The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

NINTH YEAR MATHEMATICS

C

June 1975

The last page of this test booklet is the answer sheet. Turn to the last page and detach it very carefully from the booklet. Then fill in the heading of your answer sheet.

On page 13 , you will find the "Tables of Natural Trigonometric Functions" which you may need to answer some questions in this examination. Detach this page very carefully from the test booklet also.

When you have completed the examination, you must sign the statement printed at the end of the answer paper, indicating that you had no unlawful knowledge of the questions or answers prior to the examination and that you have neither given nor received assistance in answering any of the questions during the examination. Your answer paper cannot be accepted if you fail to sign this declaration.

DO NOT OPEN THIS EXAMINATION BOOKLET UNTIL THE SIGNAL IS GIVEN

Part I

Answer all questions in this part. Each correct answer will receive 2 credits. No partial credit will be allowed.

Directions (1-35): Write in the space provided on the separate answer sheet the numeral preceding the expression that best completes each statement or answers each question.

1 Which expression represents the number of cents in n nickels and d dimes?

(1) 15nd
(2) nd
(3) 5n + 10d
(4) n + d

2 Which set is closed under addition?

(1) {1}
(2) {0}
(3) {0,1}
(4) {0,-1}

3 The expression $(-2x^2)^3$ is equivalent to

(1) $6x^8$
(2) $-6x^8$
(3) $8x^6$
(4) $-8x^6$

4 The expression $\frac{5x}{3} + \frac{x}{2}$ is equivalent to

(1) $\frac{5x^2}{6}$
(2) $\frac{6x}{5}$
(3) $\frac{13x}{6}$
(4) $\frac{13x}{12}$

5 Which expression has a value of 7?

(1) $-|-5|-|-2|$

(2) $|-5 - 2|$

(3) $-|5 + 2|$

(4) $|-5| - 2$

6 The expression $(3x - 1)^2$ is equivalent to

(1) $9x^2 + 1$

(2) $6x - 2$

(3) $9x^2 + 6x + 1$

(4) $9x^2 - 6x + 1$

7 What is the value of $\sqrt{300}$ to the nearest integer?

(1) 14

(2) 17

(3) 57

(4) 150

8 In factored form, $3x^2 + x - 4$ is equivalent to

(1) $(3x - 2)(x + 2)$

(2) $(3x - 4)(x + 1)$

(3) $(3x + 4)(x - 1)$

(4) $(3x + 1)(x - 4)$

9 Which expression is equivalent to $2\sqrt{75}$?

(1) $7\sqrt{3}$

(2) $10\sqrt{3}$

(3) $27\sqrt{3}$

(4) $50\sqrt{3}$

10 If the legs of a right triangle are 2 and 5, what is the hypotenuse of the triangle?

(1) $\sqrt{7}$

(2) $\sqrt{29}$

(3) 29

(4) 7

11 What is the area of a circle whose radius is 10?

(1) 10π
(2) 20π
(3) 25π
(4) 100π

12 A football team has lost $\frac{1}{5}$ of the games it has played. If it has played x games, how many games has the team won?

(1) $\frac{5x - 1}{5}$
(2) $\frac{5x + 1}{5}$
(3) $\frac{4}{5}$
(4) $\frac{4x}{5}$

13 The average of $5n - 3$ and $3n + 7$ is

(1) $8n + 4$
(2) $2n - 10$
(3) $4n + 2$
(4) $n - 5$

14 Subtract the product of (-5) and (-3) from 15.

(1) 0
(2) 13
(3) 23
(4) 30

15 When $8xy^2 + 12xy - 4x$ is divided by $4x$, the quotient is

(1) $2y^2 + 3y$
(2) $5y^3 - 1$
(3) $2y^2 + 3y - 1$
(4) $2y^2 + 3y - x$

16 The perimeter of a square whose area is 64 is

(1) 16
(2) 32
(3) 64
(4) 256

17 Which open sentence is shown by the graph below?

(1) $-3 \leq x < 2$

(2) $-3 < x < 2$

(3) $x < 2$

(4) $x \geq -3$

18 If the replacement set for x is {-1,0,1,3,5}, then the solution set of $x - 3 < 0$ is

(1) {-1,0,1}

(2) {-1,0,1,3}

(3) {5}

(4) { }

19 The hypotenuse of a right triangle measures 10 inches and one angle measures 31°. Which equation could be used to find x, the length of the side opposite the 31° angle?

(1) $\sin 31° = \frac{10}{x}$

(2) $\cos 31° = \frac{x}{10}$

(3) $\sin 31° = \frac{x}{10}$

(4) $\tan 31° = \frac{x}{10}$

20 A triangle has sides of 12, 16, and 20. If the longest side of a similar triangle is 15, what is the length of its shortest side?

(1) 7
(2) 9
(3) 12
(4) 25

21 If Tom hits the ball 3 times in 10 attempts, what is the ratio of hits to misses?

(1) $\frac{7}{3}$

(2) $\frac{7}{10}$

(3) $\frac{3}{7}$

(4) $\frac{3}{10}$

22 If $7x^2 - 3x$ is subtracted from $4x^2 - 5x$, the result is

(1) $3x^2 - 8x$

(2) $-3x^2 - 8x$

(3) $3x^2 + 2x$

(4) $-3x^2 - 2x$

23 The coordinates of the point at which the graph of $y = -2x - 3$ intersects the y-axis is

(1) (-3,0)

(2) (0,-3)

(3) (3,0)

(4) (0,3)

24 The root of the equation $5y + 9.1 = -2.4$ is

(1) -11.5

(2) 2.3

(3) 1.34

(4) -2.3

25 Solve for x: $\frac{5x}{2} - \frac{2x}{3} = 11$

(1) 1

(2) 5

(3) 6

(4) 22

26 When $2x^2 + x - 10$ is divided by $x + 2$, the remainder is

(1) -3

(2) -4

(3) -16

(4) 0

27 What is the value of x in the following system of equations?

$$6x + y = 52$$
$$2x + y = 4$$

(1) 7

(2) 12

(3) -14

(4) -20

28 The graph of the equation $y + 3x = 7$ has a slope of

(1) -3

(2) 7

(3) 3

(4) -7

29 Find the solution set of $x^2 + 2x - 8 = 0$

(1) {-4,2}

(2) {-4,-2}

(3) {4,-2}

(4) {4,2}

30 Which set does <u>not</u> contain negative numbers?

(1) rational numbers

(2) integers

(3) real numbers

(4) whole numbers

31 The sum of $2\sqrt{3}$ and $2\sqrt{27}$ is

(1) $7\sqrt{3}$

(2) $8\sqrt{3}$

(3) $20\sqrt{3}$

(4) $2\sqrt{30}$

32 Find the value of $x^3 - x - 8$ if $x = -3$.

(1) -14

(2) 22

(3) -32

(4) -38

33 The sale price of a coat was $36.75. This was 75% of the original selling price. What was the original selling price?

(1) $27.56

(2) $24.50

(3) $45.94

(4) $49.00

34 If a natural number x is divided by its reciprocal, the quotient is

(1) 1

(2) $\frac{1}{x}$

(3) -1

(4) x^2

35 Which number is largest?

(1) .42

(2) $\frac{2}{5}$

(3) $\frac{-3}{4}$

(4) $\frac{-2}{7}$

Part II

This part consists of 15 questions. Answer 10 questions from this part. Each correct answer will receive 3 credits. No partial credit will be allowed.

The questions in this part are more complex than those in Part I. They require careful analysis and computation. Be sure to answer these questions carefully.

Directions (36-50): Choose ten of the following 15 questions. For each one chosen, write in the space provided on the separate answer sheet the numeral preceding the expression that best completes the statement or answers the question.

36 Solve for y: $ax + by = c$

(1) $y = c - ax$

(2) $y = c - ax - b$

(3) $y = \frac{c}{b} - ax$

(4) $y = \frac{c - ax}{b}$

37 The product $\frac{(a + 3)^2}{x^2} \cdot \frac{4x^2}{4a + 12}$ is equivalent to

(1) $a + 3$

(2) $\frac{a + 3}{4}$

(3) $\frac{a^2 + 5}{4}$

(4) $\frac{(a + 3)^3}{x^4}$

38 Bob has 3 more baseball cards than Steve. Together they have a total of 165 cards. How many cards does Bob have?

(1) 41
(2) 81
(3) 84
(4) 162

39 Three numbers are in the ratio 4:5:7. If their sum is 128, the largest of the three numbers is

(1) 8

(2) 32

(3) 40

(4) 56

40 What is the root of the equation $\frac{x + 22}{6} - \frac{20 - x}{3} + 2 = 0$?

(1) 8

(2) 2

(3) 3

(4) -6

41 The expression $8 - 2x^2$ is equivalent to

(1) $2(2 - x)^2$

(2) $2(2 - x)(2 + x)$

(3) $(4 + x)(2 - 2x)$

(4) $(4 - 2x)(2 - x)$

42 The squares of two consecutive positive integers differ by 103. If x represents the smaller integer, which equation can be used to find x?

(1) $x^2 - (x + 1)^2 = 103$

(2) $(x + 1)^2 - x^2 = 103$

(3) $(x + 1)^2 + 103 = x^2$

(4) $(x^2 + 1) - 103 = x^2$

43 The length of a rectangle is 8 feet more than its width, and its area is 105 square feet. If x represents the width of the rectangle, which equation can be used to find x?

(1) $2x + 2(x + 8) = 105$

(2) $x(x + 8) = 105$

(3) $x^2 + (x + 8)^2 = 105$

(4) $x^2 + 8 = 105$

44 The value of 10 tan 54° to the nearest hundredth, is

(1) 0.14

(2) 8.09

(3) 11.38

(4) 13.76

45 One printing press can print a certain number of posters in 2 hours, and another press can print the same number of posters in 3 hours. What fractional part of the job could be printed by both machines running together for 1 hour?

(1) $\frac{1}{5}$

(2) $\frac{2}{5}$

(3) $\frac{6}{5}$

(4) $\frac{5}{6}$

46 The additive inverse of a - b is

(1) a - b

(2) $\frac{1}{a - b}$

(3) -a + b

(4) a + b

47 The intersection of the set of odd numbers between 10 and 20 and the set of prime numbers between 5 and 15 is

(1) {7,11,13,15,17,19}

(2) {7,11,13}

(3) {11,13}

(4) {11,13,17,19}

48 In the ratio $\frac{a}{b}$, a and b are real numbers and $b \neq 0$. If $c \neq 0$, which expression is equivalent to $\frac{a}{b}$?

(1) $\frac{a + c}{b + c}$

(2) $\frac{a + c}{b - c}$

(3) $\frac{a - c}{b - c}$

(4) $\frac{ac}{bc}$

49 A man invested x dollars at 7% and y dollars at 5%. He received an annual income of $290 on his total investment of $5,000. Which pair of equations could be used to find the amount invested at each rate?

(1) $\begin{aligned} 7x + 5y &= 290 \\ x + y &= 5{,}000 \end{aligned}$

(2) $\begin{aligned} x + y &= 290 \\ 7x + 5y &= 5{,}000 \end{aligned}$

(3) $\begin{aligned} .07x + .05y &= 290 \\ x + y &= 5{,}000 \end{aligned}$

(4) $\begin{aligned} x + y &= 290 \\ .07x + 5y &= 5{,}000 \end{aligned}$

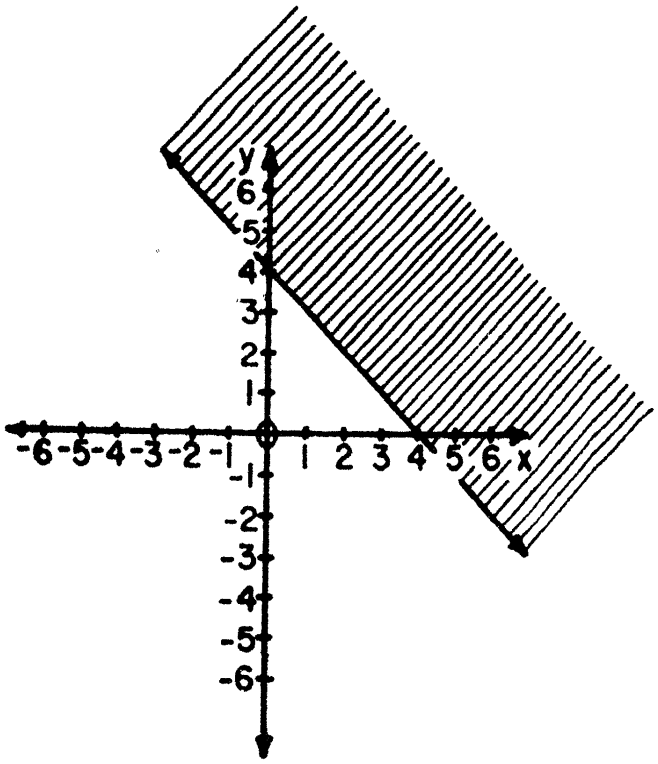
50 In the accompanying figure the shaded region represents the solution set of

(1) $x + y \geq 4$

(2) $x + y \leq 4$

(3) $x \geq 4$

(4) $y \geq 4$



THE UNIVERSITY OF THE STATE OF NEW YORK

THE STATE EDUCATION DEPARTMENT

BUREAU OF ELEMENTARY AND SECONDARY EDUCATIONAL TESTING

Tables of Natural Trigonometric Functions

(For use with 9th and 10th Year Mathematics Regents Examinations)

Angle	Sine	Cosine	Tangent	Angle	Sine	Cosine	Tangent
1°	.0175	.9998	.0175	46°	.7193	.6947	1.0355
2°	.0349	.9994	.0349	47°	.7314	.6820	1.0724
3°	.0523	.9986	.0524	48°	.7431	.6691	1.1106
4°	.0698	.9976	.0699	49°	.7547	.6561	1.1504
5°	.0872	.9962	.0875	50°	.7660	.6428	1.1918
6°	.1045	.9945	.1051	51°	.7771	.6293	1.2349
7°	.1219	.9925	.1228	52°	.7880	.6157	1.2799
8°	.1392	.9903	.1405	53°	.7986	.6018	1.3270
9°	.1564	.9877	.1584	54°	.8090	.5878	1.3764
10°	.1736	.9848	.1763	55°	.8192	.5736	1.4281
11°	.1908	.9816	.1944	56°	.8290	.5592	1.4826
12°	.2079	.9781	.2126	57°	.8387	.5446	1.5399
13°	.2250	.9744	.2309	58°	.8480	.5299	1.6003
14°	.2419	.9703	.2493	59°	.8572	.5150	1.6643
15°	.2588	.9659	.2679	60°	.8660	.5000	1.7321
16°	.2756	.9613	.2867	61°	.8746	.4848	1.8040
17°	.2924	.9563	.3057	62°	.8829	.4695	1.8807
18°	.3090	.9511	.3249	63°	.8910	.4540	1.9626
19°	.3256	.9455	.3443	64°	.8988	.4384	2.0503
20°	.3420	.9397	.3640	65°	.9063	.4226	2.1445
21°	.3584	.9336	.3839	66°	.9135	.4067	2.2460
22°	.3746	.9272	.4040	67°	.9205	.3907	2.3559
23°	.3907	.9205	.4245	68°	.9272	.3746	2.4751
24°	.4067	.9135	.4452	69°	.9336	.3584	2.6051
25°	.4226	.9063	.4663	70°	.9397	.3420	2.7475
26°	.4384	.8988	.4877	71°	.9455	.3256	2.9042
27°	.4540	.8910	.5095	72°	.9511	.3090	3.0777
28°	.4695	.8829	.5317	73°	.9563	.2924	3.2709
29°	.4848	.8746	.5543	74°	.9613	.2756	3.4874
30°	.5000	.8660	.5774	75°	.9659	.2588	3.7321
31°	.5150	.8572	.6009	76°	.9703	.2419	4.0108
32°	.5299	.8480	.6249	77°	.9744	.2250	4.3315
33°	.5446	.8387	.6494	78°	.9781	.2079	4.7046
34°	.5592	.8290	.6745	79°	.9816	.1908	5.1446
35°	.5736	.8192	.7002	80°	.9848	.1736	5.6713
36°	.5878	.8090	.7265	81°	.9877	.1564	6.3138
37°	.6018	.7986	.7536	82°	.9903	.1392	7.1154
38°	.6157	.7880	.7813	83°	.9925	.1219	8.1443
39°	.6293	.7771	.8098	84°	.9945	.1045	9.5144
40°	.6428	.7660	.8391	85°	.9962	.0872	11.4301
41°	.6561	.7547	.8693	86°	.9976	.0698	14.3007
42°	.6691	.7431	.9004	87°	.9986	.0523	19.0811
43°	.6820	.7314	.9325	88°	.9994	.0349	28.6363
44°	.6947	.7193	.9657	89°	.9998	.0175	57.2900
45°	.7071	.7071	1.0000	90°	1.0000	.0000	

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

NINTH YEAR MATHEMATICS C

June 1975

ANSWER SHEET

Part I Score:	.....
Part II Score:	.....
Total	.....
Rater's Initials:	.....

Pupil..... Teacher.....

School..... Grade.....

All of your answers should be recorded on this answer sheet.

Part I: Answer all questions in this part.

1 ____	11 ____	21 ____	31 ____
2 ____	12 ____	22 ____	32 ____
3 ____	13 ____	23 ____	33 ____
4 ____	14 ____	24 ____	34 ____
5 ____	15 ____	25 ____	35 ____
6 ____	16 ____	26 ____	
7 ____	17 ____	27 ____	
8 ____	18 ____	28 ____	
9 ____	19 ____	29 ____	
10 ____	20 ____	30 ____	

Part II: Answer 10 questions in this part.

36 ____	46 ____
37 ____	47 ____
38 ____	48 ____
39 ____	49 ____
40 ____	50 ____
41 ____	
42 ____	
43 ____	
44 ____	
45 ____	

The declaration below should be signed when you have completed the examination.

I do hereby affirm, at the close of this examination, that I had no unlawful knowledge of the questions or answers prior to the examination, and that I have neither given nor received assistance in answering any of the questions during the examination.

_____

Signature

FOR TEACHERS ONLY

9

SCORING KEY

NINTH YEAR MATHEMATICS

C

June 1975

Use only *red* ink or *red* pencil in rating Regents papers. Do not attempt to *correct* the pupil's work by making insertions or changes of any kind. Use checkmarks to indicate pupil errors.

Part I

Allow 2 credits for each correct answer; allow no partial credit. Allow credit if the pupil has written the correct answer instead of the number 1, 2, 3, or 4.

(1) 3	(8) 3	(15) 3	(22) 4	(29) 1
(2) 2	(9) 2	(16) 2	(23) 2	(30) 4
(3) 4	(10) 2	(17) 1	(24) 4	(31) 2
(4) 3	(11) 4	(18) 1	(25) 3	(32) 3
(5) 2	(12) 4	(19) 3	(26) 2	(33) 4
(6) 4	(13) 3	(20) 2	(27) 2	(34) 4
(7) 2	(14) 1	(21) 3	(28) 1	(35) 1

Part II

Allow 3 credits for each of 10 of the following. Allow credit if the pupil has written the correct answer instead of the number 1, 2, 3, or 4. If a student has answered more than 10 questions on Part II, do not allow credit on those questions beyond the first ten answered.

(36) 4	(39) 4	(42) 2	(45) 4	(48) 4
(37) 1	(40) 2	(43) 2	(46) 3	(49) 3
(38) 3	(41) 2	(44) 4	(47) 3	(50) 1