QUESTIONNAIRE Mathematics Test 3. Population 3b and Intermediate Population

QUESTION 1
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 2-3 / 2
Use the graph below in answering the two following questions.

[Picture]

2. Three hours after starting, car A is how many miles ahead of car B ?

A. 2 B. 10 C. 15 D. 20 E. 25

3. How much longer does it take car B to go 50 miles than it does for car A to go 50 miles?

A. 1 hour 15 minutes
B. 1 hour 30 minutes
C. 2 hours
D. 2 hours 30 minutes
E. 2 hours 45 minutes

QUESTION 4
There are 227 boys in a school. Every boy in the school belongs to either the music club or the sports club, and some boys belong to both clubs. The music club has 120 members, and 36 of these are also members of the sports club. What is the total membership of the sports club ? _____

QUESTION 5
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 6
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 7
Which of the following sets of conditions is not sufficient for the congruence of FGH and PQR when f is less than g ?

[Note: the character À denotes the character for an angle]

A. À F = À P
   g = q
   f = p

B. À F = À P
   h = r
   À G = À Q

C. g = q
   À F = À P
   h = r

[Picture]

D. h = r
   g = q
   f = p

E. f = p
   À G = À Q
   h = r

QUESTION 8
In □KLM, KL = KM, PO Á LM, and LKP is a straight line.
Then □NKP is isosceles because

[Note: the character □ denotes the character for a triangle]
[: the character À denotes the character for an angle]
[: the character Á denotes the character for a perpendicular line]

A. À P= À KNP, since both are complements of the equal angles L and M.
B. NK = PK, since À P = À M.
C. its sides are parallel to the sides of □KLM.
D. its sides are perpendicular to the sides of □KLM.
E. À P = À KNP since both are half the supplement of angle M.

[Picture]

QUESTION 9
The lengths of the sides of triangle XYZ are 4, 7 and 10. If a similar triangle has a perimeter of 147, what is the length of its shortest side ?

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QUESTION 10
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 11
Which of the following is true for any parallelogram ABCD which has an acute angle at B and diagonals AC and BD?

A. AB < BC
B. AB = BC
C. AB > BC
D. AC < BD
E. None of them

QUESTION 12
The equation of the line shown in the graph is

A. $x + 4y = 4$
B. $2x - y = 4$
C. $2x = y - 2$
D. $x - 4y + 2 = 0$
E. $4x - y = 2$

[Picture]

QUESTION 13
Which of the following is (are) true?

I. $(53 \times 73) \times 17 = 53 \times (73 \times 17)$
II. $133 \times (78 + 89) = (133 \times 78) + 89)$
III. $133 \times (78 + 89) = (133 \times 78) + (133 \times 98)$

A. I only
B. II only
C. III only
D. I and II only
E. I and III only

QUESTION 14

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

For examplc, $\overline{3, 7}$ 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 15

The distance between two schools on a map with a scale of 1 : 10,000 is 20 cm. What is the actual distance in kilometres between the two schools ?

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QUESTION 16

The expression $\frac{a}{b - c} + \frac{a}{c - b}$, where a <> 0 and b <> c, is equal to

[Note: originally <> was printed as a = overprinted with a /]

A. 0

B. $\frac{2a}{b - c}$

C. $\frac{a}{by - cy}$

D. $\frac{a}{2b}$

E. 2a

QUESTION 17
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. $x \geq 0$ E. $x \geq \frac{9}{3}$

B. $x \leq -\frac{1}{3}$ D. $x \geq \frac{7}{3}$

QUESTION 18
In the solution of the following system of equations

$$\left| \begin{array}{l} 2x + y = 7 \\ x - 4y = 4 \end{array} \right|$$

the value of y is equal to

A. $-\frac{5}{3}$ B. -9 C. $\frac{1}{9}$ D. $\frac{1}{9}$ E. $\frac{5}{3}$

QUESTION 19
Which of the following numbers in base two is (are) even ?

I. 110011
II. 110010
III. 110101
IV. 100100

A. I only
B. III only
C. I and III only
D. II and IV olly
E. I, III and IV

QUESTION 20
The symbol P n Q represents the intersection of sets P and Q and the symbol P u Q represents the union of sets P and Q. Which of the following represents the shaded portion of the diagram below?

[Note: the character n denotes the character for an intersection of sets]
[: the character u denotes the character for a union of sets]

A. (X n Y) u Z
B. X u (Y n Z)
C. X n (Y u Z)
D. (X n Y) n Z
E. (X u Y) n Z