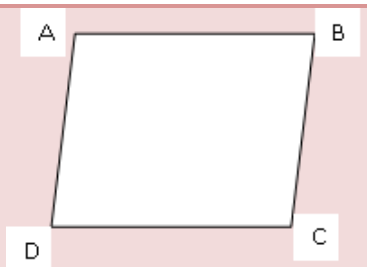
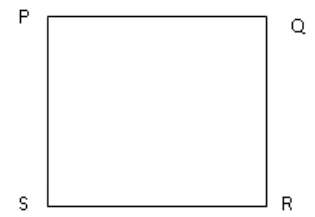
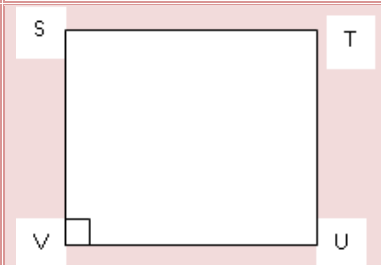
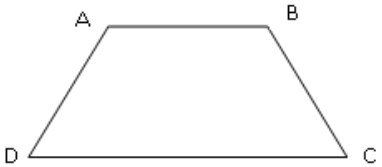
Understanding Quadrilateral

Check Your Concepts

Q.1. *Match the following*:

Directions: *Give below are two columns – Column – I and column – II. Match the two columns and write the correct answer in the given blank grid.*

1. Match the following:

Column – I		Column – II	
A.	 $AB \parallel DC, AD \parallel BC$	**(i)**	Rhombus
B.	 $PQ \parallel SR, PS \parallel QR$ and $PQ = PS$	**(ii)**	Trapezium
C.	 $ST \parallel UV, SV \parallel TU, \angle SVU = 90°$	**(iii)**	Rectangle
D.	 $AB \parallel CD$		Parallelogram

2. Match the following:

Column – I		Column – II	
A.	quadrilateral in which the diagonals are equal and bisect each other perpendicularly is a	**(i)**	Its diagonals are not perpendicular
B.	A quadrilateral is a rectangle but not a square when	**(ii)**	The length of diagonals are not equal.
C.	A quadrilateral is a rhombus but not a square if	**(iii)**	60°
D.	In a quadrilateral the angles are in the ratio 3 : 4 : 5 : 6. Then the difference between the greatest and the smallest angle is		Square

Q.2. *Fill in the blanks*:

Directions: *Complete the following statements with an appropriate word / term to be filled in the blank space(s).*

1. _____ is a polygon having n-sides.

2. _____ is a line segment connecting two non-consecutive vertices of a polygon.

3. The sum of the measures of the _____ angles of any polygon is 360°.

4. If the non-parallel sides of a trapezium are of equal length, it is called _____.

5. The adjacent angles of a parallelogram are _____.

6. A _____ is an equilateral rectangle.

7. A _____ is an equiangular but not equilateral quadrilateral.

8. A _____ in which two adjacent angles are equal is a rectangle.

9. A _____ in which both pairs of opposite angles are equal is parallelogram.

10. In a _____ the number of acute angles is zero (or) two.

Q.3. *True / False*:

Directions: *Read the following statements and mark your response as true or false.*

1. Each diagonal of a quadrilateral divides it into two triangles. **[ ]**

2. Each side of a quadrilateral is less than the sum of the remaining three sides. **[ ]**

3. A quadrilateral can at most have three obtuse angles. **[ ]**

4. A quadrilateral has four diagonals. **[ ]**

5. In a trapezium the diagonals bisect each other. **[ ]**

6. In a rectangle diagonals intersect at right angles. **[ ]**

7. The diagonals of a rhombus are equal. **[ ]**

Q.4. *Multiple choice questions*:

Directions: *Read the following questions and choose the answer that best answers the questions.*

1. One of the angles of a parallelogram measures 63° . Measures of the other three angles of the parallelogram are

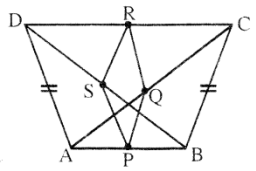
(a) 63°, 63°, and 63°, because all the angles of a parallelogram are always congruent

(b) 63°, 27°, and 27°, because consecutive angles of a parallelogram are complementary and the sum of the measures of the angles of a parallelogram is 180°

(c) 63°, 117° and 117° because consecutive angles of a parallelogram are supplementary and the sum of the measures of the angles of a parallelogram is 360°

(d) Cannot be determined

2. The accompanying diagram shows quadrilateral ABCD, where AD = BC.



If P. Q, R, and S are midpoint of AB, AC, CD and BD respectively, which of the following is the correct statement?

(a) PQRS is a rhombus. (b) PQRS is a square.

(c) PQRS is a rectangle. (d) none of these.

3. Consider the following statements:

I. A parallelogram in which two adjacent angles are equal is a rectangle.

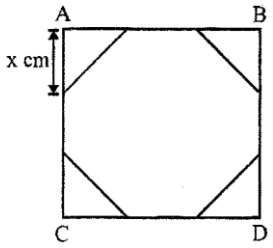
II. A quadrilateral in which both pairs of opposite angles are equal is parallelogram.

III. In a parallelogram the number of acute angles is zero or two.

Which of the following is correct?

(a) Only I (b) II and III (c) I, II and III (d) All I, II and III

4. In the figure, ABCD is a square of side 10 cm. From the square, four congruent isosceles triangles are cut so that the remaining portion is regular octagon.



The value of x is

(a) 5.45 cm. (b) 2.93 cm. (c) 1.73 cm. (d) 3.68 cm.

5. The sum of the exterior angles of a hexagon is

(a) $360°$ (b) $540°$ (c) $720°$ (d) none of these

6. The number of sides of a regular polygon, if each of its interior angles is $135°$, is given by

(a) 4 (b) 6 (c) 8 (d) 10

7. Each interior angle of a regular polygon of n sides $(n \geq 3)$ contains

(a) $4n$ right angles (b) $\frac{2(n+1)}{n}$ right angles

(c) $\frac{2(n-1)}{n}$ right angles (d) $\frac{2(n-2)}{n}$ right angles

8. If angles P, Q, R and S of the quadrilateral PQRS, taken in order, are in the ratio 3 : 7 : 6 : 4 then PQRS is a

(a) rhombus (b) parallelogram (c) trapezium (d) kite

9. If a quadrilateral has two adjacent sides equal and the other two sides equal then it is called

(a) parallelogram (b) square (c) rectangle (d) kite

10. The interior angle of a regular polygon exceeds the exterior angle by $140°$. Which one of the following is the number of sides in the polygon?

(a) 15 (b) 16 (c) 18 (d) 20

11. The angles of a pentagon in degree are $x°, (x+20)°, (x+40)°, (x+60)°$ and $(x+80)°$. Measure of the largest angle is

(a) $78°$ (b) $148°$ (c) $68°$ (d) $158°$

12. In a square *ABCD*, the diagonals bisect at *O*. Then triangle *AOB* is

(a) an equilateral triangle (b) an isosceles but not a right angled triangle

(c) a right angled but not an isosceles triangle (d) an isosceles right angled triangle

Q.2. *Subjective questions*:

1. In parallelogram DEFG. $\angle E = 70°$. What is the measure of $\angle F$ in degrees?

Ans. ……

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2. The angles of a quadrilateral are $x°$, $x-10°$, $x+30°$ and $2x°$. Find the greatest angle.

Ans. ……

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3. In a Rhombus *ABCD*. if $AB = AC$, then find the measure of $\angle BCD$.

Ans. ……

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4. In a parallelogram ABCD, if $AB = 2x+5$, and $BC = 3x-4$ then find the ratio of AB : BC.

Ans. ……

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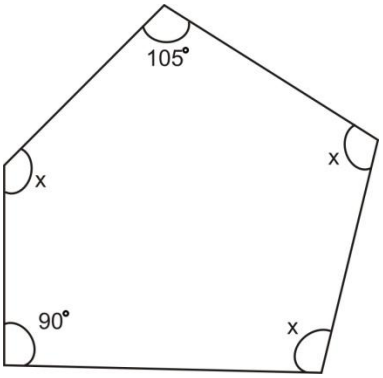
5. Find the value of x in the polygon:



Ans. ……

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