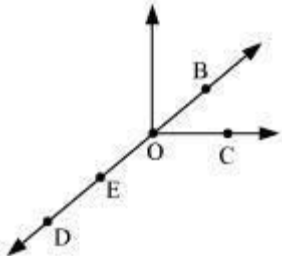


## Exercise 4.1

### Question 1:

Use the figure to name:



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

**Answer:**

- (a) The five points are D, E, O, B, and C.
- (b)  $\overleftrightarrow{BD}$
- (c)  $\overline{OD}$ ,  $\overline{OB}$ ,  $\overline{OC}$ ,  $\overline{OE}$
- (d)  $\overline{DE}$ ,  $\overline{EO}$ ,  $\overline{OB}$ ,  $\overline{OC}$ ,  $\overline{BE}$

### Question 2:

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

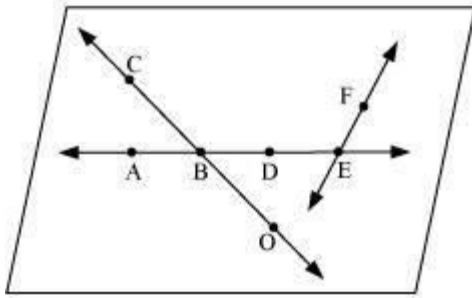


**Answer:**

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

### Question 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.

**Answer:**

- (a)  $\overline{AE}$
- (b)  $\overline{AE}$
- (c)  $\overline{OC}$
- (d)  $\overline{OC}$  and  $\overline{AE}$ ,  $\overline{AE}$  and  $\overline{EF}$

**Question 4:**

How many lines can pass through (a) one given point? (b) Two given points?

**Answer:**

- (a) Infinite number of lines can pass through a single point.
- (b) Only one line can pass through two given points.

**Question 5:**

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

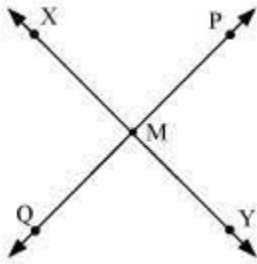
- (a) Point P lies on  $\overline{AB}$ .
- (b)  $\overline{XY}$  and  $\overline{PQ}$  intersect at M.
- (c) Line  $l$  contains E and F but not D.
- (d)  $\overline{OP}$  and  $\overline{OQ}$  meet at O.

**Answer:**

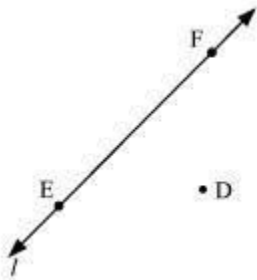
- (a)



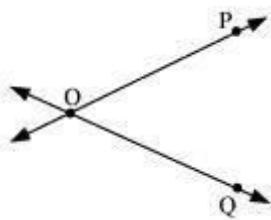
- (b)



(c)

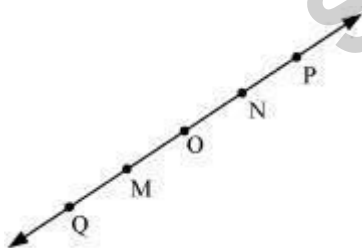


(d)



### Question 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  $\overrightarrow{NM}$ .

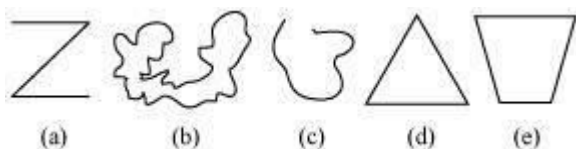
Answer:

- (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

### Question 1:

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



Answer:

- (a) Open
- (b) Closed

- (c) Open
- (d) Closed
- (e) Closed

**Question 2:**

Draw rough diagrams to illustrate the following:

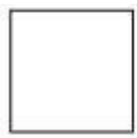
- (a) Open curve (b) Closed curve.

**Answer:**

- (a) Open curve



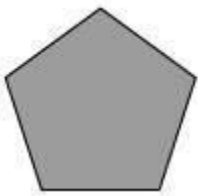
- (b) Closed curve



**Question 3:**

Draw any polygon and shade its interior.

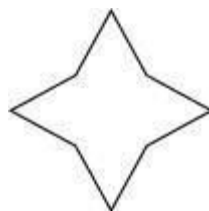
**Answer:**



**Question 4:**

Consider the given figure and answer the questions:

- (a) Is it a curve? (b) Is it closed?



**Answer:**

- (a) Yes
- (b) Yes

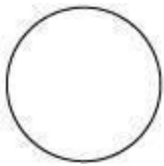
### Question 5:

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

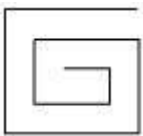
- (a) A closed curve that is not a polygon.
- (b) An open curve made up entirely of line segments.
- (c) A polygon with two sides.

Answer:

(a)



(b)

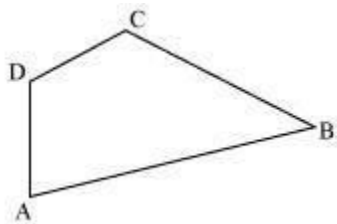


(c) This is not possible as the polygon having the least number of sides is a triangle, which has three sides in it.

## Exercise 4.3

### Question 1:

Name the angles in the given figure.

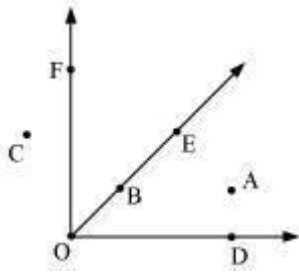


Answer:

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

### Question 2:

In the given diagram, name the point (s)



- (a) In the interior of  $\angle DOE$
- (b) In the exterior of  $\angle EOF$
- (c) On  $\angle EOF$

**Answer:**

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

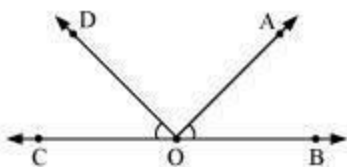
**Question 3:**

Draw rough diagrams of two angles such that they have

- (a) One point in common.
- (b) Two points in common.
- (c) Three points in common.
- (d) Four points in common.
- (e) One ray in common.

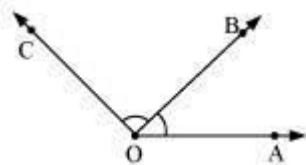
**Answer:**

- (a)



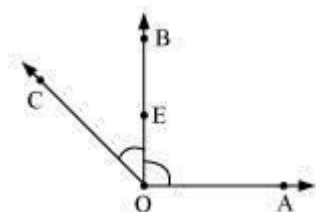
$\angle COD$  and  $\angle AOB$  have point O in common.

- (b)



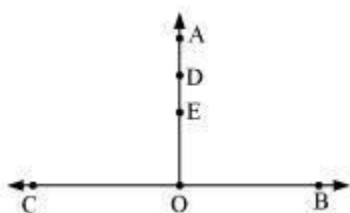
$\angle AOB$  and  $\angle BOC$  have points O and B in common.

(c)



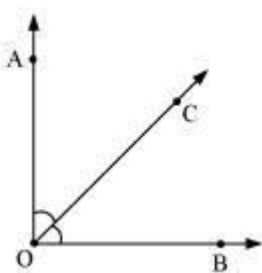
$\angle AOB$  and  $\angle BOC$  have points O, E, B in common.

(d)



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

(e)



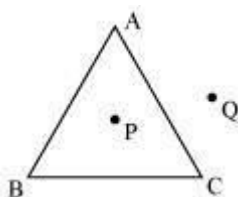
Ray  $\overrightarrow{OC}$  is common between  $\angle BOC$  and  $\angle AOC$ .

## Exercise 4.4

### Question 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?

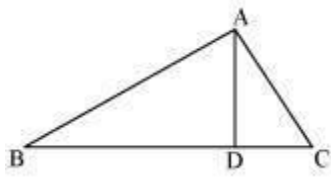
**Answer:**



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



Question 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?

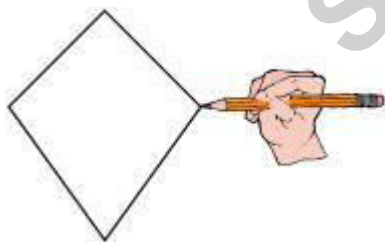
Answer:

- (a)  $\triangle ABC$ ,  $\triangle ACD$ ,  $\triangle ADB$
- (b)  $\angle ABC$ ,  $\angle ADB$ ,  $\angle ADC$ ,  $\angle ACB$ ,  $\angle BAD$ ,  $\angle CAD$ ,  $\angle BAC$
- (c)  $\overline{AB}$ ,  $\overline{BC}$ ,  $\overline{CA}$ ,  $\overline{AD}$ ,  $\overline{BD}$ ,  $\overline{CD}$
- (d)  $\triangle ABD$  and  $\triangle ABC$

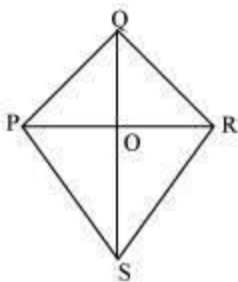
## Exercise 4.5

Question 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?



Answer:



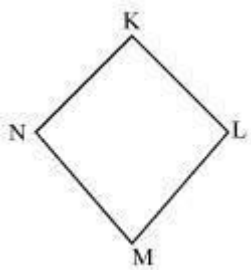
Diagonals are PR and QS. They meet at point O which is in the interior of  $\square PQRS$ .

### Question 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.

Answer:



(a)  $\overline{KL}$ ,  $\overline{NM}$  and  $\overline{KN}$ ,  $\overline{ML}$

(b)  $\angle KLM$  and  $\angle KNM$

$\angle LKN$  and  $\angle LMN$

(c)  $\overline{KL}$ ,  $\overline{KN}$  and  $\overline{NM}$ ,  $\overline{ML}$

$\overline{KL}$ ,  $\overline{LM}$  and  $\overline{NM}$ ,  $\overline{NK}$

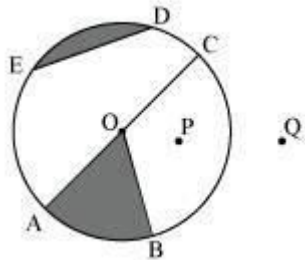
(d)  $\angle K$ ,  $\angle L$  and  $\angle M$ ,  $\angle N$

$\angle K$ ,  $\angle N$  and  $\angle L$ ,  $\angle M$

## Exercise 4.6

### Question 1:

From the figure, identify:



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

**Answer:**

- (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)

### Question 2:

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

**Answer:**

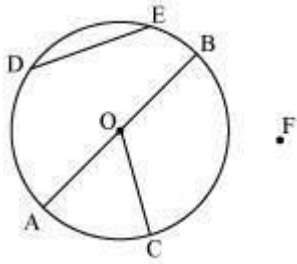
- (a) Yes. The diameter is the longest possible chord of the circle.
- (b) No

### Question 3:

Draw any circle and mark

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

Answer:



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

Question 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.

Answer:

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