. a)	Correct	<u>49</u>			
	b) Substitution	18		b) Operation	13			
	c) Substitution	13		c) Procedure	25			
	d) Substitution	15		d) Unidentifiable	3			
	e) Substitution	14		e) Exponent calculation	10			
	Omit	1		Omit	0			
42. a)	Integer operation	15	45. a)	Correct	<u>34</u>			
	b) Correct	<u>34</u>		b) Substitution	20			
	c) Sign	17		c) Substitution	18			
	d) Operation	23		d) Substitution	21			
	e) Integer operation	11		e) Substitution	7			
	Omit	0		Omit	0			
43. a)	Operation	4						
	b) Correct	<u>80</u>						
	c) Integer operation	10						
	d) Unidentifiable	1						
	e) Sign and substitution	4						
	Omit	0						

IV. Algebra  
IV.B. Equations

29. "Six times a certain number equals the sum of eight and twice the number." This can be written as

A)  $6n = 2(8 + n)$

C)  $6(n + 8) = 8 + 2n$

B)  $6(n + 8) = 2n$

D)  $6n = 8 + 2n$

60. If  $7x = 63$ , then  $x =$

A) 8

D) -9

B) -8

E) 56

C) 9

61. If  $2.5x = 15$ , then  $x =$

A) 7.5

D) -6

B) 6

E) 12.5

C) 8

62. If  $6 + 5n = 41$ , then  $n =$

A) 6

D) 9

B)  $\frac{47}{5}$

E) 7

C)  $\frac{41}{11}$

63. If  $12 + 7x = 11 - 2x$ , then  $x =$

A) -1

D)  $-\frac{1}{5}$

B) 1

E)  $-\frac{1}{9}$

C)  $\frac{23}{9}$



IV. Algebra  
IV.B. Equations (continued)

64. If  $8x + 12 = 5x + 3$ , then  $x =$

- A) 5  
B) -5  
C) 3  
D) -3  
E)  $\frac{15}{13}$

65. If  $4(2m - 3) = -12$ , then  $m =$

- A) 3  
B)  $-\frac{9}{8}$   
C) 0  
D)  $\frac{15}{8}$   
E) -1

66. If  $3(x - 7) = 18$ , then  $x =$

- A) 1  
B) -1  
C) -13  
D) 13  
E)  $\frac{25}{3}$

67. If  $8(3x - 5) - 6(x + 5) = 20$ , then  $x =$

- A)  $\frac{25}{9}$   
B) 5  
C)  $\frac{5}{3}$   
D) -5  
E)  $\frac{10}{9}$

68. If  $\frac{4y - 3}{5} = \frac{7y - 9}{8}$ , then  $y =$

- A)  $\frac{1}{7}$   
B) -7  
C) 7  
D)  $-\frac{1}{7}$   
E) 2

69. If  $\frac{2x - 1}{3} = \frac{2x + 1}{5}$ , then  $x =$

- A)  $\frac{1}{2}$   
B)  $-\frac{1}{2}$   
C) 2  
D) -2  
E) no solution

70. If  $4(x - 3) - x = 5(x + 8) + 12$ , then  $x =$

- A) -32  
B) -16  
C) 8  
D) 16  
E) 32



INTERLAKE/CROSSLAKE  
 SUBTEST: IV. Algebra

GRADE 9

## IV.8. Equations (Continued)

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS		
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response
64. a)	Procedure: operation	10	66. a)	Sign and procedure: operation	14	69. a)	Sign and procedure: cross mult.	8
	b) Procedure: operation	11		b) Procedure: operation	11		b) Procedure: cross mult.	8
	c) Sign	20		c) Sign	8		c) Correct	<u>42</u>
	d) Correct	<u>34</u>		d) Correct	<u>46</u>		d) Sign	7
	e) Procedure: operation	24		e) Distributive	15		e) Procedure: omitted denom.	31
	Omit	1		Omit	4		Omit	3
65. a)	Procedure: operation	27	67. a)	Procedure: operation	8	70. a)	Correct	<u>30</u>
	b) Distributive and procedure: operation	17		b) Correct	<u>44</u>		b) Procedure: operation	23
	c) Correct	<u>41</u>		c) Distributive sign	14		c) Procedure: operation	20
	d) Distributive	7		d) Sign	24		d) Procedure: operation	7
	e) Calculation	7		e) Distributive	7		e) Sign	18
	Omit	1		Omit	3		Omit	3
			68. a)	Procedure: operation	18			
				b) Sign	8			
				c) Correct	<u>37</u>			
				d) Sign and procedure: operation	11			
				e) Procedure: omitted denom.	23			
			Omit	3				

IV Algebra  
IV.B. Equations (continued)

71. If  $5(x - 9) - 7(2x - 9) = 7(x - 2)$ , then  $x =$
- |       |       |
|-------|-------|
| A) -2 | D) -1 |
| B) 2  | E) -6 |
| C) 1  |       |

72. If  $x^2 + 15 = 64$ , a value of  $x$  is
- |       |      |
|-------|------|
| A) 79 | D) 7 |
| B) 49 | E) 6 |
| C) 8  |      |



IV. Algebra  
IV.C. Word Problems

31. Allan has 54 jawbreakers some of which are red, the others black. He has five times as many red as black. How many of each kind does he have?

- A) 6 red, 48 black      D) 9 black, 45 red  
B) 6 black, 48 red      E) 8 black, 40 red  
C) 9 red, 45 black

32. Troy's age is two years less than three times Joyce's age. If Troy's age is 16 years, how old is Joyce?

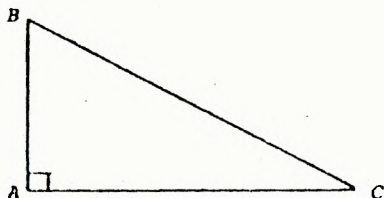
- A) 3.5 years      D) 5 years  
B) 6 years      E) 5.5 years  
C) 4 years

73. The perimeter of an isosceles triangle is 34 cm. If the length of each equal side is 1 cm less than 4 times the length of the base, what is the length of each side?

- A) 6 cm, 14 cm, 14 cm      C) 2 cm, 16 cm, 16 cm  
B) 4 cm, 15 cm, 15 cm      D) 5 cm, 19 cm, 19 cm

79. One leg of a right triangle is twice as long as the other leg. The area of the triangle is  $49 \text{ cm}^2$ . The length  $\overline{AC}$  is

- A) 7 cm  
B) 14 cm  
C) 21 cm  
D) 28 cm



INTERLAKE/CROSSLAKE  
SUBTEST: IV. Algebra

GRADE 9

## IV.C. Word Problems

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS		
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response
31. a)	Calculation and translation	7	79. a)	Method: AB	37			
	b) Calculation	13		b) Correct	<u>21</u>			
	c) Translation	18		c) Calculation/translation	18			
	d) Correct	<u>52</u>		d) Calculation/translation	17			
	e) Method: not all info. used Omit	10 0		d) Calculation/translation Omit	7			
32. a)	Method/calculation	17						
	b) Correct	<u>34</u>						
	c) Method/calculation	24						
	d) Method/calculation	20						
	e) Method/calculation Omit	6 0						
73. a)	Method/calculation	18						
	b) Correct	<u>34</u>						
	c) Method/calculation	37						
	d) Method/defn: perimeter	6						
	Omit	1						

V. Graphing and Statistics  
V.A. Arithmetic Mean

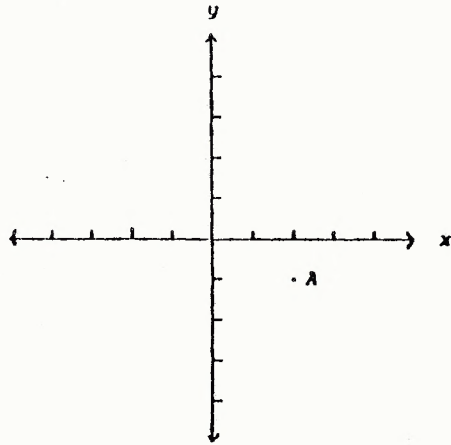
4. The average (arithmetic mean) of 46.3, 39.6 and 28.4 (correct to one decimal) is
- A) 36.1                      D) 39.1  
B) 37.1                      E) 39.6  
C) 38.1
54. A truck is loaded with four crates with the following weight: 124 kg, 208 kg, 247 kg and 153 kg. What is the average (arithmetic mean) weight of the crates?
- A) 732 kg                      D) 183 kg  
B) 176 kg                      E) 186 kg  
C) 366 kg



V. Graphing and Statistics  
V.B. Graphing

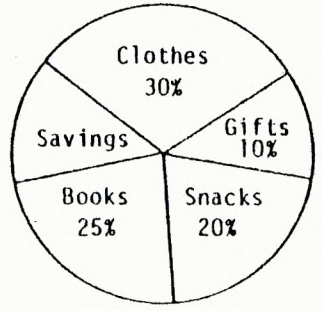
75. Point *a* has the coordinates

- A) (2, 1)
- B) (1, 2)
- C) (-1, 2)
- D) (-2, -1)
- E) (2, -1)



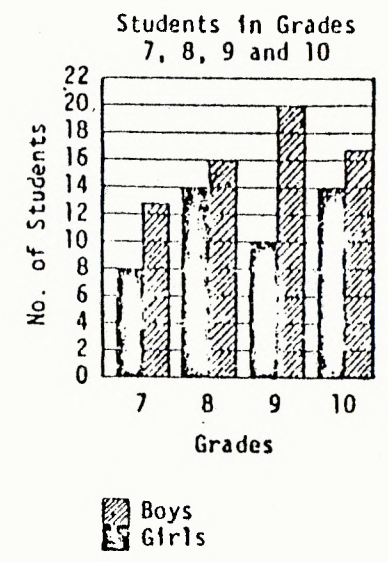
76. This graph shows how Ruth spends her allowance. If she receives \$260 a year, how much did Ruth save?

- A) \$15
- B) \$26
- C) \$32
- D) \$39



77. Which of these is a TRUE statement about the information shown on the graph?

- A) Grade 8 is the smallest class
- B) Grade 9 has twice as many boys as girls
- C) Grade 10 has more girls than boys
- D) Grades 8 and 10 have the same number of pupils
- E) Grade 7 has as many boys as there are girls in Grade 10





INTERLAKE/CROSSLAKE  
SUBTEST : V. Graphing and Statistics  
V.B. Graphing

GRADE 9

PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS			PERFORMANCE ON INDIVIDUAL ITEMS		
Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response	Test Item and Response	Error Classification	% of Students Selecting Response
75. a)	Defn: x,y coord.	10						
	b) Defn: x,y coord.	10						
	c) Defn: x,y coord.	23						
	d) Defn: x,y coord.	8						
	e) Correct	<u>46</u>						
	Omit	3						
76. a)	Procedure	35						
	b) Calculation: of percent	10						
	c) Unidentified	27						
	d) Correct	<u>24</u>						
	Omit	3						
77. a)	Reading of graph	6						
	b) Correct	<u>82</u>						
	c) Reading of graph	3						
	d) Calculation/reading of graph	8						
	e) Reading of graph	0						
	Omit	1						

08/17/81

## ITEM ANALYSIS

PAGE 01

SCHOOL

INSTRUCTOR

CLASS

SECTION

CROSS LAKE\*INTERLAKE

CROSS LAKEA

MATHEMATICS GR\*NINE

TEST  
MATH\*GRADE\*NINETOTAL STUDENTS  
071DATE TESTED  
80/ /81

SUB TEST	QUESTION NUMBER	RESPONSE		POSITION				6TH	omitted NRR
		1ST	2ND	3RD	4TH	5TH			
		a	b	c	d	e			
1	1		1%	1%	* 97%				
1	2	8%	4%	* 63%	1%	23%			
1	3	35%	4%	7%	17%	* 34%		3%	
1	4	13%	1%	* 46%	10%	24%		6%	
1	5	* 35%	7%	18%	13%	25%		1%	
1	6	27%	* 44%	21%	8%				
1	7	* 35%	37%	7%	7%	14%			
1	8	11%	8%	32%	* 35%	13%			
1	9	* 85%	4%	4%	1%	3%		3%	
1	10	6%	32%	* 51%	7%	4%			
1	11	3%	7%	* 49%	25%	11%		4%	
1	12	20%	17%	13%	* 35%	11%		4%	
1	13	14%	7%	13%	* 48%	15%		3%	
1	14	28%	21%	3%	* 45%	3%			
1	15	* 13%	3%	73%	11%				
1	16	20%	32%	3%	10%	* 32%		3%	
1	17	3%	10%	1%	* 65%	18%		3%	
1	18	25%	* 18%	55%				1%	
1	19	8%	20%	10%	44%	* 18%			
1	20	21%	21%	* 44%	8%	3%		3%	
1	21	6%	1%	* 58%	18%	17%			
1	22	13%	* 14%	15%	51%	7%			
1	23	1%	4%	* 70%	23%			1%	

08/17/81

## ITEM ANALYSIS

PAGE 02

SUB TEST	QUESTION NUMBER	RESPONSE			POSITION			NRR
		1ST	2ND	3RD	4TH	5TH	6TH	
1	24	* 72%	7%	11%	10%			
1	25	* 42%	17%	8%	20%	13%		
1	26	52%	3%	* 15%		30%		
1	27	6%	32%	7%	* 52%	3%		
1	28	* 34%	31%	31%	1%	3%		
1	29	4%	4%	13%	* 75%	4%		
1	30	14%	25%	21%	* 30%	10%		
1	31	7%	13%	18%	* 52%	10%		
1	32	17%	* 34%	24%	20%	6%		
1	33	20%	* 34%	14%	25%	6%		1%
1	34	27%	7%	1%	4%	* 61%		
1	35	13%	14%	13%	* 56%	4%		
1	36	21%	* 62%		17%			
1	37	3%	8%	21%	* 39%	28%		
1	38	* 45%	15%	10%	10%	20%		
1	39	8%	8%	18%	7%	* 58%		
1	40	18%	7%	10%	20%	* 45%		
1	41	* 38%	18%	13%	15%	14%		1%
1	42	15%	* 34%	17%	23%	11%		
1	43	4%	* 80%	10%	1%	4%		
1	44	* 49%	13%	25%	3%	10%		
1	45	* 34%	20%	18%	21%	7%		
1	46	1%	* 34%	7%	8%	49%		
1	47	13%	3%	* 44%	14%	25%		1%
1	48	13%	* 35%	7%	10%	32%		3%
1	49	23%	7%	* 56%	6%	8%		

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## ITEM ANALYSIS

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SUB TEST	QUESTION NUMBER	RESPONSE POSITION					NRR
		1ST	2ND	3RD	4TH	5TH	
1	50	10%	* 48%	8%	18%	15%	
1	51	* 48%	17%	7%	13%	15%	
1	52	1%	25%	15%	8%	* 49%	
1	53	11%	38%	* 38%	6%	7%	
1	54	55%	4%	1%	* 35%	4%	
1	55	13%	37%	31%	1%	* 17%	1%
1	56	17%	* 69%	3%	10%	1%	
1	57	10%	8%	* 55%	23%	1%	3%
1	58	* 49%	15%	7%	6%	20%	3%
1	59	4%	* 54%	4%	10%	27%	1%
1	60	3%	1%	* 85%	6%	3%	3%
1	61	24%	* 51%	8%	1%	13%	3%
1	62	6%	1%	20%	7%	* 65%	1%
1	63	13%	17%	20%	18%	* 31%	1%
1	64	10%	11%	20%	* 34%	24%	1%
1	65	27%	17%	* 41%	7%	7%	1%
1	66	14%	11%	8%	* 46%	15%	4%
1	67	8%	* 44%	14%	24%	7%	3%
1	68	18%	8%	* 37%	11%	23%	3%
1	69	8%	8%	* 42%	7%	31%	3%
1	70	* 30%	23%	20%	7%	18%	3%
1	71	15%	* 45%	8%	11%	15%	4%
1	72	4%	27%	3%	* 61%	4%	1%
1	73	18%	* 34%	37%	6%	4%	1%
1	74	41%	7%	8%	* 28%	13%	3%
1	75	10%	10%	23%	8%	* 46%	3%

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## ITEM ANALYSIS

PAGE 04

SUB TEST	QUESTION NUMBER	RESPONSE POSITION						NRR
		1ST	2ND	3RD	4TH	5TH	6TH	
1	76	35%	10%	27%	* 24%	1%		3%
1	77	6%	* 82%	3%	8%			1%
1	78	* 35%	17%	15%	10%	18%		4%
1	79	37%	* 21%	18%	17%			7%
1	80	* 62%	4%	6%	17%			11%
1	81	* 55%	* 3%	* 14%	* 11%	*	*	17%

\* DENOTES CORRECT RESPONSE      NRR = NON-READABLE RESPONSE





























