

## Chapter 5: Understanding Quadrilaterals & Practical Geometry

NCERT Exemplar · Class 8 · Maths

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### Questions

#### Question 1

If three angles of a quadrilateral are each equal to  $75^\circ$ , the fourth angle is

(a)  $150^\circ$  (b)  $135^\circ$  (c)  $45^\circ$  (d)  $75^\circ$

#### Solution

**Solution:-**

(b)  $135^\circ$

We know that, sum of interior angles of quadrilateral is equal to  $360^\circ$ .

From the question it is given that, three angles of a quadrilateral are each equal to  $75^\circ$ .

Let us assume the fourth angle be  $x$ .

Then,  $75^\circ + 75^\circ + 75^\circ + x = 360^\circ$

$$225 + x = 360^\circ$$

$$x = 360^\circ - 225$$

$$x = 135^\circ$$

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#### Question 2

For which of the following, diagonals bisect each other?

(a) Square (b) Kite (c) Trapezium (d) Quadrilateral

**Solution****Solution:-**

(a) Square

**Question 3**

For which of the following figures, all angles are equal?

(a) Rectangle (b) Kite (c) Trapezium (d) Rhombus

**Solution****Solution:-**

(a) Rectangle



So, in rectangle all angles are equal to  $90^\circ$ .

**Question 4**

For which of the following figures, diagonals are perpendicular to each other?

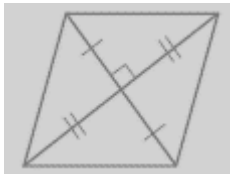
(a) Parallelogram (b) Kite

(c) Trapezium (d) Rectangle

**Solution****Solution:-**

(b) Kite

In kite, diagonals are perpendicular to each other is as shown in the figure below.

**Question 5**

For which of the following figures, diagonals are equal?

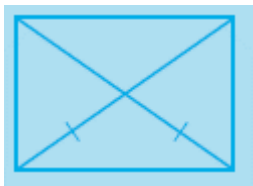
- (a) Trapezium (b) Rhombus  
(c) Parallelogram (d) Rectangle

**Solution**

**Solution:-**

- (d) Rectangle

For rectangle, diagonals are equal is as shown in the figure below.

**Question 6**

Which of the following figures satisfy the following properties?

- All sides are congruent.
- All angles are right angles.
- Opposite sides are parallel.



(a) P



(b) Q



(c) R



(d) S

**Solution****Solution:-**

(c) R

So, square has all sides are congruent, all angles are right angles and opposite sides are parallel.

**Question 7**

Which of the following figures satisfy the following property?

– Has two pairs of congruent adjacent sides.



(a) P



(b) Q



(c) R



(d) S

**Solution****Solution:-**

(c) R

**Question 8**

Which of the following figures satisfy the following property?

– Only one pair of sides are parallel.



(a) P



(b) Q



(c) R



(d) S

**Solution****Solution:-**

(a) P

By observing the above figure we can able say that trapezium has only one pair of sides are parallel.

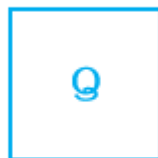
**Question 9**

Which of the following figures do not satisfy any of the following properties?

- All sides are equal.
- All angles are right angles.
- Opposite sides are parallel.



(a) P



(b) Q



(c) R



(d) S

**Solution****Solution:-**

(a) P

By observing the above figure we can able say that trapezium do not satisfy any of the properties mentioned in the question.

**Question 10**

Which of the following properties describe a trapezium?

A.

A pair of opposite sides is parallel.

B.

The diagonals bisect each other.

C.

The diagonals are perpendicular to each other.

D.

The diagonals are equal.

### Solution

**Solution:-**

(a) A pair of opposite sides is parallel.

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### Question 11

Which of the following is a property of a parallelogram?

A.

Opposite sides are parallel.

B.

The diagonals bisect each other at right angles.

C.

The diagonals are perpendicular to each other.

D.

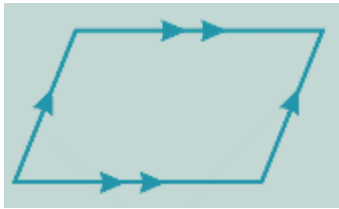
All angles are equal.

### Solution

**Solution:-**

(a) Opposite sides are parallel.

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### Question 12

12. What is the maximum number of obtuse angles that a quadrilateral can have?

- (a) 1 (b) 2 (c) 3 (d) 4

### Solution

**Solution:-**

- (c) 3

As we know that, obtuse angle is an angle between  $90^\circ$  to  $180^\circ$ .

The sum of the interior angles of a quadrilateral is equal to  $360^\circ$ . So all the angles can't be obtuse since then the sum will more than  $360^\circ$ . Therefore a maximum of 3 obtuse angles that a quadrilateral have.

### Question 13

How many non-overlapping triangles can we make in a  $n$ -gon (polygon having  $n$  sides), by joining the vertices?

- (a)  $n - 1$  (b)  $n - 2$  (c)  $n - 3$  (d)  $n - 4$

### Solution

**Solution:-**

- (b)  $n - 2$

### Question 14

What is the sum of all the angles of a pentagon?

- (a)  $180^\circ$  (b)  $360^\circ$  (c)  $540^\circ$  (d)  $720^\circ$

## Solution

### Solution:-

(c)  $540^{\circ}$

We know that, the sum of all the angles of a polygon is  $(n - 2) \times 180^{\circ}$ .

Where 'n' is the number of sides in the polygon,

Then, pentagon has 5 sides, i.e.  $n = 5$

So,  $(n - 2) \times 180^{\circ}$

$(5 - 2) \times 180^{\circ}$

$3 \times 180^{\circ}$

$540^{\circ}$

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## Question 15

What is the sum of all angles of a hexagon?

(a)  $180^{\circ}$  (b)  $360^{\circ}$  (c)  $540^{\circ}$  (d)  $720^{\circ}$

## Solution

### Solution:-

(d)  $720^{\circ}$

We know that, the sum of all the angles of a polygon is  $(n - 2) \times 180^{\circ}$ .

Where 'n' is the number of sides in the polygon,

Then, hexagon has 6 sides, i.e.  $n = 6$

So,  $(n - 2) \times 180^{\circ}$

$(6 - 2) \times 180^{\circ}$

$4 \times 180^{\circ}$

720°

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### Question 16

If two adjacent angles of a parallelogram are  $(5x - 5)^\circ$  and  $(10x + 35)^\circ$ , then the ratio of these angles is

(a) 1 : 3 (b) 2 : 3 (c) 1 : 4 (d) 1 : 2

### Solution

**Solution:-**

(a) 1: 3

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### Question 17

A quadrilateral whose all sides are equal, opposite angles are equal and the diagonals bisect each other at right angles is a \_\_\_\_\_.

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

### Solution

**Solution:-**

(a) rhombus

A quadrilateral whose all sides are equal, opposite angles are equal and the diagonals bisect each other at right angles is a rhombus.

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### Question 18

A quadrilateral whose opposite sides and all the angles are equal is a

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

### Solution

**Solution:-**

(a) rectangle

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**Question 19**

A quadrilateral whose all sides, diagonals and angles are equal is a

(a) square (b) trapezium (c) rectangle (d) rhombus

**Solution**

**Solution:-**

(a) Square

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**Question 20**

How many diagonals does a hexagon have?

(a) 9 (b) 8 (c) 2 (d) 6

**Solution**

**Solution:-**

(a) 9

We know that,

The number of diagonals in a polygon of  $n$  sides is  $\frac{n(n-3)}{2}$

Where  $n = 6$

Then,

$$= \frac{6 \times (6 - 3)}{2}$$

$$= \frac{6 \times 3}{2}$$

$$= \frac{18}{2}$$

$$= 9$$

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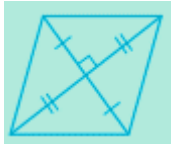
**Question 21**

If the adjacent sides of a parallelogram are equal then parallelogram is a

(a) rectangle (b) trapezium (c) rhombus (d) square

**Solution****Solution:-**

(c) rhombus

**Question 22**

If the diagonals of a quadrilateral are equal and bisect each other, then the quadrilateral is a

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

**Solution****Solution:-**

(b) rectangle

**Question 23**

The sum of all exterior angles of a triangle is

(a)  $180^\circ$  (b)  $360^\circ$  (c)  $540^\circ$  (d)  $720^\circ$

**Solution****Solution:-**(b)  $360^\circ$ 

The sum of all exterior angles of a triangle is  $360^\circ$

**Question 24**

Which of the following is an equiangular and equilateral polygon?

(a) Square (b) Rectangle (c) Rhombus (d) Right triangle

## Solution

### Solution:-

(a) Square

Square is an equiangular and equilateral polygon.

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## Question 25

Which one has all the properties of a kite and a parallelogram?

(a) Trapezium (b) Rhombus (c) Rectangle (d) Parallelogram

## Solution

### Solution:-

(b) Rhombus

Rhombus has all the properties of a kite and a parallelogram

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## Question 26

The angles of a quadrilateral are in the ratio 1 : 2 : 3 : 4. The smallest angle is

(a)  $72^\circ$  (b)  $144^\circ$  (c)  $36^\circ$  (d)  $18^\circ$

## Solution

### Solution:-

(c)  $36^\circ$

We know that, sum of all interior angle of quadrilaterals is equal to  $360^\circ$ .

Let us assume the angles be  $x$ ,  $2x$ ,  $3x$ , and  $4x$

Then,

$$x + 2x + 3x + 4x = 360^\circ$$

$$10x = 360^\circ$$

$$x = 360/10$$

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$$x = 36$$

Therefore the angles are  $x = 36^\circ$

$$2x = 2 \times 36 = 72^\circ$$

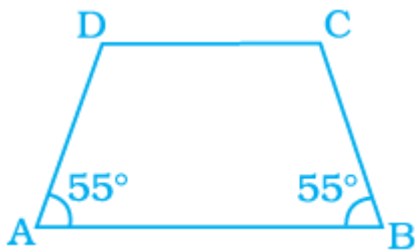
$$3x = 3 \times 36 = 108^\circ$$

$$4x = 4 \times 36 = 144^\circ$$

### Question 27

In the trapezium ABCD, the measure of  $\angle D$  is

(a)  $55^\circ$  (b)  $115^\circ$  (c)  $135^\circ$  (d)  $125^\circ$



### Solution

**Solution:-**

(d)  $125^\circ$

By observing the given figure  $\angle D$  and  $\angle A$  are supplementary.

We know that, sum of supplementary angle is equal to  $180^\circ$ .

$$\text{Then, } \angle D + \angle A = 180^\circ$$

$$\angle D + 55^\circ = 180^\circ$$

$$\angle D = 180^\circ - 55^\circ$$

$$\angle D = 125^\circ$$

### Question 28

A quadrilateral has three acute angles. If each measures  $80^\circ$ , then the measure of the fourth angle is

(a)  $150^\circ$  (b)  $120^\circ$  (c)  $105^\circ$  (d)  $140^\circ$

### Solution

**Solution:-**

(b)  $120^\circ$

We know that, sum of all interior angle of quadrilaterals is equal to  $360^\circ$ .

Let us assume the fourth angle be x

Then,

$$80^\circ + 80^\circ + 80^\circ + x = 360^\circ$$

$$240^\circ + x = 360^\circ$$

$$x = 360^\circ - 240^\circ$$

$$x = 120^\circ$$

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### Question 29

The number of sides of a regular polygon where each exterior angle has a measure of  $45^\circ$  is

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

### Solution

**Solution:-**

(a) 8

Now let us assume number of sides of a regular polygon be n.

WKT, sum of all exterior angles of all polygons is equal to  $360^\circ$ .

Form the question it is given that each exterior angle has a measure of  $45^\circ$ .

Then,

$$n \times 45^\circ = 360^\circ$$

$$n = 360^\circ / 45^\circ$$

$$n = 8$$

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### Question 30

In a parallelogram PQRS, if  $\angle P = 60^\circ$ , then other three angles are

(a)  $45^\circ, 135^\circ, 120^\circ$  (b)  $60^\circ, 120^\circ, 120^\circ$

(c)  $60^\circ, 135^\circ, 135^\circ$  (d)  $45^\circ, 135^\circ, 135^\circ$

### Solution

**Solution:-**

(b)  $60^\circ, 120^\circ, 120^\circ$

In parallelogram  $\angle P$  and  $\angle Q$  are supplementary.

We know that, sum of supplementary angle is equal to  $180^\circ$ .

$$\text{Then, } \angle P + \angle Q = 180^\circ$$

$$\angle 60^\circ + \angle Q = 180^\circ$$

$$\angle P = 180^\circ - 60^\circ$$

$$\angle P = 120^\circ$$

And also, opposite angles  $\angle P$  and  $\angle R$  are equal in parallelogram.

$$\text{So, } \angle P = \angle R = 60^\circ$$

$$\angle Q = \angle S = 120^\circ$$

Therefore, the other three angles of parallelograms are  $60^\circ, 120^\circ$  and  $120^\circ$ .

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### Question 31

If two adjacent angles of a parallelogram are in the ratio 2 : 3, then the measure of angles are

(a)  $72^\circ, 108^\circ$  (b)  $36^\circ, 54^\circ$  (c)  $80^\circ, 120^\circ$  (d)  $96^\circ, 144^\circ$

### Solution

**Solution:-**

(a)  $72^\circ$ ,  $108^\circ$

We know that, sum of adjacent angles of a parallelogram =  $180^\circ$

Let us assume two angles be  $2x$  and  $3x$

Then,

$$2x + 3x = 180^\circ$$

$$5x = 180^\circ$$

$$x = 180^\circ/5$$

$$x = 36^\circ$$

Therefore the two angles are  $2x = 2 \times 36 = 72^\circ$

$$3x = 3 \times 36 = 108^\circ$$

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### Question 32

If PQRS is a parallelogram, then  $\angle P - \angle R$  is equal to

(a)  $60^\circ$  (b)  $90^\circ$  (c)  $80^\circ$  (d)  $0^\circ$

### Solution

**Solution:-**

(d)  $0^\circ$

We know that opposite angles  $\angle P$  and  $\angle R$  are equal in parallelogram.

$$\text{So, } \angle P - \angle R = 0^\circ$$

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### Question 33

The sum of adjacent angles of a parallelogram is

(a)  $180^\circ$  (b)  $120^\circ$  (c)  $360^\circ$  (d)  $90^\circ$

### Solution

**Solution:-**

(a)  $180^\circ$

### Question 34

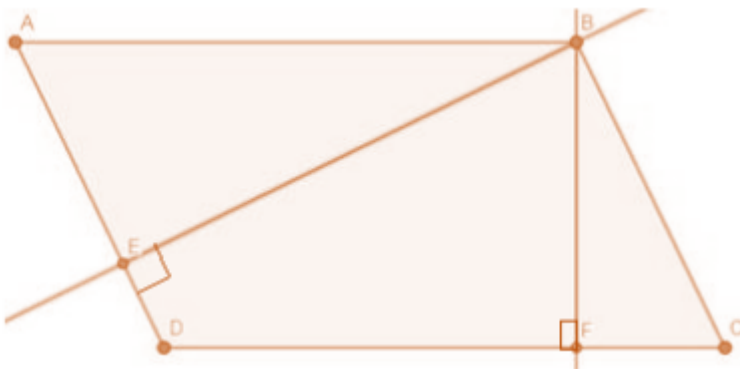
The angle between the two altitudes of a parallelogram through the same vertex of an obtuse angle of the parallelogram is  $30^\circ$ . The measure of the obtuse angle is

(a)  $100^\circ$  (b)  $150^\circ$  (c)  $105^\circ$  (d)  $120^\circ$

### Solution

**Solution:-**

(b)  $150^\circ$



ABCD is a parallelogram.

From the question it is given that,  $\angle EBF = 30^\circ$

WKT, sum of interior angles of a quadrilateral =  $360^\circ$

Then,

$$\angle EBF + \angle BED + \angle EDF + \angle DFB = 360^\circ$$

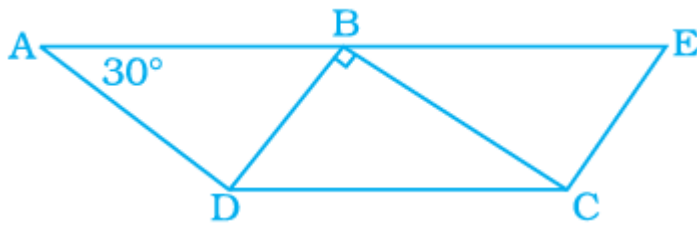
$$\angle EDF = 360^\circ - (90^\circ + 90^\circ + 30^\circ)$$

$$\angle EDF = 150^\circ \text{ which is an obtuse angle.}$$

### Question 35

In the given figure, ABCD and BDCE are parallelograms with common base DC. If  $BC \perp BD$ , then  $\angle BEC =$

(a)  $60^\circ$  (b)  $30^\circ$  (c)  $150^\circ$  (d)  $120^\circ$



### Solution

**Solution:-**

(a)  $60^\circ$

From the given figure,

$$\angle BAD = 30^\circ$$

$$\angle BCD = 30^\circ \dots [\because \text{opposite angles of parallelogram are equal}]$$

Now, let us consider the triangle CBD

$$\text{From angle sum property, } \angle DBC + \angle BCD + \angle CDB = 180^\circ$$

$$90^\circ + 30^\circ + \angle CDB = 180^\circ$$

$$120^\circ + \angle CDB = 180^\circ$$

$$\angle CDB = 180^\circ - 120^\circ$$

$$\angle CDB = 60^\circ$$

$$\therefore \angle BEC = 60^\circ, \text{ because opposite angles of parallelogram are equal.}$$

### Question 36

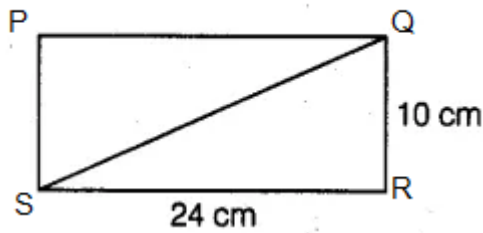
Length of one of the diagonals of a rectangle whose sides are 10 cm and 24 cm is

(a) 25 cm (b) 20 cm (c) 26 cm (d) 3.5 cm

### Solution

**Solution:-**

(c) 26 cm



PQRS is a rectangle,

Where  $SR = 24\text{ cm}$ ,  $QR = 10\text{ cm}$

Now, consider the triangle QRS

From the rule of Pythagoras theorem,

$$QS^2 = SR^2 + QR^2$$

$$QS^2 = 24^2 + 10^2$$

$$QS^2 = 576 + 100$$

$$QS^2 = 676$$

$$QS = \sqrt{676}$$

$$QS = 26\text{ cm}$$

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### Question 37

If the adjacent angles of a parallelogram are equal, then the parallelogram is a

(a) rectangle (b) trapezium (c) rhombus (d) any of the three

### Solution

**Solution:-**

(a) rectangle

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### Question 38

Which of the following can be four interior angles of a quadrilateral?

(a)  $140^\circ$ ,  $40^\circ$ ,  $20^\circ$ ,  $160^\circ$  (b)  $270^\circ$ ,  $150^\circ$ ,  $30^\circ$ ,  $20^\circ$

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(c)  $40^\circ$ ,  $70^\circ$ ,  $90^\circ$ ,  $60^\circ$  (d)  $110^\circ$ ,  $40^\circ$ ,  $30^\circ$ ,  $180^\circ$

### Solution

**Solution:-**

(a)  $140^\circ$ ,  $40^\circ$ ,  $20^\circ$ ,  $160^\circ$

We know that sum of interior angles of quadrilaterals is  $360^\circ$ .

$$\text{So, } 140^\circ + 40^\circ + 20^\circ + 160^\circ = 360^\circ$$

In option (d) has angle sum equal to  $360^\circ$ , but one angle is  $180^\circ$  if it is considered then the quadrilateral becomes a triangle.

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### Question 39

The sum of angles of a concave quadrilateral is

(a) more than  $360^\circ$  (b) less than  $360^\circ$

(c) equal to  $360^\circ$  (d) twice of  $360^\circ$

### Solution

**Solution:-**

(c) equal to  $360^\circ$

We know that sum of angles of concave and convex quadrilateral is equal to  $360^\circ$ .

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### Question 40

Which of the following can never be the measure of exterior angle of a regular polygon?

(a)  $22^\circ$  (b)  $36^\circ$  (c)  $45^\circ$  (d)  $30^\circ$

### Solution

**Solution:-**

(a)  $22^\circ$

We know that, Sum of exterior angles of a polygon is equal to  $360^\circ$

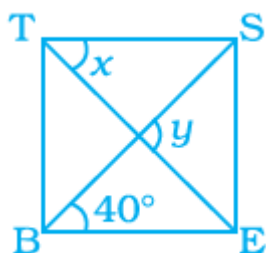
If we divide  $360^\circ$  by any one of the angles must be a whole number since it gives the number of sides.

Then,  $360^\circ$  divide by 22 it gives fraction. So  $22^\circ$  can never be the measure of exterior angle of a regular polygon.

### Question 41

In the figure, BEST is a rhombus, Then the value of  $y - x$  is

- (a)  $40^\circ$  (b)  $50^\circ$  (c)  $20^\circ$  (d)  $10^\circ$



### Solution

**Solution:-**

- (a)  $40^\circ$

From the given figure  $TS \parallel BE$  and also  $BS$  is transversal line.

By the rule of alternate interior angles,  $\angle EBS = \angle BST = 40^\circ$

Then,  $\angle y = 90^\circ \dots [\because \text{diagonal bisect at } 90^\circ]$

Consider triangle TSO,

By the rule of exterior angle property of triangle

$$\angle STO + \angle TSO = \angle SOE$$

$$x + 40^\circ = 90^\circ$$

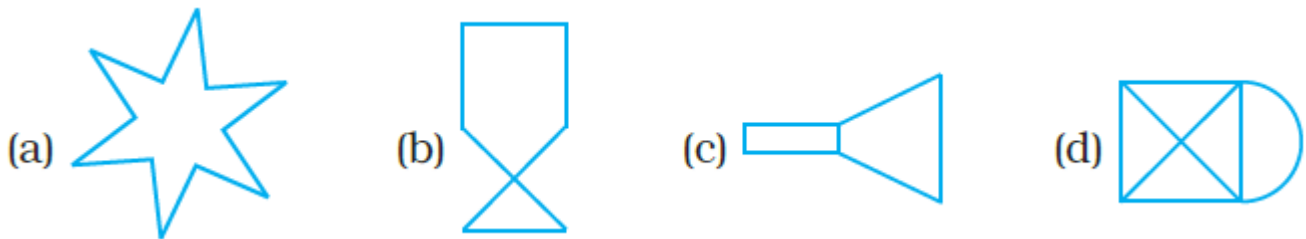
$$x = 90^\circ - 40^\circ$$

$$x = 50^\circ$$

So, the value of  $y - x$  is  $= 90^\circ - 40^\circ = 50^\circ$

**Question 42**

The closed curve which is also a polygon is

**Solution**

**Solution:-**

The closed curve which is also a polygon is figure (a). Because there is no line segments intersect each other.

**Question 43**

Which of the following is not true for an exterior angle of a regular polygon with  $n$  sides?

A.

$$\text{Each exterior angle} = 360^\circ/n$$

B.

$$\text{Exterior angle} = 180^\circ - \text{interior angle}$$

C.

$$n = 360^\circ/\text{exterior angle}$$

D.

$$\text{Each exterior angle} = ((n - 2) \times 180^\circ)/n$$

**Solution**

**Solution:-**

(d)  $\text{Each exterior angle} = ((n - 2) \times 180^\circ)/n$

Because each exterior angle is equal to  $360^\circ/n$

#### Question 44

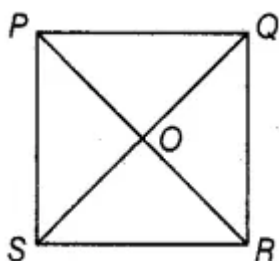
PQRS is a square. PR and SQ intersect at O. Then  $\angle POQ$  is a

- (a) Right angle (b) Straight angle  
(c) Reflex angle (d) Complete angle

#### Solution

**Solution:-**

- (a) Right angle



The diagonals in the square intersect each other at right angle i.e.  $90^\circ$

Therefore,  $\angle POQ$  is a right angle.

#### Question 45

Two adjacent angles of a parallelogram are in the ratio 1:5. Then all the angles of the parallelogram are

- (a)  $30^\circ, 150^\circ, 30^\circ, 150^\circ$  (b)  $85^\circ, 95^\circ, 85^\circ, 95^\circ$   
(c)  $45^\circ, 135^\circ, 45^\circ, 135^\circ$  (d)  $30^\circ, 180^\circ, 30^\circ, 180^\circ$

#### Solution

**Solution:-**

- (a)  $30^\circ, 150^\circ, 30^\circ, 150^\circ$

We know that, sum of adjacent angles of a parallelogram =  $180^\circ$

Let us assume two angles be  $x$  and  $5x$

Then,

$$x + 5x = 180^\circ$$

$$6x = 180^\circ$$

$$x = 180^\circ/6$$

$$x = 30^\circ$$

Therefore the two angles are  $x = 30^\circ$

$$5x = 5 \times 30 = 150^\circ$$

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### Question 46

A parallelogram PQRS is constructed with sides  $QR = 6$  cm,  $PQ = 4$  cm and  $\angle PQR = 90^\circ$ . Then PQRS is a

(a) square (b) rectangle (c) rhombus (d) trapezium

### Solution

**Solution:-**

(b) rectangle

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### Question 47

The angles P, Q, R and S of a quadrilateral are in the ratio 1:3:7:9. Then PQRS is a

(a) parallelogram (b) trapezium with  $PQ \parallel RS$

(c) trapezium with  $QR \parallel PS$  (d) kite

### Solution

**Solution:-**

(b) trapezium with  $PQ \parallel RS$

We know that, sum of all interior angle of quadrilaterals is equal to  $360^\circ$ .

Let us assume the angles be  $x$ ,  $3x$ ,  $7x$ , and  $9x$

Then,

$$x + 3x + 7x + 9x = 360^\circ$$

$$20x = 360^\circ$$

$$x = 360/20$$

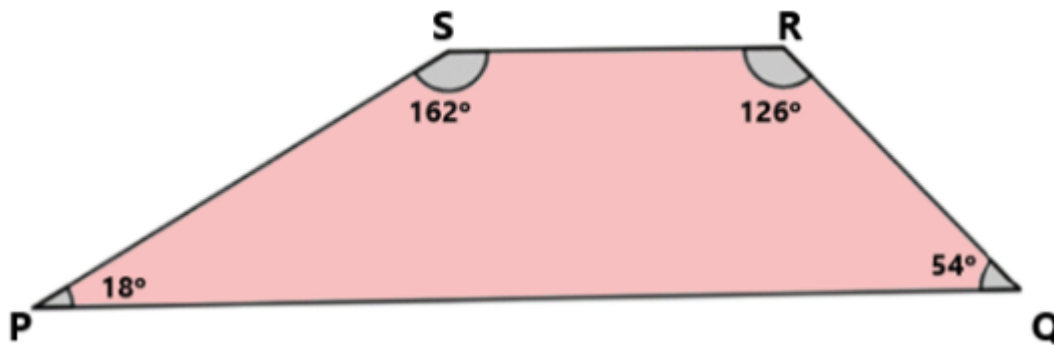
$$x = 18$$

Therefore the angles are  $P = x = 18^\circ$

$$Q = 3x = 3 \times 18 = 54^\circ$$

$$R = 7x = 7 \times 18 = 126^\circ$$

$$S = 9x = 9 \times 18 = 162^\circ$$



Therefore,  $PQ \parallel RS$

#### Question 48

PQRS is a trapezium in which  $PQ \parallel SR$  and  $\angle P = 130^\circ$ ,  $\angle Q = 110^\circ$ . Then  $\angle R$  is equal to: (a)  $70^\circ$  (b)  $50^\circ$  (c)  $65^\circ$  (d)  $55^\circ$

#### Solution

**Solution:-**

(a)  $70^\circ$

We know that, the adjacent angles in a trapezium are supplementary.

$$\angle R + \angle Q = 180^\circ$$

$$\angle R + 110^\circ = 180^\circ$$

$$\angle R = 180^\circ - 110^\circ$$

$$\angle R = 70^\circ$$

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**Question 49**

The number of sides of a regular polygon whose each interior angle is of  $135^\circ$  is

(a) 6 (b) 7 (c) 8 (d) 9

**Solution**

**Solution:-**

Now let us assume number of sides of a regular polygon be  $n$ .

WKT, sum of all exterior angles of all polygons is equal to  $360^\circ$ .

Form the question it is given that each exterior angle has a measure of  $45^\circ$ .

Then,

$$n = 360^\circ / \text{Exterior angle}$$

$$n = 360^\circ / (180^\circ - 135^\circ)$$

$$n = 360^\circ / 45^\circ$$

$$n = 8$$

---

**Question 50**

If a diagonal of a quadrilateral bisects both the angles, then it is a

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

**Solution**

**Solution:-**

(c) rhombus

---

**Question 51**

To construct a unique parallelogram, the minimum number of measurements required is

- (a) 2 (b) 3 (c) 4 (d) 5

**Solution**

**Solution:-**

- (b) 3

To construct a unique parallelogram, we need the measurement of two adjacent sides of the parallelogram and the angle between them.

---

**Question 52**

To construct a unique rectangle, the minimum number of measurements required is

- (a) 4 (b) 3 (c) 2 (d) 1

**Solution**

**Solution:-**

- (c) 2

To construct a unique rectangle, we need only the measurement of the length and the breadth of a rectangle.

**In questions 53 to 91, fill in the blanks to make the statements true.**

---

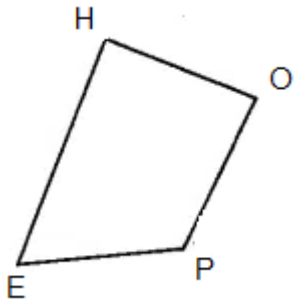
**Question 53**

In quadrilateral HOPE, the pairs of opposite sides are \_\_\_\_\_.

**Solution**

**Solution:-**

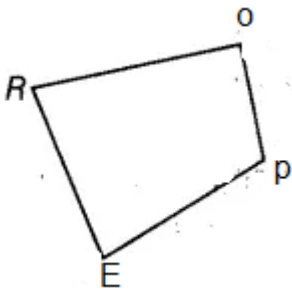
In quadrilateral HOPE, the pairs of opposite sides are HO and PE, HE and OP.

**Question 54**

In quadrilateral ROPE, the pairs of adjacent angles are \_\_\_\_\_.

**Solution****Solution:-**

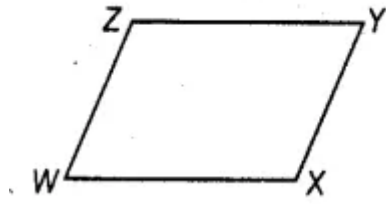
In quadrilateral ROPE, the pairs of adjacent angles are RO and OP, OP and PE, PE and ER, ER and RO.

**Question 55**

In quadrilateral WXYZ, the pairs of opposite angles are \_\_\_\_\_.

**Solution****Solution:-**

In quadrilateral WXYZ, the pairs of opposite angles are  $\angle W$  and  $\angle Y$ ,  $\angle X$  and  $\angle Z$ .

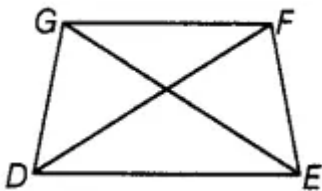
**Question 56**

The diagonals of the quadrilateral DEFG are \_\_\_\_\_ and \_\_\_\_\_.

**Solution**

**Solution:-**

The diagonals of the quadrilateral DEFG are DF and EG.

**Question 57**

The sum of all \_\_\_\_\_ of a quadrilateral is  $360^\circ$ .

**Solution**

**Solution:-**

The sum of all angles of a quadrilateral is  $360^\circ$ .

---

**Question 58**

The measure of each exterior angle of a regular pentagon is \_\_\_\_\_.

**Solution**

**Solution:-**

The measure of each exterior angle of a regular pentagon is  $72^\circ$ .

---

We know that, the measure of each exterior angle of a regular pentagon is  $360^\circ/n$ .

Where 'n' is the number of sides in the polygon,

Then, pentagon has 5 sides, i.e.  $n = 5$

So,  $360^\circ/5$

$= 72^\circ$

---

### Question 59

Sum of the angles of a hexagon is \_\_\_\_\_.

### Solution

**Solution:-**

Sum of the angles of a hexagon is  $720^\circ$ .

We know that, the sum of all the angles of a polygon is  $(n - 2) \times 180^\circ$ .

Where 'n' is the number of sides in the polygon,

Then, hexagon has 6 sides, i.e.  $n = 6$

So,  $(n - 2) \times 180^\circ$

$(6 - 2) \times 180^\circ$

$4 \times 180^\circ$

$720^\circ$

---

### Question 60

The measure of each exterior angle of a regular polygon of 18 sides is \_\_\_\_\_.

### Solution

**Solution:-**

The measure of each exterior angle of a regular polygon of 18 sides is  $20^\circ$ .

We know that, the measure of each exterior angle of a regular polygon is  $360^\circ/n$ .

---

Where 'n' is the number of sides in the polygon,

Then, polygon has 18 sides, i.e.  $n = 18$

So,  $360^\circ/18$

$= 20^\circ$

---

### Question 61

The number of sides of a regular polygon, where each exterior angle has a measure of  $36^\circ$ , is \_\_\_\_\_.

### Solution

**Solution:-**

The number of sides of a regular polygon, where each exterior angle has a measure of  $36^\circ$ , is 10.

We know that, the measure of each exterior angle of a regular polygon is  $360^\circ/n$ .

Where 'n' is the number of sides in the polygon,

Then, exterior angle has a measure of  $36^\circ$

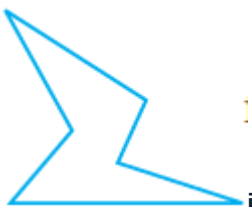
So,  $36^\circ = 360^\circ/n$

$n = 360^\circ/36^\circ$

$n = 10$

---

### Question 62



is a closed curve entirely made up of line segments. The another name for this shape is \_\_\_\_\_.

### Solution

**Solution:-**

Concave polygon.

Concave polygon has more than one reflex angle.

---

### Question 63

A quadrilateral that is not a parallelogram but has exactly two opposite angles of equal measure is \_\_\_\_\_.

### Solution

**Solution:-**

A quadrilateral that is not a parallelogram but has exactly two opposite angles of equal measure is kite.

---

### Question 64

The measure of each angle of a regular pentagon is \_\_\_\_\_.

### Solution

**Solution:-**

The measure of each angle of a regular pentagon is  $108^\circ$ .

We know that, the sum of all the angles of a polygon is  $(n - 2) \times 180^\circ$ .

Where 'n' is the number of sides in the polygon,

Then, pentagon has 5 sides, i.e.  $n = 5$

So,  $(n - 2) \times 180^\circ$

$(5 - 2) \times 180^\circ$

$3 \times 180^\circ$

$540^\circ$

Measure of each angle =  $540^\circ/5 = 108^\circ$

---

### Question 65

The name of three-sided regular polygon is \_\_\_\_\_.

## Solution

### Solution:-

The name of three-sided regular polygon is an equilateral triangle.

---

## Question 66

The number of diagonals in a hexagon is \_\_\_\_\_.

## Solution

### Solution:-

The number of diagonals in a hexagon is 9.

We know that,

The number of diagonals in a polygon of  $n$  sides is  $n(n - 3)/2$

Where  $n = 6$

Then,

$$= 6 \times (6 - 3)/2$$

$$= 6 \times 3/2$$

$$= 18/2$$

$$= 9$$

---

## Question 67

A polygon is a simple closed curve made up of only \_\_\_\_\_.

## Solution

### Solution:-

A polygon is a simple closed curve made up of only line segments.

---

## Question 68

A regular polygon is a polygon whose all sides are equal and all \_\_\_\_\_ are equal.

---

## Solution

### Solution:-

A regular polygon is a polygon whose all sides are equal and all angles are equal.

---

## Question 69

The sum of interior angles of a polygon of  $n$  sides is \_\_\_\_\_ right angles.

## Solution

### Solution:-

The sum of interior angles of a polygon of  $n$  sides is  $2n - 4$  right angles.

---

## Question 70

The sum of all exterior angles of a polygon is \_\_\_\_\_.

## Solution

### Solution:-

The sum of all exterior angles of a polygon is  $360^\circ$ .

---

## Question 71

\_\_\_\_\_ is a regular quadrilateral.

## Solution

### Solution:-

Square is a regular quadrilateral.

All the angles and sides of square are equal.

---

## Question 72

A quadrilateral in which a pair of opposite sides is parallel is \_\_\_\_\_.

**Solution****Solution:-**

A quadrilateral in which a pair of opposite sides is parallel is trapezium.

**Question 73**

If all sides of a quadrilateral are equal, it is a \_\_\_\_\_.

**Solution****Solution:-**

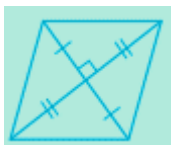
If all sides of a quadrilateral are equal, it is a rhombus, square.

**Question 74**

In a rhombus diagonals intersect at \_\_\_\_\_ angles.

**Solution****Solution:-**

In a rhombus diagonals intersect at right angles.

**Question 75**

\_\_\_\_\_ measurements can determine a quadrilateral uniquely.

**Solution****Solution:-**

5 measurements can determine a quadrilateral uniquely.

5 measurements are four sides one angle or 3 sides and 2 included angle.

---

### Question 76

A quadrilateral can be constructed uniquely if its three sides and \_\_\_\_\_ angles are given.

### Solution

**Solution:-**

A quadrilateral can be constructed uniquely if its three sides and 2 included angles are given.

---

### Question 77

A rhombus is a parallelogram in which \_\_\_\_\_ sides are equal.

### Solution

**Solution:-**

A rhombus is a parallelogram in which all sides are equal.

---

### Question 78

The measure of \_\_\_\_\_ angle of concave quadrilateral is more than  $180^\circ$ .

### Solution

**Solution:-**

The measure of 1 angle of concave quadrilateral is more than  $180^\circ$ .

---

### Question 79

A diagonal of a quadrilateral is a line segment that joins two \_\_\_\_\_ vertices of the quadrilateral.

### Solution

**Solution:-**

A diagonal of a quadrilateral is a line segment that joins two opposite vertices of the quadrilateral.

---

### Question 80

The number of sides in a regular polygon having measure of an exterior angle as  $72^\circ$  is \_\_\_\_\_.

### Solution

#### Solution:-

The number of sides in a regular polygon having measure of an exterior angle as  $72^\circ$  is 5.

We know that, the measure of each exterior angle of a regular polygon is  $360^\circ/n$ .

Where 'n' is the number of sides in the polygon,

Then, pentagon has exterior angle =  $72^\circ$

So,  $72^\circ = 360^\circ/n$

$n = 360^\circ/72^\circ$

$n = 5$

---

### Question 81

If the diagonals of a quadrilateral bisect each other, it is a \_\_\_\_\_.

### Solution

#### Solution:-

If the diagonals of a quadrilateral bisect each other, it is a Parallelogram.

---

### Question 82

The adjacent sides of a parallelogram are 5 cm and 9 cm. Its perimeter is \_\_\_\_\_.

### Solution

#### Solution:-

The adjacent sides of a parallelogram are 5 cm and 9 cm. Its perimeter is 28 cm.

---

We know that, perimeter of Parallelogram =  $2 \times$  (sum of lengths of adjacent sides)

$$= 2 \times (5 + 9)$$

$$= 2 \times 14$$

$$= 28 \text{ cm}$$

---

**Question 83**

A nonagon has \_\_\_\_\_ sides.

**Solution**

**Solution:-**

A nonagon has 9 sides.

---

**Question 84**

Diagonals of a rectangle are \_\_\_\_\_.

**Solution**

**Solution:-**

Diagonals of a rectangle are equal.



---

**Question 85**

A polygon having 10 sides is known as \_\_\_\_\_.

**Solution**

**Solution:-**

A polygon having 10 sides is known as Decagon.

**Question 86**

A rectangle whose adjacent sides are equal becomes a \_\_\_\_\_.

**Solution****Solution:-**

A rectangle whose adjacent sides are equal becomes a Square.

---

**Question 87**

If one diagonal of a rectangle is 6 cm long, length of the other diagonal is \_\_\_\_\_.

**Solution****Solution:-**

If one diagonal of a rectangle is 6 cm long, length of the other diagonal is 6cm.

Because, diagonals of a rectangle are equal.

---

**Question 88**

Adjacent angles of a parallelogram are \_\_\_\_\_.

**Solution****Solution:-**

Adjacent angles of a parallelogram are supplementary.

---

**Question 89**

If only one diagonal of a quadrilateral bisects the other, then the quadrilateral is known as \_\_\_\_\_.

**Solution****Solution:-**

If only one diagonal of a quadrilateral bisects the other, then the quadrilateral is known as kite.

---

**Question 90**

In trapezium ABCD with  $AB \parallel CD$ , if  $\angle A = 100^\circ$ , then  $\angle D =$  \_\_\_\_\_.

**Solution****Solution:-**

In trapezium ABCD with  $AB \parallel CD$ , if  $\angle A = 100^\circ$ , then  $\angle D = 80^\circ$ .

We know that, in trapezium adjacent angles of non – parallel sides are supplementary.

$$\angle A + \angle D = 180^\circ$$

$$100^\circ + \angle D = 180^\circ$$

$$\angle D = 180^\circ - 100^\circ$$

$$\angle D = 80^\circ$$

**Question 91**

The polygon in which sum of all exterior angles is equal to the sum of interior angles is called \_\_\_\_\_.

**Solution****Solution:-**

The polygon in which sum of all exterior angles is equal to the sum of interior angles is called Quadrilateral.

In questions 92 to 131 state whether the statements are true (T) or (F) false.

**Question 92**

All angles of a trapezium are equal.

**Solution****Solution:-**

False.

Because, all angles of a trapezium are not equal.

---

### Question 93

**All squares are rectangles.**

#### Solution

**Solution:-**

True.

All squares are rectangles, because it has 4 right angles.

---

### Question 94

**All kites are squares.**

#### Solution

**Solution:-**

False.

In kites all the angles are not equal to  $90^\circ$  but, in the square all angles are equal to  $90^\circ$ .

---

### Question 95

**All rectangles are parallelograms**

#### Solution

**Solution:-**

True.

Because, all the properties of parallelogram are satisfied by the rectangle.

---

### Question 96

**All rhombuses are squares.**

**Solution****Solution:-**

False.

Because, the angles of rhombus are not equal to  $90^\circ$  so all rhombuses are not squares.

---

**Question 97**

Sum of all the angles of a quadrilateral is  $180^\circ$ .

**Solution****Solution:-**

False.

Sum of all the angles of a quadrilateral is  $360^\circ$ .

---

**Question 98**

A quadrilateral has two diagonals.

**Solution****Solution:-**

True.

---

**Question 99**

Triangle is a polygon whose sum of exterior angles is double the sum of interior angles.

True.



100. is a polygon.

## Solution

### Solution:-

False.

The given figure intersects with itself more than once.

---