

The University of the State of New York
REGENTS HIGH SCHOOL EXAMINATION

NINTH YEAR MATHEMATICS

Friday, April 5, 1974—9:15 a.m. to 12:15 p.m., only

The last page of the booklet is the answer sheet. Fold the last page along the perforations and, slowly and carefully, tear off the answer sheet. Then fill in the heading of your answer sheet.

On page 7 you will find the "Tables of Natural Trigonometric Functions" which you may need to answer some questions in this examination. Fold this page along the perforations, and tear it off also slowly and carefully.

DO NOT OPEN THIS EXAMINATION BOOKLET UNTIL THE SIGNAL IS GIVEN

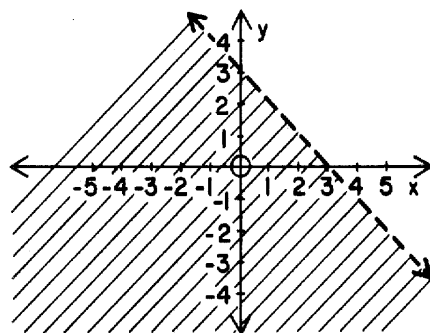
Part I

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 If $12x^2 - 3x$ is divided by $3x$, the quotient is
 (1) $4x - x$ (3) $4x$
 (2) $4x - 1$ (4) $12x^2$
- 2 The expression $\frac{x}{3} + \frac{x}{4}$ is equivalent to
 (1) $\frac{2x}{7}$ (3) $\frac{7x}{12}$
 (2) $\frac{2x}{12}$ (4) x
- 3 The graph of $2x + y = 3$ intersects the y -axis in the point whose coordinates are
 (1) $(0, \frac{3}{2})$ (3) $(3, 0)$
 (2) $(0, 3)$ (4) $(0, 1)$
- 4 The expression $2\sqrt{27} + \sqrt{12}$ is equivalent to
 (1) $2\sqrt{39}$ (3) $7\sqrt{3}$
 (2) $8\sqrt{3}$ (4) $22\sqrt{3}$
- 5 Which is an illustration of the distributive property?
 (1) $a = a$
 (2) $a + b = b + a$
 (3) $a + (b + c) = (a + b) + c$
 (4) $a(b + c) = ab + ac$
- 6 If $3a^2 + 5a - 4$ is subtracted from $4a^2 + 2a + 1$, the result is
 (1) $a^2 + 3a - 5$ (3) $a^2 - 3a + 5$
 (2) $a^2 + 3a - 3$ (4) $-a^2 + 3a - 5$
- 7 The value of $2t^2$ when $t = -3$ is
 (1) -12 (3) 18
 (2) -18 (4) 36
- 8 If $\frac{a^8}{15b^4}$ is divided by $\frac{a^9}{5b^4}$, the quotient is
 (1) $\frac{a^8}{3}$ (3) $\frac{b}{3a^2}$
 (2) $\frac{1}{3a^3}$ (4) $\frac{a^9}{75b^8}$

- 9 The absolute value of x , symbolized by $|x|$ is *never*
 (1) equal to one (3) positive
 (2) equal to zero (4) negative
- 10 For which value of x is the fraction $\frac{x - 2}{x - 3}$ undefined or meaningless?
 (1) 0 (3) 3
 (2) 2 (4) -3
- 11 What is the value of $\sqrt{65}$ to the nearest tenth?
 (1) 8.0 (3) 8.5
 (2) 8.1 (4) 8.6
- 12 Solve for x : $.15x = .10x + 5.65$
 (1) 11.3 (3) 40.4
 (2) 22.6 (4) 113
- 13 The accompanying figure shows a graph of $x + y < k$. What is the value of k ?



- (1) -1 (3) 3
 (2) 0 (4) 6
- 14 The number of degrees in the measures of the angles of a triangle is represented by x , $2x$, and $3x$. What is the number of degrees in the measure of the *smallest* angle?
 (1) 30 (3) 60
 (2) 36 (4) 90
- 15 If one dozen pencils cost $(n + 6)$ cents, then the cost of one pencil may be expressed as
 (1) $\frac{n + 6}{12}$ (3) $\frac{12}{n + 6}$
 (2) $\frac{n + 1}{2}$ (4) $12n + 72$

16 Which is a set of factors for the expression $a^2 - b^2$?

- (1) $(a - b)(a - b)$
- (2) $(a + b)(a - b)$
- (3) $(a + a)(b - b)$
- (4) $(a^2 - 1)(1 + b^2)$

17 Rounded to the nearest integer, 16.47 is

- (1) 16
- (2) 16.4
- (3) 16.5
- (4) 17

18 One side of a square is represented by $x - 3$. The area of the square can be represented by

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

19 If the replacement set for n is $\{-3, -1, 0, 1, 3\}$, the solution set of $3n < 0$ is

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

20 If $\sin x = .8746$, find the number of degrees in the measure of angle x .

- (1) 29
- (2) 41
- (3) 61
- (4) 87

21 Jerry has 5 nickels and Ann has 2 quarters. The ratio of the value of Jerry's money to the value of Ann's money is

- (1) 5:2
- (2) 2:5
- (3) 1:2
- (4) 2:1

22 A vertical flagpole casts a shadow 12 feet long. At the same time a vertical post 4 feet high casts a shadow 3 feet long. What is the number of feet in the height of the flagpole?

- (1) 9
- (2) 13
- (3) 15
- (4) 16

23 A television set which usually sells for \$200 is on sale for \$170. What is the percent of discount?

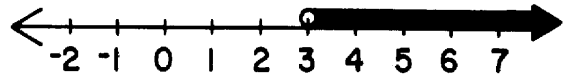
- (1) 10%
- (2) 15%
- (3) 18%
- (4) 30%

24 Which ordered pair is the solution of the following system of equations?

$$\begin{aligned} 3x + y &= 2 \\ x - y &= 6 \end{aligned}$$

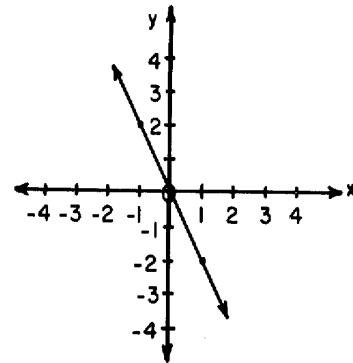
- (1) (2,4)
- (2) (2,-4)
- (3) (-2,8)
- (4) (-2,-8)

25 Which solution set is represented by the graph below?



- (1) $\{x \mid x < 3\}$
- (2) $\{x \mid x \leq 3\}$
- (3) $\{x \mid x > 3\}$
- (4) $\{x \mid x \geq 3\}$

26 Which is the slope of the line shown in the diagram below?



- (1) -2
- (2) 2
- (3) 0
- (4) $-\frac{1}{2}$

27 The solution set of the equation $\frac{1}{2}x + 5 = 5$ is

- (1) $\{50\}$
- (2) $\{2\}$
- (3) $\{0\}$
- (4) $\{ \}$

28 What is the solution set of $7(y - 2) - 3(y + 4) = 18$?

- (1) $\{ \}$
- (2) $\{11\}$
- (3) $\{5\}$
- (4) $\{4\}$

29 If $x + y = 2x$, then x equals

- (1) y
- (2) $2y$
- (3) $3y$
- (4) $\frac{1}{2}y$

30 Which quadratic equation has the roots 0 and 3?

- (1) $x^2 = 3$
- (2) $x^2 + 3x = 0$
- (3) $x^2 - 3x = 0$
- (4) $x^2 - 6x + 9 = 0$

31 The root of $x + \frac{x - 3}{4} = 3$ is

- (1) -3
- (2) -4
- (3) 3
- (4) 4

32 A rational number x such that $\sqrt{10} < x < \sqrt{26}$ is

- (1) 2.9 (3) 3
(2) $\frac{13}{2}$ (4) 4

33 If two-fifths of the cost of a dam is \$1 billion, the total cost of the dam is

- (1) \$400 million (3) \$2 $\frac{1}{2}$ billion
(2) \$1 $\frac{2}{5}$ billion (4) \$4 billion

34 If x is positive and $y = \frac{3}{x}$, then, as x increases, y will

- (1) decrease, only
(2) increase, only
(3) increase and then decrease
(4) decrease and then increase

35 An equation of the line whose y -intercept is -4 and whose graph is parallel to the graph of $y = -2x + 7$ is

- (1) $y = \frac{1}{2}x - 4$ (3) $y = \frac{1}{4}x + 7$
(2) $y = -2x - 4$ (4) $y = -4x + 7$
-

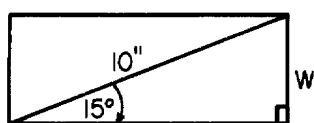
Part II

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 As shown in the accompanying diagram, the diagonal of the rectangle is 10 inches long. The diagonal makes a 15° angle with the longer side of the rectangle. What is the width, W , of the rectangle to the nearest tenth of an inch?



- (1) 2.5
 (2) 2.6
 (3) 3.9
 (4) 9.7
- 37 One man can do a job alone in 3 hours. Another man can do the same job alone in 6 hours. What fraction of the job can the two men complete if they work together for 1 hour?

- (1) $\frac{1}{2}$ (3) $\frac{2}{3}$
 (2) $\frac{1}{3}$ (4) $\frac{1}{6}$

- 38 The tens digit of a two-digit number is twice the units digit. If N represents the units digit, then the number is represented by

- (1) $11N$ (3) $3N$
 (2) $12N$ (4) $21N$

- 39 The expression $\frac{x - 3}{5} - \frac{x + 2}{10}$

is equivalent to

- (1) $\frac{x - 4}{10}$ (3) $x - 4$
 (2) $\frac{x - 8}{10}$ (4) $x - 8$

- 40 Fifteen postage stamps are purchased; some are 8-cent stamps and the rest are 10-cent stamps. If x represents the number of 8-cent stamps, which expression represents the total cost of the 15 stamps?

- (1) $x + (15 - x)$
 (2) $.08x + .10(15 - x)$
 (3) $.08x + .10(x - 15)$
 (4) $x + (x - 15)$

- 41 The average of two numbers is $3a - 2$. If one of the numbers is a , then the other number is

- (1) $5a - 4$ (3) $2a - 2$
 (2) $2a - 1$ (4) $4a - 2$

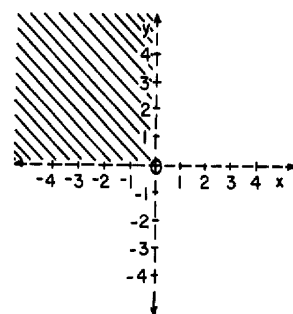
- 42 A mixture of 30 pounds of coffee worth 90 cents a pound is made up of x pounds of coffee worth 80 cents a pound and y pounds of coffee worth \$1.10 a pound. Which system of equations could be used to find the number of pounds of each kind of coffee in the mixture?

- (1) $x + y = 30$
 $80x + 110y = 2,700$
 (2) $x + y = 30$
 $80x + 110y = 90$
 (3) $x + y = 30$
 $80x + 1.10y = 27.00$
 (4) $x + y = 27.00$
 $.80x + 1.10y = 30$

- 43 The *additive* inverse of $\frac{1}{5}$ is

- (1) $-\frac{1}{5}$ (3) 5
 (2) -5 (4) 0

- 44 The shaded region in the accompanying graph represents the set of points for which



- (1) $x < 0$ and $y < 0$
 (2) $x < 0$ and $y > 0$
 (3) $x > 0$ and $y > 0$
 (4) $x > 0$ and $y < 0$

- 45 The length of a side of a square is 10. What is the length of a diagonal of the square?

- (1) $5\sqrt{2}$ (3) 20
 (2) $10\sqrt{2}$ (4) 100

46 The second of three consecutive integers is represented by $n + 1$. Which expression represents the sum of the three integers?

- (1) $3n$ (3) $3n + 3$
(2) $3n + 2$ (4) $3n + 6$

47 A man invested \$5,000 at 7% and y dollars at 4%. Which expression represents the total annual income on these two investments?

- (1) $35,000 + 4y$ (3) $.11(5,000 + y)$
(2) $3,500 + .04y$ (4) $350 + .04y$

48 When factored, $2x^2 - 16x + 14$ is equivalent to

- (1) $(2x + 7)(x + 2)$
(2) $(2x - 7)(x - 2)$
(3) $2(x - 1)(x - 7)$
(4) $(2x - 8x + 2)(x - 8x + 7)$

49 What are the coordinates of the point at which the graph of $y = -2$ intersects the graph of $x = 4$?

- (1) $(4,0)$ (3) $(4,-2)$
(2) $(0,-2)$ (4) $(-2,4)$

50 The solution set of $c^2 + 5c = 14$ is

- (1) $\{2,-7\}$ (3) $\{2,7\}$
(2) $\{-2,7\}$ (4) $\{14,-1\}$

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

Friday, April 5, 1974—9:15 a.m. to 12:15 p.m., only

Part I Score:
Part II Score:

Total
Rater's Initials

ANSWER SHEET

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

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

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

Part I: Answer all questions in this part.

Part II: Answer 10 questions in this part.

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

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

Credit

Credit

FOR TEACHERS ONLY

9

NINTH YEAR MATHEMATICS

Friday, April 5, 1974—9:15 a.m. to 12:15 p.m., only

Just before the start of the examination period, distribute one examination booklet, face up, to each pupil. Instruct the pupils to read the directions on the cover of the examination booklet, detach the answer sheet and reference tables, and fill in the heading on their answer sheet. When each pupil has received a booklet and finished filling in the heading of the answer sheet, instruct the pupils to open their examination booklets and begin work.

Use only *red* ink or 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.

SCORING KEY

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

[OVER]

NINTH YEAR MATHEMATICS — *concluded*

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) 2

(44) 2

(37) 1

(45) 2

(38) 4

(46) 3

(39) 2

(47) 4

(40) 2

(48) 3

(41) 1

(49) 3

(42) 1

(50) 1

(43) 1

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. . . that you can help prepare Regents examinations? You can do so by completing the Regents Examination Evaluation Form that is enclosed in each Regents examination envelope.

Classroom teachers returned almost 5,000 Regents Examination Evaluation Forms to the Education Department following last June's Regents examinations. Their comments were carefully reviewed by the Department subject-matter and testing specialists and the committees of teachers who prepared this year's examinations.

Remember, your comments are important! Be sure to complete the Evaluation Form and give it to your principal for return in the Regents box.