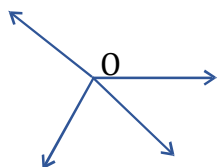


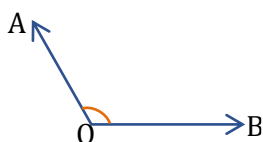
## EXERCISE-01

### Multiple Choice Questions

- $\overline{PQ}$  is perpendicular to  $\overline{RS}$  is symbolically written as  
 (1)  $\overline{PQ} \perp \overline{RS}$  (2)  $\overline{PQ} \parallel \overline{RS}$   
 (3)  $\overline{PQ} \neq \overline{RS}$  (4)  $\overline{PQ} = \overline{RS}$
- The lines which lie on the same plane and do not intersect at any point are called  
 (1) Perpendicular (2) Intersecting  
 (3) Parallel (4) None of these
- Number of angles formed in the given figure is

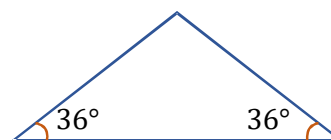


- (1) 4 (2) 12  
 (3) 8 (4) 13
- $\angle AOB$  is a/an \_\_\_\_ angle.



- (1) Acute (2) Right  
 (3) Obtuse (4) None of these
- At 3 O'clock, the angle formed between the two hands of a clock is  
 (1) Right (2) Acute  
 (3) Obtuse (4) Left
- Which of the following statement is false?  
 (1) Using protractor, angle of any measure between  $0^\circ$  and  $180^\circ$  can be drawn.  
 (2) A line has two end points.  
 (3) An angle whose measure is greater than  $90^\circ$  is an obtuse angle.  
 (4) Two coinciding rays with a common end point form an angle of measure  $0^\circ$ .

- At 9 o'clock, the angle formed between the hands of a clock is  
 (1) straight angle (2) reflex angle  
 (3) right angle (4) complete angle
- Measure of an obtuse angle  $x$  is  
 (1)  $0^\circ < x < 90^\circ$   
 (2)  $90^\circ < x < 180^\circ$   
 (3)  $0^\circ < x < 270^\circ$   
 (4)  $x > 0^\circ$  and  $x > 180^\circ$
- A triangle with the sides measuring 5 cm, 6 cm and 4 cm is called  
 (1) equilateral triangle  
 (2) isosceles triangle  
 (3) scalene triangle  
 (4) None of these
- Which of the following best describes the given triangle.



- (1) Equilateral obtuse triangle.  
 (2) Isosceles right triangle.  
 (3) Isosceles obtuse triangle.  
 (4) Isosceles acute triangle.
- The given road sign is an equilateral triangle. What is the measure of each angle?



- (1)  $45^\circ$  (2)  $90^\circ$   
 (3)  $60^\circ$  (4)  $36^\circ$

12. The hands of clock form an acute angle at 2 O'clock. What type of angle do they form at 4 O'clock?

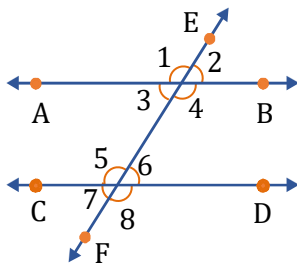
(1) Acute (2) Right  
(3) Obtuse (4) Straight

13. The following statements about  $\triangle ABC$  are true :  $\angle C > \angle B$ ,  $\angle B > \angle A$  and  $\angle A > 40^\circ$ . According to the given statements which of the following are the angle measures of  $\triangle ABC$ ?

(1)  $\angle A = 48^\circ$ ,  $\angle B = 78^\circ$ ,  $\angle C = 54^\circ$   
(2)  $\angle A = 48^\circ$ ,  $\angle B = 54^\circ$ ,  $\angle C = 78^\circ$   
(3)  $\angle A = 36^\circ$ ,  $\angle B = 54^\circ$ ,  $\angle C = 90^\circ$   
(4)  $\angle A = 60^\circ$ ,  $\angle B = 60^\circ$ ,  $\angle C = 60^\circ$

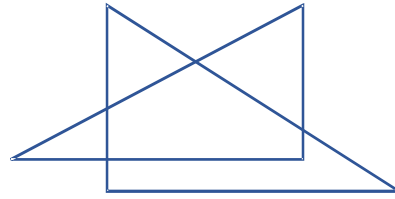
**Direction (Q. 14 to Q.16) : Refer to the given figure for questions.**

Given :  $AB \parallel CD$ .



14. What type of angle is  $\angle 4$  ?  
(1) Acute (2) Right  
(3) Obtuse (4) Straight
15. If  $\angle 2$  is an acute angle, then  $\angle 1$  is  
(1) Acute (2) Right  
(3) Obtuse (4) Straight
16. What type of angle is  $\angle 6$  ?  
(1) Acute (2) Right  
(3) Obtuse (4) Straight

17. How many triangles can be seen in this drawing?

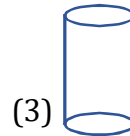
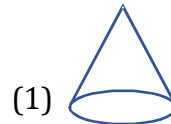


(1) 3 (2) 5  
(3) 6 (4) 7

18. A quadrilateral in which both pairs of opposite sides are equal is a

(1) parallelogram (2) square  
(3) rhombus (4) rectangle

19. Which of the following figure has six faces?



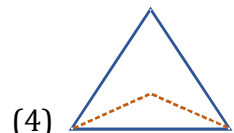
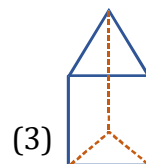
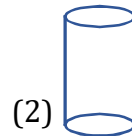
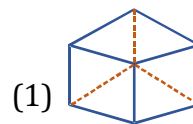
20. A solid object when seen from one side, looks like this.



The same solid, when viewed from top, looks like this.



Which of these shapes could it be ?



21. Which of the following ribbons is the longest?

(1) (2)   
(3) (4)

22. Which term of geometry would you associate with an edge of your book?

- (1) a point
- (2) a line segment
- (3) a plane
- (4) a ray

23. Name the angle formed at each corner of an envelope.

- (1) Acute angle
- (2) Obtuse angle
- (3) Right angle
- (4) Straight angle

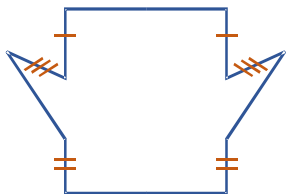
24. The angle formed by the adjacent two fingers of a hand is

- (1) Acute (2) Obtuse
- (3) Right (4) Straight

25. When an arm of an angle is extended to double its length, then the measure of the angle.

- (1) doubles (2) triples
- (3) remains the same (4) becomes half

26. What is true about this figure.

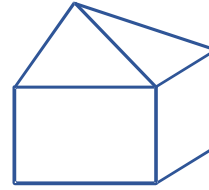


- (1) It is a quadrilateral
- (2) It is a polygon
- (3) It is an octagon
- (4) It is a regular polygon

27. A building designed by an architect has a roof top in the form of a structure that has a vertex, one circular base and a curved surface. It corresponds to the three-dimensional figure.

- (1) cube (2) sphere
- (3) cone (4) cylinder

28. Which two solid shapes have been combined to form this solid shape?



- (1) two pyramids
- (2) a pyramid and a triangular prism
- (3) a cuboid and a triangular prism
- (4) a cuboid and a pyramid

29. Which of the following solid shapes has six rectangular faces?

- (1) cuboid (2) pyramid
- (3) cone (4) triangular prism

30. Parallel lines are \_\_\_\_\_ intersecting lines.

- (1) always (2) never
- (3) sometimes (4) None of these

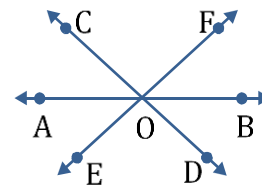
31. Vertically opposite angles are \_\_\_\_\_ right angles.

- (1) always (2) never
- (3) sometimes (4) None of these

32. A scalene triangle can \_\_\_\_\_ be a right triangle.

- (1) always (2) never
- (3) sometimes (4) None of these

33. Which two angles are supplementary if AB, CD and EF are straight lines?



- (1)  $\angle COF$  and  $\angle AOC$
- (2)  $\angle COF$  and  $\angle COE$
- (3)  $\angle COF$  and  $\angle EOD$
- (4)  $\angle COF$  and  $\angle AOE$

34. If two angles of a triangle are  $50^\circ$  and  $60^\circ$ , then the third angle is  
 (1)  $50^\circ$  (2)  $60^\circ$   
 (3)  $70^\circ$  (4)  $90^\circ$
35. A bicycle wheel has 24 spokes. The angle between a pair of adjacent spokes is  
 (1)  $10^\circ$  (2)  $15^\circ$   
 (3)  $24^\circ$  (4)  $7\frac{1}{2}^\circ$

**True or false**

- If an angle is acute it has a measure of  $45^\circ$ .
- An obtuse angled triangle can have more than one obtuse angle.
- Square is a regular quadrilateral.
- Two intersecting lines are always perpendicular.
- The minimum number of sides that a polygon can have is two.

**Fill in the blanks**

- An angle greater than a right angle and less than a straight angle is called an \_\_\_\_\_ angle.

- When the minutes hand of a clock moves from 4 to 7, it has turned through \_\_\_\_\_ degrees.
- A triangle having angles  $80^\circ$ ,  $40^\circ$  and  $60^\circ$  is an \_\_\_\_\_ triangle.
- A polygon bounded by six line segments is called \_\_\_\_\_.
- A parallelogram with all equal sides, but unequal diagonals is a \_\_\_\_\_.

**Match the column**

	Column-I		Column-II
(1)	Straight angle	(a)	Less than one-fourth a revolution
(2)	Right angle	(b)	More than half a revolution and less than a revolution
(3)	Acute angle	(c)	Half of a revolution
(4)	Obtuse angle	(d)	One-fourth a revolution
(5)	Reflex angle	(e)	Between $\frac{1}{4}$ and $\frac{1}{2}$ of a revolution
(6)	Complete	(f)	Four right angles.

# ANSWER KEY

## Multiple choice questions

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	1	3	2	3	1	2	3	2	3	3	3	3	2	3	3
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	1	2	1	2	3	3	2	3	1	3	2	3	4	1	2
Question	31	32	33	34	35										
Answer	3	3	2	3	2										

## True or false

1. False      2. False      3. True      4. False      5. False

## Fill in the blanks

1. Obtuse      2.  $90^\circ$       3. Acute angle      4. Hexagon      5. Rhombus

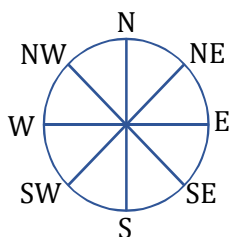
## Match the column

- (1)  $\rightarrow$  c;      (2)  $\rightarrow$  d;      (3)  $\rightarrow$  a;      (4)  $\rightarrow$  e;      (5)  $\rightarrow$  b;      (6)  $\rightarrow$  f

## EXERCISE-02

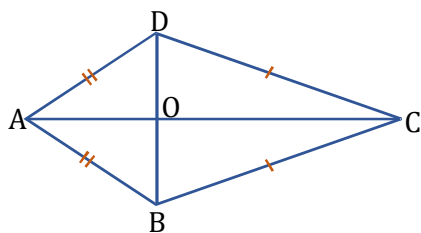
## Very short answer type questions

- Classify the triangles whose angles have measures as under acute, obtuse or right :  
 (i)  $58^\circ, 83^\circ, 39^\circ$  (ii)  $65^\circ, 95^\circ, 20^\circ$   
 (iii)  $30^\circ, 60^\circ, 90^\circ$  (iv)  $109^\circ, 40^\circ, 31^\circ$   
 (v)  $46^\circ, 90^\circ, 44^\circ$  (vi)  $56^\circ, 48^\circ, 76^\circ$
- Classify the following triangles as scalene, isosceles, or equilateral according to the length of their sides.  
 (i) 10 cm, 9 cm, 7 cm  
 (ii) 10 cm, 6 cm, 10 cm  
 (iii) 7 cm, 7 cm, 7 cm  
 (iv) 3 m, 4 m, 5 m
- Find the number of degrees of turn when we turn in a clockwise direction.



- From N to E
- From N to S
- From N to NE
- From NE to W
- From NW to SE
- From NW to SW

- The figure ABCD is a kite.



- Is  $\overline{AD} = \overline{AB}$  ?
- Is  $\angle ADO = \angle ABO$  ?
- Is  $\angle DAO = \angle BAO$  ?
- Is  $\angle AOB = \angle AOD = 90^\circ$  ?

- Two adjacent sides of a parallelogram are equal and the included angle is a right angle. What is the specific name for this figure ?

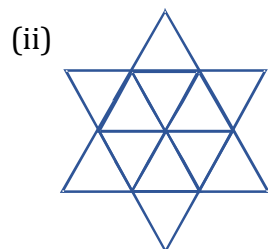
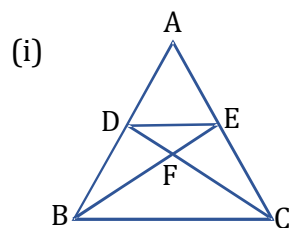
- The three angles of a quadrilateral are  $80^\circ, 70^\circ$ , and  $120^\circ$ . Find the fourth angle.
- Draw a circle with centre O and radius 3.7 cm. Draw a sector having the angle  $72^\circ$ .
- Two adjacent angles of a parallelogram are equal. What is the other name of this parallelogram?

## Short answer type questions

- If you are facing east and turn clockwise through  $270^\circ$ , which direction would you face?
- Answer the following:
  - When the seconds hand has moved from 12 to 6. How many degrees has it turned through?
  - When the seconds hand has moved from 5 to 8, how many degrees has it turned through?
  - The seconds hand is at 10. It turns through  $90^\circ$ . What figure does it reach.
  - What is the time on the clock when the hour hand moves clockwise.
    - $60^\circ$  from 5 O'clock
    - $180^\circ$  from 10 O'clock
    - $270^\circ$  from 12 O'clock
  - Through how many degrees does the minutes hand of a clock turn in:
    - 1 minute
    - 8 minutes
    - $\frac{1}{2}$  hour
    - $\frac{3}{4}$  hour
    - 1 hour
    - $1\frac{1}{2}$  hour
  - Through how many degrees does the hour hand of a clock turn in :
    - 1 minute
    - 10 minutes
    - 30 minutes
    - 2 hours

**Long answer type questions**

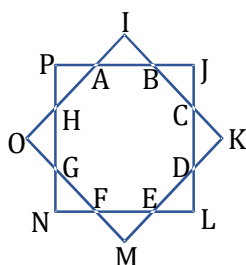
11. How many different triangles are there in each of the following figures ?



12. The diagonals of the quadrilateral divides into two isosceles right triangles. Name the quadrilateral.
13. What type of angle do the hands of a clock make at:
- (i) 9 O'clock                      (ii) 2 O'clock  
(iii) 6 O'clock                  (iv) 8 O'clock
14. What is the size of the reflex angle between the hands of a clock at
- (i) 3 O'clock                      (ii) 5 O'clock  
(iii) 7 O'clock
15. Given below is a rectangle ABCD.  $AB = 8$  cm,  $BC = 5$  cm. Find  $\angle BCD$ , side CD and side AD.



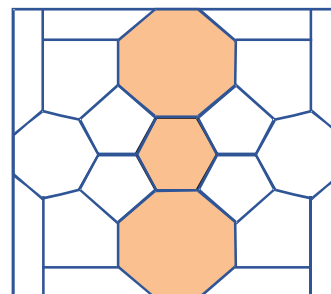
16. The perimeter (sum of all sides) of a regular octagons is 64 cm. Equilateral triangles stand on each side of the octagon.



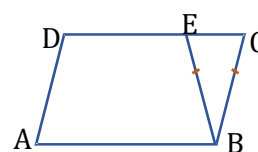
Calculate the distance :

$$(AI + IB + BJ + JC + CK + KD + DL + LE + EM + MF + FN + NG + GO + OH + HP + PA)$$

17. In this figure :



- (i) How many pentagons are there ?  
(ii) How many hexagons are there ?  
(iii) How many heptagons are there ?  
(iv) How many octagons are there ?
18. If there are 36 spokes in a bicycle wheel, then find the angle between a pair of adjacent spokes.
19. Specify the type of quadrilateral ABCD in each case, given the following information.
- (i)  $AB \parallel CD$ ,  $AD \parallel CB$ ,  $AB = BC$ ,  $\angle DAB = 75^\circ$   
(ii)  $AD \parallel CB$ ,  $AD < CB$   
(iii)  $AO = OC$ ,  $DO = OB$ ,  $DB \perp AC$ ,  $DA \perp AB$ , O being the point of intersection of diagonals.  
(iv)  $AB \parallel CD$ ,  $AB = CD$   
(v)  $AB \parallel CD$ ,  $AD \parallel CB$ ,  $AB = BC = CD$ ,  $\angle DAB = 90^\circ$
20. From a cardboard cut-out a parallelogram ABCD as shown in the figure, an isosceles triangle BCE is cut off. What type of quadrilateral is ABED ?



## ANSWER KEY

### Very short answer type questions

- |                   |                  |                   |                  |
|-------------------|------------------|-------------------|------------------|
| 1. (i) Acute      | (ii) Obtuse      | (iii) Right       | (iv) Obtuse      |
| (v) Right         | (vi) Acute       |                   |                  |
| 2. (i) Scalene    | (ii) Isosceles   | (iii) Equilateral | (iv) Scalene     |
| 3. (i) $90^\circ$ | (ii) $180^\circ$ | (iii) $45^\circ$  | (iv) $225^\circ$ |
| (v) $180^\circ$   | (vi) $270^\circ$ |                   |                  |
| 4. (i) yes        | (ii) yes         | (iii) yes         | (iv) yes         |
| 5. Square         | 6. $90^\circ$    | 8. Rectangle      | 9. North         |

### Short answer type questions

- |                              |                 |                 |                 |
|------------------------------|-----------------|-----------------|-----------------|
| 10. (i) $180^\circ$          | (ii) $90^\circ$ | (iii) 10'clock  |                 |
| (iv) (a) 7 O'clock           | (b) 4 O'clock   | (c) 9 O'clock   |                 |
| (v) (a) $6^\circ$            | (b) $48^\circ$  | (c) $180^\circ$ | (d) $270^\circ$ |
| (e) $360^\circ$              | (f) $540^\circ$ |                 |                 |
| (vi) (a) $\frac{1}{2}^\circ$ | (b) $5^\circ$   | (c) $15^\circ$  | (d) $60^\circ$  |
| 11. (i) 12                   | (ii) 20         |                 |                 |

### Long answer type questions

12. Square
- |                    |            |                |             |
|--------------------|------------|----------------|-------------|
| 13. (i) $90^\circ$ | (ii) Acute | (iii) Straight | (iv) Obtuse |
|--------------------|------------|----------------|-------------|
14. (i)  $270^\circ$       (ii)  $210^\circ$       (iii)  $210^\circ$
15.  $\angle BCD = 90^\circ$ , Side CD = 8 cm, AD = 5 cm
16. 128 cm
- |           |        |         |        |
|-----------|--------|---------|--------|
| 17. (i) 8 | (ii) 1 | (iii) 2 | (iv) 2 |
|-----------|--------|---------|--------|
18.  $10^\circ$
- |                 |                |              |                    |
|-----------------|----------------|--------------|--------------------|
| 19. (i) Rhombus | (ii) Trapezium | (iii) Square | (iv) Parallelogram |
| (v) Square      |                |              |                    |
20. Isosceles Trapezium



Exercise-01 Solutions

Multiple choice questions

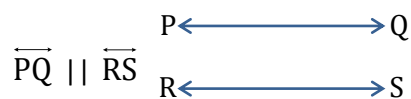
1. Option (1)

Perpendicular lines: When two lines intersect, so that four right angles are formed we can say that the lines are perpendicular to each other.

The symbol " $\perp$  stands for " is perpendicular to"  $\overline{PQ} \perp \overline{RS}$ .

2. Option (3)

The lines which lie on the same plane and do not intersect at any point maintaining a constant distance between them throughout is known as parallel lines.



The symbol " $\parallel$ " stands for " is parallel to".

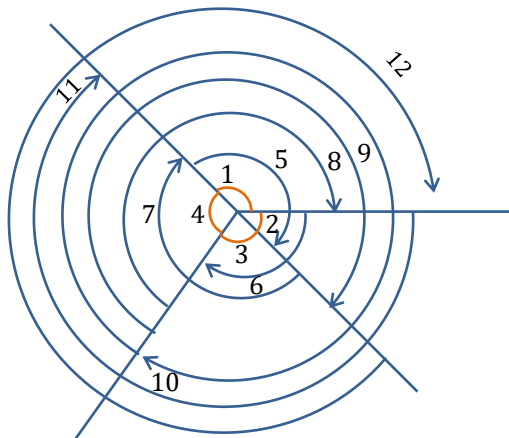
3. Option (2)

$\angle 1, \angle 2, \angle 3, \angle 4$

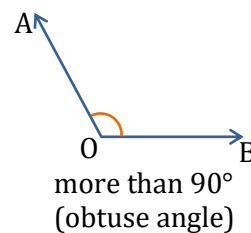
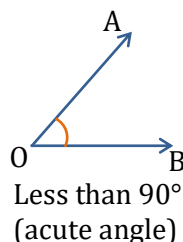
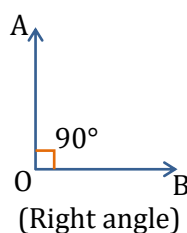
$\angle 5, \angle 6, \angle 7, \angle 8$

$\angle 9, \angle 10, \angle 11, \angle 12$

$\therefore$  There are 12 angles formed in the given figure



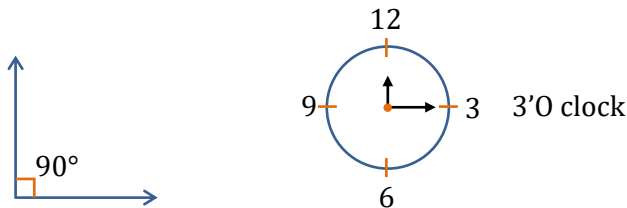
4. Option (3)



$\therefore \angle AOB$  is an obtuse angle.

**5. Option (1)**

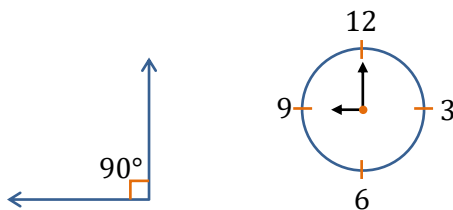
At 3 O'clock, the angle formed between the two hands of a clock is right angle.

**6. Option (2)**

- (i) The protractor is an instrument used to measure angles and draw angles of any measure between  $0^\circ$  and  $180^\circ$ . This statement is true.
- (ii) A line has no end points, it can be extended in any of the directions.
- (iii) Obtuse angle is an angle whose measure is greater than  $90^\circ$ . This statement is true.
- (iv) Yes, angle formed in between two coinciding rays with a common end point is  $0^\circ$ . This is true.

**7. Option (3)**

Angle formed between the hands of a clock is a right angle.

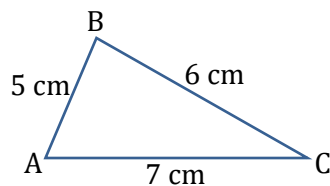
**8. Option (2)**

Obtuse angle measures greater than  $90^\circ$  and less than  $180^\circ$  i.e.  $90^\circ < \text{obtuse angle} < 180^\circ$ .

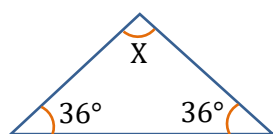
**9. Option (3)**

Given sides of a triangle are 5 cm, 6 cm and 4 cm. So, it is clear that all the sides are of unequal length.

$\therefore$  It is a scalene triangle which has all the sides unequal.

**10. Option (3)**

Since, the sum of the angles of a triangle is  $180^\circ$ . and here it is given that two angles are of same measure i.e.,  $36^\circ$ . So, if angles (two angles) of a triangle are of equal measurement, then they come under the isosceles triangle.



and if one of its angles of the given triangle is obtuse then it will be an obtuse angled triangle also.

$$\therefore 180^\circ - (36^\circ + 36^\circ) = x^\circ$$

$$180^\circ - 72^\circ = x^\circ$$

$$x^\circ = 108^\circ$$

So, it is an obtuse angled triangle also; as its one angle measures  $108^\circ > 90^\circ$  and  $108^\circ < 180^\circ$

So, this triangle is an isosceles obtuse triangle.

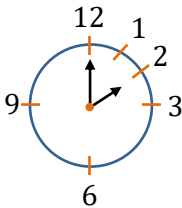
**11. Option (3)**

Equilateral triangle is one that has all the sides equal (i.e. of equal length) and all the angles are of measurement  $60^\circ$ .

Hence, measure of each angle =  $60^\circ$ .



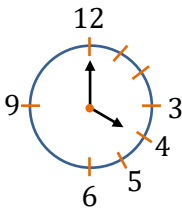
**12. Option (3)**



at 2'0 Clock, the hands of a clock form an



acute angle ( $0^\circ < \text{acute angle} < 90^\circ$ ).



at 4'0 clock, the hands of a clock form an



obtuse angle ( $90^\circ < \text{obtuse angle} < 180^\circ$ ).

**13. Option (2)**

Given:  $\angle A > 40^\circ$ ,  $\angle B > \angle A$  and  $\angle C > \angle B$

$\therefore$  we know that sum of the angles of a triangle is  $180^\circ$ . Let us check all the options one by one.

(1)  $\angle A = 48^\circ$  (satisfying) ( $\angle A > 40^\circ$ )

$\angle B = 78^\circ$  (satisfying) ( $\angle B > \angle A$ )

but  $\angle C = 54^\circ$  (not satisfying) ( $\angle C > \angle B$ )

(2)  $\angle A = 48^\circ$  ( $\angle A > 40^\circ$ )

$\angle B = 54^\circ$  ( $\angle B > \angle A$ )

and  $\angle C = 78^\circ > \angle B$

Hence, all the conditions are satisfied for this

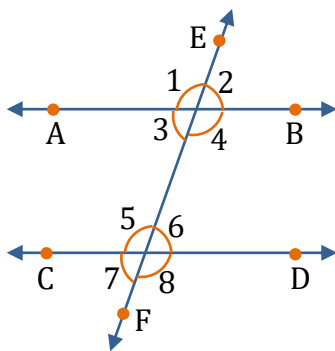
(3)  $\angle A = 36^\circ$  (not satisfying) ( $\angle A > 40^\circ$  given)

$\angle B = 54^\circ$  and  $\angle C = 90^\circ$

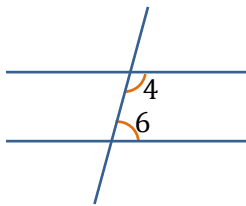
(4)  $\angle A = 60^\circ$  (satisfying) ( $\angle A > 40^\circ$ )

but  $\angle B = 60^\circ$  and  $\angle C = 60^\circ$  are not satisfying the given conditions.

**Given (Question 14 - 16)**



14. **Option (3)**



$\angle 4$  is obtuse angle.

15. **Option (3)**

From figure

$\angle 1 + \angle 2 = 180^\circ$  [Linear pair]

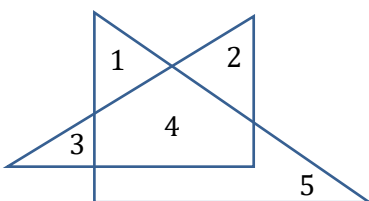
If  $\angle 2$  is an acute angle, then  $\angle 1$  is obtuse angle.

16. **Option (1)**

By observation  $\angle 6$  is acute angle.

17. **Option (2)**

There are 5 triangles in this drawing.



18. Option (1)

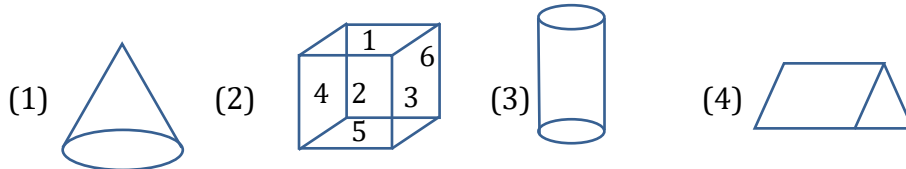
A quadrilateral in which both pairs of opposite sides are equal is a parallelogram.

Square: a quadrilateral in which all the sides are equal and each angle is a right angle.

Rhombus: A quadrilateral in which all the sides are equal.

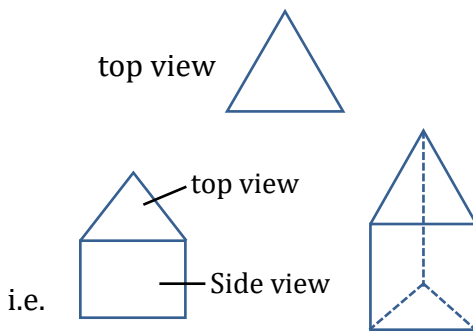
Rectangle: A quadrilateral in which each angle is a right angle.

19. Option (2)



20. Option (3)

One side of a solid object

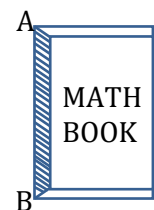


triangular prism → it has bases are equilateral  $\Delta$  and sides are square.

21. Option (3)

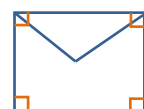


22. Option (2)



Edge of the book is  $\overline{AB}$  which is a line segment with two end points A and B.

23. Option (3)



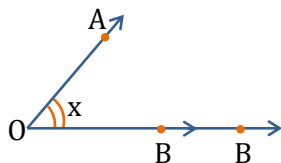
Envelope is in the shape of a rectangle in which all the angles formed at each

corner is of  $90^\circ$  (i.e. right angle)

24. Option (1)

The angle formed by the two adjacent fingers of a hand is acute.

25. Option (3)



When an arm of an angle is extended to double its length, then

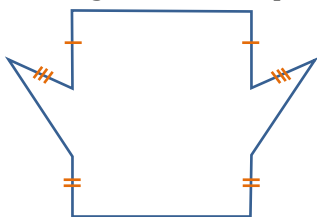
Let angle is  $x^\circ$  i.e.,

$$\angle AOB = x^\circ$$

Now if we extend OB i.e., OB' then there is no effect on the measure of angle. It will remain same.

26. Option (2)

This figure is not a quadrilateral since it is a polygon.



27. Option (3)

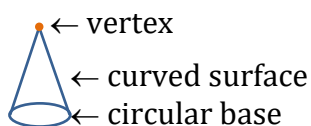
Roof top in the form of a structure that has a vertex. One circular base and curved surface.

• ← Vertex

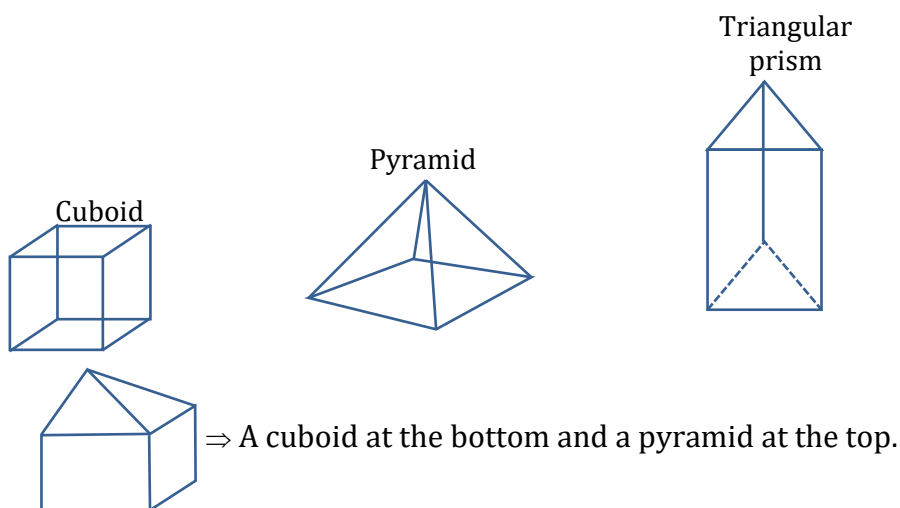
○ ← Circular base

△ ← Curved surface

∴ it corresponds to the 3-D figure i.e. Cone

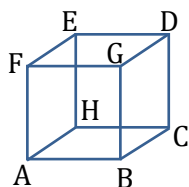


28. Option (4)

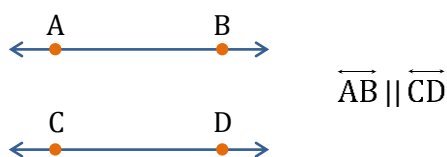


29. Option (1)

A cuboid has 6 faces (each of rectangular shape) 12 edges and 8 vertices. A pyramid has 5 faces, 5 vertices and 8 edges for a square pyramid. A cone has 1 face, 0 edges and 0 vertices. A triangular prism has atleast 5 faces, atleast 9 edges and atleast 6 vertices.



30. Option (2)

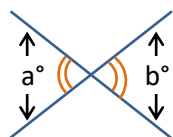


Parallel lines are  $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$  never intersecting lines.

31. Option (3)

Vertical angles are the angles opposite each other when two lines intersect.

$$a^\circ = b^\circ$$

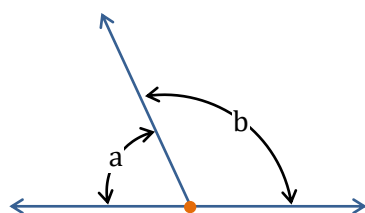


32. Option (3)

A scalene triangle sometimes be a right triangle as in a right triangle, one of the angles is a right angle an angle of  $90^\circ$ . A triangle which has one angle of  $90^\circ$  may be isosceles or scalene also.

33. Option (2)

Supplementary angles: these two angles "a" and "b" are supplementary, because they add up to  $180^\circ$  i.e.,



$$\angle a + \angle b = 180^\circ$$

But the angles don't have to be together.

These two are also supplementary.



∴ In the given figure

$\angle COF + \angle COE = 180^\circ$ . Hence,  $\angle COF$  and  $\angle COE$  are supplementary.

**34. Option (3)**

Since, the sum of the angles of a triangle is  $180^\circ$ .

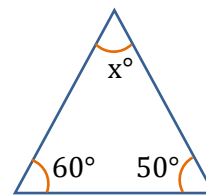
∴ If one angle =  $50^\circ$ , second angle =  $60^\circ$ .

Let third angle be  $x^\circ$ .

$$\therefore x^\circ + 50^\circ + 60^\circ = 180^\circ$$

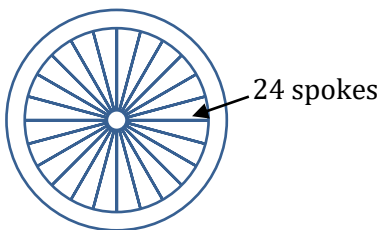
$$x^\circ + 110^\circ = 180^\circ$$

$$x^\circ = 180^\circ - 110^\circ = 70^\circ$$



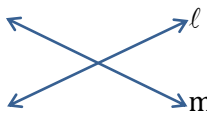
**35. Option (2)**

Since we know that the wheel of a bicycle is in the form of a circle.



$$\therefore \frac{360}{24} = 15^\circ$$

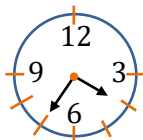
**True or false**

1. Acute angle can have a measure in between  $0^\circ$  to  $90^\circ$ . So, the given statement is false.
2. False, as measurement of an obtuse angle lies in between  $90^\circ$  to  $180^\circ$  and sum of the angles of a triangle is  $180^\circ$ .
3. True, as all the sides of a square are equal and all of its angles are also of  $90^\circ$ .
4. False,  line  $\ell$  is not perpendicular to  $m$  but it is intersecting  $m$ .
5. False; The minimum number of sides that a polygon can have is three.



### Fill in the blanks

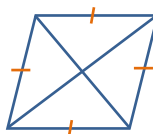
1. Obtuse angle:  $90^\circ < \text{obtuse} < 180^\circ$
2.  $90^\circ$



3. Angles are  $40^\circ$ ,  $60^\circ$  and  $80^\circ$ . It is an acute angled triangle.
4. Six-line segments  
Polygon -Hexagon



5. Rhombus has unequal diagonals



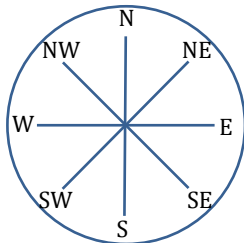
### Match the column

- |                    |   |
|--------------------|---|
| (1) Straight angle | (c) Half of a revolution $= \frac{1}{2} \times 360^\circ = 180^\circ$                                   |
| (2) Right angle    | (d) One-fourth of a revolution i.e. $\frac{1}{4} \times 360 = 90^\circ$                                 |
| (3) Acute angle    | (a) Less than $\frac{1}{4}$ of a revolution i.e. $0^\circ$ to $90^\circ$ only                           |
| (4) Obtuse angle   | (e) between $\frac{1}{4}$ and $\frac{1}{2}$ of a revolution i.e. $90^\circ < \text{obtuse} < 180^\circ$ |
| (5) Reflex angle   | (b) More than half a revolution   |
| (6) Complete angle | (f) Four right angles.  |

## Exercise-02 Solutions

1. (i)  $58^\circ, 83^\circ, 39^\circ$   
All the angles are less than  $90^\circ$ .  
Therefore, this triangle is an acute angled triangle.
- (ii)  $65^\circ, 95^\circ, 20^\circ$   
One angle is more than  $90^\circ$  i.e.  $95^\circ$  which is an obtuse angle. So, this triangle is an obtuse angled triangle.
- (iii)  $30^\circ, 60^\circ, 90^\circ$   
One angle is of  $90^\circ$  i.e., it is forming a right angled triangle.
- (iv)  $109^\circ, 40^\circ, 31^\circ$   
 $109^\circ$  is the angle which is obtuse. So, the triangle formed will be an obtuse angled triangle.
- (v)  $46^\circ, 90^\circ, 44^\circ$   
One of the angle is of  $90^\circ$  so, the triangle formed will be a right angled triangle.
- (vi)  $56^\circ, 48^\circ, 76^\circ$   
All the angles are less than  $90^\circ$ . Therefore; triangle formed will be an acute angled triangle.
2. (i) 10 cm, 9 cm and 7cm  
The measure of the lengths of the sides are different therefore, it is a scalene triangle.
- (ii) 10 cm, 6 cm and 10 cm  
 $\Rightarrow$  Two sides are of equal length i.e.; 10 cm. therefore; it is an isosceles triangle.
- (iii) 7cm, 7cm and 7cm.  
 $\Rightarrow$  All the sides are of equal length. Therefore, it is an equilateral triangle.
- (iv) 3 m, 4 m and 5 m  
All the sides are unequal i.e., of different length.  
Hence, it is a scalene triangle.

3.



- (i) From N to E  $\Rightarrow 90^\circ$   
(ii) From N to S  $\Rightarrow 180^\circ$   
(iii) From N to NE

$$\Rightarrow \frac{1}{2} \times 90^\circ = 45^\circ$$

(iv) From NE to W

$$\Rightarrow 45^\circ + 45^\circ + 45^\circ + 45^\circ + 45^\circ = 225^\circ$$

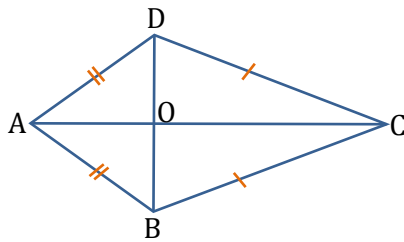
(v) From NW to SE

$$\Rightarrow 45^\circ + 45^\circ + 45^\circ + 45^\circ = 180^\circ$$

(vi) From NW to SW

$$\Rightarrow 90^\circ + 90^\circ + 90^\circ = 270^\circ$$

4.



(i)  $\overline{AD} = \overline{AB}$

Yes, both are equal

(ii)  $\angle ADO = \angle ABO$

Yes, since  $AD = AB$  and it is an isosceles triangle

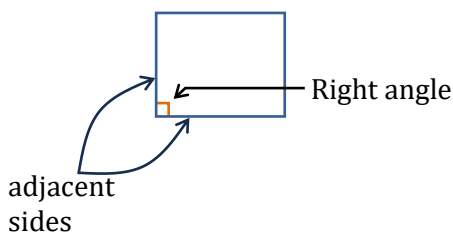
So,  $\angle ADO = \angle ABO$

(iii)  $\angle DAO = \angle BAO$

Yes, they are bisected by AC, So, both are equal

(iv)  $\angle AOB = \angle AOD = 90^\circ$ ; yes because  $AD \perp DB$ .

5. Given it is a parallelogram and its adjacent sides are equal.



Square is a parallelogram.

In which adjacent sides i.e. all the sides are equal and the angles is of  $90^\circ$  (each).

The name for this figure is square.

6. Since, sum of the interior angles of a quadrilateral is  $360^\circ$ .

$\therefore$  Given angles are  $80^\circ$ ,  $70^\circ$  and  $120^\circ$ .

Let the fourth angle be  $x^\circ$ .

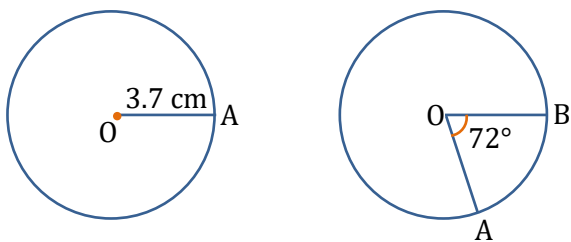
$$\text{So, } x + 80^\circ + 70^\circ + 120^\circ = 360^\circ$$

$$x + 270^\circ = 360^\circ$$

$$x = 360^\circ - 270^\circ = 90^\circ$$

Fourth angle =  $90^\circ$

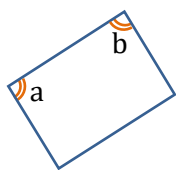
7. Radius = 3.7 cm



8. Adjacent angles are the angles that have a common vertex and a common side.

$$\angle a = \angle b \text{ (given)}$$

$\therefore$  Name of this parallelogram is rectangle.



because in a rectangle two adjacent angles are equal.

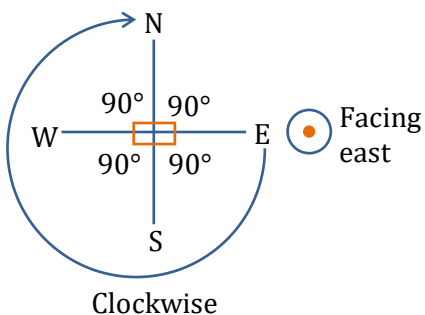
### Short answer type questions

9. East to south  $90^\circ$

East to west  $180^\circ$

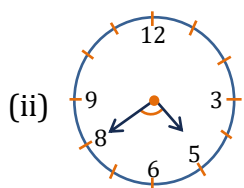
East to north  $270^\circ$

We will face North direction.

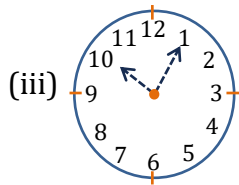


10. (i)
- 

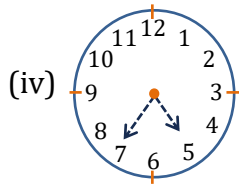
Rotation of  $180^\circ$  from 12 to 6.



Rotation of  $90^\circ$  from 5 to 8.



10 to  $90^\circ$  Rotation reaches 1 O' clock.



$60^\circ$  from 5 O' clock  $\rightarrow$  7 O'clock.

$180^\circ$  from 10 O' clock  $\rightarrow$  4 O'clock.

$270^\circ$  from 12 O'clock - 9 O'clock

(v) (a) minute hand of clock

1 complete round =  $360^\circ$

60 min =  $360^\circ$

$$1 \text{ min} = \frac{360^\circ}{60} = 6^\circ$$

(b) 8 minutes =  $8 \times 6^\circ = 48^\circ$

(c)  $\frac{1}{2}$  hour =  $\frac{1}{2} \times 360^\circ = 180^\circ$

(d)  $\frac{3}{4}$  hour =  $\frac{3}{4} \times 360^\circ = 270^\circ$

(e) 1 hour =  $360^\circ$

(f)  $1\frac{1}{2}$  hour =  $\frac{3}{2} \times 360^\circ = 540^\circ$

(vi) hour hand of clock

(a) 1 min

12 hours =  $360^\circ$

1 hour =  $30^\circ$

60min. =  $30^\circ$

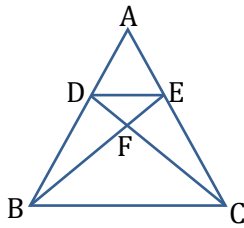
$$1 \text{ min.} = \frac{30}{60} = \left(\frac{1}{2}\right)^\circ$$

(b) 10 min. =  $10 \times \frac{1}{2} = 5^\circ$

(c) 30 min =  $30 \times \frac{1}{2} = 15^\circ$

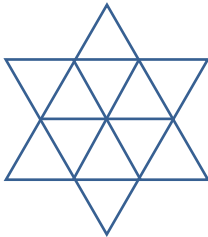
(d) 2 hour =  $60^\circ = 2 \times 30$

11. (i)



It has 12 triangles ABC, ADE, BFC, DFE,  
AEB, BEC, ADC, BDC, BFD, CFE, BED, CDE

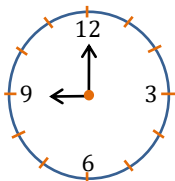
(ii)



it has 20 triangles.

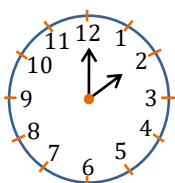
12. A square has two diagonals, which are line segments linking opposite vertices of the square. Each diagonal bisects each other and also each diagonal divides the square into two congruent isosceles right triangles. Because the triangles are congruent, they have the same area, and each triangle has half the area of the square.

13. (i) 9 O'clock



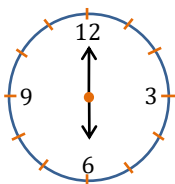
Right angle =  $90^\circ$

(ii) 2 O'clock



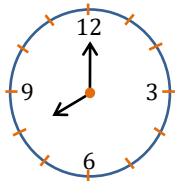
Acute angle

(iii) 6 O'clock



Straight angle ( $180^\circ$ )

(iv) at 8 O'clock



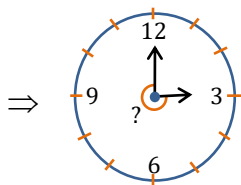
Obtuse angle ( $120^\circ$ )

14. (i) At 3'O clock: There are 12 of them in a complete turn ( $360^\circ$ ).

So, each one must be  $360^\circ \div 12 = 30^\circ$ .

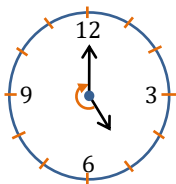
So, the angle between the hands of a clock at 1'O clock is  $30^\circ$

$\therefore$  Reflex angle between the hands of a clock at 3'O clock



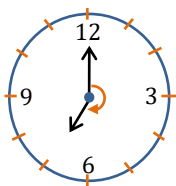
$$360^\circ - 90^\circ = 270^\circ$$

(ii) at 5'O Clock



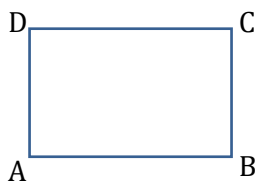
$$180^\circ + 30^\circ = 210^\circ$$

(iii) at 7'O clock



$$180^\circ + 30^\circ = 210^\circ$$

15.  $AB = 8$  cm,  $BC = 5$  cm  
 $\angle BCD = 90^\circ$  ( $\because$  it is a rectangle)



$CD = AB$  ( $\because$  opposite sides are equal in a rectangle)

$CD = 8$  cm and  $BC = 5$  cm  $= AD$  (opposite sides are equal)

16. Octagon has 8 sides. equilateral triangles stand on each side of octagon.

Perimeter = 64 cm

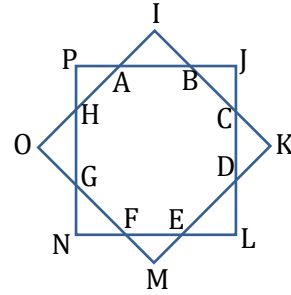
8x side = 64 cm

$$\text{Side} = \frac{64}{8} = 8 \text{ cm}$$

$\therefore AB = BC = CD = DE = EF = FG = GH = HA = 8 \text{ cm}$

Also,  $AB = AI = IB = 8 \text{ cm}$

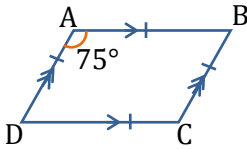
So Required calculation =  $16 \times 8 = 128 \text{ cm}$



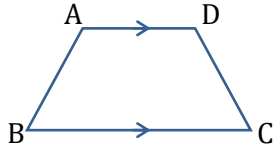
17. (i) There are 8 pentagons. [pentagons are the polygons which have 5 sides.  
 (ii) Hexagons: which have 6 sides. There is only one hexagon.  
 (iii) Heptagons: Which have 7 sides there are two heptagons.  
 (iv) Octagons: Which have 8 sides there are two octagons.

18. Angle between a pair of adjacent spokes =  $\frac{360^\circ}{\text{Number of spokes}} = \frac{360^\circ}{36} = 10^\circ$

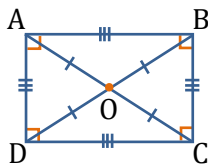
19. (i) According to the given information. It is the case of rhombus.



- (ii) According to the given information. It is the case of trapezium.

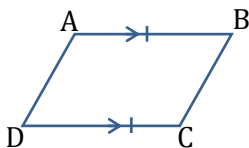


- (iii) Given information is the properties of square.



- (iv) Given information is the properties of parallelogram.

A quadrilateral in which a pair of sides are equal and parallel known as parallelogram.



- (v) Given information is the properties of square.

20. ABED is an isosceles trapezium.