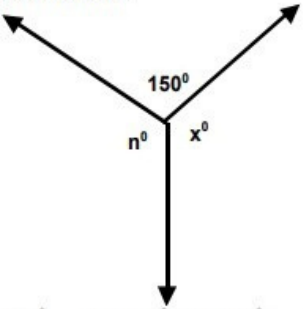
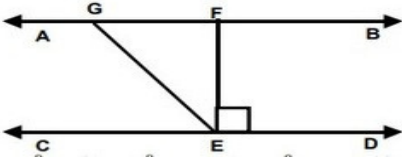
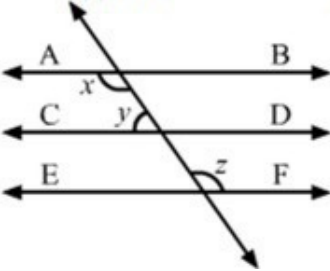
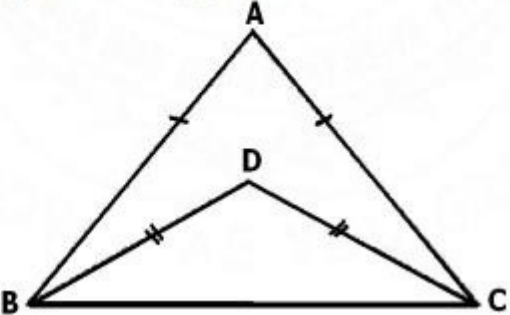


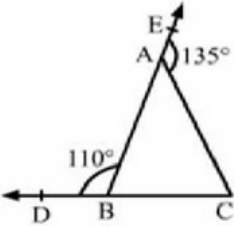
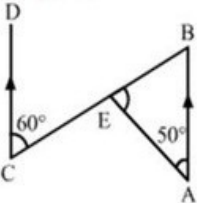
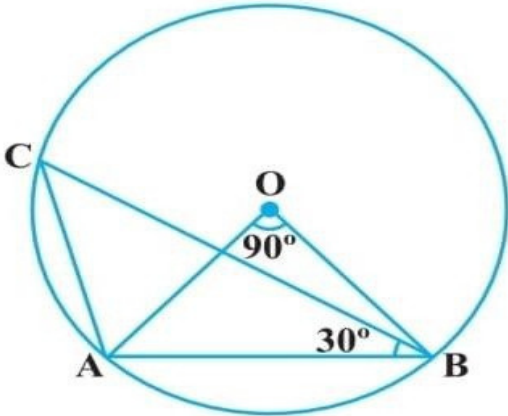
S.D. DAV PUBLIC SCHOOL
SAMPLE QUESTION PAPER
SESSION 2024-2025

Class: IX
 Subject: MATHEMATICS

Maximum Marks: 80
 Time: 3 Hrs

Q.No	Question	Marks
SECTION A (Section A consists of 20 questions of 1 mark each)		
1.	Which of the following statements is true? A. Every irrational number can be represented as a fraction. B. Every irrational number can be represented with the help of decimals. C). Every rational number can be represented as a terminating decimal. D. Every rational number can be represented as an integer.	1
2.	Find the value of $(1296)^{0.17} \times (1296)^{0.08}$. (a) 2 (b) 4 (c) 3 (d) 6	1
3.	If $\left(\frac{2}{3}\right)^x \times \left(\frac{3}{2}\right)^{2x} = \frac{81}{16}$, then the value of x is (a) 1 (b) 2 (c) 3 (d) 4	1
4.	The point (1, -1), (2, -2), (4, -5), (-3, -4) lies in: (a) II quadrant (b) III quadrant (c) IV quadrant (d) do not lie in the same quadrant	1
5.	Any solution of the linear equation $2x + 0y + 9 = 0$ in two variables is of the form (a) $\left(-\frac{9}{2}, m\right)$ (b) $\left(n, -\frac{9}{2}\right)$ (c) $\left(0, -\frac{9}{2}\right)$ (d) $(-9, 0)$	1
6.	A linear equation in two variables x and y is of the form $ax + by + c = 0$, where (a) $a \neq 0, b \neq 0$ (b) $a \neq 0, b = 0$ (c) $a = 0, b \neq 0$ (d) $a = 0, c = 0$	1

7.	In fig., $n - x = 3^\circ$ then values of x and n are:  (a) 126° and 129° (b) 125° and 128° (c) 150° and 153° (d) none of these	1
8.	If $(x-a)$ and $(x-b)$ are the factors of $x^2 + ax + b$, then a) $a=-1, b=-2$ b) $a=0, b=1$ c) $a=-1/2, b=1/2$ d) $a=-1, b=2$.	1
9.	In fig, if $AB \parallel CD$, $EF \perp CD$ and $\angle GED = 126^\circ$ then the value of $\angle AGE$ is 	1
10.	In the given figure, if $AB \parallel CD$, $CD \parallel EF$ and $y : z = 3 : 7$, $x = ?$ (a) 108° (b) 126° (c) 162° (d) 63° 	1
11.	In the given figure, the ratio $\angle ABD : \angle ACD$ is (a) $1 : 1$ (b) $2 : 1$ (c) $1 : 2$ (d) $2 : 3$ 	1

12.	In the given figure, the sides CB and BA of $\triangle ABC$ have been produced to D and E, respectively, such that $\angle ABD = 110^\circ$ and $\angle CAE = 135^\circ$. Then $\angle ACB = ?$ (a) 65° (b) 45° (c) 55° (d) 35° 	1
13.	The class marks of a frequency distribution are given as follows: 15, 20, 25, The class corresponding to the class mark 20 is (a) 12.5 – 17.5 (b) 17.5 – 22.5 (c) 22.5 – 27.5 (d) 27.5 – 32.5	1
14.	In the given figure, BO and CO are the bisectors of $\angle B$ and $\angle C$ respectively. If $\angle A = 50^\circ$ then $\angle BOC = ?$ (a) 130° (b) 100° (c) 115° (d) 120° 	1
15.	If the area of an equilateral triangle is $16\sqrt{3} \text{ cm}^2$, then the perimeter of the triangle is: (a) 64 cm (b) 60 cm (c) 36 cm (d) none of these	1
16.	In a triangle ABC, if $2\angle A = 3\angle B = 6\angle C$, then the measure of $\angle C$ is (a) 30° (b) 75° (c) 90° (d) 60°	1
17.	Let m be the midpoint and 'l' the upper class limit of a class in a continuous frequency distribution. The lower class limit of the class is (a) $2m + l$ (b) $2m - l$ (c) $m - l$ (d) $m - 2l$	1
18.	In Fig. 10.9, $\angle AOB = 90^\circ$ and $\angle ABC = 30^\circ$, then $\angle CAO$ is equal to: (A) 30° (B) 45° (C) 90° (D) 60°  Fig. 10.9	1

19.	Assertion(A): The angles of a triangle are in the ratio 2 : 3 : 4. The largest angle of the Reason(R): The sum of all the interior angles of a triangle is 180° . (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A). (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A). (c) Assertion (A) is true but reason (R) is false. (d) Assertion (A) is false but reason (R) is true.	1
20.	Assertion(A): The sides of a triangle are 3 cm, 4 cm and 5 cm. Its area is 6 square cm . Reason(R): If $2s = (a+b+c)$ where a, b, c are the sides of the triangle then area $= \sqrt{s(s-a)(s-b)(s-c)}$. (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A). (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A). (c) Assertion (A) is true but reason (R) is false. (d) Assertion (A) is false but reason (R) is true.	1
21.	SECTION-B (Section B consists of 5 questions of 2 marks each) If $x = \frac{5-\sqrt{3}}{5+\sqrt{3}}$ and $y = \frac{5+\sqrt{3}}{5-\sqrt{3}}$ Then find the value of (x-y)	2
22.	Express $0.6 + 0.\overline{7} + 0.\overline{47}$ in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.	2
23.	Find K if $x^{51} + 2x^{60} + 3x + K$ is divisible by $x+1$	2

24.	Find the volume, curved surface area and the total surface area of a hemisphere of diameter 7 cm. OR A conical pit of top diameter 3.5 m is 12 m deep. What is its capacity in kilolitres?	2
25.	Plot the following points and write the name of the figure obtained by joining them in order: P(-3,2),Q(-7,-3),R(6,-3),S(2,2). OR, Plot the following points and check whether they are collinear or not. (1,3),(-1,-1)and(-2,-3).	2
26.	SECTION-C (Section-C consists of 6 questions of 3 marks each) Factorise : $x^3 - 23x^2 + 142x - 120$ OR, Factorize the polynomial: $8a^3 - b^3 - 12a^2b + 6ab^2$	3
27.	Find the values of a and b in each of $\frac{\sqrt{2}+\sqrt{3}}{3\sqrt{2}-2\sqrt{3}} = a - b\sqrt{6}$ OR, If $2^x = 3^y = 12^z$, show that $\frac{1}{z} = \frac{1}{y} + \frac{2}{x}$.	3
28.	If a transversal intersects two lines such that the bisectors of a pair of corresponding angles are parallel, then prove that the two lines are parallel.	3

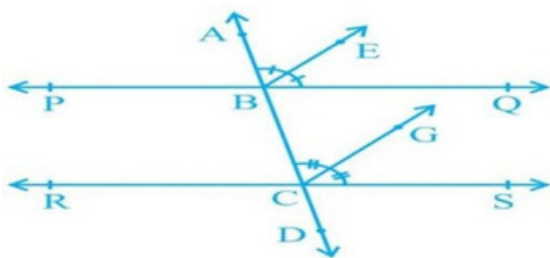
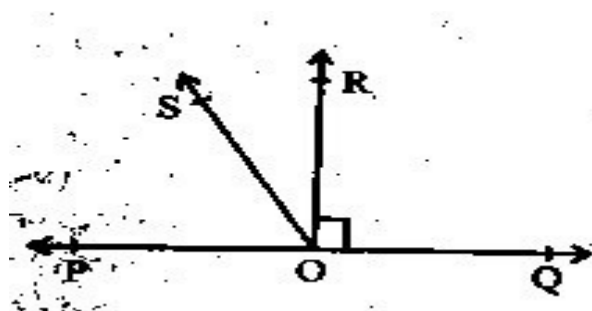


Fig. 6.21

OR,

In the given figure, POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that

$$\angle ROS = \frac{1}{2}(\angle QOS - \angle POS).$$



29. E and F are respectively the mid-points of the non-parallel sides AD and BC of a trapezium ABCD. Prove that $EF \parallel AB$ and $EF = (AB + CD)/2$.
OR
ABCD is a rhombus and P, Q, R, S are mid-points of AB, BC, CD and DA respectively. Prove that quadrilateral PQRS is a rectangle. 3

30. The sides of a quadrilateral, taken in order are 5, 12, 14 and 15 meters respectively, and the angle contained by the first two sides is a right angle. Find its area.

OR

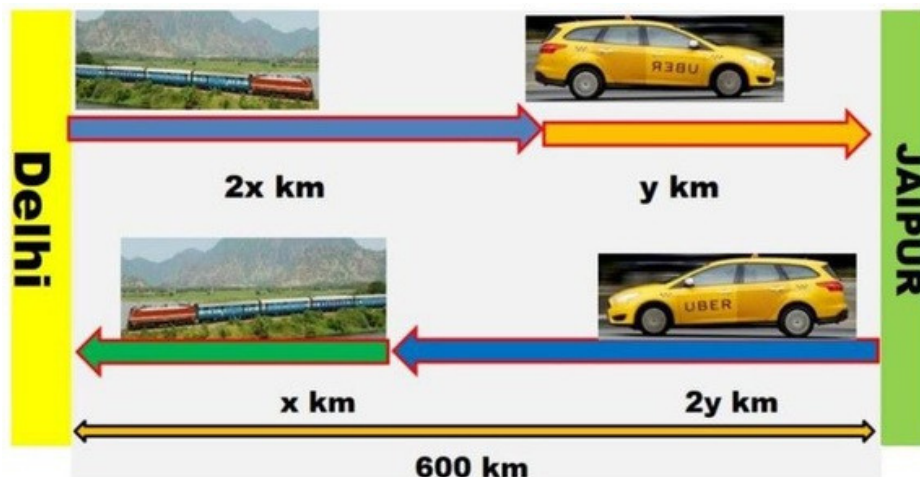
A triangle has sides 35 cm, 54 cm and 61 cm long. Find its area. Also, find the smallest of its altitudes. 3

31. If both $(x-2)$ and $(x - \frac{1}{2})$ are factors of px^2+5x+r Prove that $p=r$

OR,

	If the polynomials $(2x^3+ax^2+3x-5)$ and (x^3+x^2-2x+a) leave the same remainder when divided by $(x-2)$, find the value of a. Also find remainder in each case.															
32	SECTION-D (Section D consists of 4 questions of 5 marks each) The sum of either pair of the opposite angles of a cyclic quadrilateral is 180 degree.	5														
33	Prove that the quadrilateral formed by joining the mid-points of the consecutive sides of a square is also a square. OR The line segment joining the midpoint of any two sides of a triangle is parallel to the third side and equal to half of it.	5														
34	Draw a histogram with frequency polygon for the following data: <table border="1"><tr><td>class interval</td><td>25 - 29</td><td>30 - 34</td><td>35 - 39</td><td>40 - 44</td><td>45 - 49</td><td>50 - 54</td></tr><tr><td>frequency</td><td>5</td><td>15</td><td>23</td><td>20</td><td>10</td><td>7</td></tr></table>	class interval	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	frequency	5	15	23	20	10	7	5
class interval	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54										
frequency	5	15	23	20	10	7										
35	If a ,b ,c are all non zero and $a+b+c=0$, then prove that $\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab} =3$. OR, Prove that $X^3 + Y^3 + Z^3 - 3XYZ = \frac{1}{2}(X + Y + Z)[(X - Y)^2 + (Y - Z)^2 + (Z - X)^2]$	5														
36.	SECTION-E Case study based questions are compulsory. (Section-E consists of 3 questions of 4 marks each) Ajay lives in Delhi, The city of Ajay's father in laws residence is at Jaipur is 600 km from Delhi. Ajay used to travel this 600 km partly by train and partly	1+1+2														

by car. He used to buy cheap items from Delhi and sell at Jaipur and also buying cheap items from Jaipur and sell at Delhi. Once From Delhi to Jaipur in forward journey he covered $2x$ km by train and the rest y km by taxi. But, while returning he did not get a reservation from Jaipur in the train. So first $2y$ km he had to travel by taxi and the rest x km by Train. From Delhi to Jaipur he took 8 hrs but in returning it took 10 hrs.



(i) Write the above information in terms of equation.

(ii) Find the value of x and y ?

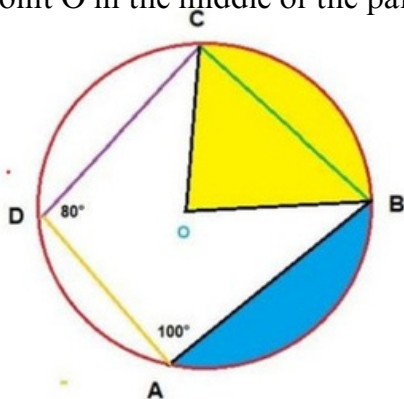
(iii) Find the speed of Taxi?

OR

Find the speed of Train?

37.

There was a circular park in Defence colony at Delhi. For fencing purpose poles A, B, C and D were installed at the circumference of the park. Ram tied wires From A to B, B to C and C to D, and he managed to measure the $\angle A = 100^\circ$ and $\angle D = 80^\circ$. C is in the middle of the park is the center of the circle. Point O in the middle of the park is the center of the circle.



(i) Name the quadrilateral ABCD.

(ii) What is the value of $\angle C$?

(iii) What is the value of $\angle B$?

OR

Write any three properties of cyclic quadrilateral?

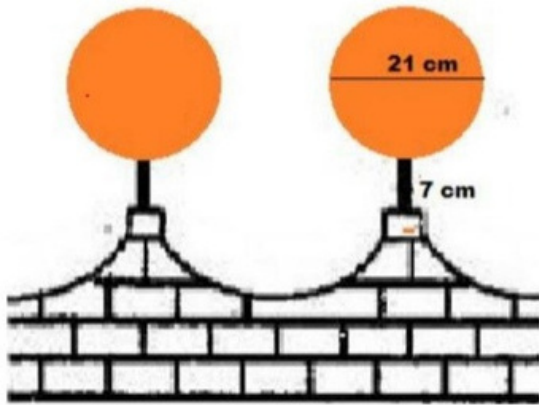
1+1
+2

38

The front compound wall of a house is decorated by wooden spheres of

1+1
+2

diameter 21 cm, placed on small supports as shown in figure. 25 such spheres are used for this purpose and are to be painted silver. Each support is a cylinder and is to be painted black.



- (i) what will be the total surface area of the spheres all around the wall?
- (ii) Find the cost of orange paint required if this paint costs 20 paise per cm^2
- (iii) How much orange paint in liters is required for painting the supports if the paint required is 3 ml per cm^2 ?

OR.

What will be the volume of total spheres all around the wall?