CBSE Class 9 Maths Question Paper 2021 Set 2

ANNUAL EXAMINATION 2020-21

MATHEMATICS **TIME: 3 Hours**
Maximum Marks: 80

General Instructions:

1. All questions are compulsory.

2. The Question Paper consists of 40 questions divided into four sections A, B C and D.

3. Section A contains 20 questions of 1 mark each, Section B contains 6 questions of 2 marks each, Section C contains 8 questions of 3 marks each and Section D contains 6 questions of 4 marks each.

4. There is no overall choice in the paper. However, internal choice is provided in 2 questions of 1 mark, 1 question in 2 marks, 1 question in 3 marks and 3 questions of 4 marks.

5. Use of calculators is not permitted.

Section-A

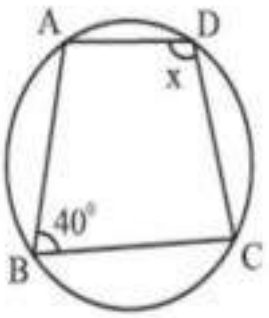
Q.1 to Q.10 are multiple choice questions. Select the most appropriate answer from the given options.

Q1. What is the distance between the graphs of two equations y = 1 and y = - 4
(a) – 4 units
(b) 1 unit
(c) – 5 units
(d) 5 units

Q2. In quadrilateral ABCD angle A + angle D is equal to 180° . What special name can be given to the quadrilateral?
(a) Kite
(b) Trapezium
(c) Square
(d) None of these

Q3. The value of x in given figure:

(a) 40°
(b) 80°
(c) 140°
(d) 90°



Q4. Base of a right triangle is 8 cm and the hypotenuse 10 cm. Its area will be?
(a) 112 cm^2
(b) 96 cm^2
(c) 24 cm^2
(d) None of these

Q5. In two triangles, ABC and PQR, $\angle A = 30°$, $\angle B = 70°$, $\angle P = 70°$, $\angle Q = 80°$ and AB = RP, then
(a) $\Delta ABC \cong \Delta PQR$
(b) $\Delta ABC \cong \Delta QRP$
(c) $\Delta ABC \cong \Delta RPQ$
(d) $\Delta ABC \cong \Delta RQP$

Q6. The reason that a degree one polynomial equation ax+by+c=0 is called a linear equation is that
(a) It has infinitely many solutions.
(b) The geometrical representation is a straight line.
(c) It has two variables.
(d) Both (a) and (b)

Q7. If the probability of winning a game is 0.3, then probability of losing it is
(a) 0.6
(b) 0.7
(c) 0.5
(d) None of these

Q8. Which point lies on x-axis?
(a) (3, 2)
(b) (-3, 2)
(c) (2, 0)
(d) (-1,-2)

Q9. Find the angle which is 30° less than twice its complement.
(a) 50°
(b) 40°
(c) 25°
(d) 50

Q10. In between two rational number there is/are:
(a) Exactly one rational number
(b) Infinitely many rational numbers
(c) Many irrational numbers
(d) Only irrational number

(Qs 11 to 15) Fill in the Blanks.

Q11. Value of $(64)^{1/3}$ is _____.

Q12. Three angles of a quadrilateral are in the ratio 3 : 3 : 1 and the fourth angle is 80^0. Then the measure of the smallest angle of the quadrilateral is_____.

Q13. The perpendicular distance of point P (4, 6) from X-axis is _____.
OR
A point whose ordinate is -3 and abscissa is 2 lies in _____quadrant.

Q14. If in a triangle ABC angle A + angle B is = 105^0 and angle B + angle C is = 120^0 then angle B = _____.

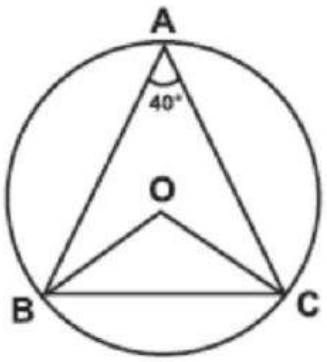
Q15. P(E) + P(not E) = _____.

(Qs 16 to 20) Answer the following.

Q16. Area of the base of a cylinder is 154 cm^2 and its height is 15 cm. Find its volume.

Q17. The points scored by the team of kabaddi in a series of matches are as follows:
17, 2, 7, 27, 15, 5, 14, 8, 10, 24, 48, 10, 8, 7, 18, 28.
Find the median of the points scored by the team.

Q18. Find the radius of a circle whose area and circumference are the same.
OR
In the given figure O is the center of a circle and $\angle BAC=40^0$, then find $\angle OBC$?



Q19. If x=0 and y=k is the solution of the equation 5x-3y=0, Find the value of k.

Q20. If a = 2 and b = 3, then find the value of $(a^3 + b^3)^{-1}$

Section-B

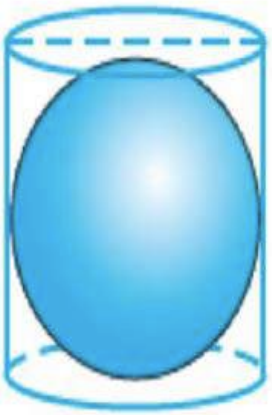
21. Simplify:

$(4+\sqrt{3})/(4-\sqrt{3})$

22. Find the value of polynomial $5 x^3 + 4 x^2 + 3$ at x = 0

23. Five people were asked about the time in a week they spend doing social work in their community. They said 10, 7, 13, 20, and 15 hours, respectively. Find the mean (or average) time in a week devoted by then for social work.
OR
In a small unit of a factory 5 employees (a supervisor and four labourers) are working. The labourers draw a salary of Rs. 5000 per month each while the supervisor gets Rs. 15,000 per month. Calculate the mean of the salaries of the unit of the factory.

24. A right circular cylinder just encloses a sphere of radius r. Find
(i) surface area of the sphere
(ii) curved surface area of the cylinder



25. In a cricket match, a batswoman hits a boundary 6 times out of 30 balls she plays. Find the probability that she did not hit a boundary.

26. If point (3, 4) lies on a graph of equation $3y = ax + 7$, find the value of a.

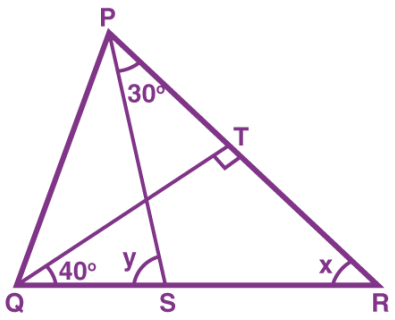
Section-C

27. Locate $\sqrt{3}$ on the number line.
OR
Show that 1.272727..... can be expressed in the form p/q, where p and q are integers and $q \neq 0$.

28. If $P(x) = x^3 - x^2 + x + 1$ then find the value of $[P(-1) + P(1)] \div 2$.

29. The cost of a notebook is twice the cost of a pen. Write a linear equation in two variables to represent this statement.

30. In Fig., if QT is perpendicular to PR, $\angle TQR = 40°$ and $\angle SPR = 30°$, find x and y.



31. Find the area of a triangle, two sides of which are 8 cm and 11 cm and the perimeter is 32 cm.

32. The sides of a right triangle are 7 cm, 24 cm and 25 cm. If it is revolved about side 7 cm to form a solid cone, find the volume of the solid so formed.

33. Write coordinates of a point whose
a) ordinate is -5 and lies on Y-axis
b) lies on both X and Y-axes
c) whose abscissa is -3 and lies on X-axis.

34. The points scored by a Kabaddi team in a series of matches are as follows:
15, 2, 7, 27, 15, 5, 15, 15, 10, 24, 35, 10, 8, 9, 18, 28
Find the mean, median and mode of the points scored by the team.

Section-D

35. Draw the graph of the linear equation : $2y - x = 7$ and determine whether $x = 3$, $y = 2$ is its solution or not?

36. Factorise completely $x^8 - y^8$.
OR
Evaluate $(99)^3$ and $(102)^3$ using suitable identities.

37. The students of a Vidyalaya were asked to participate in a competition for making and decorating penholders in the shape of a cylinder with a base, using cardboard. Each penholder was to be of radius 3 cm and height 10.5 cm. The Vidyalaya was to supply the competitors with cardboard. If there were 35 competitors, how much cardboard was required to be bought for the competition?

38. A hemispherical dome of a building needs to be painted. If the circumference of the base of the dome is 17.6 m, find the cost of painting it, given that the rate of painting is Rs 5 per 100 cm^2.

OR
The inner diameter of a cylindrical wooden pipe is 24 cm and its outer diameter is 28 cm. The length of the pipe is 35 cm. Find the mass of the pipe, if 1 cm^3 of wood has a mass of 0.06gm.

39. Factorise $x^3 - 23x^2 + 142x - 120$.

40. A nutritionist is interested in knowing the percentage of calories from fat which Indians intake on a daily basis. To study this, the nutritionist randomly selects 25 Indians and evaluates the percentage of calories from fat consumed in a typical day. The result of the study are as follows:
34%, 18%, 33%, 25%, 30%,
42%, 40%, 33%, 39%, 40%,
45%, 35%, 45%, 25%, 27%,
23%, 32%, 33%, 47%, 23%,
27%, 32%, 30%, 28%, 36%,

(a) Construct a frequency table for this data with class interval as 15-20, 20-25 and so on
(b) Draw the histogram for the above data.