

CHAPTER 6

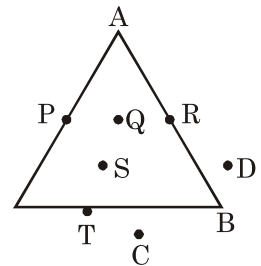
TRIANGLES AND PROPERTIES

Points to Remember :

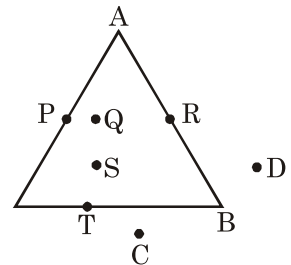
- A closed figure of three line segments is called triangle.
- Area inside the triangular region is called interior region of the triangle.
- There are three vertices, three sides and three angles in a triangle.
- Sum of angles of a triangle is 180° .
- Exterior angle of a triangle is equal to sum of two interior opposite angles.

QUESTIONS

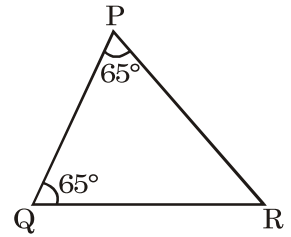
1. What are the points that lie on the given triangle?



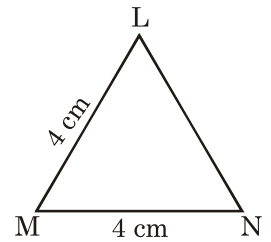
2. What are the points that lie in the triangular region?



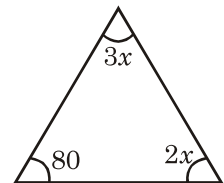
3. Which sides are equal in $\triangle PQR$?



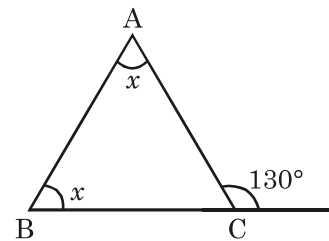
4. Which angles are equal in $\triangle LMN$?



5. In the given triangle, find the value of x .

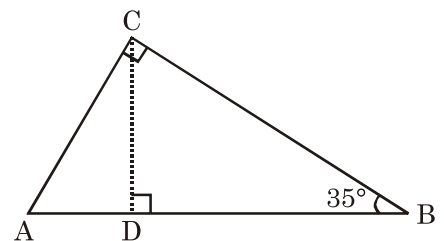


6. In the given figure find the value of x .

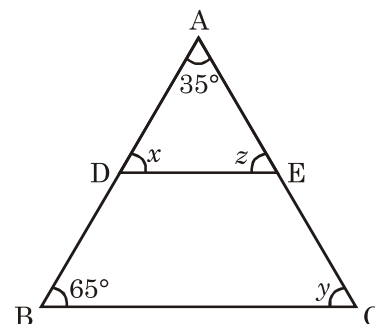


7. Angles of a triangle are in the ratio $8 : 12 : 16$. Find the angles.

8. Find angles $\angle CAD$ and $\angle BCD$ in the given figure.

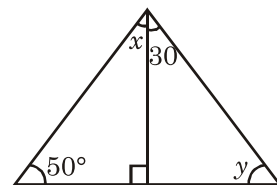


9. In $\triangle ABC$, $DE \parallel BC$. Find x , y and z .

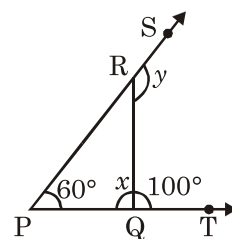


10. Two angles of a triangle are equal and third angle is smaller than others by 15° . Find the angles.
11. Three angles of a triangle are $x - 10^\circ$, $x + 20^\circ$, $2x - 30^\circ$. Find each angle.

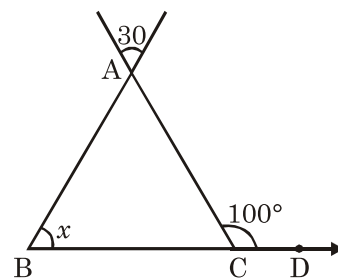
12. Find x and y in the given figure.



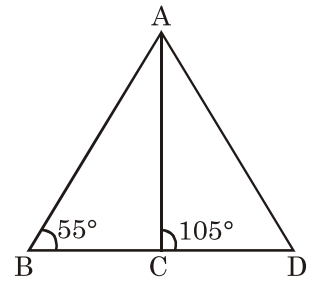
13. Find value of x and y in the given figure.



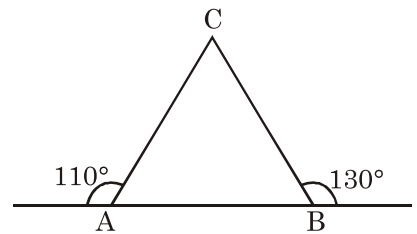
14. Find x in the given figure.



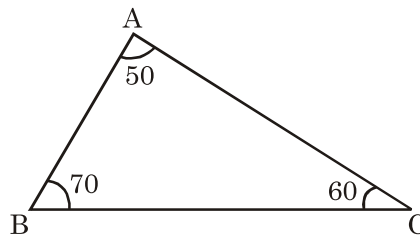
15. Find the $\angle BAC$ in the given figure.



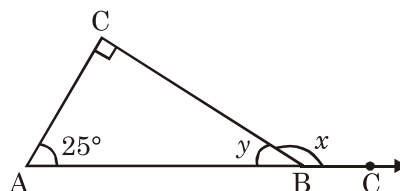
16. Find $\angle ACB$ in the given figure.



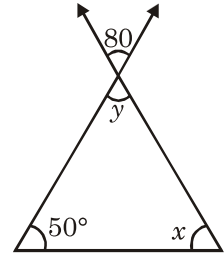
17. Two sides of a triangle are 11 cm and 5.5 cm. What will be the minimum length of the third side?
 18. Which side is the smallest side of the triangle ABC ?



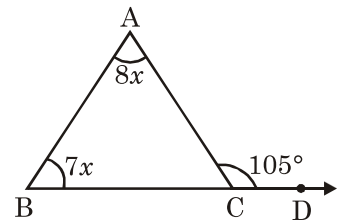
19. What is the location of the point of concurrence of altitudes in an obtuse angled triangle? What is this point of concurrence called?
 20. What is the position of the point-of concurrence of all the medians in a right-angled triangle.
 21. What is the value of x and y in the given figure?



22. Find the value of x and y in the given figure.

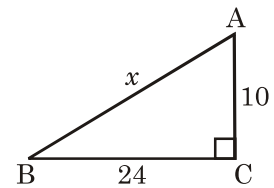


23. Find the value of x .

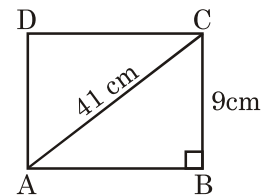


24. Two sides of a triangle are 10cm and 15 cm. What will be the maximum length of third side?

25. Find the value of x in the given figure?

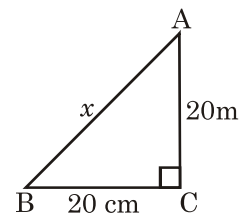


26. Find the perimeter of the given rectangle.



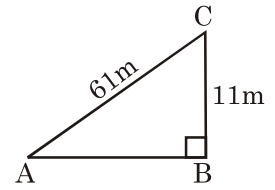
27. Diagonals of a rhombus are 6cm and 8cm. What will be the perimeter of such rhombus?
 28. A ladder 25m long reaches a window of a building 20m above the ground. Find the distance between foot of the ladder and building.

29. Find the value of x .

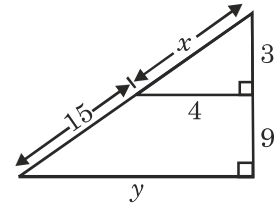


30. A man goes 15m due west and then 8 m due north. How far is he from the starting point?

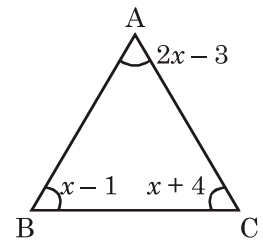
31. Find the length of AB in the given figure?



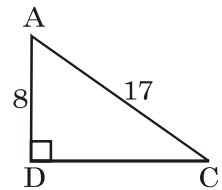
32. Find the value of x and y .



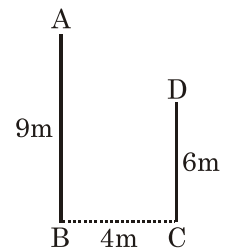
33. Find $\angle A$, $\angle B$ and $\angle C$.



34. Find the length of DC .

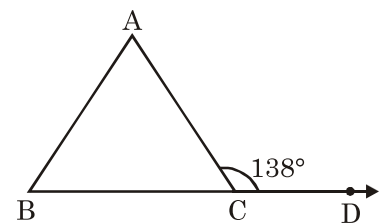


35. Find the distance from A to D .

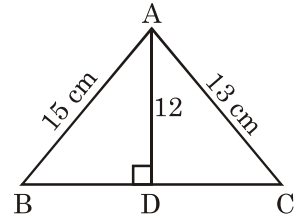


36. Length of a diagonal of a square is $18\sqrt{2}$ m. Find the perimeter of the square.

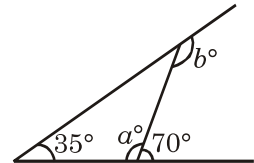
37. In the given figure $AC = BC$. Find $\angle ABC$.



38. Find the length of BC in the given figure.

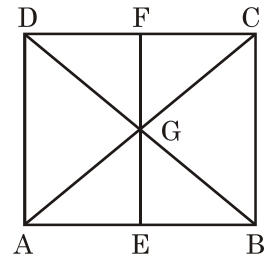


39. In the given figure find the value of a and b .

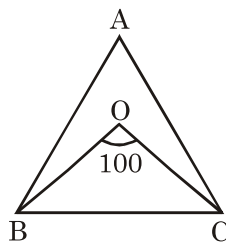


40. Find out from the given sides of a triangle which will form a right-angled triangle?
 (a) 15, 10.25; (b) 27, 36, 39; (c) 15, 36, 39 (d) 7, 24, 25

41. How many triangles are there in the given figure?

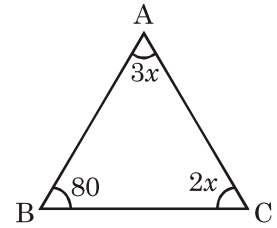


42. In an equilateral triangle, altitudes are drawn. Name the point where altitudes of the triangle meet.
43. In the given figure $AB = AC$. OB and OC are the angle bisectors of $\angle B$ and $\angle C$. Find $\angle ABC$, $\angle ACB$ and $\angle BAC$.



44. Triangle ABC is an isosceles right triangle. Find all the angles of the triangle.
45. A man goes 30 m due east and then 40 m due north. Find his distance from the starting point.
46. A boy is flying a kite with 100 m long thread. The perpendicular height of the kite distance between the boy and the point from which the height of kite is measured.

47. Find $\angle BAC$, and $\angle ACB$.



48. Length and breadth of a rectangle are 24 cm and 10 cm. Find its diagonal.

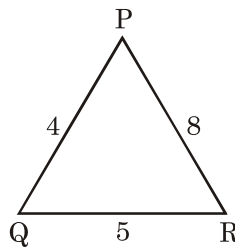
49. (i) Incentre of an obtuse-angled triangle lies in of triangle.

(ii) Orthocentre of an obtuse-angled triangle lies in of triangle.

(iii) Median of an obtuse-angled triangle lies in of triangle.

(iv) Perpendicular bisectors of the sides of a triangle meet at

50. In the given ΔPQR , which angle will be the greatest and which will be the smallest?



51. In an isosceles ΔABC , $AB = AC$ and $\angle B = 4\angle A$. Find the angles of the triangle.

ANSWERS

- | | |
|--------------------------------------|----------------------------------|
| 1. P, T, R. | 2. Q, S |
| 3. PR, QR | 4. $\angle L$ and $\angle N$. |
| 5. $x = 20^\circ$ | 6. $x = 65^\circ$ |
| 7. 40, 60, 80 | 8. $55^\circ, 55^\circ$ |
| 9. $65^\circ, 80^\circ, 80^\circ$ | 10. 65, 65, 50 |
| 11. 40, 70, 70 | 12. $x = 40, y = 60$ |
| 13. $x = 80, y = 140$ | 14. 70° |
| 15. 50° | 16. 60° |
| 17. More than 5.5 cm | 18. BC |
| 19. Orthocentre outside the Δ | 20. Inside the Δ |
| 21. $x = 115^\circ, y = 65^\circ$ | 22. $x = 50^\circ, y = 80^\circ$ |
| 23. $x = 7$ | 24. Less than 25 |

25. $x = 26$
27. 20 cm
29. $\sqrt{800}$
31. 60 m
33. 87, 44, 49
35. 5
37. 69
39. 110, 145
41. 12
43. $80^\circ, 80^\circ, 20^\circ$
45. 50 m
47. $60^\circ, 40^\circ$
49. (i) Exterior (ii) Exterior,
50. $\angle R$ smaller, $\angle Q$ greater.
26. 98
28. 15 m
30. 17 m
32. $x = 5, y = 16$
34. 15
36. 72
38. 14
40. (d)
42. orthocentre
44. 90, 45, 45
46. 60 m
48. 26 cm
51. 20, 80, 80.
- (iii) Interior, (iv) circumcentre