

The University of the State of New York

302D HIGH SCHOOL EXAMINATION

MATHEMATICS (Preliminary)

Wednesday, January 28, 1948 — 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 Add 4387; 9476; 804; 1726; 403 | 1..... |
| 2 Subtract $4\frac{1}{2}$ from $5\frac{1}{2}$ | 2..... |
| 3 Multiply 40 by $6\frac{1}{4}$ | 3..... |
| 4 Divide 1350 by 75 | 4..... |
| 5 If a boy's temperature rises from 98.6° to 101.2° , how many degrees does it rise? | 5..... |
| 6 Frank paid \$12 for a bicycle. He spent \$3.50 for repairs and then sold the bicycle for \$18. What was his profit? | 6..... |
| 7 Robert earns \$16 a week and saves \$12 of this amount. What fractional part of his wages does he save? | 7..... |
| 8 At the rate of \$.40 for the first 10 words and \$.02 for each additional word, what is the cost of a 15-word telegram? | 8..... |
| 9 How many miles will an automobile travel in 15 minutes at an average rate of 48 miles an hour? | 9..... |
| 10 At \$18 per ton, what is the cost of 15,000 pounds of coal? | 10..... |
| 11 A boy scores an average of 6 out of every 10 shots. At the same rate, how many scoring shots should he make out of 100 attempts? | 11..... |
| 12 What is the interest on \$250 for 6 months at 6%? | 12..... |
| 13 If 12 pounds 8 ounces is equally divided among four people, how much does each receive? | 13..... |
| 14 What is the cost of 2 pounds 4 ounces of meat at \$.60 per pound? | 14..... |
| 15 A boy spends 30% of his allowance for candy, 30% for a notebook and saves the balance. What percentage of his allowance does he save? | 15..... |
| 16 A merchant bought potatoes at \$1.40 per bushel. He put them into peck bags and sold them at \$.49 per peck. What was his profit on each bushel sold? | 16..... |
| 17 If eggs cost d cents a dozen, what is the price of $\frac{1}{2}$ dozen? | 17..... |
| 18 If $x = 4$ and $y = 3$, what does $3x + 4y$ equal? | 18..... |
| 19 Three angles measure 16° , 90° and 95° . Which of these three angles is called an acute angle? | 19..... |
| 20 How many 10-ounce packages can be filled from 45 pounds of candy? | 20..... |
| 21 How many rods of fence will be needed to inclose a pasture 60 rods long and 45 rods wide? | 21..... |
| 22 A man bought a lot for \$1200 and sold it for \$1500. His gain was what per cent of the selling price? | 22..... |
| 23 Write $12\frac{1}{2}\%$ as a decimal. | 23..... |
| 24 Which of the following figures would have the greater area? | 24..... |
| a A square with a side of 6 feet | 24..... |
| b A circle with a diameter of 6 feet | 25..... |
| 25 Find the value of x in the proportion $6:18::x:3$ | 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 In a near-by school the seventh and eighth grade teams played five games, with the following scores:

TEAMS	POINTS				
	Game No. 1	Game No. 2	Game No. 3	Game No. 4	Game No. 5
Seventh grade	18	8	16	19	19
Eighth grade	13	20	13	14	25

Using the above figures, answer the following questions:

- How many games did *each* team win? [2]
 - What was the total number of points for *each* team? [2]
 - What was the average number of points per game for *each* team? [2]
 - What was the highest number of points scored by either team in any one game? [2]
 - In which game was the total number of points scored lowest? [2]
- 27 Using the information given above in problem 26, make a bar graph showing the scores of the seventh grade in the five games. [10]
- 28 Answer *each* of the following: [10]
- If you know how far you have traveled and how many hours it has taken you, how can you find your average speed per hour?
 - If you know the cost of one article, how can you find the cost of six articles of the same kind?
 - If you know the length and width of a floor, how can you find its area?
 - If you know the diameter of a circle, how can you find its circumference?
 - If you know the base and altitude of a triangle, how can you find its area?
- 29 During December and January, Tom, Dick and Harry shoveled snow from the sidewalks in front of several stores. They agreed to divide their pay according to the number of hours each worked. Tom worked 6 hours, Dick worked 15 hours and Harry worked 9 hours. They received \$19.50 for their work. How much did *each* boy receive? [10]
- 30 a Edward has x marbles and Charles has four times as many as Edward. Together they have 45.
- Express the above information by an algebraic equation. [2]
 - Solve the equation to find out how many marbles Edward had. [2]
 - How many marbles did Charles have? [1]
- b In the formula $A = 4\pi r^2$, find A when π equals $\frac{22}{7}$ and r equals 7. [5]

[3]

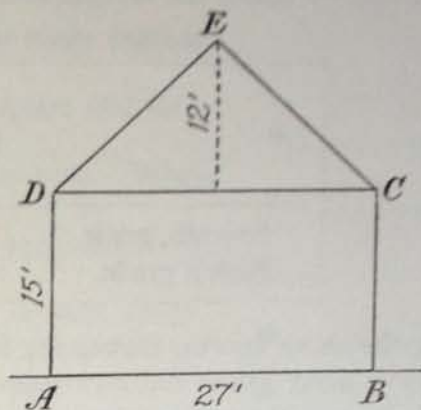
[OVER]

31 Last fall Fred Lucas, whose father owns a peach orchard, purchased 200 bushels of peaches from his father at the rate of \$1.75 per bushel. He sold them in half-bushel baskets at \$1.50 per basket. The baskets cost him \$.20 each and other expenses amounted to a total of \$20.

- How much did Fred pay for all the peaches? [1]
- How much did he pay for all the baskets? [2]
- What were the total expenses? [2]
- How much did Fred receive from the sale of all the peaches? [2]
- How much profit did he make? [1]
- The profit was what per cent of the selling price? [2]

32 The accompanying sketch represents the end of a barn.

- What geometric figure is $ABCD$? [1]
- What geometric figure is CDE ? [1]
- What is the area of figure $ABCD$? [2]
- What is the area of figure CDE ? [2]
- How far above the ground is the peak of the gable? [1]
- How many square yards of siding will be needed to cover the end of the barn if 5 square yards are allowed for cutting and waste? [3]



33 A salesman receives a salary of \$2700 a year and 2% commission on his sales. During the past year his sales amounted to \$125,000.

- What was his total income for the year? [5]
- What was his average weekly salary during this year? [5]