

The University of the State of New York

THE STATE EDUCATION DEPARTMENT

NINTH GRADE ELEMENTARY ALGEBRA EXAMINATION

June 1955

Fill in the following lines:

Name of pupil.....Name of school.....

Instructions

It is wise to divide your time so that you may complete the entire examination in *three hours*. Part I probably can be done within a period of one and one-half hours and parts II and III within the time remaining. Excess time may be used in reviewing your paper for errors.

Part I

Directions (1-25): Answer all questions in this part. Write the answer to each question in the space provided at the right. No work need be shown for this part. In questions 1, 2 and 3 each correct answer will receive 1 credit. In questions 4 through 25 each correct answer will receive 2 credits. [50]

- | | |
|--|-----------|
| 1 a Multiply 709 by 68. | 1 a |
| b How much larger is $25\frac{1}{8}$ than $17\frac{3}{4}$? | b |
| 2 a What is $4\frac{1}{3} \div 1\frac{1}{2}$? | 2 a |
| b Divide 3.86 by .2 | b |
| 3 a Which is larger: $\frac{5}{8}$ or 60%? | 3 a |
| b What is .5% of 2800? | b |
| 4 Find the square root of 148 to the <i>nearest tenth</i> . | 4..... |
| 5 Subtract $2x^2 - 3x + 2$ from $x^2 + 4x - 1$. | 5..... |
| 6 Multiply $a^2 + 2a + 1$ by $a - 1$. | 6..... |
| 7 Factor completely: $2x^2 - 18$. | 7..... |
| 8 Find the factors of $a^2 - 3a - 54$. | 8..... |
| 9 If an odd number is represented by n , what will represent the next larger odd number? | 9..... |
| 10 In the formula $S = \frac{n}{2}(a + b)$, find the value of S if $n = 6$, $a = 4$ and $b = 15$. | 10..... |

NINTH GRADE ELEMENTARY ALGEBRA — *continued*

- 11 A team won w games and lost 5 games and no games resulted in a tie. What is the ratio of the number of games won to the number of games played by this team? 11.....
- 12 Combine $\sqrt{27} + \sqrt{3}$. [Leave answer in simplest radical form.] 12.....
- 13 What is the value of $a - b$ when $a = 3$ and $b = -2$? 13.....
- 14 Solve for x : $\frac{x+2}{3} - \frac{x-2}{5} = 2$. 14.....
- 15 If $\sin A = .9102$, find angle A to the *nearest degree*. 15.....
- 16 In basketball a free throw counts 1 point and a field basket counts 2 points. Write a formula for the total number of points P scored by a team that made x free throws and y field baskets. 16.....
- 17 Multiply $\frac{(x+5)^2}{25}$ by $\frac{5}{x+5}$ 17.....
- 18 Divide $6x^2 + 5x - 6$ by $3x - 2$. 18.....
- 19 If a car can be driven 15 miles on a gallon of gasoline, how many gallons will be needed to drive this car m miles? 19.....
- 20 Solve the following set of equations for x :
 $3x - y = 4$
 $2x + 3y = 21$ 20.....
- 21 Solve for y : $3y + 1 = 8y + 16$. 21.....
- 22 Write a linear equation expressing the relationship between a and b as shown in the following table: 22.....
- | | | | | |
|-----|---|---|---|---|
| a | 0 | 1 | 2 | 3 |
| b | 3 | 4 | 5 | 6 |
- 23 Solve for a : $3a + 2 = b$. 23.....
- 24 Solve for x : $10x - 2(3x + 1) = 26$. 24.....
- 25 Find the value of x in the proportion $\frac{8}{20} = \frac{x}{30}$ 25.....

NINTH GRADE ELEMENTARY ALGEBRA — *concluded*

Part II

Answer three questions from this part. A purely arithmetical solution for any problem here will not be accepted. Show all work.

26 The sum of three numbers is 76. Find the numbers if the second number is twice the first, and if the third number is four more than the sum of the first two. [10]

27 A certain tennis court is 6 feet longer than twice its width. The perimeter of the court is 228 feet. Find the number of feet in the length and the width of the court. [10]

28 A man invested \$6000 from which he receives a yearly income of \$330. Part of the money is invested at 6% and the remainder at 4%. How much is invested at each rate? [10]

29 A boy walked a certain distance at the rate of 3 miles an hour. One and one-half hours after he left, his father followed him at the rate of 4 miles an hour. How many miles had the boy gone when his father overtook him? [10]

30 A dealer wishes to make a mixture of 30 pounds of nuts to sell at 95 cents a pound by mixing together some nuts worth 75 cents a pound with another kind worth \$1.05 a pound. How many pounds of each kind must he use? [10]

Part III

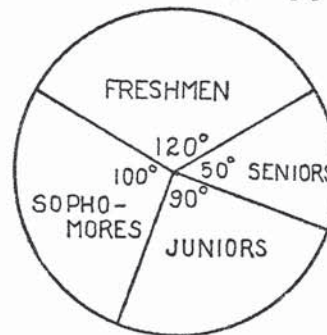
Answer two questions from this part. Show all work.

31 A balloon B is observed to be directly above a point C situated on level ground. At a point A on the ground 54 yards from C , the angle of elevation of the balloon is 77° . How many yards from A is the balloon? [6, 4]

32 Answer both a and b :

a The circle graph below represents the proportion of students in the four classes of a college. If the total number of students is 1800, how many are there in each class? [4]

b Using the answers found in part a , draw a bar graph to show the number of students in each class. [6]



33 Solve graphically and check: [3, 3, 2, 2]

$$\begin{aligned} x + 2y &= 6 \\ 4x + y &= -4 \end{aligned}$$

*34 Given the formula $S = vt - \frac{1}{2}gt^2$, find the values of t when $S = 48$, $v = 64$ and $g = 32$. [10]

* This question is based on one of the optional topics in the syllabus.