The University of the State of New York

297TH HIGH SCHOOL EXAMINATION

MATHEMATICS (Preliminary)

Wednesday, June 19, 1946 — 9.15 a. m. to 12.15 p. m., only

Fill in the following lines:

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

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 Subtract 68.79 from 128 1.....

2 Find the sum of 786; 4975; 2708; 64 2.....

3 Find the quotient of $9\frac{3}{8} \div 6\frac{1}{4}$ 3.....

4 Find the product of 84.7 and .065 4.....

5 Add $3\frac{1}{4}$; $2\frac{1}{3}$; $4\frac{1}{2}$ 5.....

6 Find, to the *nearest tenth*, the quotient of $847 \div 24$ 6.....

7 If a mixture of water and alcohol in a car radiator contains 20% alcohol, what per cent of the mixture is water? 7.....

8 How much will you pay for 12 ounces of dry peas that sell for 16 cents a pound? 8.....

9 Before a serious illness a boy weighed 110 lb. On the day he left the hospital he weighed 99 lb. What per cent of his former weight did he lose? 9.....

10 If baseballs listed at $16 per dozen are sold to schools at a discount of 25%, how much do schools have to pay per dozen? 10.....

11 A grocer paid $6 for 200 lb. of cabbage and sold it at the rate of 2 lb. for $.15. What was the amount of his profit? 11.....

12 The price of eggs increased from 40 cents to 60 cents a dozen. What was the per cent of increase in the price? 12.....

13 What will be the interest on $100 for 3 months at the annual rate of 4%? 13.....

14 A man has a $5000 life-insurance policy. What will be the annual premium he must pay if the insurance costs $21 per $1000? 14.....

15 A boy sold $64 worth of merchandise on a 20% commission. How much did he earn? 15.....

16 A train was scheduled to arrive at 2:45 but was 20 minutes late. At what time did it arrive? 16.....

17 How many feet of fencing will be required to inclose a flower bed 5 feet wide and 10 feet long? 17.....

18 If rock salt sells for $1.25 per hundred pounds, how much will 1000 pounds cost? 18.....

19 To the product of 8 and 5 add the difference between 29 and 18. 19.....

20 At the rate of 240 miles per hour, how far would an airplane travel in 20 minutes? 20.....

21 What kind of angle is formed by the intersection of two roads, if one road runs north and south and the other east and west? 21.....

22 If a girl's age is x years now, express algebraically her age 10 years ago. 22.....

23 Represent the number of inches in x feet. 23.....

24 Which of the following is the largest: $\frac{1}{3}$; $\frac{1}{2}$; $\frac{2}{5}$; $\frac{5}{8}$? 24.....

25 If the sum of two angles of a triangle is 130 degrees, how many degrees are there in the other angle? 25.....

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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*) 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 An eighth grade class in a certain school held an election for class president. There were 75 pupils in the class but only 72 voted. It was ruled that the winner must have a majority of the votes cast. [A majority is more than half the total.] Henry received 35 votes, Mary 21 votes and Jack 16 votes.

a Was any one elected? [1]

b Show work to prove your answer to *a*. [3]

c What per cent of the pupils in the class voted? [4]

d What was the ratio of Mary's vote to Henry's? [2]

27 Using the scale $\frac{1}{8}$" equals 100 miles, make a bar graph showing the lengths of the following rivers: [10]

Name of river	*Approximate length of river*
Nile	4000 miles
Amazon	3300 miles
Congo	3000 miles
Hwang Ho	2600 miles
Rio Grande	2000 miles

28 A clerk worked in a store 8 hours a day at the rate of $.55 per hour. In addition to his regular pay, he received 2% commission each day on the amount of his sales *above* $75. During 4 consecutive days, his sales were as follows: first day $95, second day $178.50, third day $70, fourth day $128.

a How much did he receive as regular pay for the 4 days? [4]

b How much extra did he earn in commission? [4]

c What was his total pay for the 4 days? [2]

29 A lady purchased household furnishings at a total cost of $900. She paid 40% down and agreed to pay the balance in 12 equal instalments. She could have purchased the same furniture for $810 cash.

a How much did she pay down on the furniture? [2]

b What was the amount of each instalment payment? [2]

c How much could she have saved by paying cash? [2]

d The amount she could have saved by paying cash is what per cent of the instalment price of $900? [4]

30 Mr Charles insured his building against fire for $15,000 at the rate of $.90 per $100 for a 3-year policy. After he rebuilt the wooden section of the building with fireproof material, he found that his insurance rate was thereby reduced to the rate of $.54 per $100 for a 3-year policy.

a How much did he save on the insurance premium for his 3-year policy because of the reduced rate? [6]

b The cost of rebuilding the wooden section was $432. How many *years* would it take for the saving in rate to pay the cost of rebuilding the wooden section? [4]

31 Mr Caldwell purchased an automobile for $1250. His expenses for the first year were as follows:

Item of expense	*Cost*
Loss of interest on $1250 at 2%	$
Depreciation, 25% of $1250	
Garage, $6 a month	
Repairs	70.62
License	16.00
Insurance	43.60
Gas, 500 gal. at 20¢	
Oil, 60 qt at 30¢	
Total cost	

a Copy the list of expenses, filling in the blank spaces with the correct amounts. [6]

b What was the average expense per month? [2]

c If the car was driven a total of 10,000 miles during the year, what was the average cost per mile, to the *nearest tenth of a cent?* [2]

32 *a* Solve the following equation for x: [2]

$$\frac{3x}{4} = 12$$

b In the equation $N = \frac{3m}{2}$, find N when m equals 4. [2]

c Henry and Joe picked strawberries for a farmer. Henry picked three times as many quarts of berries as Joe and together they picked 160 quarts. Answer *each* of the following, letting x equal the number of quarts picked by Joe.

(1) Express in terms of x the number of quarts Henry picked. [1]

(2) Write an equation for the total number of quarts of berries picked. [3]

(3) Solve the equation to find the number of quarts of berries *each* boy picked. [2]

33 *a* What is the area of the circle inscribed within the square? [2]

b What is the area of the square? [2]

c What is the perimeter of the square? [2]

d What is the circumference of the circle? [2]

e What is the area of the part of the square not included within the circle? [1]

f How much longer is the perimeter of the square than the circumference of the circle? [1]