

The University of the State of New York
254TH HIGH SCHOOL EXAMINATION
ELEMENTARY ALGEBRA
Monday, June 20, 1932—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

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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 2 1/2 credits assigned to it; no partial credit should be allowed. Each answer must be reduced to its simplest form.

1 Write the product of c^2 - 2c + 4 and c + 2

Ans.....

2 In the formula K = 2a - 5(n - 1), find the value of K when a = 8 and n = 3

Ans.....

3 Subtract 2m^3 + 6m^2 - 8m from 2m^3 - 5m - 7m^2

Ans.....

4 What is the quotient when 2a^2b^2 + ab - 3 is divided by ab - 1?

Ans.....

5 Factor m^2 + 5m - 24

Ans.....

6 Factor pi r s + pi r^2

Ans.....

7 Express as a single fraction in its simplest form:

3a/4 - 5/a - 3

Ans.....

8 Simplify 6 sqrt(a/2)

Ans.....

9 If each of two sides of a triangle is x inches and the third side is 3 inches longer than either of these sides, represent the perimeter.

Ans.....

10 Solve the following equation for x:

2x/3 - 7-x/4 = 1

Ans.....

11 Complete the statement: A number that satisfies an equation is called a ... of the equation.

Ans.....

12 Write a formula for the surface area A of the four side walls of a room whose length is L, width W and height H.

Ans.....

13 Find sin 47 degrees

Ans.....

14 Multiply a/(x^2 - 4) by (2x + 4)/(8a^3)

Ans.....

15 If x is positive, does the value of the fraction 12/(x + 2) increase or decrease as x increases?

Ans.....

16 If 10x^2 = 264, find the positive value of x correct to the nearest tenth.

Ans.....

17 In a right triangle, the side opposite acute angle A is 4 times as long as the adjacent side; find angle A to the nearest degree.

Ans.....

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ELEMENTARY ALGEBRA — *concluded*

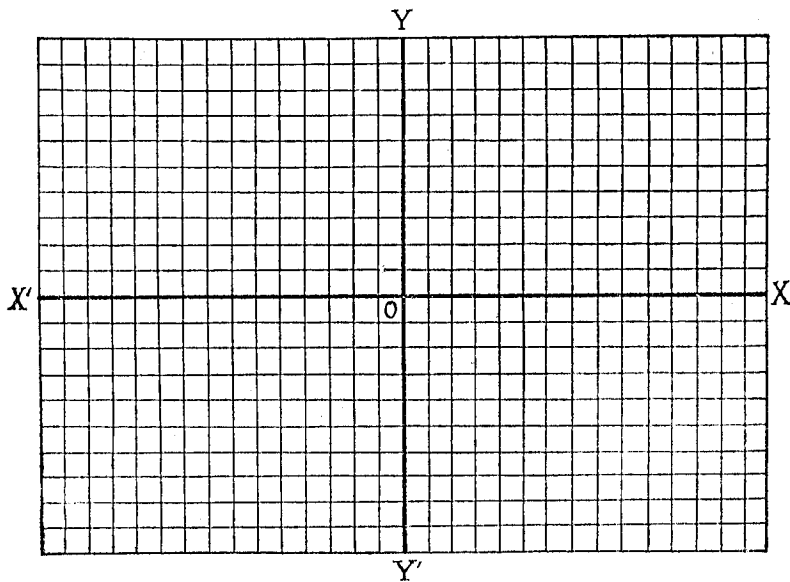
18 From the formula $T = 6E^2$, fill in the values of T in the table at the right.

E	0	1	2	3
T				

19 If in the formula used in question 18 the value of E is doubled, by what is T multiplied?

Ans.....

20 On the diagram below, draw the graph of the equation $3x + 2y = 7$, using the following values for x : $-1, 3, 5$



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- 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 In basket ball a foul basket counts 1 point and a field basket counts 2 points. A team scored 39 points in a game, making 6 more field baskets than foul baskets. How many baskets of each kind did they make? [7, 3]

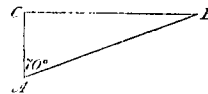
22 A state trooper flying an airplane at 90 miles an hour chases a thief who drives an automobile at an average rate of 50 miles an hour. The thief is headed toward the border and has a start of 1 hour.

- a In how many hours after the trooper starts will he be directly over the thief? [6, 2]
 b Will the trooper pass over the thief within the state if the border is 120 miles from their starting point? [2]

23 Eight boys agreed to buy a tent. Two of them find that they are unable to pay, so each of the others has to pay \$4 more than he expected to pay. What is the cost of the tent? [7, 3]

24 If 3 feet is added to each side of a square, its area is increased by 39 square feet; find the side of the original square. [7, 3]

25 In laying out a golf course, the club members wish to find the distance across a ravine from a point A to a point B . They walk from A to a point C , which is directly across from B , and find the distance AC to be 51.3 yards. Angle C is a right angle and angle A is found to be 70° . How far is it from A to B ? [7, 3]



- 26 Solve and check the following set of equations:

$$\frac{x-6}{3y} = \frac{1}{5}$$

$$2x + y = 23 \quad [8, 2]$$

- 27 A salesman's record of calls on customers and sales made to them for a week was as follows:

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Calls	6	10	14	16	12	8
Sales	4	7	8	11	6	7

- a Show this information by means of two line graphs, using the same set of axes, with a dotted line to represent calls and a solid line to represent sales. [4, 4]
 b On the graph made in answer to a , indicate the day on which the salesman made the smallest number of unsuccessful calls. [2]

- * 28 Find the roots of the following equation correct to the nearest tenth:

$$x^2 = 6x - 1 \quad [10]$$

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