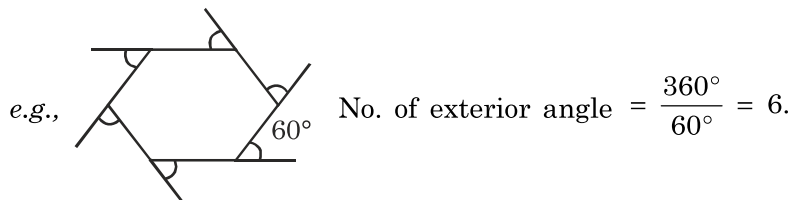
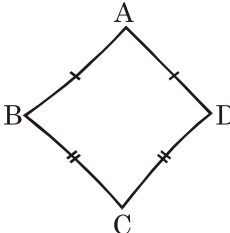


CHAPTER 3

UNDERSTANDING QUADRILATERALS

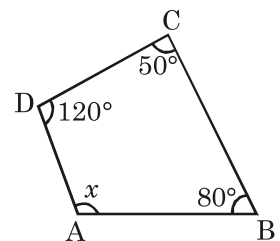
- Total angle sum of polygon = $(n - 2) \times 180^\circ$ where n is the no. of sides of polygon.
- The sum of the measures of the external angles of any polygon is 360° .
- The number of exterior angles of polygon = $360^\circ/\text{measure of exterior angle}$.



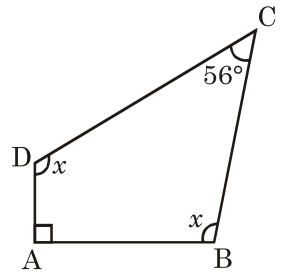
-  $ABCD$ is a kite then $\angle B = \angle D$.

QUESTIONS

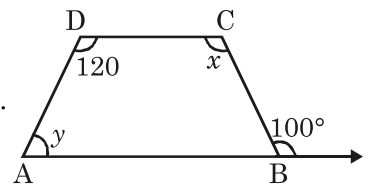
1. $ABCD$ is a quadrilateral. Find x .



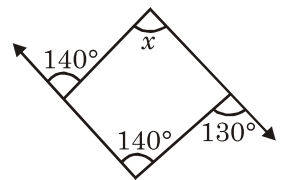
2. $ABCD$ is a quadrilateral. Find x .



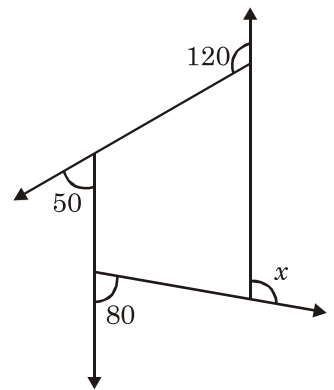
3. $ABCD$ is a quadrilateral in which $AB \parallel CD$. Find x and y .



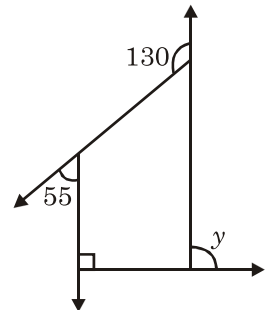
4. Find x .



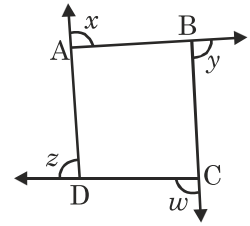
5. In the adjoining figure. Find x .



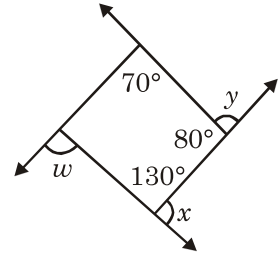
6. Find y .



7. What is $x + y + z + w$?

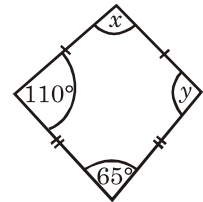


8. What is $x + y + w$?



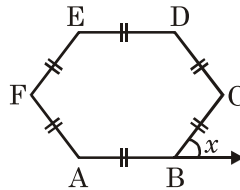
9. Name the polygon whose each exterior angle is 72° .

10. Find x and y .



11. What is the measure of each exterior angle of a regular polygon of 10 sides?

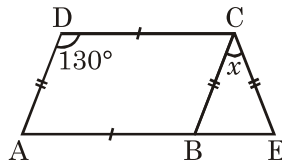
12. $ABCDEF$ is regular hexagon. What is the value of the exterior angle x ?



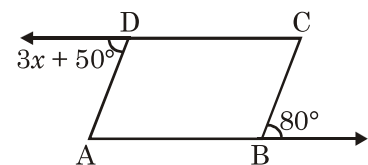
13. How many sides does a regular polygon has if each of its interior angle is 160° ?

14. If the total angle sum of a polygon is 108° then how many sides does polygon has?

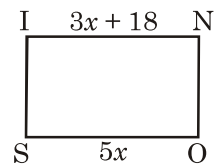
15. In Fig. what is the value of x if $ABCD$ is a parallelogram and $\triangle CBE$ is an isosceles triangle.



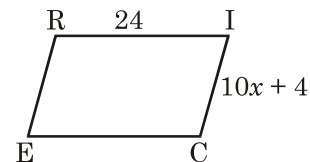
16. $ABCD$ is a parallelogram. What is the value of x ?



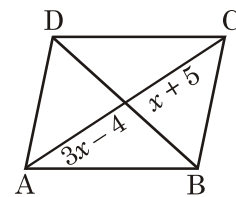
17. $SONI$ is a rectangle. What is the length of \overline{IN} ?



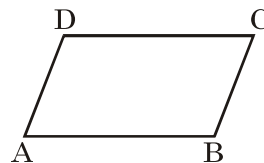
18. What is the value of the variable x in the rhombus $RICE$?



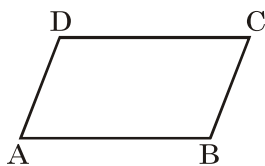
19. $ABCD$ is a parallelogram. What is the value of x ?



20. $ABCD$ is a parallelogram. If $AB = 5$ cm then $CD = ?$

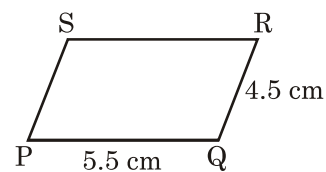


21. $ABCD$ is a parallelogram. The perimeter is 144 cm and $BC = 20$ cm then $AB = ?$

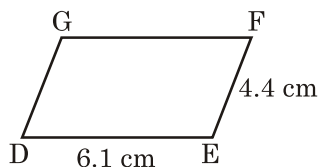


22. The ratio of two adjacent sides of a parallelogram is 5:4. Its perimeter is 18 cm then, what is the length of the adjacent sides.

23. In the given figure $PQRS$ is a $\parallel gm$, Find $PS + SR$.



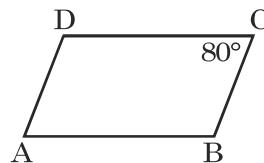
24. $DEFG$ is a parallelogram. Find the perimeter of the given figure.



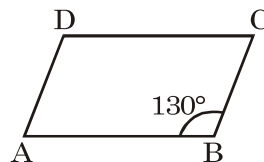
25. Complete the following :

The opposite sides of a parallelogram are _____.

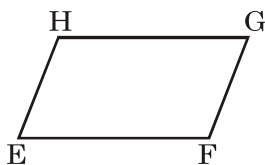
26. $ABCD$ is a parallelogram. If $\angle C = 80^\circ$ then what is $\angle B + \angle D$.



27. $ABCD$ is a parallelogram. If $\angle B = 130^\circ$, then what is $\angle C$.



28. In a parallelogram $\angle F : \angle G = 2 : 3$. What is the degree measure of $\angle F$ and $\angle G$.

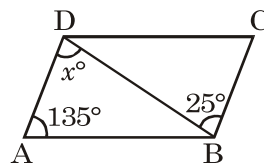


29. In a parallelogram $ABCD$ $\angle B = 2\angle C$. What is the degree measure of $\angle B$ and $\angle C$.

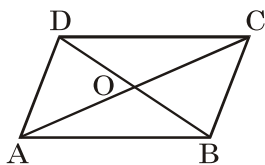
30. Complete the following :

The opposite angles of a parallelogram are _____.

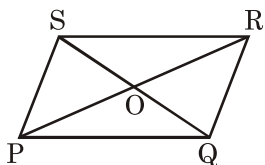
31. In the fig. $ABCD$ is a parallelogram Find x .



32. In a parallelogram $ABCD$ the point of intersection of both diagonals AC and BD is O . If $AC = 16$ cm and $BD = 12$ cm then what is OA and OD .



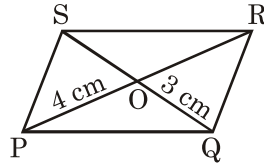
33. $PQRS$ is a parallelogram and diagonals PR and SQ bisect at O . If $PO = 3.5$ cm and $OQ = 4.1$ cm. What is the length of the diagonals.



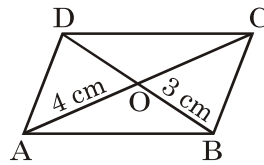
34. Complete the following :

The diagonals of a parallelogram _____ each other.

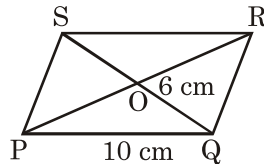
35. $ABCD$ is a rhombus. If $AB = 4$ cm then what is the perimeter of $ABCD$?
36. $PQRS$ is a rhombus. If $PO = 4$ cm and $OQ = 3$ cm then what is $PR + SQ$?



37. In the figure $ABCD$ is a rhombus in which $AO = 4$ cm and $OB = 3$ cm. What is the length of the side of the rhombus?

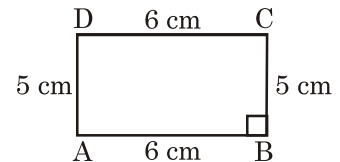


38. $PQRS$ is a rhombus with $PQ = 10$ cm. If $OQ = 6$ cm then what is the length of the diagonal PR ?

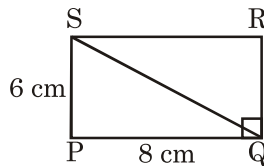


39. In a rhombus $RSTU$ if $\angle R = 120^\circ$, then what is the measure of $\angle S$.

40. Which figure is this?

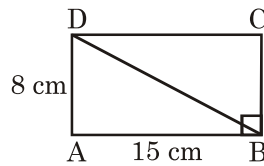


41. In rectangle $PQRS$ $PQ = 8$ cm and $PS = 6$ cm. What is the length of SQ ?

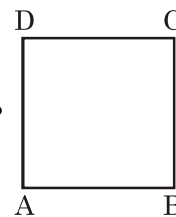


42. What is the length of the rectangle if its breadth is 10 cm and the diagonal is 26 cm?

43. $ABCD$ is a rectangle if $AB = 15$ cm and $AD = 8$ cm then find AC .

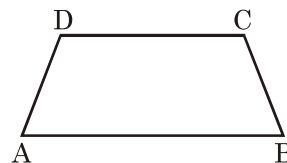


44. $ABCD$ is a square with sides 2.4 cm. What is the perimeter of the square?



45. The perimeter of a square is 196 cm. What is the side of the square?
46. The side of the square is 16 cm. What is the length of the diagonal?

47. In trapezium $ABCD$, $AB \parallel CD$. What is the sum of $\angle B$ and $\angle C$?



48. Complete the following :

A quadrilateral can be constructed uniquely if 4 sides and one _____ is known.

49. How many triangles are made while constructing a quadrilateral with four sides and a diagonal?

50. Complete the following :

With constructing a quadrilateral with three sides and two diagonals _____ triangles are made on the same base.

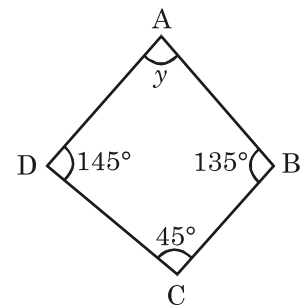
ANSWERS

- | | |
|-------------------------------------|--------------------------|
| 1. 110° | 2. 107° |
| 3. $x = 100^\circ$, $y = 60^\circ$ | 4. $x = 130^\circ$ |
| 5. 110° | 6. 85° |
| 7. 360° | 8. 250° |
| 9. Pentagon. | 10. $x = 75$, $y = 110$ |
| 11. 36° | 12. 60° |
| 13. 18 | 14. 8 sides |
| 15. 80° | 16. $x = 10$ |
| 17. 45 | 18. $x = 2$ |
| 19. $x = \frac{9}{2}$. | 20. 5 cm |
| 21. 52 cm | 22. 5 cm, 4 cm |
| 23. 10 cm | 24. 21 cm |
| 25. equal. | 26. 200° |

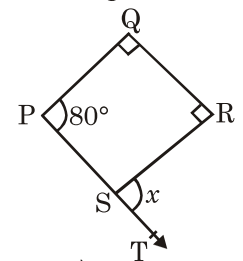
- | | |
|---------------------------|---------------------------|
| 27. 50° | 28. $72^\circ, 108^\circ$ |
| 29. $120^\circ, 60^\circ$ | 30. equal |
| 31. 25° | 32. 8 cm, 6 cm |
| 33. 7 cm, 8.2 cm | 34. bisect |
| 35. 16 cm | 36. 14 cm |
| 37. 5 cm | 38. 16 cm |
| 39. 60° | 40. rectangle |
| 41. 10 cm | 42. 24 cm |
| 43. 17 cm | 44. 9.6 cm |
| 45. 49 cm | 46. $16\sqrt{2}$ cm |
| 47. 180° | 48. diagonal or one angle |
| 49. Two | 50. Two. |

TEST YOUR KNOWLEDGE

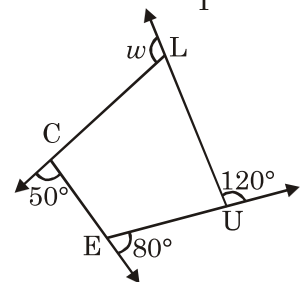
1. $ABCD$ is a quadrilateral. Find y .



2. $PQRS$ is a quadrilateral. Find x .

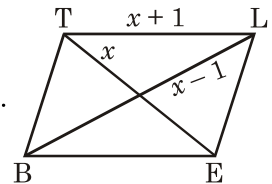


3. $CLUE$ is a quadrilateral find w .

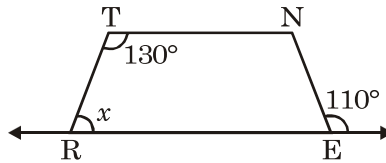


4. Name of polygon whose each exterior angle is 60°
5. What is the total angle sum of a polygon having nine sides?
6. The perimeter of a parallelogram is 52 cm. If the length of one side is 16 cm. What is the length of adjacent side?

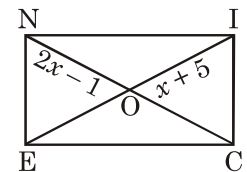
7. $BELT$ is a rhombus. Find the length of the side of the rhombus.



8. $RENT$ is a trapezium in which $TN \parallel RE$. What is the value of x .



9. $NICE$ is a rectangle. What is the length of the diagonal EI .



10. $ABCD$ is a square of side 5 cm. What is the length of its diagonal.

ANSWERS

- | | |
|-----------------|--------------------|
| 1. 35° | 2. $x = 80^\circ$ |
| 3. 110° | 4. Hexagon |
| 5. 1260° | 6. 10cm |
| 7. 5 | 8. 50° |
| 9. 22 | 10. $5\sqrt{2}$ cm |