

### Question 1

Is triangle ABC obtuse angled?

1.  $a^2 + b^2 > c^2$ .
2. The center of the circle circumscribing the triangle does not lie inside the triangle.

### Question 2

Is triangle ABC with sides a, b and c acute angled?

1. Triangle with sides a, b, c has an area of 140 sq cms.
2. Median AD to side BC is equal to altitude AE to side BC.

### Question 3

A cube of side 5 cm is painted on all its side. If it is sliced into 1 cubic centimeter cubes, how many 1 cubic centimeter cubes will have exactly one of their sides painted?

- A. 9
- B. 61
- C. 98
- D. 54
- E. 64

### Question 4

A wheel of a car of radius 21 cms is rotating at 600 RPM. What is the speed of the car in km/hr?

- A. 79.2 km/hr
- B. 47.52 km/hr
- C. 7.92 km/hr
- D. 39.6 km/hr
- E. 3.96 km/hr

### Question 5

The area of a square field is 24200 sq m. How long will a lady take to cross the field diagonally at the rate of 6.6 km/hr?

- A. 3 minutes
- B. 0.04 hours
- C. 2 minutes
- D. 2.4 minutes
- E. 2 minutes 40 seconds

### Question 6

A lady grows cabbage in her garden that is in the shape of a square. Each cabbage takes 1 square foot of area in her garden. This year, she has increased her output by 211 cabbages when compared to last year. The shape of the area used for growing the cabbage has remained a square in both these years. How many cabbages did she produce this year?

- A. 11236
- B. 11025

- C. 14400
- D. 12696
- E. Cannot be determined

### Question 7

The length of a rope, to which a cow is tied, is increased from 19 m to 30 m. How much additional ground will it be able to graze? Assume that the cow is able to move on all sides with equal ease. Use  $\pi =$

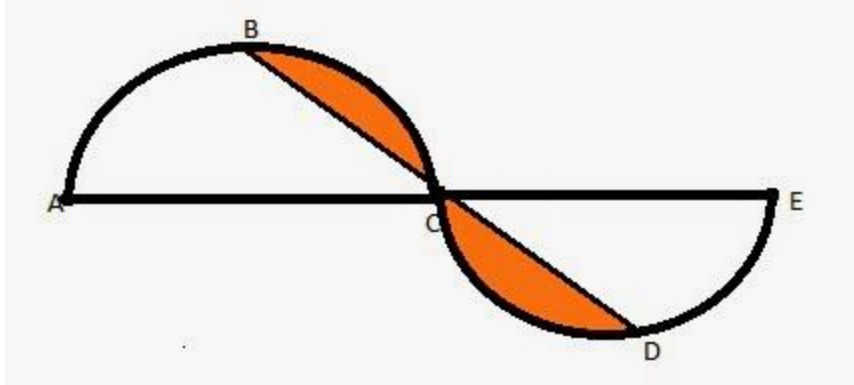
$\frac{22}{7}$

**$\frac{22}{7}$  in your calculations.**

- A. 1696 sq m
- B. 1694 sq m
- C. 1594 sq m
- D. 1756 sq m
- E. 1896 sq m

### Question 8

In the figure given below, ABC and CDE are two identical semi-circles of radius 2 units. B and D are the mid points of the arc ABC and CDE respectively. What is the area of the shaded region?



- A.  $4\pi - 1$
- B.  $3\pi - 1$
- C.  $2\pi - 4$
- D.  $\frac{1}{2}(3\pi - 1)$
- E.  $2\pi - 2$

### Question 9

$a$ ,  $b$ , and  $c$  are sides of a right triangle. What is the area of the triangle?

Statement 1:  $a = 4$ .

Statement 2:  $a + b + c = 4$ .

### Question 10

Is the triangle ABC right angled at B an isosceles triangle?

Statement 1: All 3 sides are integers.

Statement 2: The square of the hypotenuse is twice the product of the other two sides.

### Question 11

Rectangle ABCD is constructed in the  $xy$ -plane so that sides AB and CD are parallel to the  $x$ -axis. Both the  $x$  and  $y$  coordinates of all four vertices of the rectangle are integers. How many rectangles can be constructed if  $x$  and  $y$  coordinates satisfy the inequality  $11 < x < 29$  and  $5 \leq y \leq 13$ ?

- A. 153
- B. 153C<sub>4</sub>
- C. 4896
- D. 2448
- E. 5508

### Question 12

Does the line L whose equation is  $y = mx + c$  cut the  $x$ -axis in the positive direction of  $x$ -axis?

Statement 1: The intercepts of Line K, perpendicular to L, are of the opposite signs.

Statement 2: Line L passes through the 4th quadrant.

### Question 13

If  $y = (x - p)(x - q)$ , is the sum of integers  $p$  and  $q$  positive?

Statement 1: The curve cuts the  $y$ -axis at  $-20$

Statement 2: Minimum value of  $y$  is  $-36$

### Question 14

In right triangle ABC, what is the ratio in which point D divides the hypotenuse AC? BD is perpendicular to AC.

Statement 1:  $BC = 2BD$

Statement 2:  $AC = 2AB$

### Question 15

The area of an equilateral triangle is  $\sqrt{3}$  times the area of an isosceles triangle. If the three sides of the isosceles triangle are 5, 5 and 6. Find the length of each side of the equilateral triangle.

1. 4
2. 6
3.  $4\sqrt{3}$
4. 8
5.  $6\sqrt{3}$

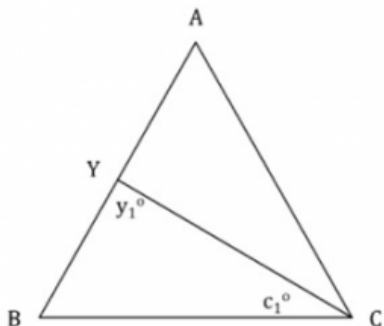
### Question 16

The three lengths 5, 3, and  $x$  are used to form a triangle. Which of the following can be the value of  $x$ ?

1. 6
2. 9
3. 10
4. 12
5. 14

### Question 17

In the triangle given below, all the points denoted are non-overlapping and the angles A, B, and C are distinct. Is  $AB > AC > BC$ ?



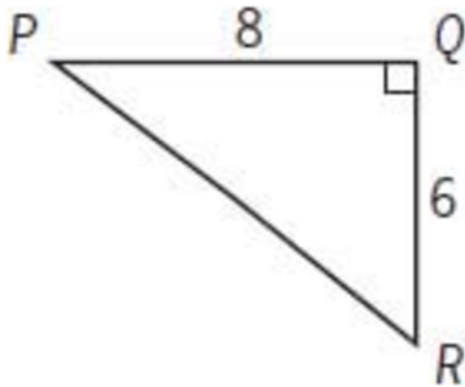
1.  $\angle y_1 = \angle c_1$
2.  $\angle BAC < \angle ABC$  and neither angle is the greatest in the triangle ABC

### Question 18

A rectangular floor that measures 8 meters by 10 meters is to be covered with carpet squares that each measure 2 meters by 2 meters. If the carpet squares cost \$12 apiece, what is the total cost for the number of carpet squares needed to cover the floor?

1. \$200
2. \$240
3. \$480
4. \$960
5. \$1920

### Question 19

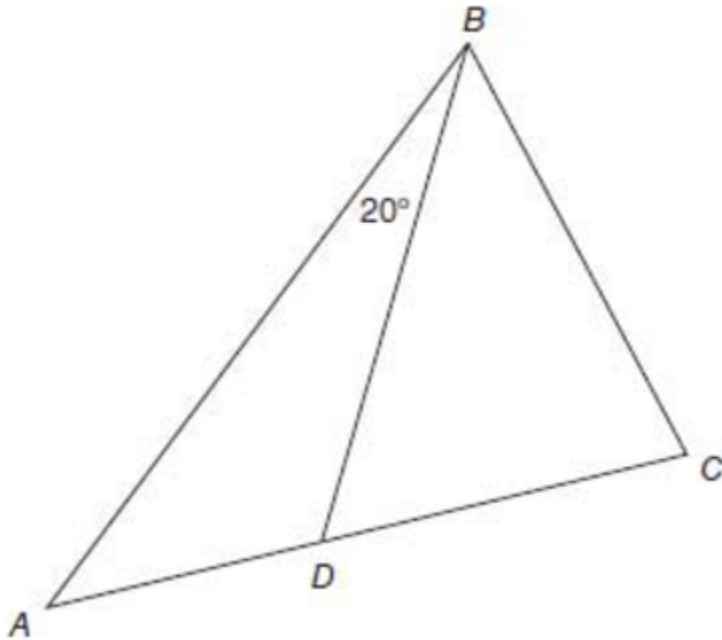


The figure above shows a path around a triangular piece of land. Mary walked the distance of 8 miles from  $P$  to  $Q$  and then walked the distance of 6 miles from  $Q$  to  $R$ . If Ted walked directly from  $P$  to  $R$ , by what percent did the distance that Mary walked exceed the distance that Ted walked?

1. 30%
2. 40%
3. 50%

- 4. 60%
- 5. 80%

**Question 20**



In the figure above, point D is on AC. What is the degree measure of angle  $\angle BAC$ ?

- 1. The measure of  $\angle BDC$  is  $60^\circ$ .
- 2. The degree measure of  $\angle BAC$  is less than the degree measure of angle  $\angle BCD$ .
- 1. Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
- 2. Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
- 3. BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
- 4. EACH statement ALONE is sufficient.
- 5. Statements (1) and (2) TOGETHER are NOT sufficient.