10th Standard Midterm Examination–2019

Duration : 3 hrs | Mathematics | A | Maximum Marks : 80

1. If the common difference of an AP is 5, then what is $a_{18} - a_{13}$? 1×8=8

   A) 5 B) 20 C) 25 D) 30

2. The first four terms of an AP, whose first term is –2 and the common difference is –2, are

   A) –2,0,2,4 B) –2,4,–8,16 C) –2,–4,–6,–8 D) –2,–4,–8,–16

3. If S is a point on side PQ of a ΔPQR such that PS = QS = RS, then

   A) $PR.QR = RS^2$ B) $QS^2+RS^2=QR^2$ C) $PR^2+QR^2=PQ^2$ D) $PS^2+RS^2=PR^2$

4. If a pair of linear equations is consistent, then the lines will be . . . .

   A) parallel B) always coincident

   C) intersecting or coincident D) always intersecting

5. The solutions for the equations $x - y = 2$ and $x + y = 8$ are . . . .

   A) (5,3) B) (3,5) C) (6,4) D) (6,2)

6. If the sum of the areas of two circles with radii R_1 and R_2 is equal to the area of a circle of radius R, then . . . .

   A) $R=R_1+R_2$ B) $R^2 = R_1^2 + R_2^2$ C) $R^2 > R_1^2 + R_2^2$ D) $R > R_1 + R_2$

7. The points A (9, 0), B (9, 6), C (–9, 6) and D (–9, 0) will form a . . . .

   A) square B) rectangle C) rhombus D) trapezium

8. For an integer *m*, every even integer is of the form . . . .

   A) *m* B) *m* + 1 C) 2*m* D) 2*m* + 1

9. What is the sum of first 25 odd natural numbers ? 1×8=8

10. Write the basic proportionality theorem.

11. If a chord AB subtends an angle of 50° at the centre of a circle, then what is the angle between the tangents at A and B ?

12. How many tangents can be drawn to a circle at a point lying on the circle?

13. The length of the tangent to a circle is 24cm and the distance from the centre is 25cm. What is the radius of the circle ?

14. Find the the mid-point of the line segment joining the points (4,10) and (6,2).

15. Write 32760 as a product of its prime factors.

16. Write the decimal expansion of $\frac{17}{8}$

17. Find the sum of first 30 terms of the A.P. : 1 + 5 + 9 + 13 + ... 2×8=16

    OR

    Find the 50^{th} term of the A.P. : 0 , 5 , 10 , 15 . . . . . .

18. ΔABC ~ ΔEDF such that AB = 5cm, AC = 7cm, DF = 15cm and DE = 12cm. Find the lengths of the remaining sides of the triangles.

    OR

    AB ∥ DC in ABCD trapezium. P and Q are points on AD and BC, respectively such that PQ ∥ DC. If PD = 18 cm, BQ = 35 cm and QC = 15 cm, find AD.

19. Solve : $x - 2y = -7$ and $4x + 3y = 5$

20. Find the area and perimeter of a sector with central angle 60^0 in a circle of radius 7cm.

21. Draw two tangents from a point 7cm away from the centre of a circle of radius 4cm.

22. Divide the line segment AB = 12cm in the ratio 3:2.

23. Find the distance between the points : (3 , –2) and (15 , 3)

24. Check whether $\frac{7}{50}$ and $\frac{3}{28}$ will have terminating decimal expansion or not.

25. The first and the 60^{th} terms of an A.P. are 7 and 125 respectively. Find 32^{nd} term. 3×9=27

26. A 15 metres high tower casts a shadow 24 metres long at a certain time and at the same time, a flag pole casts a shadow 16 metres long. Find the height of the flag pole.

OR

Areas of two similar triangles are 36 cm^2 and 100 cm^2. If one side of the bigger triangle is 20 cm, find the corresponding side of the smaller triangle.

27. The angles of a triangle are *x, y* and 40°. The difference between the two angles *x* and *y* is 30°. Find *x* and *y*.

28. Solve graphically : $y = 2x - 2$ and $y = 4x - 4$

29. Prove that the radius drawn at the point of contact is perpendicular to the tangent.

OR

Prove that the lengths of tangents drawn from an external point to a circle are equal.

30. Draw two tangents to a circle of radius 5cm so that angle between the tangents is 60^0.

31. Determine if the points (3 , 1) , (6 , 4) and (8 , 6) are collinear.

OR

Find the area of the triangle whose vertices are (–5 , 1) , (3 , –5) and (5 , 2).

32. Find the coordinates of the point dividing the line joining (–2,7) and (3,–3) in a ratio 3:2.

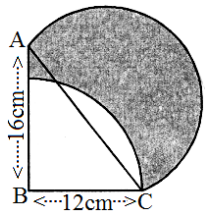
33. Find the LCM and HCF of 224 and 288. Verify that LCM × HCF = product of the two numbers.

OR

Prove that $\sqrt{3} - 5$ is an irrational number.

34. Prove that "If two triangles are equiangular, then they are similar". 4×4=16

35. In the Fig if AB=16cm and BC=12cm
Calculate the area of the shaded region in the figure :



36. Construct a triangle PQR with PQ = 7cm , QR = 6cm and ∠Q = 60^0. Then construct a similar triangle whose sides are $\frac{3}{5}$ of triangle PQR.

37. How many terms of A.P. –10, –7, –4, –1. . . . . must be added to get the sum –104 ?

OR

Find three consecutive terms which are in A.P. whose sum is 27 and product is 648.

38. State and prove Pythagoras theorem. 5×1=5