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REGENTS HIGH SCHOOL EXAMINATION

NINTH YEAR MATHEMATICS

Wednesday, August 12, 1970 - 12:30 to 3:30 p.m., only

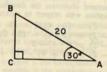
The last page of the booklet is the answer sheet, which is perforated. Fold the last page along the perforation and then, slowly and carefully, tear off the answer sheet. Now fill in the heading of your answer sheet. When you have finished the heading, you may begin the examination immediately.

Part I

Answer all questions in this part. Each correct answer will receive 2 credits. No partial credit will be allowed. Write your answers in the spaces provided on the separate answer sheet.

- 1 A tree which is 60 feet tall casts a shadow of 12 feet. Under the same conditions how many feet tall is a tower that casts a shadow of 50 feet?
- 2 If b = -2 and c = 5, evaluate $c(b^2 2)$.
- 3 Find the root of the equation 5x 6 = 34.
- 4 Solve for $n: \frac{2n}{3} 2 = 8$
- 5 Solve for x: 2(x + 5) = 8
- 6 The area of a rectangle is represented by $n^2 + 3n 10$. If the length of the rectangle is n + 5, express the width in terms of n.
- 7 Find the value of |-8| + 2.
- 8 It takes Tom x hours to paint his house. Express in terms of x the part of the job Tom completes in one hour.
- 9 Factor: xª 25
- 10 A line 28 inches in length is divided into two parts in the ratio 3:1. Find the number of inches in the length of the shorter segment.

- 11 Find the positive square root of 17 to the nearest tenth.
- 12 Solve for y in the following system of equations: x = y - 2x = -2y + 4
- 13 In right triangle ABC below, $\angle C = 90^{\circ}$, $\angle A = 30^{\circ}$, and AB = 20.



Find the length of side BC.

- 14 Express $\frac{x}{5} + \frac{x+2}{3}$ as a single fraction.
- 15 The point whose coordinates are (3,y) lies on the line whose equation is 2r + y = 10. Find the value of y at that point.
- 16 From $2x^2 3x + 7$ subtract $x^2 2x 3$.
- 17 Solve for x in terms of a and b: ax b = 0
- 18 The hypotenuse of a right triangle is 10 and one leg is 6. Find the length of the other leg of the triangle.

Directions (19-30): Write in the space provided on the separate answer sheet the number preceding the expression that best completes each statement or answers each question.

- 19 A set which is equal to {1, 3, 4, 6} is
 - (1) {2, 5, 7, 9} (3) {6, 4, 1, 3}
 - (2) {1, 3, 4}
- (4) {6, 4, 3}
- 20 The solution set of (x + 5)(x 3) = 0 is
 - (1) (%)
- (3) {5,—3}
- (2) (2)

- (4) $\{-5,3\}$
- 21 An equation of a straight line whose y-intercept is 3 is
 - (2) $y = \frac{1}{2}x + \frac{3}{2}$
- (1) $y = \frac{1}{2}x \frac{3}{2}$ (3) $y = \frac{1}{2}x + 3$ (4) $y = \frac{1}{2}x - 3$
- 22 The fraction $\frac{2x-6}{2}$ is equivalent to
 - (1) x 6(2) 2x - 3
- (3) 2x 4(4) x - 3
- 23 Which statement illustrates the distributive property of multiplication with respect to subtraction?
 - (1) $6(4-2) = (6 \cdot 4)(6-2)$
- 24 The solution set of 3x 3 > 2x + 1 is
 - (1) $\{x \mid x < 4\}$ (2) $\{x \mid x > -2\}$
- $(3) \{x \mid x > 4\}$ $(4) \{x \mid x > -4\}$
- 25 If a is an odd integer, which of the following is an odd integer?
 - (1) a + 1
- (3) a + 2

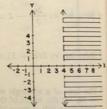
(2) 2a

(4) a - 1

- 26 The quotient $(6x^6 9x^4 + 3x^3) \div (3x^3)$ is (3) $2x^3 - 3x^3 + 1$ (1) $2x^4 - 3x^2$ (4) $2x^4 - 3x^2 + 1$ $(2) 2x^3 - 3x^2$
 - 27 An expression equivalent to (3k2)2 is (3) 27ks
 - (1) 9ks (4) 9ks (2) 27ke
 - 28 The expression $\sqrt{75} \sqrt{48}$ is equivalent to
 - (1) 1 $(2) \sqrt{3}$
- (3) $3\sqrt{3}$ $(4) 9\sqrt{3}$
- 29 An item which normally sells for d dollars is on sale at a 10% discount. The new price in dollars is
 - (1) .10d (2) .90d

(3) 1.10d (4) .09d

- 30 The figure at the right shows the graph of
 - (1) x > 4
 - $(2) x \ge 4$
 - (3) v > 4
- $(4) y \ge 4$



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Answers to the following questions are to be written on paper provided by the school.

Part II

Answer four questions from this part. Show all work unless otherwise directed.

31 Answer either a or b, but not both:

a Solve graphically and check: [8,2] $\begin{array}{c}
x - y = 2 \\
x + 2y = 11
\end{array}$ OR

b Answer both 1 and 2:

(1) On a set of coordinate axes draw the graph of y = |x|. [5]

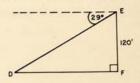
(2) On a set of coordinate axes draw the graph of y > -3x + 6. [5]

32 Solve the system of equations for x and y and check in both equations: [8,2]

$$\frac{x-2}{3} + \frac{12-y}{4} = 2$$
$$2x - y = 4$$

- 33 A postal clerk sold 25 postage stamps for \$1.66. Some were 6-cent stamps and some were 10-cent stamps. Find the number of each sold. [Only an algebraic solution will be accepted.] [5,5]
- 34 Write an equation or a system of equations which can be used to solve each of the following problems. In each case state what the variable or variables represent. [Solution of the equations is not required.]
 - a A man made a trip of 280 miles, stopping once for lunch. In the morning he averaged 50 miles per hour and in the afternoon 40 miles per hour. The morning part of the trip was 2 hours longer than the afternoon part. How long did he travel before he stopped for lunch? [5]
 - b Six years ago in a state park the deer outnumbered the foxes by 80. Since then the number of deer has doubled and the number of foxes has increased by 20. If there is now a total of 240 deer and foxes in the park, how many foxes were there six years ago? [5]

- 35 Answer both a and b:
 - a In the diagram below, EF represents a lighthouse 120 feet high. From the top of the lighthouse the angle of depression of a boat at D is 25°.



Find, to the nearest foot, the distance DF from the boat to the base of the lighthouse. [6]

- b In right triangle ABC the hypotenuse AB is 8 and leg BC is 3. Find angle A to the nearest degree. [4]
- 36 The length of a rectangle is 3 more than its width. If the length is decreased by 1 and the width is increased by 1, the area of the new rectangle will be 20. Find the width of the original rectangle. [Only an algebraic solution will be accepted.] [5,5]
- 37 On your answer paper write the letters a through e. After each letter write the answer to the correspondingly lettered question below. The replacement set is the set of real numbers. [10]
 - a What number is the multiplicative identity element?
 b What number is the multiplicative inverse of

$$-\frac{3}{2}$$
?

c What number has no multiplicative inverse?

d What is the additive inverse of 2?

e Write a number which is equal to its multiplicative inverse.

FOR TEACHERS ONLY

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SCORING KEY

NINTH YEAR MATHEMATICS

Wednesday, August 12, 1970 - 12:30 to 3:30 p.m., only

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.

Unless otherwise specified, mathematically correct variations in the answers will be allowed. Units need not be given when the wording of the questions allows such omissions.

Part 1

Allow 2 credits for each correct answer; allow no partial credit. For questions 19-30, allow credit if the pupil has written the correct answer instead of the number 1, 2, 3, or 4.

(1)	250
(2)	10

$$(14) \ \frac{8x + 10}{15}$$

$$(5) -1$$

(16)
$$x^2 - x + 10$$

(17)
$$\frac{b}{a}$$

(9)
$$(x-5)(x+5)$$

(10) 7

(20) 4

[OVER]

Part II

Please refer to the Department's pamphlet Suggestions on the Rating of Regents Examination Please refer to the Department's pampines only in making deductions as to whether the error Papers in Mathematics. Care should be exercised in making deductions as to whether the error of the error due to a violation of some principle. A mechanical error Papers in Mathematics. Care should be executed by the error of some principle. A mechanical error generally is purely a mechanical one or due to a violation of some principle. A mechanical error generally is purely a mechanical one or due to a violation of some cardinates. is purely a mechanical one or due to a violation of some cardinal prin-should receive a deduction of 10 percent, while an error due to a violation of some cardinal prinshould receive a deduction of 10 percent, while 30 percent to 50 percent, depending on the relative ciple should receive a deduction ranging from 30 percent to 50 percent, depending on the relative importance of the principle in the solution of the problem.

- (31) The graphs for part b (1) and (2) may be on the same set of axes or on different sets of axes.
- (35) a 216 [6] [4]

(32) x = 8[8] y = 12Check

(36) Analysis

(33) Analysis 21 at 6¢ [5] 4 at 10¢

(37) a 1 [2]

(34) a x = number of hours spent traveling in the morning 50x + 40(x - 2) = 280

> b x = number of foxes 6 years ago2(x+80) + x + 20 = 240

DO YOU KNOW ...

. . . that most questions used on Regents examinations have been tried out in advance in representative classrooms throughout the State?

Each year more than 40,000 pupils in about 300 schools "pretest" questions intended for use in future Regents examinations. When committees of classroom teachers meet to assemble Regents examinations, the information obtained from this pretesting is to aid them in determining which questions are appropriate, which questions need revision, and which questions should be eliminated.