1. **Vertices of a quadrilateral ABCD are A(0, 0), B(4, 5), C(9, 9) and D(5, 4). What is the shape of the quadrilateral?**
   A. Square

   B. Rectangle but not a square

   C. Rhombus

   D. Parallelogram but not a rhombus

   E. Kite

2. **What is the area of an obtuse angled triangle whose two sides are 8 and 12 and the angle included between the two sides is 150°?**
   .   24 sq units

   A. 48 sq units

   B. $243 - \sqrt{243}$

   C. $483 - \sqrt{483}$

   D. Such a triangle does not exist

3. **What is the measure of the radius of the circle that circumscribes a triangle whose sides measure 9, 40 and 41?**
   .   6

   A. 4

   B. 24.5

   C. 20.5

   D. 12.5

4. **If the sum of the interior angles of a regular polygon measures 1440°, how many sides does the polygon have?**
   .   10 sides

   A. 8 sides

   B. 12 sides

   C. 9 sides

5. **What is the radius of the incircle of the triangle whose sides measure 5, 12 and 13 units?**
   .   2 units

   A. 12 units

   B. 6.5 units

   C. 6 units

   D. 7.5 units

6. **How many diagonals does a 63-sided convex polygon have?**
   .   3780

   A. 1890

B. 3843

C. 3906

D. 1953

7. **If 10, 12 and 'x' are sides of an acute angled triangle, how many integer values of 'x' are possible?**

. 7

A. 12

B. 9

C. 13

D. 11

8. **Data Sufficiency :Is triangle ABC obtuse angled?**

0. $a^2 + b^2 > c^2$.

1. The center of the circle circumscribing the triangle does not lie inside the triangle.

9. **Data Sufficiency :Is triangle ABC with sides a, b and c acute angled?**

0. Triangle with sides a^2, b^2, c^2 has an area of 140 sq cms.

1. Median AD to side BC is equal to altitude AE to side BC.

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

. 9

A. 61

B. 98

C. 54

D. 64

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

. 79.2 km/hr

A. 47.52 km/hr

B. 7.92 km/hr

C. 39.6 km/hr

D. 3.96 km/hr

12. **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?**

. 3 minutes

A. 0.04 hours

B. 2 minutes

C. 2.4 minutes

D. 2 minutes 40 seconds

13. **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?**
    . 11236

    A. 11025

    B. 14400

    C. 12696

    D. Cannot be determined

14. **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 π = 227227 in your calculations.**
    . 1696 sq m

    A. 1694 sq m

    B. 1594 sq m

    C. 1756 sq.m

    D. 1896 sq.m

15 **What is the equation of a circle of radius 6 units centered at (3, 2)?**
A. $x^2 + y^2 + 6x - 4y = 23$

B. $x^2 + y^2 - 6x + 4y = 23$

C. $x^2 + y^2 + 6x + 4y = 23$

D. $x^2 + y^2 - 6x - 4y = -23$

E. $x^2 + y^2 - 6x - 4y = 23$

16 **Set S contains points whose abscissa and ordinate are both natural numbers. Point P, an element in set S has the property that the sum of the distances from point P to the point (8, 0) and the point (0, 12) is the lowest among all elements in set S. How many such points P exist in set S?**
A. 1

B. 5

C. 11

D. 8

E. 3

17 <u>**Data Sufficiency**</u> **: Line L is perpendicular to line K whose equation is 3y = 4x + 12; Lines L and K intersect at (p, q).**
Is p + q > 0?
    1. x intercept of Line L is less than that of Line K

2. y intercept of Line L is less than that of Line K

18 <u>Data Sufficiency</u> : Does the line x + y = 6 intersect or touch the circle C with radius 5 units?
1. Center of the circle lies in the third quadrant.
2. Point (-4, -4) does not lie inside the circle

19 <u>Data Sufficiency</u> : Is the slope of the line that passes through the point (p, q) positive?
1. p, q > 0
2. The x-intercept of the line is k, such that k > p.

20 If m, s are the average and standard deviation of integers a, b, c, and d, is s > 0?
1. m > a
2. a + b + c + d = 0

21 Is $x^3 > x^2$?
1. x > 0
2. x < 1

22 Is y = 3?
1. (y - 3)(x - 4) = 0
2. (x - 4) = 0

23 Is $\frac{x}{y}$ a terminating decimal?
1. x is a multiple of 2
2. y is a multiple of 3

24 Is the positive integer X divisible by 21?
1. When X is divided by 14, the remainder is 4
2. When X is divided by 15, the remainder is 5

25 A set S contains the following elements: {7, 11, 15, 19, 23, x}. What is the value of x?
1. The elements are in arithmetic progression.
2. x is prime.

26 Is xy < 0?
1. 5|x| + |y| = 0
2. |x| + 5|y| = 0

27 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

28 Is triangle ABC with sides a, b and c acute angled?
1. Triangle with sides a^2, b^2, c^2 has an area of 140 sq cms.
2. Median AD to side BC is equal to altitude AE to side BC.

29 When a positive integer 'x' is divided by a divisor 'd', the remainder is 24. What is d?
1. When 2x is divided by d, the remainder is 23.
2. When 3x is divided by d, the remainder is 22.

30 How many of the numbers x, y, and z are positive if each of these numbers is less than 10?
1. $x + y + z = 20$
2. $x + y = 14$

31 Is a < b?
1. $a^b < b^a$
2. $abab > 1$

32 Is | a | > | b |?
1. $1(a{-}b){>}1(b{-}a)1(a{-}b){>}1(b{-}a)$
2. $a + b < 0$

33 What is the 6ᵗʰ term of the Arithmetic sequence?
1. The sum of the 6ᵗʰ to the 12ᵗʰ term of the sequence is 77.
2. The sum of the 2ⁿᵈ to the 10ᵗʰ term of the sequence is 108.

34 Is $a^3 > a^2$
1. $1a1a> a$
2. $a^5 > a^3$

35 Line L is perpendicular to line K whose equation is 3y = 4x + 12; Lines L and K intersect at (p, q).
1. x intercept of Line L is less than that of Line K
2. y intercept of Line L is less than that of Line K

36 Line L is perpendicular to line K whose equation is 3y = 4x + 12; Lines L and K intersect at (p, q).
1. x intercept of Line L is less than that of Line K
2. y intercept of Line L is less than that of Line K

37 Does the line x + y = 6 intersect or touch the circle C with radius 5 units?
1. Center of the circle lies in the third quadrant.
2. Point (-4, -4) does not lie inside the circle.

38 Is 'a' positive?

1. a - b > 0

2. 2a - b > 0

39 If x and y are positive integers, is y odd?

1. x is odd.

2. xy is odd.

40 Is 'b' the median of 3 numbers a, b, and c?

1. $\frac{b}{a} = \frac{c}{b}$
2. ab < 0

41 Is the slope of the line that passes through the point (p, q) positive?

1. p, q > 0

2. The x-intercept of the line is k, such that k > p

42 Is $a^n > b^n$?

1. a > b

2. ab < 0