MATHEMATICS (Preliminary)

Wednesday, June 20, 1945 — 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 Find the sum of .375; 16; 22.25; .5; 1.125

1...................

2 Subtract 8¼ from 16½

2...................

3 Find the product of 500 and 87½

3...................

4 $10 minus $3.79 equals what?

4...................

5 Divide 36 by 2¼

5...................

6 Jane is 4 ft 7 in. tall and her brother Dick is 5 ft 4 in. tall. How much taller is Dick than Jane?

6...................

7 When apples are sold at 3 pounds for 25 cents, how many pounds can be bought for 75 cents?

7...................

8 A dealer purchased bathing suits at $3 each and sold them for $5 each. The overhead was $.50. How much money did he make on each suit?

8...................

9 A girl sold $24.60 worth of seeds at a 33⅓% commission. How much did she earn?

9...................

10 A certain train leaves New York City at 9:20 a. m. and arrives at Buffalo at 7:48 p. m. How long does it take the train to make the trip?

10...................

11 Two cities are 3¾" apart on a map drawn to a scale of 1 inch = 40 miles. What is the distance in miles between the cities?

11...................

12 How much tax must be paid on property assessed at $4200 if the tax rate is $14.60 per thousand dollars of assessed valuation?

12...................

13 Write the numbers 2, 8, 12, 3 to form a proportion.

13...................

14 How much money would you have if you had two quarters, three dimes, seven nickels and fourteen pennies?

14...................

15 Write $\frac{1}{8}$ as a per cent.

15...................

16 Write in decimal form: seven and four thousandths.

16...................

17 What fractional part of a yard is 9"?

17...................

18 A rectangular garden plot is 12 feet wide. If it contains 288 square feet, how long is it?

18...................

19 Find the area of a triangle having an altitude of 10 feet and a base of 14 feet.

19...................

20 Which of the following contains the greatest number of degrees: an acute angle, an obtuse angle or a right angle?

20...................

21 If x represents the length of one side of a square, what is the perimeter of the square?

21...................

22 Which is the greater distance, 5000 feet or one mile?

22...................

23 Find the interest on $500 for 3 months at an annual interest rate of 4%.

23...................

24 If x equals 9, what is the value of $x + 6$?

24...................

25 William had 9 problems to work. When he had worked 6 of them, what per cent of the problems had he worked?

25...................

[2]

MATHEMATICS (Preliminary)

Wednesday, June 20, 1945

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 young man receives a salary of $275 a month. During the year he plans to spend $480 for rent, $820 for food, $375 for clothing, $425 for fuel and household expenses and $300 for other expenses. He also plans to buy as many war bonds at $375 each as possible with the balance.

    a How much is his annual salary? [3]

    b If he spends his money according to his plans, how much will his total expenses be? [3]

    c How many war bonds at $375 each will he be able to buy? [2]

    d How much will he have left after paying his expenses and buying the war bonds? [2]

27 Herman's clothing store, 1021 Main Street, Ourtown, N. Y., purchased from Fashion Center, Inc., 32d Street at Seventh Avenue, New York 10, N. Y., the following: [terms: 2% discount if paid in 10 days]

    6 doz. shirts @ $18.00 per doz.
    6 doz. neckties @ $8.40 per doz.
    3 doz. handkerchiefs @ $2.20 per doz.
    $\frac{1}{3}$ doz. sweaters @ $42.00 per doz.
    30 suits @ $18.50 each

Fashion Center, Inc. received payment for the merchandise 5 days after the date of the bill.

    a Copy the form below and make out the bill just as it would have been sent to Mr Herman. [6]

    b How much did Mr Herman pay for the merchandise? [2]

    c Receipt the bill for Fashion Center, Inc. [2]

FASHION CENTER, INC.

Sold to:

New York, June 11, 1945

Terms:

[OVER]

28 A local merchant last year did a total business of $18,000. The merchandise cost him $10,800. He paid out for rent $1000, for the services of a clerk $1352 and for other expenses $648.

   a What was his net profit for the year? [3]

   b What was the merchant's average monthly net profit? [2]

   c Find, to the *nearest whole per cent*, the profit he made on his *total* expenses. [5]

29 A page in an average daily newspaper has 8 columns of print. Each column consists of 160 lines and each line averages 6 words.

   a Find the average number of words on a full page. [6]

   b If a linotype operator sets 1440 words per hour, how many columns can he set in 1 hour? [4]

30 On May 15th an electric meter read 5472 kilowatt-hours. The following month, on June 15th, the meter read 5542 kilowatt-hours. Following are the rates:

   For the first 10 kilowatt-hours or less $.82

   For the next 45 kilowatt-hours $.05 per kilowatt-hour

   For the next 55 kilowatt-hours $.03 per kilowatt-hour

   For all over 110 kilowatt-hours $.02 per kilowatt-hour

   a How many kilowatt-hours were used during the monthly period? [2]

   b What was the total charge for the kilowatt-hours consumed during the period? [8]

31 Eighteen salesmen, who worked on a 20% commission, together sold $324,000 worth of merchandise during the year.

   a What was the average amount (in dollars) sold by each salesman during the year? [5]

   b What were the average earnings that each salesman received for the year's work? [5]

32 *a* Solve *each* of the following equations: [4]

   (1) $2x - 4 = 10$

   (2) $\frac{x}{2} = \frac{3}{4}$

   b Write the algebraic equation for *each* of the following: [4]

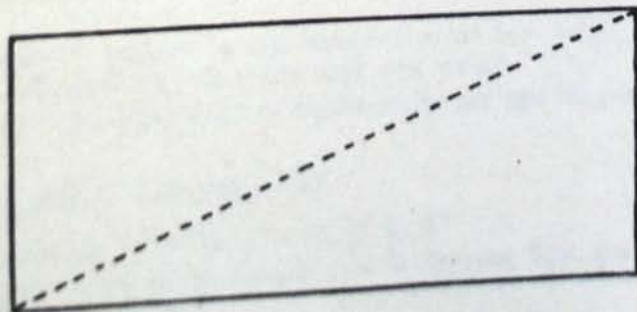   (1) A certain boy's age 5 years from now equals 15

   (2) Three times a certain number increased by 2 equals 20

   c Write the following in simplest form: [2]

   $2x - 4y - 3z - 2y - x - 3z$

33 The diagram below represents a rectangular plot of ground. It is drawn to a scale of $1'' = 40'$.

   a What is the length of the plot? [3]

   b What is the width of the plot? [3]

   c What is the length of the diagonal represented by the dotted line? [4]

[4]