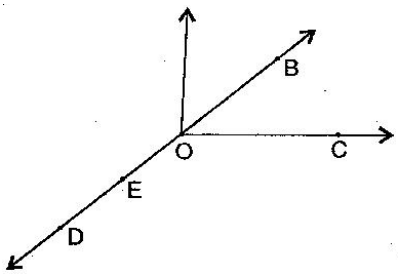
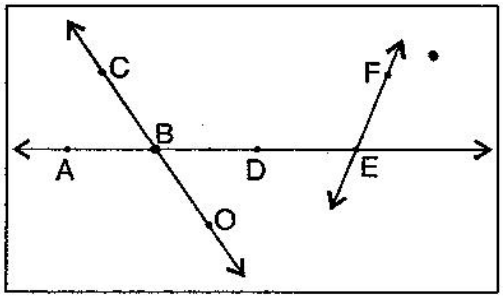
Class –VI Mathematics (Ex. 4.1)
Questions

1. Use the figure to name:
   (a) Five points
   (b) A line
   (c) Four rays
   (d) Five line segments

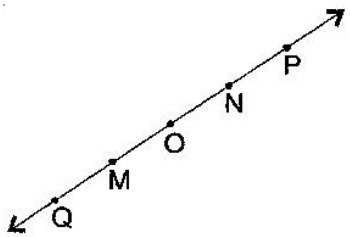


2. Name the line given in all possible (twelve) ways, choosing only two letters at a time from the four given.

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.



4. How many lines can pass though:
   (a) one given point? (b) two given points
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.
6. Consider the following figure of line $\overline{MN}$. Say whether following statements are true or false in the context of the given figure:



   (a) Q, M, O, N, P are points on the line $\overline{MN}$.
   (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 $\overrightarrow{OP}$.
   (h) Ray $\overrightarrow{OP}$ same as ray $\overrightarrow{OM}$..
   (i) Ray $\overrightarrow{OM}$. is not opposite to ray $\overrightarrow{OP}$.
   (j) O is not an initial point of $\overline{NP}$ and $\overline{NM}$.

Class –VI Mathematics (Ex. 4.1)

Answers

1. (a) Five points are: O, B, C, D, E

   (b) A line: $\overline{DE}$, $\overline{DB}$, $\overline{OE}$, $\overline{OB}$

   (c) Four rays: $\overrightarrow{OD}$, $\overrightarrow{OE}$, $\overrightarrow{OC}$, $\overrightarrow{OB}$

   (d) Four line segments: $\overline{DE}$, $\overline{OE}$, $\overline{OC}$, $\overline{OB}$, , $\overline{OD}$

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

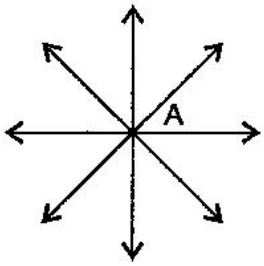
3. (a) A line containing E = $\overline{AE}$ or $\overline{FE}$

   (b) A line passing through A = $\overline{AE}$ or $\overline{DE}$

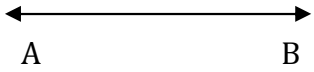
   (c) A line on which O lies = $\overline{CO}$ or $\overline{OC}$

   (d) Two pairs of intersecting lines are : $\overline{AD}$, $\overline{CO}$ and $\overline{AE}$, $\overline{FE}$

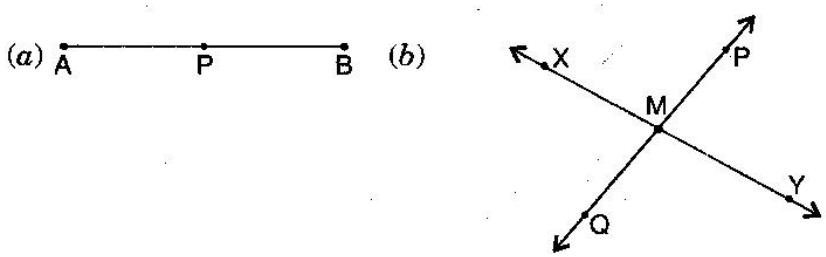
4. (a) Infinite number of lines can pass through one given point.



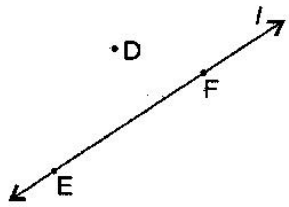
   (b) Only one line can pass through two given points.



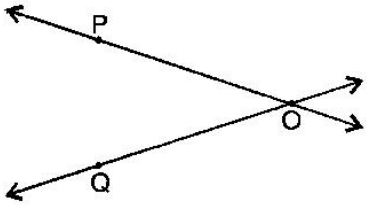
5. Sol.



(c)



(d)



6. (a) True
   (b) True
   (c) True
   (d) False
   (e) False
   (f) False
   (g) True
   (h) False
   (i) False
   (j) False
   (k) True

Class –VI Mathematics (Ex. 4.2)
Questions

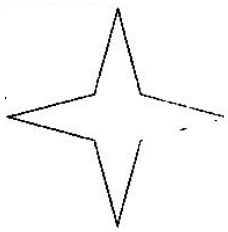
1. Classify the following curves as (i) Open or (ii) Closed.

(a) (b) (c) (d) (e)

2. Draw rough diagrams to illustrate the following:
   (a) Open curve
   (b) Closed curve

3. Draw any polygon and shade its interior.

4. Consider the given figure and answer the questions:



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

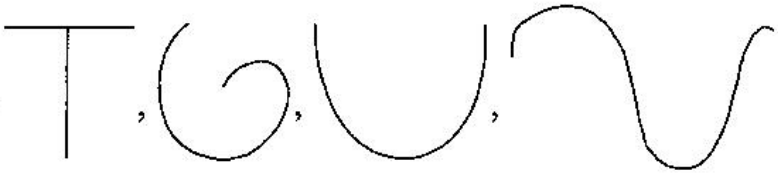
5. Illustrate, if possible, each one of the following with a rough diagram:
   (a) A closed curve that is not a polygon.
   (b) An open curve made up entirely of line segments.
   (c) A polygon with two sides.

Class –VI Mathematics (Ex. 4.2)

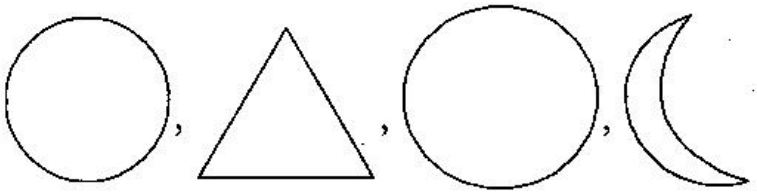
Answers

1. (a) Open curve
   (b) Closed curve
   (c) Open curve
   (d) Closed curve
   (e) Closed curve

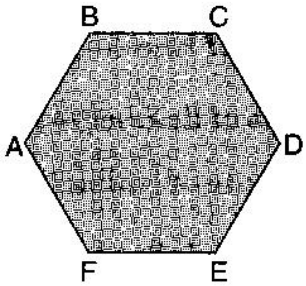
2. Open curves:



   Closed curves

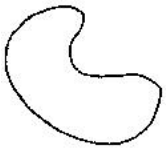


3. Polygon ABCDEF

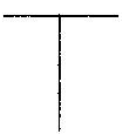


4. (a) Yes, it is a curve.
   (b) Yes, it is closed.

5. (a)



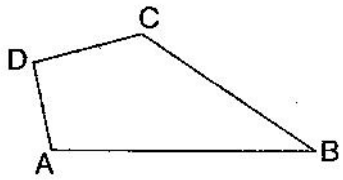
   (b)



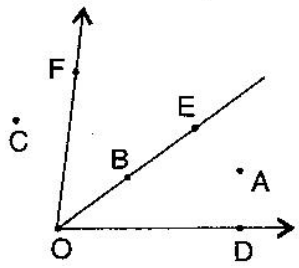
   (c) Polygon with two sides cannot be draw.

Class –VI Mathematics (Ex. 4.3)
Questions

1. Name the angles in the given figure:



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.



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.

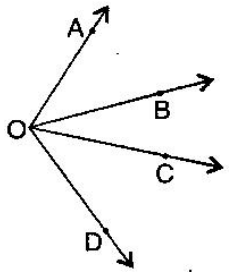
Class –VI Mathematics (Ex. 4.3)

Answers

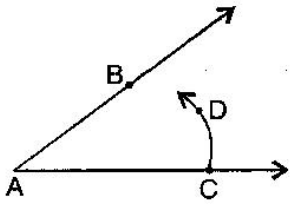
1. There are four angles in given figure:
   $\angle ABC$, $\angle CDA$, $\angle DAB$, $\angle DCB$

2. (a) Point interior of $\angle DOE$: A
   (b) Points exterior of $\angle EOF$: C, A, D
   (c) Points on $\angle EOF$: E, O, B, F

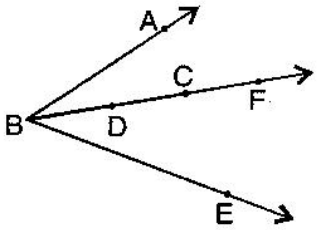
3. (a)



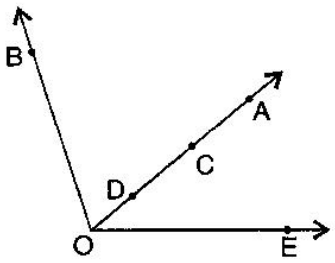
(b)



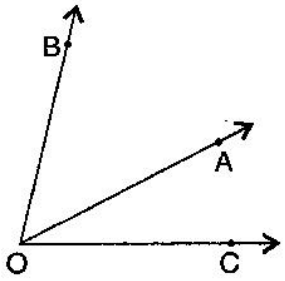
(c)



(d)



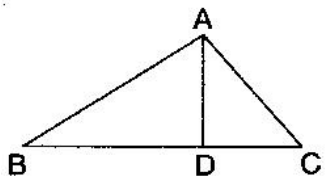
(e)



Class –VI Mathematics (Ex. 4.4)
Questions

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?

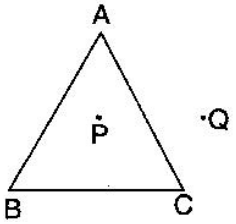
2. (a) Identify three triangles in the figure:
   (b) Write the names of seven angles.
   (c) Write the names of sic line segments.
   (d) Which two triangles have $\angle B$ as common?



Class –VI Mathematics (Ex. 4.4)

Answers

1. Sol.



A is neither interior of the figure nor exterior of triangle. It is a vertex.

2. (a) The three triangles are: $\Delta ABC,\ \Delta ABD,\ \Delta ADC$

   (b) Angles are: $\angle ADB,\ \angle ADC,\ \angle ABD,\ \angle ACD,\ \angle BAD,\ \angle CAD,\ \angle BAC$

   (c) Line segments are: $\overline{AB},\ \overline{AC},\ \overline{AD},\ \overline{BD},\ \overline{DC},\ \overline{BC}$

   (d) Triangles having common $\angle B$: $\Delta ABC,\ \Delta ABD,$

Class –VI Mathematics (Ex. 4.5)
Questions

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?

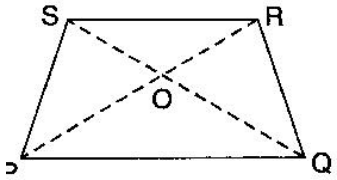
2. Draw a rough sketch of a quadrilateral KLMN. State:
   (a) Two pairs of opposite sides.
   (b) Two pairs of opposite angles.
   (c) Two pairs of adjacent sides.
   (d) Two pairs of adjacent angles.

3. Investigate:
   Use strip 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 quadrilateral?

Class –VI Mathematics (Ex. 4.5)

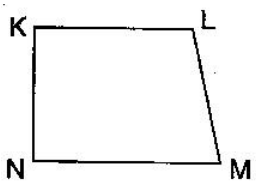
Answers

1. Sol.



Diagonal PR and diagonal SQ meet at O, which is inside the quadrilateral.

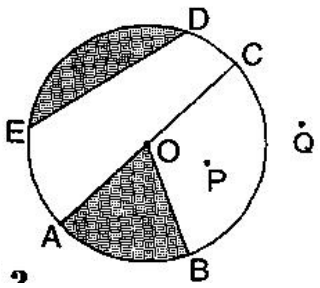
2. (a) Pair of opposite sides: KL and MN, KN and LM
(b) Pair of opposite angles: $\angle$K and $\angle$M, $\angle$L and $\angle$N
(c) Pair of adjacent sides: KN and NM, KL and LM
(d) Pair of adjacent angles: $\angle$K and $\angle$N, $\angle$L and $\angle$M



3. O is common to both the angles $\angle$AOC and $\angle$BOC.
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.

Class –VI Mathematics (Ex. 4.6)
Questions

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.



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

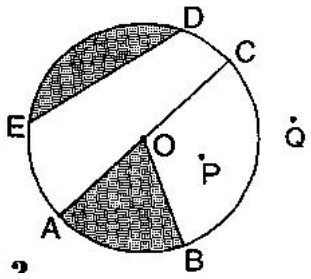
3. Draw any circle and mark:
   (a) Its centre.
   (b) A radius.
   (c) A diameter.
   (d) A sector.

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.

Class –VI Mathematics (Ex. 4.6)

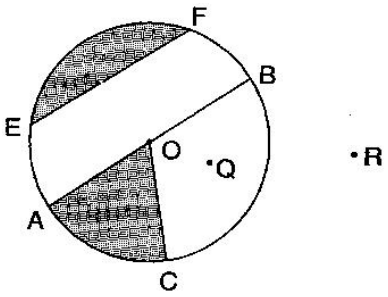
Answers

1. (a) O is the centre.
   (b) Three radii: OA, OB and OC
   (c) A diameter: AC
   (d) A chord: ED
   (e) Interior points: O, P
   (f) Exterior point: Q
   (g) A sector: OAB
   (h) A segment: $\overset{\frown}{ED}$



2. (a) Yes, every diameter of a circle is also a chord.
   (b) No, every chord of a circle is not a diameter.

3. Sol.



4. (a) True
   (b) True