

The University of the State of New York

251ST HIGH SCHOOL EXAMINATION

ELEMENTARY ALGEBRA

Monday, June 15, 1931 — 9.15 a. m. to 12.15 p. m., only

Instructions

Do not open this sheet until the signal is given.

Answer all questions in part I and five questions from part II.

Part I is to be done first and the maximum time to be allowed for this part is one and one half hours. Merely place the answer to each question in the space provided; no work need be shown.

If you finish part I before the signal to stop is given you may begin part II. However, it is advisable to look your work over carefully before proceeding to part II, since *no credit will be given any answer in part I which is not correct and reduced to its simplest form.*

When the signal to stop is given at the close of the one and one half hour period, work on part I must cease and this sheet of the question paper must be detached. The sheets will then be collected and you should continue with the remainder of the examination.

ELEMENTARY ALGEBRA

Monday, June 15, 1931

Fill in the following lines:

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

Detach this sheet and hand it in at the close of the one and one half hour period.

Part I

Answer all questions in this part. Each question has 2½ credits assigned to it; no partial credit should be allowed. Each answer must be reduced to its simplest form.

1 Write the product of $a^2 + ab + b^2$ and $a - b$ Ans.....

2 Find *three* factors of $18m^2 - 8$ Ans.....

3 Write a formula for the number of days (n) in w weeks and 3 days. Ans.....

4 How many hours will it take a car to go 60 miles at m miles an hour? Ans.....

5 From $\frac{x+y}{8}$ subtract $\frac{x+y}{10}$ Ans.....

6 Solve the following equation for y : Ans.....

$$\frac{y-3}{6} - \frac{y-25}{5} = 4$$

7 Solve for A the formula $S = \frac{1}{2} AT^2$ Ans.....

8 The area of a square is 59; find a side of the square to the *nearest tenth*. Ans.....

9 Express $2\sqrt{3} - \frac{1}{2}\sqrt{12}$ as a single term. Ans.....

10 Does $(a - b)^2 = (b - a)^2$? [Answer *yes* or *no*.] Ans.....

11 Express $x^2 - \frac{2}{3}x^2 + 2$ as a single fraction in its simplest form. Ans.....

12 Solve the following set of equations for x : Ans.....

$$5y + 3x = 12$$

$$4x - 5y = 2$$

13 The perimeter of a square is $8x$; what is its area? Ans.....

14 $K = \frac{1}{2} BH$ is the formula for the area of a triangle. Is the area K doubled if the base B is doubled and the altitude H remains the same? [Answer *yes* or *no*.] Ans.....

15 Does the cosine of an angle increase or decrease as the angle increases from 0° to 90° ? Ans.....

16 One acute angle of a right triangle is 67° and the hypotenuse is 10 feet; find to the *nearest foot* the length of the side opposite the given angle. Ans.....

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17 Express a simple relation between G and L shown in the table at the right.

G	6	9	12	
L	2	3		5

Ans.....

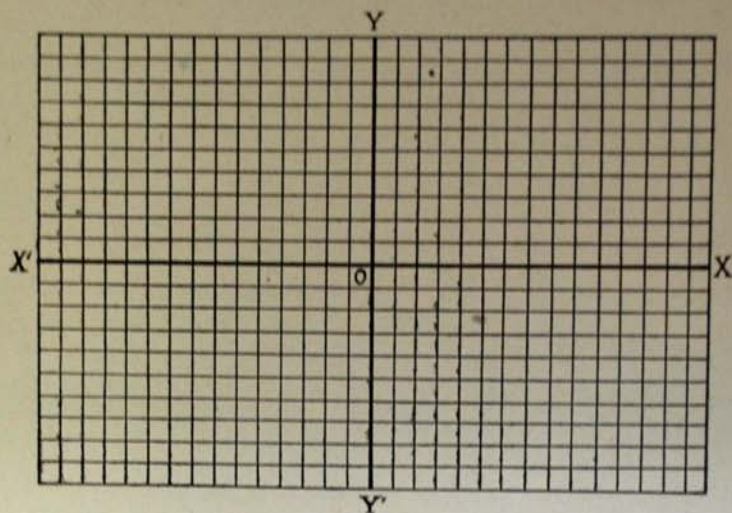
18 Complete the table in question 17.

Ans.....

19-20 a On the diagram below plot the points $x = 12, y = 5$, and $x = 4, y = -3$

b What is the value of x where the line joining these two points crosses the x -axis?

Ans.....



- Write at top of first page of answer paper to part II (a) name of school where you have studied,
 (b) number of weeks and recitations a week in elementary algebra.

The minimum time requirement is five recitations a week for a school year.

Part II

Answer five questions from this part. Full credit will not be granted unless all operations (except mental ones) necessary to find results are given; simply indicating the operations is not sufficient. Each answer should be reduced to its simplest form.

21 The age of the older of two boys is twice that of the younger; 3 years ago it was three times that of the younger. Find the age of each boy now. [7, 3]

22 The cost of 3 pens and 3 books is \$6. If the cost of a pen exceeds the cost of a book by \$1, find the cost of each. [7, 3]

23 A dealer wishes to produce 100 gallons of oil worth 19 cents a gallon by mixing oil worth 20 cents a gallon with oil worth 16 cents a gallon; how many gallons of each kind of oil should he use? [7, 3]

24 Indicate whether each of the following statements is true or false: [Write the letters a, b, c, d, e in a column and then write the word true or false after each letter.]

$a \sin 31^\circ = \cos 59^\circ$ [2]

b The value of a fraction is not changed if the same number is added to both the numerator and the denominator. [2]

$c \frac{\sqrt{a}}{\sqrt{b}} = \sqrt{\frac{a}{b}}$ [2]

d If $2n + 1$ is an odd number, the next larger odd number is $2n + 2$. [2]

e If $3x + 2 = 7$, then $2x = \frac{1}{6}$ [2]

25 The length of a rectangle is three times the width. If the width is diminished by 1 inch and the length increased by 3 inches, the area will be 72 square inches. Find the dimensions of the original rectangle. [6, 4]

26 The ratio of A's money to B's money is 5:3. If A should give B \$200, they would then have equal amounts. Find the amount that each one has. [7, 3]

27 Solve graphically the following set of equations and write the values of x and y at the point on the graph that represents the common solution:

$$4x - y = 5$$

$$2x + y = 10$$

[4, 4, 2]

The following question is based on one of the optional topics in the syllabus and may be substituted for any other question in part II.

28 Given the formula $S = VT - \frac{1}{2}gT^2$; find the values of T when $S = 48$, $V = 64$ and $g = 32$ [10]