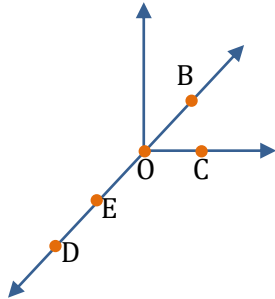


NCERT QUESTIONS WITH SOLUTIONS

EXERCISE : 4.1

1. Use the figure to name:



- (a) Five points
- (b) A line
- (c) Four rays
- (d) Five-line segments

Sol. (a) The five points are D, E, O, B, and C.

- (b) \overrightarrow{BD}
- (c) $\overrightarrow{OD}, \overrightarrow{OB}, \overrightarrow{OC}, \overrightarrow{OE}$
- (d) $\overrightarrow{DE}, \overrightarrow{EO}, \overrightarrow{OB}, \overrightarrow{OC}, \overrightarrow{BE}$

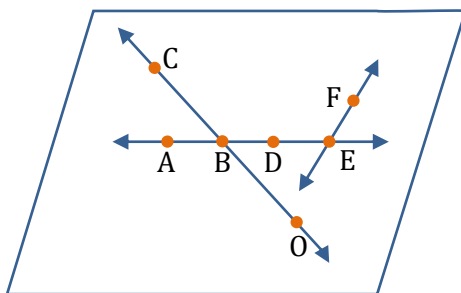
2. Name the line given in all possible (twelve) ways, choosing only two letters at a time from the four given.



Sol.

$\overrightarrow{AB}, \overrightarrow{BC}, \overrightarrow{CB}, \overrightarrow{CD}, \overrightarrow{BA}, \overrightarrow{DC}, \overrightarrow{AD}, \overrightarrow{DA}, \overrightarrow{AC}, \overrightarrow{CA}, \overrightarrow{BD}, \overrightarrow{DB}$

3. Use the figure to name :



- (a) Line containing point E.
- (b) Line passing through A.
- (c) Line on which O lies

(d) Two pairs of intersecting lines.

- Sol.** (a) \overrightarrow{AE}
 (b) \overrightarrow{AE}
 (c) \overrightarrow{OC}
 (d) \overrightarrow{OC} and \overrightarrow{AE} , \overrightarrow{AE} and \overrightarrow{EF}

4. How many lines can pass through

- (a) one given point?
- (b) Two given points?

Sol. (a) Infinite number of lines can pass through a single point.

(b) Only one line can pass through two given points.

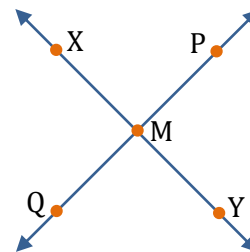
5. Draw a rough figure and label suitably in each of the following cases:

- (a) Point P lies on \overrightarrow{AB} .
- (b) \overrightarrow{XY} and \overrightarrow{PQ} intersect at M.
- (c) Line ℓ contains E and F but not D.
- (d) \overrightarrow{OP} and \overrightarrow{OQ} meet at O.

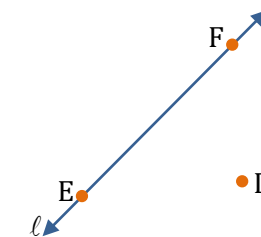
Sol. (a)



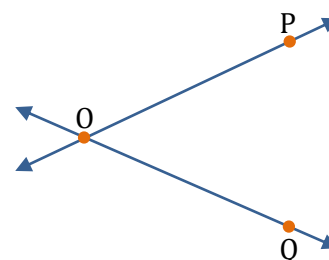
(b)



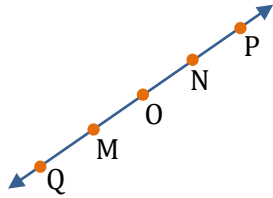
(c)



(d)



6. Consider the following figure of line \overleftrightarrow{MN} .
Say whether following statements are true or false in context of the given figure.

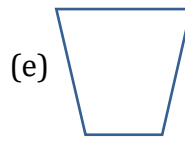
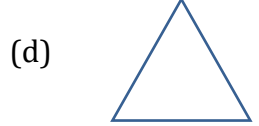
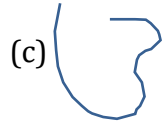
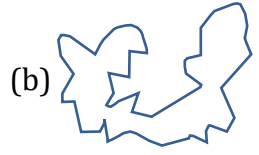
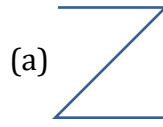


- (a) Q, M, O, N, P are points on the line \overleftrightarrow{MN}
- (b) M, O, N are points on a line segment \overline{MN} .
- (c) M and N are end points of line segment \overline{MN} .
- (d) O and N are end points of line segment \overline{OP} .
- (e) M is one of the end points of line segment \overline{QO} .
- (f) M is point on ray \overrightarrow{OP} .
- (g) Ray \overrightarrow{OP} is different from ray \overrightarrow{QP} .
- (h) Ray \overrightarrow{OP} is same as ray \overrightarrow{OM} .
- (i) Ray \overrightarrow{OM} is not opposite to ray \overrightarrow{OP} .
- (j) O is not an initial point of \overrightarrow{OP} .
- (k) N is the initial point of \overrightarrow{NP} and \overrightarrow{NM} .

- Sol.**
- | | |
|-----------|-----------|
| (a) True | (b) True |
| (c) True | (d) False |
| (e) False | (f) False |
| (g) True | (h) False |
| (i) False | (j) False |
| (k) True | |

EXERCISE : 4.2

1. Classify the following curves as (i) Open or (ii) Closed.

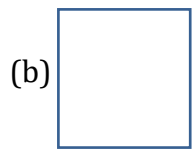
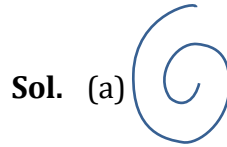


- Sol.**
- | | |
|------------|------------|
| (a) Open | (b) Closed |
| (c) Open | (d) Closed |
| (e) Closed | |

2. Draw rough diagrams to illustrate the following.

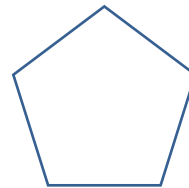
(a) Open curve

(b) Close curve



3. Draw any polygon and shade its interior.

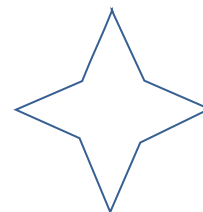
Sol.



4. Consider the given figure and answer the questions.

(a) Is it a curve?

(b) Is it closed?



- Sol.**
- | | |
|---------|---------|
| (a) Yes | (b) Yes |
|---------|---------|

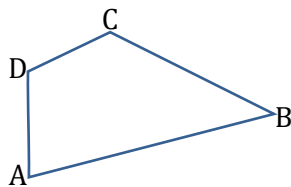
5. Illustrate, if possible, each one of the following with a rough diagram.

- A closed curve that is not a polygon.
- An open curve made up entirely of line segments.
- A polygon with two sides.

Sol. (i)  (ii) 
(iii) No Possible

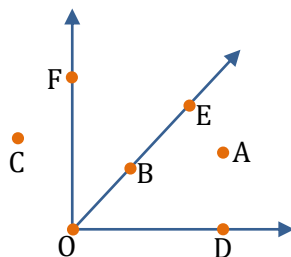
EXERCISE : 4.3

1. Name the angles in the given figure.



Sol. $\angle BAD$, $\angle ADC$, $\angle DCB$, $\angle CBA$

2. In the given diagram, name the point (s)



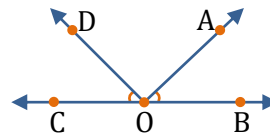
- In the interior of $\angle DOE$
- In the exterior of $\angle EOF$
- On $\angle EOF$

Sol. (a) A (b) C, A, D
(c) B, E, O, F

3. Draw rough diagrams of two angles such that they have

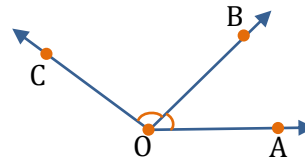
- One point in common.
- Two points in common.
- Three points in common.
- Four points in common.
- One ray in common.

Sol. (a)



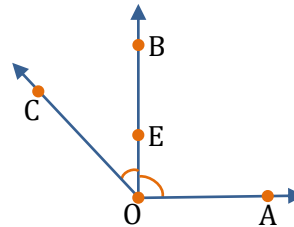
$\angle COD$ and $\angle AOB$ have point O in common.

(b)



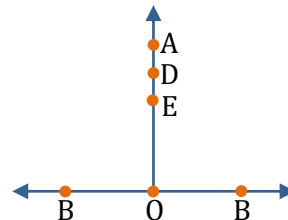
$\angle AOB$ and $\angle BOC$ have points O and B in common.

(c)



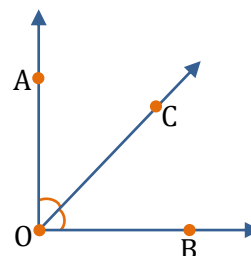
$\angle AOB$ and $\angle BOC$ have points O, E, B in common.

(d)



$\angle BOA$ and $\angle COA$ have points O, E, D, A in common.

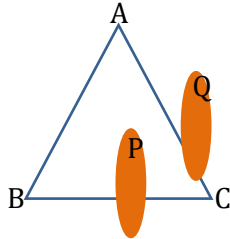
(e)



Ray \overrightarrow{OC} is common between $\angle BOC$ and $\angle AOC$.

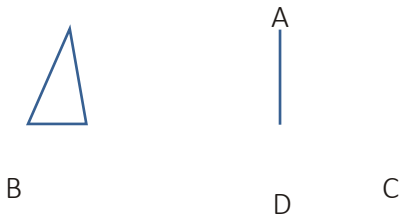
EXERCISE : 4.4

1. Draw a rough sketch of a triangle ABC. Mark a point P in its interior and a point Q in its exterior. Is the point A in its exterior or in its interior?

Sol.

Point A lies on the given $\triangle ABC$.

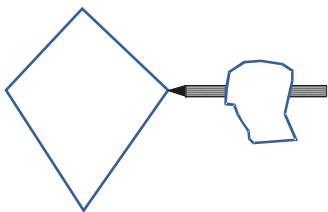
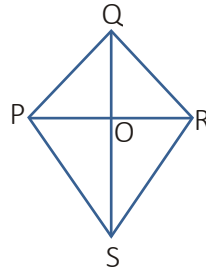
2. (a) Identify three triangles in the figure.
 (b) Write the names of seven angles.
 (c) Write the names of six line segments.
 (d) Which two triangles have $\angle B$ as common?



- Sol.** (a) $\triangle ABC$, $\triangle ABD$ & $\triangle ADC$
 (b) $\angle ABD$, $\angle BAC$, $\angle ACB$, $\angle BAD$, $\angle DAC$, $\angle BDA$ & $\angle ADC$
 (c) \overline{AB} , \overline{AC} , \overline{BD} , \overline{AD} , \overline{DC} & \overline{BC}
 (d) $\triangle ABC$ & $\triangle ABD$

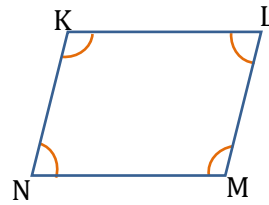
EXERCISE : 4.5

1. Draw a rough sketch of a quadrilateral PQRS. Draw its diagonals. Name them. Is the meeting point of the diagonals in the interior or exterior of the quadrilateral?

**Sol.**

Diagonals are PR and QS. They meet at point O which is in the interior of quadrilateral PQRS.

2. Draw a rough sketch of a quadrilateral KLMN. State,
 (a) Two pairs of opposite sides,
 (b) Two pairs of opposite angles,
 (c) Two pairs of adjacent sides,
 (d) Two pairs of adjacent angles.

Sol.

- (a) \overline{KL} , \overline{NM} and \overline{KN} , \overline{ML}
 (b) $\angle KLM$ and $\angle KMN$
 $\angle LKN$ and $\angle LMN$
 (c) \overline{KL} , \overline{KN} and \overline{NM} , \overline{ML}
 (d) $\angle K$, $\angle L$ and $\angle M$, $\angle N$

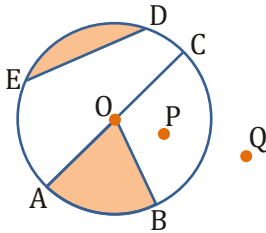
3. Investigate

Use strips and fasteners to make a triangle and a quadrilateral. Try to push inward at any one vertex of the triangle. Do the same to the quadrilateral. Is the triangle distorted? Is the quadrilateral distorted? Is the triangle rigid? Why is it that structures like electric towers make use of triangular shapes and not quadrilaterals?

- Sol.** No, the triangle is not distorted but the quadrilateral is distorted and also the triangle is rigid. Structures like electric towers make use of triangular shape so that they could not be distorted, and they could be rigid.

EXERCISE : 4.6

1. From the figure, identify:



- (a) The centre of circle
- (b) Three radii
- (c) a diameter
- (d) a chord
- (e) Two points in the interior
- (f) a point in the exterior
- (g) a sector
- (h) a segment

Sol. (a) O (b) $\overline{OA}, \overline{OB}, \overline{OC}$
 (c) \overline{AC} (d) \overline{ED}
 (e) O, P (f) Q
 (g) AOB (shaded region)
 (h) DE (shaded region)

2. (a) Is every diameter of a circle also a chord?

(b) Is every chord of circle also a diameter?

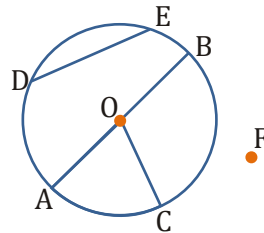
Sol. (a) Yes. The diameter is the longest possible chord of the circle.

(b) No

3. Draw any circle and mark

- (a) Its centre
- (b) a radius
- (c) a diameter
- (d) a sector
- (e) a segment
- (f) a point in its interior
- (g) a point in its exterior
- (h) an arc

Sol.



- (a) O
- (b) \overline{OA}
- (c) \overline{AB}
- (d) COA
- (e) DE
- (f) O
- (g) F
- (h) AC

4. Say true or false:

(a) Two diameters of a circle will necessarily intersect.

(b) The centre of a circle is always in its interior.

Sol. (a) True. They will always intersect each other at the centre of the circle.

(b) True