

QUESTIONNAIRE Mathematics Test C. Population 1a and 1b

QUESTION 1

Which of the following is the same as a quarter of a million?

- A. 25,250      C.  $\frac{1}{4,000,000}$       D. 250,000  
B. 40,000      E. 2,500,000

QUESTION 2

0.40 x 6.38 is equal to

- A. .2552      B. 2.452      C. 2.552      D. 24.52      E. 25.52

QUESTION 3

The sum of  $9\frac{4}{5}$  and  $13\frac{1}{4}$  is equal to

- A.  $22\frac{5}{9}$       B.  $22\frac{9}{20}$       C. 23      D.  $23\frac{1}{20}$       E.  $23\frac{1}{5}$

QUESTION 4

The ratio of 2 to 5 equals the ratio of what number to 100?

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QUESTION 5

In a given triangle the measures of two angles in degrees are 60 and 70. What is the measure of the third angle in degrees?

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QUESTION 6

On level ground, a boy 5 feet tall cast a shadow 3 feet long. At the same time a nearby telephone pole 45 feet high casts a shadow the length of which, in feet, is

- A. 24      B. 27      C. 30      D. 60      E. 75

QUESTION 7

A runner ran 3000 metres in exactly 8 minutes. What was his average speed, in metres per second ?

- A. 3.75      B. 6.25      C. 16.0      D. 37.5      E. 62.5

QUESTION 8

[ Picture ]

On the scale above, the reading indicated by the arrow is between

- A. 51 and 52
- B. 57 and 58
- C. 60 and 62
- D. 62 and 64
- E. 64 and 66

QUESTION 9

If  $x + y = 4$  and  $x - y = 2$ , then  $x$  is equal to

- A. 0
- B. 1
- C. 2
- D. 3
- E. 6

QUESTION 10

One bell rings every 8 minutes, while another bell rings every 12 minutes. They have rung together once at the same moment. After how many minutes will they ring together again

- A. for the first time?
- B. for the second time?
- C. for the tenth time ?

QUESTION 11

At 4 o'clock, the measure of the angle between the minute hand and the hour hand of a clock, in degrees, is

- A. 30
- B. 45
- C. 60
- D. 90
- E. 120

QUESTION 12

Any two regular polygons with the same number of sides are

- A. congruent
- B. non-congruent
- C. similar
- D. not similar
- E. equal in area

QUESTION 13-15 / 3

[ Picture ]

Imagine that the geometrical figures K, L, M, N and O have been drawn on a rubber sheet. The lines are assumed to have no width. The rubber sheet is stretched parallel to the X-axis while leaving all the distances measured parallel to the Y-axis unchanged. The stretching is uniform, that is, the same for every part of the sheet.

13. For which of the segments K, L, M will the length remain unchanged?

- A. only K
- B. only L
- C. only M
- D. K and L
- E. K and M

14. What will happen to the measure of angle  $\epsilon$  of triangle N?
- A. It will remain the same.
  - B. It will become larger.
  - C. It will become smaller.
  - D. One cannot tell from the data whether A, B, or C is correct

15. What will happen to circle O?
- A. It will still be a circle.
  - B. It will no longer be a circle.
  - C. One cannot tell from the data whether A or B is correct.

QUESTION 16

A factory produces  $m$  units per week. How many units per week will it produce after production is increased  $p$  per cent?

- A.  $100p + m$
- B.  $100m + mp$
- C.  $\frac{m + mp}{100}$
- D.  $m + \frac{mp}{100}$
- E.  $\frac{p}{100} + m$

QUESTION 17

Let the symbol,  $\overline{a, b}$  denote the set of integers between  $a$  and  $b$ .

For example,  $\overline{3, 7}$  consists of the integers 4, 5, and 6. Which of the following pairs of sets has a larger number of integers in common than any of the other pairs?

- A.  $\overline{0, 15}$  and  $\overline{7, 20}$
  - B.  $\overline{5, 15}$  and  $\overline{16, 30}$
  - C.  $\overline{5, 14}$  and  $\overline{5, 17}$
  - D.  $\overline{4, 18}$  and  $\overline{8, 20}$
  - E.  $\overline{0, 12}$  and  $\overline{6, 12}$
14. A 13 C D E

QUESTION 18

What are the values of  $x$  for which the inequality

$$5x + \frac{5}{3} \leq 2x - \frac{2}{3}$$

is true ?

- A.  $x \leq \frac{7}{9}$       C.  $x \leq 0$       E.  $x \leq \frac{9}{3}$   
 B.  $x \leq \frac{1}{3}$       D.  $x \leq \frac{7}{3}$

QUESTION 19

The symbol  $P \cap Q$  represents the intersection of sets  $P$  and  $Q$  and the symbol  $P \cup Q$  represents the union of sets  $P$  and  $Q$ . Which of the following represents the shaded portion of the diagram below?

[ Note: the character  $\cap$  denotes the character for an intersection of sets]  
 [ : the character  $\cup$  denotes the character for a union of sets ]

- A.  $(X \cap Y) \cup Z$       C.  $X \cap (Y \cup Z)$   
 B.  $X \cup (Y \cap Z)$       D.  $(X \cap Y) \cap Z$   
 E.  $(X \cup Y) \cap Z$

QUESTION 20

If, in the figure below,  $PQ$  and  $RS$  are intersecting straight lines, then  $x + y$  is equal to

- [ Picture ]  
 A. 15  
 B. 30  
 C. 60  
 D. 180  
 E. 300

QUESTION 21

Each of 9 boys had  $t$  marbles. In order to play a game, they divided the marbles among 12 boys in such a way that each had the same number. How many marbles did each of the 12 have?

- A.  $\frac{3t}{4}$       B.  $t - 3$       C.  $\frac{4t}{3}$       D.  $9t - 12$       E.  $12t - 9$

QUESTION 22

The length of the circumference of a circle with centre at O is 24 and the length of arc RS is 4. What is the measure in degrees of the central angle ROS?

[ Picture ]

- A. 24
- B. 30
- C. 45
- D. 60
- E. 90

QUESTION 23

Given any fraction whose numerator is less than the denominator, if you then add 2 to both the numerator and the denominator, the new fraction is

- A. equal to the original fraction
- B. larger than the original fraction
- C. twice the original fraction
- D. smaller than the original fraction
- E. 1 more than the original fraction