Techior Solutions Pvt. Ltd.

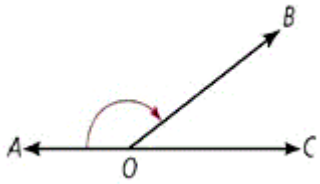
CBSE IX Maths

Total Time: 3 Hr | Total Marks: 80.0

Maths

MCQs (1 Marks) **$20 \times 1 = 20$**

1) Angle AOB marked in diagram is an **1**



A) Acute angle
B) Obtuse angle
C) Reflex angle
D) None of these

2) The coefficient of y in the expansion of $(5–y)^2$ is **1**

A) 5
B) 10
C) -10
D) 1

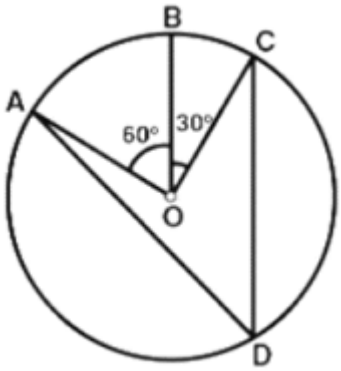
3) In $\triangle ABC$, BC = AB and $\angle B = 80°$.Then $\angle A$ is equal to **1**

A) 80°
B) 40°
C) 50°
D) 100°

4) The figure obtained by joining mid-points of the sides of a rhombus, taken in order is **1**

A) a parallelogram
B) a square
C) a rhombus
D) a rectangle

5) In diagram ∠ADC is **1**



A) 60°

B) 75°

C) 30°

D) 45°

6) **1**

The solution of the equation $\frac{x}{2}+\frac{x}{3}=5$ is

A) 5

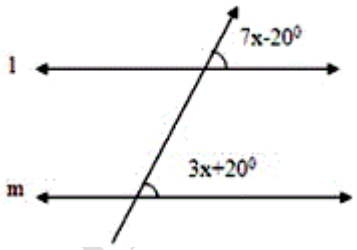
B) 6

C) 4

D) 7

7) Assertion: In the diagram, l and m are parallel to each other, then x = 10°. **1**

Reason: If a transversal intersects two parallel lines, then each pair of corresponding angles is equal.



A) Both A and R are true and R is the correct explanation for A

B) Both A and R are true and R is not the correct explanation of A

C) A is true but R is false

D) A is false but R is true

8) The median of the data 32, 35, 39, 31,35,36,33 is **1**

A) 33

B) 35

C) 39

D) 36

9) The total surface area of a cube is 216 cm^2. The volume of cube is **1**

A) 6 cm^3

B) 216 cm^3

C) 1296 cm^3

D) none of these

10) The graph of the linear equation $2x + 3y = 6$ is a line which meets the x-axis at the points. **1**

A) (0,2)

B) (2,0)

C) (0,3)

D) (3,0)

11) The figure formed by joining the mid-points of the sides of a quadrilateral PQRS, taken order is a square if and only if **1**

A) PQRS is a rhombus

B) Diagonals of PQRS are perpendicular

C) Diagonals of PQRS are equal and perpendicular

D) Diagonals of PQRS are equal

12) For a frequency distribution the mid-value of the class is 65 and the class size is 8. The upper limit of the class is **1**

A) 57

B) 73

C) 61

D) 69

13) Assertion: In $\triangle ABC$, AD is the median than $AB+BC+CA > 2AD$ **1**

Reason: The sum of two sides of a triangle is greater than the third side.

A) Both A and R are true and R is the correct explanation for A

B) Both A and R are true and R is not the correct explanation of A

C) A is true but R is false

D) A is false but R is true

14) Assertion: In a rhombus ABCD, the diagonals AC bisects $\angle A$ as well as $\angle C$. **1**

Reason: The diagonals of a rhombus bisect each other at right angles.

A) Both A and R are true and R is the correct explanation for A

B) Both A and R are true and R is not the correct explanation of A

C) A is true but R is false

D) A is false but R is true

15) The class mark of the class 90-120 is **1**

A) 90
B) 105
C) 115
D) 120

16) If a, b, c are the lengths of three sides of a triangle, then area of triangle $\sqrt{s(s-a)(s-b)(s-c)}$ where is **1**

A) perimeter of the triangle
B) Semi-perimeter of the triangle
C) Height of the triangle
D) Shortest side of the triangle

17) The length of the longest pole that can be put in a room of dimension (10m × 10m × 5m) is **1**

A) 10m
B) 16 m
C) 14m
D) 15m

18) The capacity in litres of a conical vessel with radius 7 cm and slant height 25 cm is **1**

A) 2.464 L
B) 3.396 L
C) 1.232 L
D) 0.2464 L

19) Assertion: The points O(0,0) lie in the quadrant I. **1**

Reason: The points O(0,0) lie on both axes.

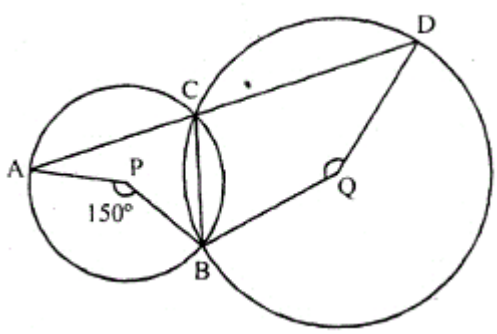
A) Both A and R are true and R is the correct explanation for A
B) Both A and R are true and R is not the correct explanation of A
C) A is true but R is false
D) A is false but R is true

20) Eulid divided his famous treatise " The Elements" into **1**

A) 13 Chapters
B) 12 Chapters
C) 11 Chapters
D) 9 Chapters

Short Description (2 Marks) **5 × 2=10**

21) In Figure, P and Q are centres of two circles intersecting at B and C. ACD is a straight line. Then, ∠BQD = **2**



22) If x - 2 is a factor of the following two polynomials, find the values of a : **2**

$x^3 - 2ax^2 + ax - 1$

23) Factorize: **2**

$y^3 + 125$

24) Find the value of a, if x – a is a factor of $x^3 – ax^2 + 2x + a – 1$. **2**

25) Simplify: **2**

(i) $(5+\sqrt{5})(5-\sqrt{5})$ (ii) $(\sqrt{3}+\sqrt{2})^2$

Medium Description (3 Marks) **6 × 3=18**

26) Write the value of $25^3 - 75^3 + 50^3$ **3**

27) Prove that the circle drawn on any one of the equal sides of an isosceles triangle as diameter bisects the base. **3**

28) In a parallelogram ABCD, AB = 10 cm and AD = 6 cm. The bisector of ∠A meets DC in E. AE and BC produced meet at F. Find the length of CF. **3**

29) Prove that the line joining the mid-point of a chord to the centre of the circle passes through the mid-point of the corresponding minor arc. **3**

30) A cube of 9 cm edge is immersed completely in a rectangular vessel containing water. If the dimensions of the base are 15 cm and 12 cm, find the rise in water level in the vessel. **3**

31) Heights (in cm) of 30 girls of Class IX are given below: **3**

140, 140, 160, 139, 153, 153, 146, 150, 148, 150, 152,

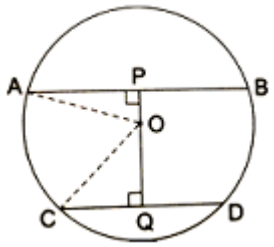
146, 154, 150, 160, 148, 150, 148, 140, 148, 153, 138,

152, 150, 148, 138, 152, 140, 146, 148.

Prepare a frequency distribution table for this data.

Long Description (5 Marks) **$4 \times 5 = 20$**

32) In the given figure, AB and CD are two parallel chords of a circle with centre O and radius 5 cm such that AB = 8 cm and CD = 6 cm. If OP $\perp$ AB and OQ $\perp$ CD, determine the length PQ. **5**



33) Prove : There is one and only one circle passing through three given noncollinear points. **5**

34) Draw the frequency polygon representing the following frequency distribution. **5**

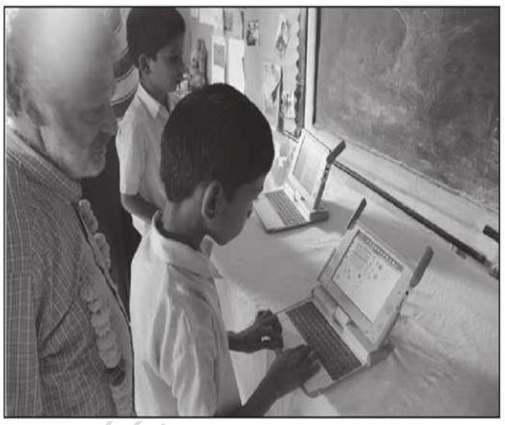
Class interval	30-34	35-39	40-44	45-49	50-54	55-59
Frequency	12	16	20	8	10	4

35) Prove : If a line segment joining two points subtends equal angles at two other points lying on the same side of the line segment then the four points are concyclic, i.e. lie on the same circle. **5**

Solve Question 36 to Question 38 based on the following paragraph:

Mrs. Rakhi lives in an undeveloped area where there is no facility of proper education. But one thing is available in that area i.e., network. Since she was very keen to take education, so she decided to complete her education through e-learning.

One day she was studying number system, where she learnt about rational numbers, irrational numbers and decimal numbers, etc.



On the basis of the above information, solve the following questions:

36) If $x + \sqrt{2} = 3$ then find the value of $\frac{1}{x}$ **2**

---OR---

Find the product of two irrational numbers $(7 + 3\sqrt{2})$ and $(7 - 3\sqrt{2})$.

37) Convert the rational number $\frac{2}{15}$ into decimal number. **1**

38) Write one irrational number between 2.365 and 3.125 . **1**

Solve Question 39 to Question 41 based on the following paragraph:

For decoration purpose, Sneha bought 100 orbeez balls and put it in a cylindrical shaped box. After filling it with water, the orbeez ball swell up and completely filled the cylindrical shaped box. Behind the orbeez ball packet, the change in volume of each orbeez ball was mentioned and which was 32% increase. Suppose the volume of all orbeez ball is 9900 cm3.

On the basis of the above information, solve the following questions:

39) Find the volume of each orbeez ball. **1**

40) What is the volume of orbeez ball before swelling? **1**

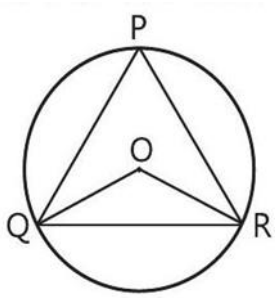
41) What is the cubic radius of a orbeez ball before swelling up? **2**

---OR---

If the change in volume of orbeez ball is increased to 48%, then find the volume of orbeez ball after swell up.

Solve Question 42 to Question 44 based on the following paragraph:

Government of India is working regularly for the growth of handicapped persons. For these three STD booths situated at point P, Q and R are as shown in the figure, which are operated by handicapped persons. These three booths are equidistant from each other as shown in the figure.



On the basis of the above information, solve the following questions:

42) Which type of ΔPQR in the given figure? **1**

43) Measure angle ∠QOR. **1**

44) Find the value of ∠OQR. **2**

---OR---

Is it true that points P, Q and R lie on the circle?