

EXAMINATION—JUNE 1954 (1)

Board of Education

Buffalo, New York

Part I

Answer all questions in Part I. Each correct answer will receive two credits. No partial credit will be allowed. Write the answer to each question on the line at the right.

- Find the sum of $3x + 4$, $5x - 3$, and $2x - 1$
- Multiply: $2r - 5$ by $3r - 2$
- If the perimeter of a square is represented by $12p + 8$, find one side of the square.
- The volume of a pyramid is equal to one-third the product of the area of the base and the altitude. Find the volume of a pyramid if the area of the base is 12 and the altitude is 6.
- Divide: $14x^4y$ by $7xy$
- Solve for b : $5b = 15$
- Solve for r : $3r - 6 = 9$
- Solve for x : $6x + 13 = 4x + 15$
- Solve for m : $\frac{m}{2} + \frac{3m}{4} = 5$
- Solve the proportion for y : $3 : y = 4 : 6$
- Solve for d : $4(d + 6) + d = 8d - 3$
- Solve for x and y : $4x - 3y = 6$
 $5x + 6y = 27$
- Factor: $9x^2 - 1$
- Factor: $4a^5b^3 + 8a^3b^3$
- Solve for the larger value of x : $x^2 - 7x + 12 = 0$
- A storekeeper had n loaves of bread. By noon he had sold s loaves. How many loaves of bread are left?
- A rectangular rug is 9 feet wide and 12 feet long. What is the distance from one corner of this rug to a diagonally opposite corner?
- If $x = 6$ and $y = 3$, evaluate $\frac{4}{x} + \frac{1}{y}$
- There are 350 pupils in the sophomore class. If 42 pupils in the sophomore class are on the honor roll, what per cent of the class is on the honor roll?

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20. Write the linear equation expressing the relationship between x and y shown in the following table:

x	-2	0	2	4	5
y	-5	1	7	13	16

Directions: (21-23). Indicate the correct completion to each question by writing on the line at the right the letter a , b , or c .

21. A telephone bill for one month is \$4.40 including a 10% tax. The bill without the tax would be (a) \$4.84 (b) \$3.96 (c) \$4.00

22. On a sheet of graph paper join the points $(-1,1)$ and $(3,2)$ with a straight line. Also draw a straight line through the points $(1,3)$ and $(5,4)$. In relation to each other, these two lines will be (a) parallel (b) perpendicular (c) oblique

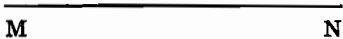
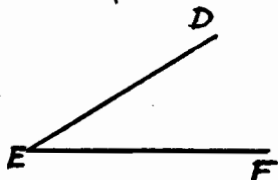
23. If $\frac{17}{33}$ is multiplied by 0.988, the answer will be *approximately*
(a) 0.5 (b) 169 (c) 50

Directions: (24-25). Leave all construction lines on the paper.

24. Construct the perpendicular bisector of AB .



25. Using MN as one side, construct an angle equal to angle DEF .



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Part II

Answer three questions from Part II.

26. During May, Jack, Bob and Jerry earned a total of \$115. If Bob earned twice as much as Jack, and Jerry earned \$15 more than Jack, how much did each earn? Check. [6, 3, 1]

27. Mr. Williams paid \$8.60 at the post office for 300 stamps, some of which were 2¢ and the rest 3¢ stamps. How many of each kind did he buy? Check. [6, 3, 1]

28. A rectangular parking lot has a perimeter of 354 feet. If the length is 13 feet less than four times the width, find the dimensions. Check. [6, 3, 1]

29. Write the equations that may be used in solving any *two* of the following problems. In each case state what the unknown letter or letters represent. (Solution of the equations is *not* required.)

- (a) A businessman invests a sum of money in bonds at 4%, and another sum in stocks at 6%. Altogether he has \$8000 invested. If his total income from the two investments is \$376, how much is invested at each rate? [5]
- (b) A truck and a passenger car leave the city at the same time traveling along the same road. The passenger car is traveling twice as fast as the truck. If at the end of three hours the passenger car is 72 miles ahead of the truck, find the rate of each. [5]
- (c) The sum of the angles of any triangle is 180° . If the three angles of a scalene triangle are in the ratio 2 : 5 : 8, find each angle of the triangle. [5]

Part III

Answer two questions from Part III.

30. A tall chimney in an industrial plant casts a shadow 275 feet long at a time when the angle of elevation of the sun is 33° . Find to the nearest foot the height of the chimney. [10]

31. Solve graphically, and check:

$$3x + y = 8$$

$$2x - 3y = 9 \quad [8, 1, 1]$$

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32. (a) Construct an isosceles triangle whose base is 2 inches and whose *altitude* is $1\frac{1}{2}$ inches. [8]

(b) Using a protractor, find the number of degrees in each of the base angles. (Answer should be within 3° of the true value.) [2]

33. Each of the five parts of this question is a statement that may be correctly completed by *one* and *only one* of the given choices. Write on your answer paper the numbers (1) to (5) and after each indicate the correct answer to the corresponding question by writing *one* of the letters *a*, *b*, or *c*.

(1) If $(5 - \sqrt{7})(5 + \sqrt{7})$ is simplified, the result is
(a) -24 (b) 18 (c) -2

(2) The square root of 62 to the nearest tenth is
(a) 7.7 (b) 7.8 (c) 7.9

(3) If $x^3 + 5x^2 - 6x - 54$ is divided by $x - 3$, the remainder is
(a) 0 (b) -108 (c) -144

(4) In a right triangle, one leg is 8 and the other is 12. To the nearest degree, the smaller of the two acute angles of the triangle is
(a) 33° (b) 34° (c) 35°

(5) Three numbers are in the ratio 5 : 7 : 9. If the middle number is equal to half the sum of the first and third numbers, find each number. Do *not* solve this problem, but simply state whether there is given

(a) not enough information to solve the problem

(b) just enough information to solve the problem

(c) more information than necessary to solve the problem