

EXAMINATION—JANUARY 1955 (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 $2x + 3$, $x - 1$, and $4x + 1$
- Multiply: $4a + 3$ by $a + 2$
- Divide: $15x^3y^4$ by $5xy^4$
- If one side of an equilateral triangle is represented by s , express the perimeter of the triangle in terms of s .
- The formula for the area of a circle of radius r is $A = \pi r^2$. Find the area of a circle whose radius is 10. [Use $\pi = 3.14$]
- Solve for b : $4b = 12$
- Solve for m : $2m - 5 = 7$
- Solve for x : $7x + 5 = 3x + 17$
- Solve for r : $\frac{r}{2} + \frac{r}{3} = 5$
- Solve the proportion for y : $y : 6 = 1 : 2$
- Solve for r : $2(3r - 1) = 5r + 4$
- Solve for x and y : $3x + 2y = 8$
 $x + y = 3$
- Factor: $6r^2s^3 + 12rs^3$
- Factor: $x^2 - 49$
- Solve for the smaller value of x : $x^2 - 8x + 15 = 0$
- Combine $\sqrt{18} + 4\sqrt{2}$
- A rectangular table top is 3 feet wide and 4 feet long. What is the distance from one corner of this table top to a diagonally opposite corner?
- If $x = 2$ and $y = 4$, evaluate $\frac{1}{x} + \frac{6}{y}$
- In a furniture store the list price of a chair is \$85. If a 10% discount is given, what is the reduced price of the chair?

EXAMINATION—JANUARY 1955 (2)

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

x	-2	0	2	4	5
y	-4	2	8	14	17

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 rectangular tract of land is 3979 feet long and 1509 feet wide. The *approximate* area in square feet is (a) 60,000 (b) 600,000 (c) 6,000,000

22. On a sheet of graph paper draw a straight line through the points $(-3, -2)$ and $(6, 5)$. This line will cross the y -axis (a) above the origin (b) at the origin (c) below the origin.

23. On a scale drawing of the floor plans for a house, the scale is $\frac{1}{8}$ inch = 1 foot. A room 14 feet long will be represented by a line whose length is (a) $1\frac{3}{4}$ " (b) 1.12" (c) $\frac{7}{8}$ "

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

24. Construct the perpendicular bisector of AB .

A B

25. From point P construct a perpendicular to MN .

P.

M N

EXAMINATION—JANUARY 1955 (3)

Part II

Answer three questions from Part II.

26. Grace, Eleanor and Ann sold tickets for the school play. Eleanor sold twice as many tickets as Grace, and Ann sold 8 tickets more than Grace. Altogether they sold 68 tickets. How many did each girl sell? Check. [6, 3, 1]

27. At 8:00 a.m. two planes leave an airport traveling in opposite directions. At 10:00 a.m. they are 840 miles apart. If one plane travels 20 miles per hour faster than the other plane, what is the rate of each plane? Check. [6, 3, 1]

28. The perimeter of a rectangular field is 720 rods. The length of the field is 24 rods less than three times the width. What are the dimensions of the field? 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 housewife buys 5 pounds of pork and 3 pounds of ground beef for \$4.00. The following week at the same prices she pays \$3.04 for 4 pounds of pork and 2 pounds of ground beef. What is the price per pound of pork? [5]
- b. A storekeeper mixes candy worth 65¢ a pound with candy worth 80¢ a pound to make a mixture of 60 pounds worth 70¢ a pound. How many pounds of each kind did he use? [5]
- c. Mr. Jackson has twice as much money invested in stocks as he has in bonds. His annual income from the two investments is \$585. If the stocks pay 5% interest, while the bonds pay 3%, how much is invested in stocks? [5]

Part III

Answer two questions from Part III.

30. The angle of elevation of the top of a steeple is 23° , taken from a point 180 feet from the foot of the steeple. Find to the nearest foot the height of the steeple. [10]

EXAMINATION—JANUARY 1955 (4)

31. Solve *graphically*, and check

$$\begin{aligned}x + y &= 3 \\7x + y &= 9 \quad [8, 1, 1]\end{aligned}$$

32. a. Construct an equilateral triangle each of whose sides is 2 inches in length. [4]
b. Bisect each of the sides of this triangle. [6]

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 completion to the corresponding statement by writing *one* of the letters *a*, *b*, or *c*.

- (1) If $7x + 5y$ is subtracted from the sum of $3x + 7y$ and $5x - 4y$, the result is (a) $x - 2y$ (b) $x + 8y$ (c) $x - 8y$
- (2) The square root of 31 to the nearest tenth is (a) 5.4 (b) 5.5 (c) 5.6
- (3) If $x^3 - 3x^2 + 4x - 4$ is divided by $x - 2$, the remainder is (a) 0 (b) -4 (c) -8
- (4) A root of the equation $3x + 7 = x^2 - 3$ is (a) 5 (b) 2 (c) -1
- (5) The total value of 18 coins consisting of nickels and dimes is \$1.20. If there are twice as many nickels as dimes, how many of each are there? 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