**J B Academy**

**Annual Examination 2023-24**

**Class IX**

**Time : 3 hr** **Sub- Mathematics** **MM : 80**

**General Instructions:**

**1) Question paper consists of five sections Sec-A, Sec-B, Sec-C, Sec-D and Sec-E.**

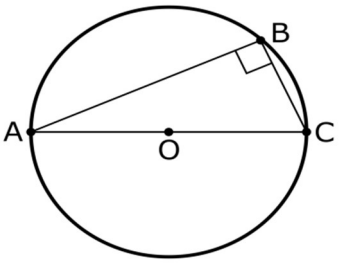
**2) All questions are compulsory where as internal choices have been provided**

## Section – A (Each of 1 mark)

1) Without multiplying directly find the product of 103 × 107.
   a) 11021 b) 12051 c) 12091 d) 10918
2) Volume of cuboid is $3x^2 – 27$. Then possible dimensions are ?
   a) 3,3,3 b) 3, (x-3), (x+3) c) 3, $x^2$, 27x d) 3 , $x^2$ , -27x
3) Which of these is obtain by factorizing the polynomial $10x^2 – 9x + 2$?
   a) (2x-1)(5x-2) b) (2x-1)(5x+2) c) (2x+1)(5x+2) d) (2x+1)(5x-2)
4) The point (5,-4) lies?
   a) On the x axis b) on the y axis c) in the 1 quadrant d) in the $4^{th}$ quadrant
5) Which of the following points does not lie in $3^{rd}$ quadrant ?
   a) (-1,2) b) (-2,-5) c) (-1,-2) d) (-6,-3)
6) If the coordinates of the two points are P(-5,3) and Q(8,-9) , then (abscissa of Q) – (abscissa of P) is ?
   a) 4 b) -12 c) 13 d) -13
7) In a Δ ABC AB = AC , $\angle B = 40^0$. Then $\angle C$ = ?
   a) $50^0$ b) $40^0$ c) $80^0$ d) $140^0$
8) In two triangles ABC and DEF AB = DE , BC = DF and AC = EF, then
   a) $\Delta ABC \cong \Delta DEF$ b) $\Delta ABC \cong \Delta EFD$ c) $\Delta ABC \cong \Delta FDE$ d) none of these
9) ABCD is a parallelogram .If $\angle C = 65^0$, then ($\angle B + \angle D$) is equal to ?
   a) $180^0$ b) $115^0$ c)$155^0$ d) $230^0$
10) In the parallelogram ABCD if AD = 8cm and the perimeter of the parallelogram is 36 cm , what is the length of AB ?
   a) 5cm b) 8 cm c) 10 cm d) 12 cm
11) In a quadrilateral ABCD $\angle A = (2x + 42)^0$ , $\angle B = (x + 22)^0$ , $\angle C = (x + 38)^0$ , $\angle D = (2x + 12)^0$ then what is the measure of $\angle DAB$ is ?
   a) $124^0$ b) $104^0$ c) $84^0$ d) $64^0$

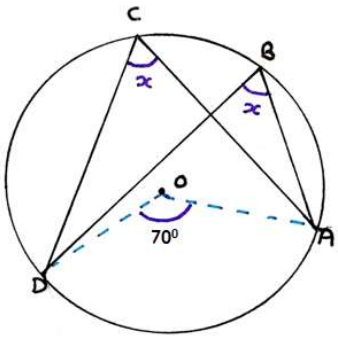
P.T.O.

12) In a circle O is the centre, $\angle BAO = 68^0$, AC is diameter of the circle, then the measure of $\angle$ BCO is ?




a) $22^0$ b) $64^0$ c) $44^0$ d) $68^0$

13) In the given figure find x if angle AOD=$70^0$ then find angle DCA.




a) $35^0$ b) $140^0$ c) $60^0$ d) none of these

14) Two sides of the triangle are 8 cm and 11 cm and the perimeter of the triangle is 32 cm. Then value of 's' is ?

a) 19 b) 20 c) 21.5 d) 16

15) Two sides of the triangle are 13 cm and 14 cm and its semi-perimeter is 18cm .Find the third side of this triangle ?

a) 9 cm b) 10cm c) 11cm d) none of these

16) Slant height of a cone is 34 cm and base diameter is 32 cm then height of the cone is ?

a) 33 cm b) 25 cm c) 30 cm d) 27 cm

17) If the surface area of the sphere is 784π $cm^2$, its radius becomes ?

a) 7 cm b) 14 cm c) $\sqrt{392}\ cm$ d) 196 cm

18) If the total surface area of the sphere is 98.56 $cm^2$ then the radius of the sphere is ?

a) 5.6 cm b) 2.8 cm c) 1.4 cm d) none of hese

19) Class mark of the class 70 – 80 is ?

a) 65 b) 85 c) 75 d) 150

20) In a grouped frequency data, class intervals are 0-20 , 20-40,40-60,…., then the class width is ?

a) 10 b) 30 c) 20 d) 15

P.T.O.

## Section B (Each of 2 marks)

21) What is the value of K of the polynomial $x^2 + 8x + k$, if -1 is a zero of the polynomial ?

**OR**

Factorise : $8x^3 + 27y^3$

22) What is the sign of x- coordinate lying in the third quadrant?

23) In a ΔPQR, $\angle QPR = 80^0$ and PQ = PR. Write the value of ∠R and ∠Q.

**OR**

In an Isosceles triangle, if the vertex angle is twice the sum of the base angles. Calculate the angle of the triangle.

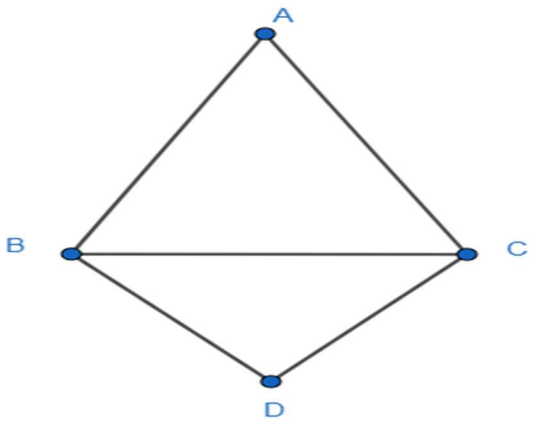
24) In a Δ ABC if a = 51 cm, b = 37 cm and c = 20 cm, find the area of the triangle?

25) Draw the histogram of the given data :

| Scores | Number of students |
|---|---|
| 20-30 | 9 |
| 30-40 | 8 |
| 40-50 | 12 |
| 50-60 | 10 |
| 60-70 | 16 |

## Section C (Each of 3 marks)

26) ABC and DBC are two isosceles triangles on the same base BC(see figure) .Show that ∠ABD = ∠ACD.




P.T.O.

27) Show that the diagonals of a square are equal and bisect each other at right angles ?

28) Prove that the perpendicular drawn from the centre of a circle to a chord bisects the chord.

29) If the angles subtended by the chords of circle at the centre are equal then prove that the chords are equal.

30) If volume and surface area of a sphere is numerically equal then find the radius of sphere.

**OR**

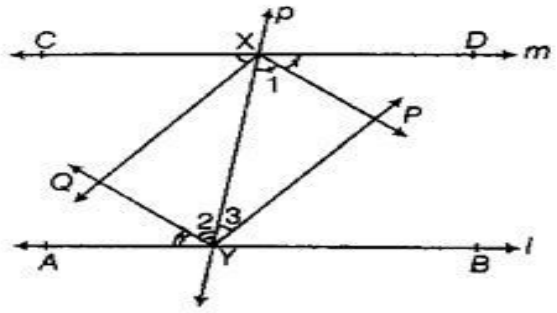
Find the volume, curved surface area and the total surface area of a hemisphere of diameter 7cm.

31) Draw the frequency polygon of the following data :

| Marks | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 |
|---|---|---|---|---|---|
| Freqency | 3 | 9 | 17 | 12 | 9 |

## Section - D (Each of 5marks)

32) Two parallel lines l and m are intersected by a transversal p. Show that the quadrilateral formed by the bisectors of interior angles is a rectangle.




**OR**

State and prove midpoint theorem.

33) Prove that the sum of either pair of opposite angles of a cyclic quadrilateral is $180^0$.

34) The diameter of moon is approximately one-fourth of the diameter of the earth. What fraction of the volume of the earth is the volume of the moon?

**OR** P.T.O.

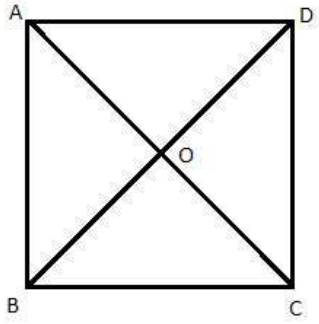
How many meters of cloth, 2.5 m., wide, will be required to make conical tent whose base radius is 7m. and height 24m?

35) Find the mean of the fllowing data:

| X | 5 | 15 | 25 | 30 | 35 | 50 |
|---|---|---|---|---|---|---|
| f | 3 | 15 | 12 | 18 | 9 | 3 |

**Section – E (Each of 4 marks)**

36) Your school organized “Summer Camp” for the students in which different activity classes were going on. Amit and Mustafa joined the summer camp. They were very excited because their next class was ‘ Learning Maths by paper craft’. They joined the class they were asked to take one rigami sheet of square paper and fold it diagonally twice one after the other and then unfold it. Doing the same they got the following figure:




Now answer the following questions

a) What is the measure of angle AOB ?

b) If OA = 6 cm then the value of OC is ?

c) Is triangle ABO and triangle ADO are congruent ?

d) Which congruence criteria can be used in support of above statement?(part-c)

37) A traffic cone has the radius 2.1 cm and height 20 cm.Answer the following questions based on the above statement

a) What is the slant height of the traffic cone ?

b) What will be the total surface area of the traffic cone? P.T.O.

c) Find he price of the painting the curved surface of 20 such traffic cones if the price of painting per square is Rs. 8 ?

d) What will be the volume of each traffic cone?

38) Define the following terms :

a) Data

b) Primary data

c) Secondary data

d) Frequency of an observation.