MATHEMATICS (Preliminary)

Wednesday, January 30, 1946 — 9.15 a. m. to 12.15 p. m., only

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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.

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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 Divide 213.50 by 25

2 Find the product of 49.08 and 75.6

3 Subtract $2\frac{1}{4}$ from $4\frac{3}{8}$

4 $3\frac{1}{4} \times \frac{3}{4}$

5 Find the sum of 621.7 ; 42.84 ; 9.659

6 $3\frac{1}{2} - 2\frac{2}{3} + \frac{5}{8}$

7 If $\frac{1}{4}$ in. represents 5 yd, how many inches long must a scale drawing be to show a football field 100 yd long?

8 If, on the average, one potato out of every 50 in a bin spoils, what per cent of the potatoes spoil?

9 A merchant paid $40 for 5 dozen neckties and sold them for $1.25 each. Find his profit.

10 If you received a discount of $2 on a bill of $20, what rate of discount did you receive?

11 A certain type of gun fired 300 shots per minute. After improvement, the firing speed of the gun was increased by 20%. What is the new firing rate per minute?

12 A tax rate of 15 mills on $1 is the same as what rate on $1000?

13 How many stakes each $5\frac{1}{2}$ ft long can be cut from 10 lengths of lumber each 12 ft long?

14 Write the numbers 4, 3, 6, 2 to form a proportion.

15 In the first half of the school year there was a total of 90 school days. If Joe was absent 9 days, what was his percentage of attendance?

16 Which is larger, a or b?

   a an area of 4 square feet

   b an area 4 feet square

17 If 12 eggs cost x cents, represent the cost of one egg.

18 To square the number 16, by what number do you multiply it?

19 If a boy walks 6 miles in 2 hours, how far will he walk at the same rate in 5 hours?

20 A boy worked from 10:30 a. m. until 1:00 p. m. at $.40 an hour. How much did he earn?

21 Find the perimeter of a square that has an area of 81 square inches.

22 If two times a certain number is decreased by 8, the result is 4. Find the number.

23 How many square yards of carpeting are required to cover a floor 18 ft long by 12 ft wide?

24 How many degrees are there in $\frac{1}{8}$ of a right angle?

25 How much tax will be paid on property assessed for $6000 if the tax rate is 12 mills per dollar?

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Wednesday, January 30, 1946

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 A boy sold hot dogs at a skating rink for one week at 10 cents apiece. He used 42 lb. of frankfurters, which averaged 8 to the pound and cost 30 cents per pound. He bought just enough rolls for the frankfurters at 15 cents per dozen.

a What was the total cost of the frankfurters? [2]

b How many hot dogs did he sell during the week? [3]

c What was the total cost of the rolls? [3]

d What was the boy's profit? [2]

27 During the year 1945, John received a monthly allowance of $3. In addition, he earned $42 during the year. Of the total, he spent $12.50 for entertainment, $38 for clothing and $8 for gifts. He saved the remainder.

a What was John's total income for the year? [3]

b How much did he save? [2]

c What per cent of his total income did he save? [5]

28 A farmer sold his potatoes through a commission merchant in New York City. The shipment, which amounted to 880 bushels, was sold at $2.40 per bushel. The rate of commission was 4%. The cost of trucking the potatoes to the city was $210.

a How much did the commission merchant receive? [5]

b How much did the farmer receive after all expenses were paid? [5]

29 The body of a man weighing 150 lb. contains the following amounts of chemicals:

Water ....98 pounds   Fat ....20 pounds

Protein ....22 pounds   Salts .... $7\frac{1}{2}$ pounds

Sugar.........$2\frac{1}{2}$ pounds

Make a bar graph showing the above information. [10]

30 A man took out a 30-year endowment insurance policy for $5000, at an annual premium of $35.20 per $1000. The annual dividends averaged $4.10 per $1000.

*a* What was the total amount of premiums paid to the company during the 30-year period? [5]

b What was the total amount of his dividends for the 30 years? [5]

31 A salesman works on a straight commission of 30%. Last year he had a total income of $8400.60

a What was his average weekly income? [4]

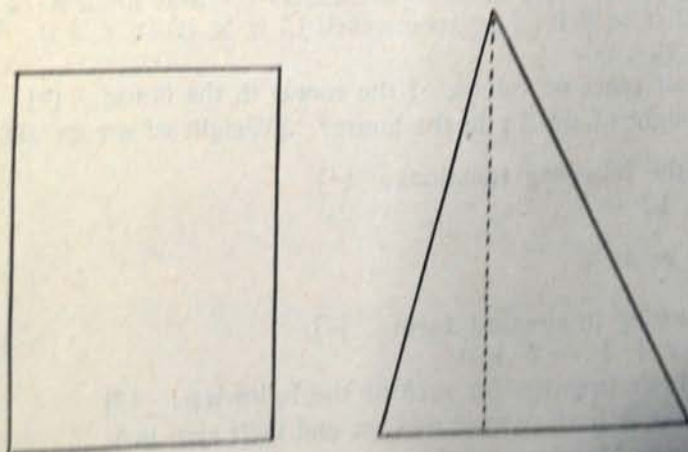*b* What was the total selling price of the goods sold? [6]

[3]

32 John and Henry kept a record of their arithmetic marks over a 10-week period. The solid line on the graph below represents John's marks and the broken line represents Henry's marks.

  a What was the highest mark made by John during the 10 weeks? [2]

  b How many points higher was Henry's best mark than John's best mark? [3]

  c How many points higher was Henry's average for the 10 weeks than John's average for the same period? [5]
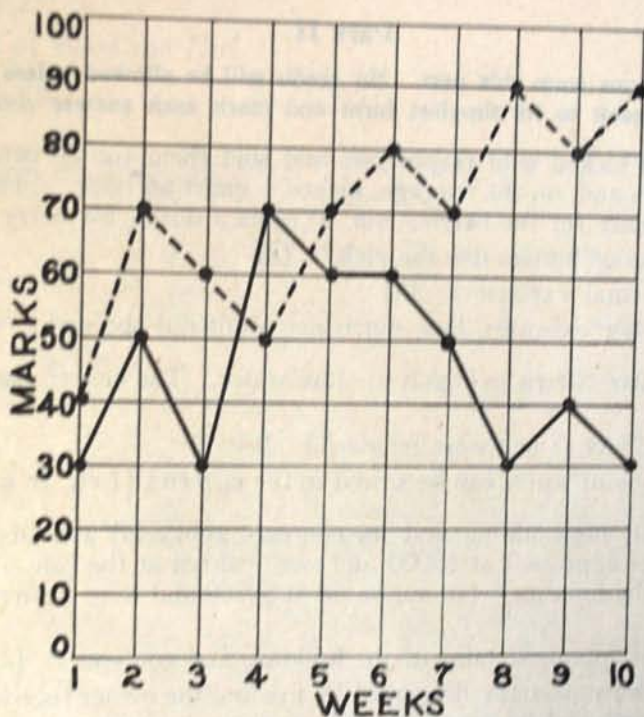
33 The rectangle and triangle below represent two large sheets of metal. Each is drawn to a scale of ¼ inch equals 1 foot. By means of a ruler determine the dimensions of each figure to the nearest foot and then find

  a The area of the rectangle [5]

  b The area of the triangle [5]