

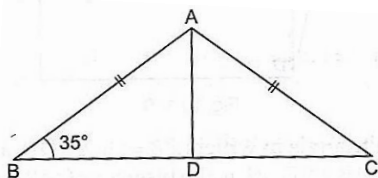
# GRAND TEST – 3

## INSTRUCTIONS: FULL SYLLABUS

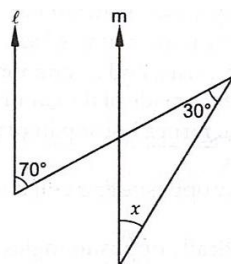
- The question paper consists of **40 questions** divided into four sections A, B, C and D.
- Section - A: Q. No. 1 to 20 carries **1 mark** each.
- Section - B: Q. No. 21 to 26 carries **2 marks** each.
- Section - C: Q. No. 27 to 34 carries **3 marks** each.
- Section - D: Q. No. 35 to 40 carries **4 marks** each.
- Time allotted is **2 hours**. **The maximum marks are 80.**

### SECTION – A (1 × 20 = 20)

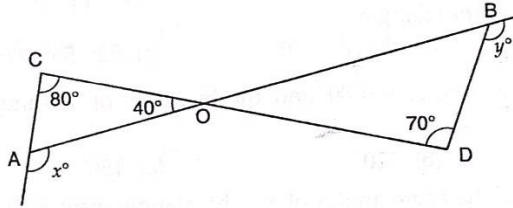
- The number  $0.\bar{3}$  in the form  $\frac{p}{q}$ , where p and q are integers and  $q \neq 0$ , is  
 (a)  $\frac{33}{100}$                       (b)  $\frac{3}{10}$                       (c)  $\frac{1}{3}$                       (d)  $\frac{3}{100}$
- The rationalization factor of  $2 + \sqrt{3}$  is  
 (a)  $2 - \sqrt{3}$                       (b)  $\sqrt{2} + 3$                       (c)  $\sqrt{2} - 3$                       (d)  $\sqrt{3} - 2$
- If  $x^3 + 6x^2 + 4x + k$  is exactly divisible by  $x + 2$ , then  $k =$   
 (a)  $-6$                       (b)  $-7$                       (c)  $-8$                       (d)  $-10$
- One angle is equal to three times its supplement. The measure of the angle is  
 (a)  $130^\circ$                       (b)  $135^\circ$                       (c)  $90^\circ$                       (d)  $120^\circ$
- An exterior angle of a triangle is equal to  $100^\circ$  and two interior opposite angles are equal. Each of these angles is equal to  
 (a)  $75^\circ$                       (b)  $80^\circ$                       (c)  $40^\circ$                       (d)  $50^\circ$
- ABC is an isosceles triangle such that  $AB = AC$  and AD is the median to base BC. Then,  $\angle BAD =$   
 (a)  $55^\circ$                       (b)  $70^\circ$                       (c)  $35^\circ$                       (d)  $110^\circ$



- The base and hypotenuse of a right triangle are respectively 5 cm and 13 cm long. Its area is  
 (a)  $25 \text{ cm}^2$                       (b)  $28 \text{ cm}^2$                       (c)  $30 \text{ cm}^2$                       (d)  $40 \text{ cm}^2$
- In a rhombus ABCD, if  $\angle ACB = 40^\circ$ , then  $\angle ADB =$   
 (a)  $70^\circ$                       (b)  $45^\circ$                       (c)  $50^\circ$                       (d)  $60^\circ$
- In fig, if lines l and m are parallel lines, then  $x =$   
 (a)  $70^\circ$                       (b)  $100^\circ$                       (c)  $40^\circ$                       (d)  $30^\circ$



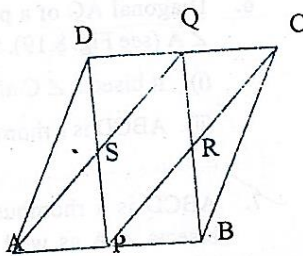
10. A triangle and a parallelogram are on the same base and between the same parallels. The ratio of the areas of triangle and parallelogram is  
 (a) 1 : 1                      (b) 1 : 2                      (c) 2 : 1                      (d) 1 : 3
11. If the length of a chord of a circle is 16 cm and is at a distance of 15 cm from the centre of the circle, then the radius of the circle is
12. In fig,  $x + y =$   
 (a) 270                      (b) 230                      (c) 210                      (d)  $190^0$



13. The distance between the graph of the equations  $x = -3$  and  $x = 2$  is
14. The length of the longest rod that can be fitted in a cubical vessel of edge 10 cm long, is
15. If the height and radius of a cone of volume  $V$  are doubled, then the volume of the cone, is
16. In a sphere the number of faces is
17. In a frequency distribution, the mid-value of a class is 15 and the class intervals is 4. The lower limit of the class is
18. If the arithmetic mean of 7, 5, 12,  $x$  and 9 is 10, then the value of  $x$  is
19. The probability of a certain event is
20. In a histogram the class intervals or the groups are taken along

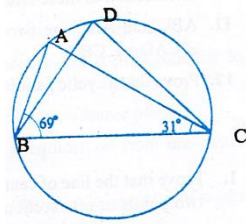
**SECTION – B ( $2 \times 6 = 12$ )**

21. The following observations have been arranged in ascending order. If the median of the data is 63, find the value of  $x$ .  
 29, 32, 48, 50,  $x$ ,  $x + 2$ , 72, 78, 84, 95
22. Write the following using suitable identities:  $\left[\frac{3}{2}x + 1\right]^3$
23. ABCD is a parallelogram in which P and Q are mid-points of opposite sides AB and CD. If AQ intersects DP at S and BQ intersects CP at R, show that:



- (i) APCQ is a parallelogram.
24. Savitri had to make a model of a cylindrical kaleidoscope for her science project. She wanted to use chart paper to make the curved surface of the kaleidoscope. What would be the area of chart paper required by her, if she wanted to make a kaleidoscope of length 25 cm with a 3.5 cm radius? You may take  $\pi = \frac{22}{7}$ .

25. In fig.,  $\angle ABC = 69^\circ$ ,  $\angle ACB = 31^\circ$ , find  $\angle BDC$ .



26. A hemispherical bowl has a radius of 3.5 cm. What would be the volume of water it would contain?

**SECTION – C (3 × 8 = 24)**

27. (i) Show that  $1.272727\dots = 1.\overline{27}$  can be expressed in the form  $\frac{p}{q}$ , where p and q are integers and  $q \neq 0$ .  
 (ii) find an irrational number between  $\frac{1}{7}$  and  $\frac{2}{7}$ .
28. (i) Write  $(3a + 4b + 5c)^2$  in expanded form.  
 (ii) Factorise  $4x^2 + y^2 + z^2 - 4xy - 2yz + 4xz$ .
29. Sides of a triangle are in the ratio of 12 : 17 : 25 and its perimeter is 540cm. Find its area.
30. Fifty seeds were selected at random from each of 5 bags of seeds, and were kept under standardized conditions favourable to germination. After 20 days, the number of seeds which had germinated in each collection were counted and recorded as follows:

Bag	1	2	3	4	5
Number of seeds germinated	40	48	42	39	41

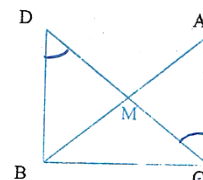
What is the probability of germination of

- (i) more than 40 seeds in a bag?  
 (ii) 49 seeds in a bag?  
 (iii) more than 35 seeds in a bag?
31. ABC is a triangle right angled at C. A line through the mid-point M of hypotenuse AB and parallel to BC intersects AC at D. Show that  
 (i) D is the mid-point of AC                      (ii)  $MD \perp AC$                       (iii)  $CM = MA = \frac{1}{2} AB$
32. Does Euclid’s fifth postulate imply the existence of parallel lines? Explain.
33. ABC is a right angled triangle in which  $\angle A = 90^\circ$  and  $AB = AC$ . Find  $\angle B$  and  $\angle C$ .
34. The height of a cone is 16 cm and its base radius is 12 cm. Find the curved surface area and the total surface area of the cone (Use  $\pi = 3.14$ ).

**SECTION – D (4 × 6 = 24)**

35. In which quadrant or on which axis do each of the points(-2, 4), (3, -1), (-1,0), (1, 2) and (-3,-5) lie? Verify your answer by locating them on the Cartesian plane.
36. In right triangle ABC, right angled at C, M is the mid-point hypotenuse AB. C is joined to M and produced to a point D such that  $DM = CM$ . Point D is joined to point B. Show that:

- (i)  $\Delta AMC \cong \Delta BMD$   
 (ii)  $\angle DBC$  is a right angle.  
 (iii)  $\angle DBC \cong \angle ACB$   
 (iv)  $CM = \frac{1}{2} AB$



37. Three girls Reshma, Salma and Mandip are playing a game by standing on a circle of radius 5m drawn in a park. Reshma throws a ball to Salma, Salma to Mandip, Mandip to Reshma. If the distance between Reshma and Salma and between Salma and Mandip is 6m each, what is the distance between Reshma and Mandip?
38. Construct a triangle ABC, in which  $\angle B = 60^\circ$ ,  $\angle C = 45^\circ$  and  $AB + BC + CA = 11$  cm.
39. A village, having a population of 4000, requires 150 litres of water per head per day. It has a tank measuring 20 m  $\times$  15 m  $\times$  6 m. For how many days will the water of this tank last?
40. The runs scored by two teams A and B on the first 60 balls in a cricket match are given below:

Number of balls	Team A	Team B
1-6	2	5
7-12	1	6
13-18	8	2
19-24	9	10
25-30	4	5
31-36	5	6
37-42	6	3
43-48	10	4
49-54	6	8
55-60	2	10

Represent the data of both the teams on the same graph by frequency polygons.