



# SAGAR PUBLIC SCHOOL

SAMPLE PAPER-2

CLASS -IX

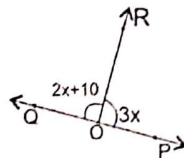
TIME ALLOWED : 3 HOURS

SUBJECT MATHS

MAX. MARKS : 80

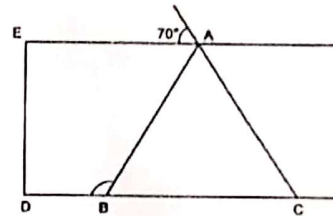
General Instructions: Same as Sample Paper-1

- $\sqrt{12} \times \sqrt{15} =$   
(a) 5 (b)  $5\sqrt{6}$  (c)  $6\sqrt{5}$  (d) 6
- The graph of  $y = 6$  is a line  
(a) Parallel to x-axis at a distance 6 units from the origin  
(b) Making an intercept 6 on the x-axis.  
(c) Making an intercept 6 on both the axes.  
(d) Parallel to y-axis at a distance 6 units from the origin
- Point  $(-10,0)$  lies  
(a) on the negative direction of the y-axis  
(b) on the negative direction of the X-axis  
(c) in the third quadrant  
(d) in the fourth quadrant
- In a histogram the class intervals or the groups are taken along  
(a) X-axis (b) Y-axis  
(c) both of X-axis and Y-axis  
(d) in between X and Y axis
- If  $(2, 0)$  is a solution of the linear equation  $2x + 3y = k$ , then the value of k is  
(a) 2 (b) 4 (c) 5 (d) 6
- The line segment with one end point at the centre and the other at any point on the circle is called \_\_\_\_\_.  
(a) diameter (b) sector (c) chord (d) radius
- Given  $\angle POR = 3x$  and  $\angle QOR = 2x + 10^\circ$ . If  $\angle POR$  is a straight line, then the value of x is

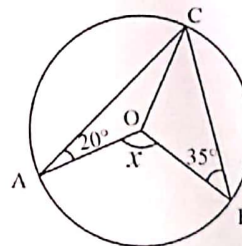


- (a) 36° (b) 30° (c) 34° (d) 42°
- A diagonal of a Rectangle is inclined to one side of the rectangle at an angle of  $25^\circ$ . The Acute Angle between the diagonals is.  
(a)  $115^\circ$  (b)  $40^\circ$  (c)  $50^\circ$  (d)  $25^\circ$

- The remainder when  $x^{31} - 31$  is divided by  $x + 1$  is  
(a) -32 (b) 31 (c) 30 (d) 0
- A linear equation in two variables is of the form  $ax + by + c = 0$   
(a)  $a \neq 0$  and  $b = 0$  (b)  $a = 0$  and  $b = 0$   
(c)  $a \neq 0$  and  $b \neq 0$  (d)  $a = 0$  and  $b \neq 0$
- In figure, if  $AE \parallel DC$  and  $AB = AC$ , the value of  $\angle ABD$  is



- (a)  $110^\circ$  (b)  $120^\circ$  (c)  $130^\circ$  (d)  $70^\circ$
- Two adjacent angles of a parallelogram are in the ratio 4 : 5. The angles are  
(a)  $90^\circ, 90^\circ$  (b)  $80^\circ, 100^\circ$   
(c)  $60^\circ, 120^\circ$  (d)  $40^\circ, 140^\circ$
- In the given figure, a circle is centred at O. The value of x is:



- (a)  $110^\circ$  (b)  $55^\circ$  (c)  $125^\circ$  (d)  $70^\circ$
- If  $\sqrt{3} = 1.732$  and  $\sqrt{2} = 1.414$ , then the value of  $\frac{1}{\sqrt{3} - \sqrt{2}}$  is  
(a) 3.146 (b)  $\frac{1}{3.146}$   
(c) 0.318 (d)  $\frac{1}{\sqrt{1.732} - \sqrt{1.414}}$



15. The line represented by the equation  $x + y = 16$  passes through (2, 14). How many more lines pass point (2, 14)

(a) 10 (b) 2 (c) many (d) 100

16. In a  $\triangle ABC$ , if  $\angle A - \angle B = 42^\circ$  and  $\angle B - \angle C = 21^\circ$  then  $\angle B = ?$

(a)  $95^\circ$  (b)  $63^\circ$  (c)  $53^\circ$  (d)  $32^\circ$

17.  $\sqrt{3}$  is a polynomial of degree.

(a) 0 (b) 2 (c)  $\frac{1}{2}$  (d) 1

18. An ice-cream cone has hemispherical top. If the height of the cone is 9 cm and base radius is 2.5 cm, then the volume of ice-cream is

(a)  $91.67 \text{ cm}^3$  (b)  $96.67 \text{ cm}^3$   
(c)  $90.67 \text{ cm}^3$  (d)  $91.76 \text{ cm}^3$

19. **Assertion (A)** : The height of the triangle is 18 cm its area is  $72 \text{ cm}^2$ . Its base is 8 cm.

**Reason (R)** : Area of a triangle  

$$= \frac{1}{2} \times \text{base} \times \text{height}$$

- (a) Both A and R are true and R is the correct explanation of A.  
 (b) Both A and R are true but R is not the correct explanation of A.  
 (c) A is true but R is false.  
 (d) A is false but R is true.

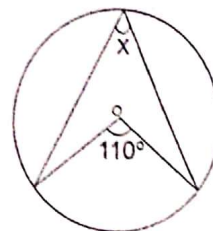
20. **Assertion (A)**: The point (0, 3) lies on the graph of the linear equation  $3x + 4y = 12$ .

**Reason (R)**: (0, 3) satisfies the equation  $3x + 4y = 12$ .

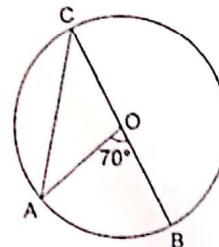
- (a) Both A and R are true and R is the correct explanation of A.  
 (b) Both A and R are true but R is not the correct explanation of A.  
 (c) A is true but R is false.  
 (d) A is false but R is true.

### Section - B

21. ABC and ADC are two right triangles with common hypotenuse AC. Prove the  $\angle CAD = \angle ABD$ .
22. Find the area of equilateral triangle whose side is 12 cm using Heron's formula.
23. Find an angle marked as x in given figure where O is the centre of the circle:

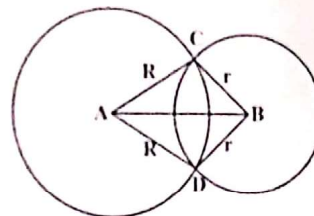


24. In the given figure, O is the centre of the circle and  $\angle AOB = 70^\circ$ . Calculate the values of (i)  $\angle OCA$ , (ii)  $\angle OAC$ .



OR

Prove that the line of centres of two intersecting circles subtends equal angles at the two points of intersection.



25. The following values of x and y are thought to satisfy a linear equation:

X	1	2
Y	1	3

OR

Cost of pen is two half times the cost of a pencil. Express this situation as a linear equation in two variable.

### Section - C

26. Locate  $\sqrt{3}$  on the number line.
27. If  $x^2 + \frac{1}{x^2} = 34$ , find  $x^3 + \frac{1}{x^3} - 9$ .
28. The cost of levelling the ground in the form of a triangle having the sides 51m, 37m and 20m at the rate of Rs. 3 per  $\text{m}^2$  is Rs.918. State whether the statement is true or false and justify your answer.



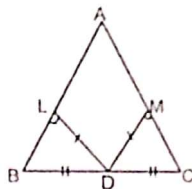
**OR**

The sides of a triangular plot are in the ratio of 3:5:7 and its perimeter is 300 m. Find its area.

29. A heap of wheat is the form of a cone whose diameter is 10.5 m and height is 3 m. Find its volume. The heap is to be covered by canvas to protect it from rain. Find the area of the canvas required.
30.  $\triangle ABC$  is an isosceles triangle in which  $AB = AC$ . Side  $BA$  is produced to such that  $AD = AB$ . Show that  $\angle BCD$  is a right angle.

**OR**

In  $\triangle ABC$ ,  $D$  is the midpoint of  $BC$ . If  $DL \perp AB$  and  $DM \perp AC$  such that  $DL = DM$ . Prove that  $AB = AC$ .



31. Draw the graphs of  $y = x$  and  $y = -x$  in the same graph. Also find the co-ordinates of the point where the two lines intersect.

**Section D**

32. If  $a = \frac{\sqrt{2}+1}{\sqrt{2}-1}$  and  $b = \frac{\sqrt{2}-1}{\sqrt{2}+1}$ , then find the value of  $a^2 + b^2 - 4ab$ .

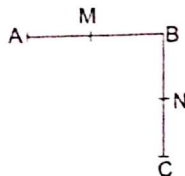
**OR**

If  $x$  is a positive real number and exponents are rational numbers, simplify

$$\left(\frac{x^b}{x^c}\right)^{b+c-a} \cdot \left(\frac{x^c}{x^a}\right)^{c+a-b} \cdot \left(\frac{x^a}{x^b}\right)^{a+b-c}.$$

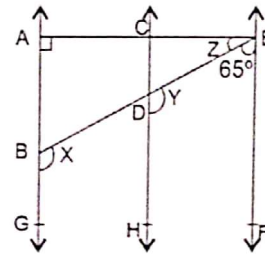
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33. (i).  $AB = BC$ ,  $M$  is the mid-point of  $AB$  and  $N$  is the mid-point of  $BC$ . Show that  $AM = NC$ .  
(ii).  $BM = BN$ ,  $M$  is the mid-point of  $AB$  and  $N$  is the mid-point of  $BC$ . Show that  $AB = BC$ .



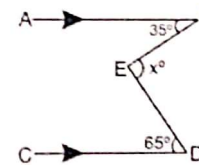
34. In the given figure,  $AB \parallel CD \parallel EF$ ,  $\angle DBG = x$ ,  $\angle EDH = y$ ,  $\angle AEB = z$ ,

$\angle EAB = 90^\circ$  and  $\angle BEF = 65^\circ$ . Find the values of  $x$ ,  $y$  and  $z$ .



**OR**

In each of the figures given below,  $AB \parallel CD$ . Find the value of  $x^\circ$  in each case.



35. The following table shows the average daily earning of 40 general stores in a market, during a certain week:

Daily earning (in rupees)	Number of Stores
700-750	6
750-800	9
800-850	2
850-900	7
900-950	11
950-1000	5

Draw a histogram to represent the above data.

**Section - E**

36. Read the following text carefully and answer the question that follow:

Vinod and Basant have an adventure tourism business in Rishikesh. They have a resort in Rishikesh but now they are planning to build some tent houses too.

The newly built tent house will have all the basis amenities and it will attract the young tourists coming for adventure. Their conical tent is 9 m high and the radius of its base is 12 m.





- (i) What is the cost of the canvas required to make it, if  $1 \text{ m}^2$  canvas costs Rs 10 ?
- (ii) How many persons can be accommodated in the tent, if each person requires  $2 \text{ m}^2$  on the ground ?
- (iii) How many person can be accommodated in the tent, if each person requires  $15 \text{ m}^3$  of space to breathe in ?

**OR**

In each person requires  $20 \text{ m}^3$  of space to breathe in and 100 person can be accommodated then what should be height of tent?

37. **Read the following text carefully and answer the questions that follow:**

Reeta was studying in the class 9<sup>th</sup> C of St. Surya Public school, Mehrauli, New Delhi-110030

Once Ranjeet and his daughter Reeta were returning after attending teachers' parent meeting at Reeta's school.

As the home of Ranjeet was close to the school so they were coming by walking.

Reeta asked her father, "Daddy how old are you?"

Ranjeet said, "Sum of ages of both of us is 55 years, After 10 years my age will be double of you.



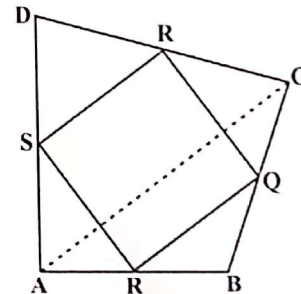
- (i) What is the second equation formed?
- (ii) What is the present age of Reeta in years?
- (iii) What is the present age of Ranjeet in years?

**OR**

If the ratio of age of Reeta and her mother is 3:7 then what is the age of Reeta's mother in years?

38. **Read the following text carefully and answer the equations that follow:**

Modern curricula include several problem-solving strategies. Teachers model the process, and students work independently to copy it. Sheela maths teacher of class 9<sup>th</sup> wants to explain the properties of parallelograms in a creative way, so she gave students colored paper in the shape of a quadrilateral and then ask the students to make a parallelogram form it by using paper folding.



- (i) How can a parallelogram be formed by using paper folding ?
- (ii) If  $\angle RSP = 30^\circ$ , then find  $\angle RQP$ .
- (iii) If  $\angle RSP = 50^\circ$ , then find  $\angle SPQ$ ?

**OR**

If  $SP = 3 \text{ cm}$ , Find the  $RQ$ .