The University of the State of New York

MATHEMATICS (Preliminary)

Wednesday, June 21, 1944 — 9.15 a. m. to 12.15 p. m., only

Fill in the following lines:

Name of school..Name of pupil..

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 write the answer to each question on the line at the right; 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.

MATHEMATICS (Preliminary)

Part I

Answer all questions in this part. Write the answer to each question on the dotted line at the right. Each question has 2 credits assigned to it; no partial credit will be allowed. Each answer must be reduced to its simplest form.

1 Add $2\frac{3}{4}$ and $1\frac{3}{8}$

2 Find the sum of 2.601; 36.5; 92; .463

3 Subtract $9\frac{1}{3}$ from $21\frac{1}{2}$

4 8031 — 7683

5 461.76 ÷ 9.6

6 Divide $4\frac{1}{2}$ by $\frac{3}{4}$

7 Find the product of 4.63 and .008

8 A girl has been receiving $15 per week. If she gets a 10 per cent increase in pay, what will she receive per week?

9 What per cent of 21 is 21?

10 Write in figures: two and twenty-five thousandths.

11 When money required for public uses is levied on property, business or incomes, what is it called?

12 Henry won first place in the shot-put with a heave of 37 feet 8 inches and John won second place with a heave of 36 feet 10 inches. How much farther did Henry heave the shot than John?

13 How many bags of coal each weighing 50 pounds can be filled from one ton of coal?

14 Find the interest on $450 for 8 months at 5%.

15 A ton of hard coal costs $15. By paying cash, I receive a discount of 30 cents. What is the per cent of discount?

16 Find the square root of 100.

17 In a certain concrete mixture the ratio of sand to cement is 4 to 1. At this ratio, how many shovelfuls of cement would be needed to be mixed with 60 shovelfuls of sand?

18 Write the algebraic expression for the following: one half of the number x increased by 5.

19 John has x dollars and his brother Lawrence has 4 times as much. Express algebraically how much Lawrence has.

20 What is the line called that divides a circle into two equal parts?

21 A triangle has a base of 12 feet and an altitude of 8 feet. Find the area.

22 Write the formula for finding the area of a circle.

23 Two aviators flew over territory mapped on a scale of 120 miles to the inch. Find the distance they flew between two places that are $4\frac{1}{2}$ inches apart on the map.

24 During February, Robert's weekly earnings were as follows: $7.60; $6.20; $4.55; $11.25. Find his average weekly earnings.

25 From the sum of 6 and 5, subtract the product of 3 and 2.

[2]

Write at top of first page of answer paper to part II (*a*) name of school where you have studied, (*b*) grade of work completed in mathematics.

The minimum requirement is the completion of the work of the eighth grade in mathematics.

Part II

Answer any five questions from this part. No credit will be allowed unless all necessary operations are given. Reduce each result to its simplest form and mark each answer *Ans.*

26 In a recent newspaper collection campaign held throughout the entire nation, one Junior high school of 175 students collected 28 tons of paper.

    a What was the average number of pounds of paper collected per student? [5]

    b How much did the school receive by selling the paper for $.60 a hundred pounds? [3]

    c Of the amount collected, $168 was given to the local servicemen's organization. What per cent did it receive? [2]

27 The 6th, 7th and 8th grades of a school held a track meet in May this year. The meet included the following events: 50-yard dash; broad jump; shot-put; high jump; distance run; commando race; relay race. The points were awarded as follows: first place 5, second place 3, third place 1. Using the results shown below, figure the scores for each grade. [10]

Grade	50-yd dash	Broad jump	Shot-put	High jump	Distance	Commando race	Relay race
6..........	2nd	1st	3rd	...	2nd	2nd	3rd
7..........	3rd	3rd	{ 1st { 2nd	1st	3rd	3rd	1st
8..........	1st	2nd	...	{ 2nd { 3rd	1st	1st	2nd

28 Black Coal Company delivered to Mr G. R. Smith 4 loads of coal weighing 4165 lb., 3865 lb., 3945 lb., 4025 lb. The price was $13.65 a ton.

    a How many tons did Mr Smith receive? [5]

    b What was the total cost of the coal? [2]

    c Write a check as Mr Smith would have written it in paying for the coal in full on February 1, 1944. [Copy and fill out the form below.] [3]

Albany National Bank

Albany, N. Y. .... 19......

Pay to
order of.. $.................

.... Dollars

....

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[3]

29 New equipment selected by the high school football team is listed at $1200. White Manufacturing Company quotes a discount of 25% and 15%; Blue Supply Company quotes a single discount of 40%.

    a What net price does the White Manufacturing Company offer? [5]

    b What net price does the Blue Supply Company offer? [3]

    c Which is the better offer and how much better? [2]

30 Answer *each* of the following:

    a Collect similar terms:
$$3a + b - a - 2a - b + 4a \quad [2]$$

    b Write algebraic equations for *each* of the following:

        (1) If 8 is subtracted from 4 times a certain number, the remainder is 20. [2]

        (2) A certain number divided by 5 equals 3. [2]

    c Solve the following equations:

        (1) $\dfrac{3x}{4} = 12$ [2]

        (2) $3x - 5 = 28$ [2]

31 Last winter a boy made a business of trapping. He purchased $32 worth of traps and $11.40 worth of skinning equipment. He caught and sold 62 skins for a total income of $108.50.

    a What was the average value of each skin? [4]

    b What was the net gain? [4]

    c What per cent of gain did he make on his investment? [2]

32 Make a bar graph to represent the approximate heights of the following well-known structures: [10]

Eiffel Tower	1000 feet
Washington Monument	550 feet
Empire State Building	1250 feet
Great Pyramid	480 feet
St. Peter's Church (Rome)	450 feet

33 On the drawing below, *A* is Paul's house, *B* is Henry's house and *C* is the school. The scale is 1 inch equals 400 feet. Using the information given and with the aid of a ruler, answer the following questions:

    a How far does Paul walk to school if he goes past Henry's house? [5]

    b How far does Paul walk to get to school if he goes by way of the path? [3]

    c How much farther does Paul walk if he goes by way of Henry's house than if he goes by way of the path? [2]

[4]