CHAPTER 11

BASIC GEOMETRICAL CONCEPTS

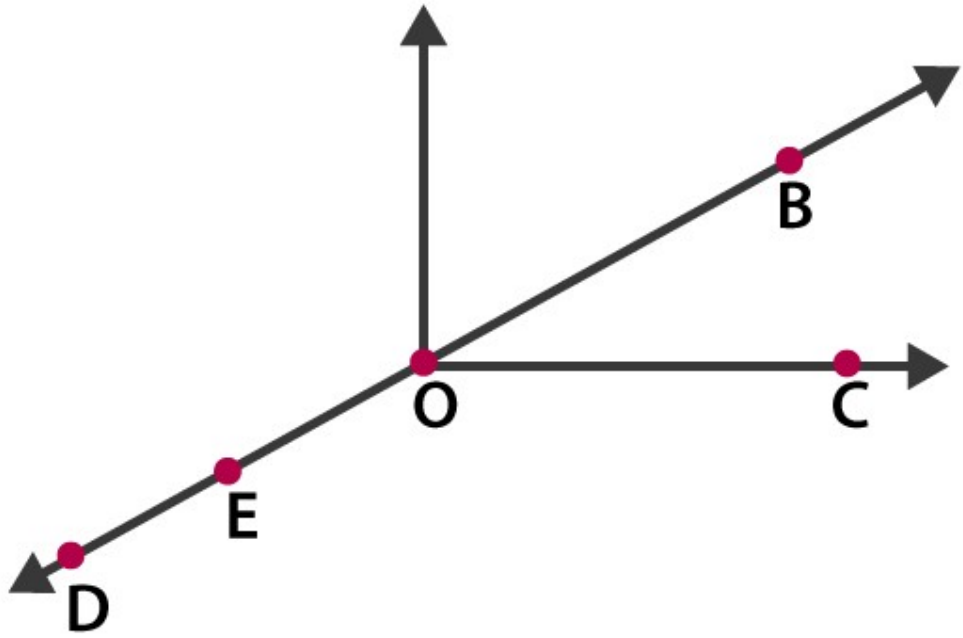
1. Use the figure to name:

(a) Five points

(b) A line

(c) Four rays

(d) Five line segments



Solutions:

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

(b) A line is $\overleftrightarrow{BD}$

(c) Four rays are $\overrightarrow{OD}$, $\overrightarrow{OB}$, $\overrightarrow{OC}$ and $\overrightarrow{OE}$.

(d) Five line segments are $\overline{DE}$, $\overline{EO}$, $\overline{OB}$, $\overline{OC}$ and $\overline{BE}$

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

Solutions:

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

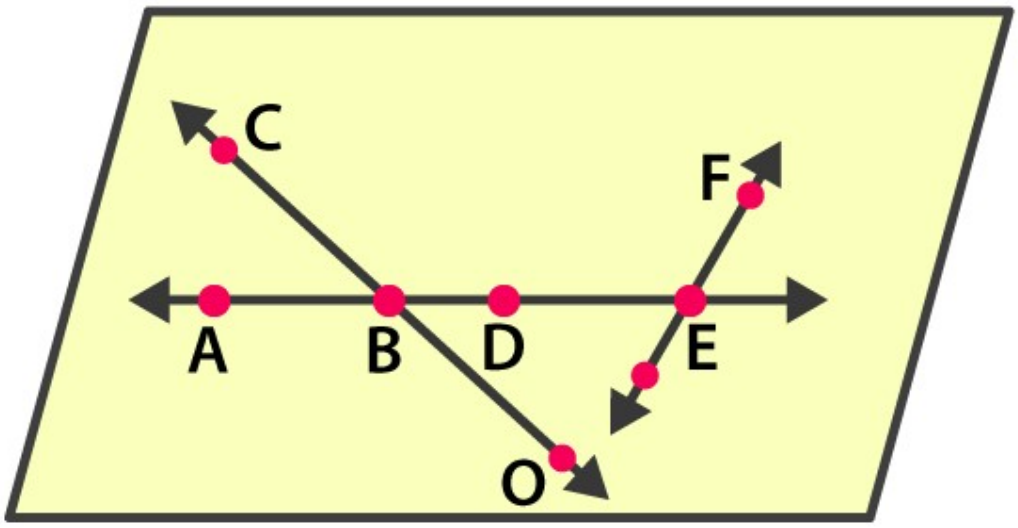
3. Use the figure to name:

(a) Line containing point E.

(b) Line passing through A.

(c) Line on which O lies

(d) Two pairs of intersecting lines.



Solutions:

(a) Line containing point E is $\overleftrightarrow{AE}$

(b) Line passing through A is $\overleftrightarrow{AE}$

(c) Line on which O lies is $\overleftrightarrow{OC}$

(d) Two pairs of intersecting lines are $\overleftrightarrow{CO}$, $\overleftrightarrow{AE}$ and $\overleftrightarrow{AE}$, $\overleftrightarrow{EF}$

4. How many lines can pass through (a) one given point? (b) two given points?

Solutions:

(a) Countless lines can pass through a given 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 $\overline{AB}$.

(b) $\overleftrightarrow{XY}$ and $\overleftrightarrow{PQ}$ intersect at M.

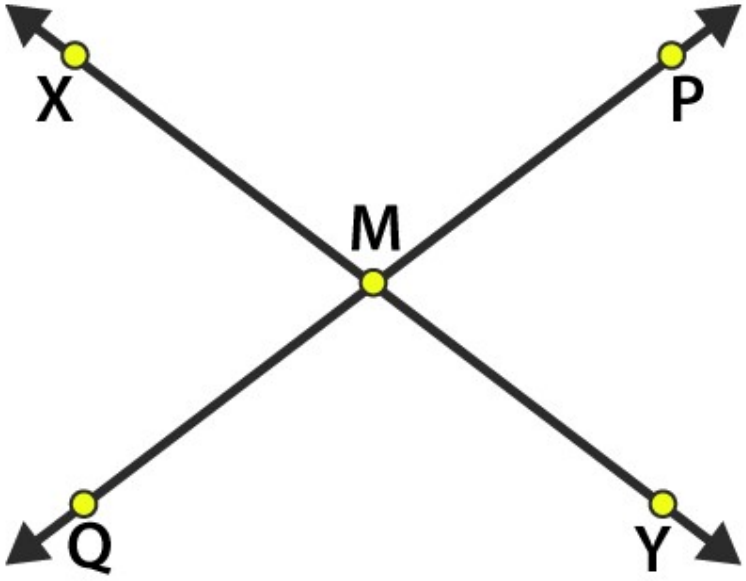
(c) Line l contains E and F but not D.

(d) $\overleftrightarrow{OP}$ and $\overleftrightarrow{OQ}$ meet at O.

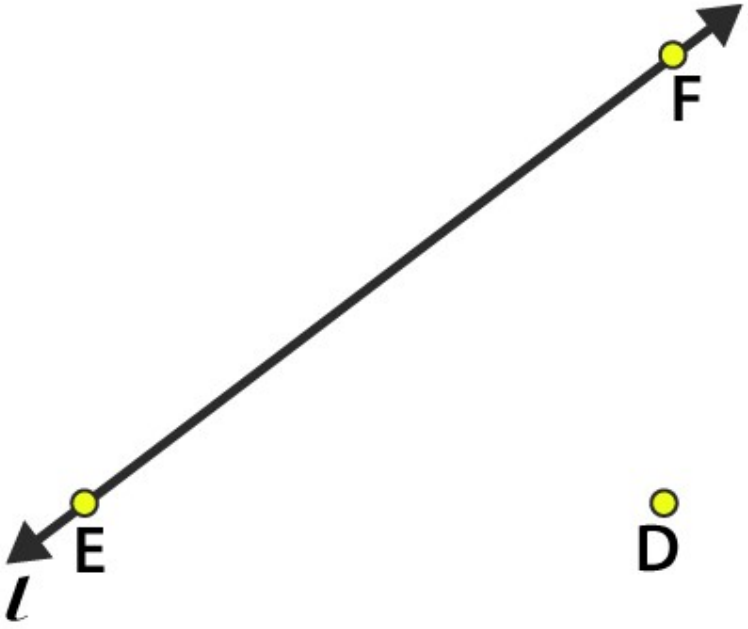
Solutions:

(a)

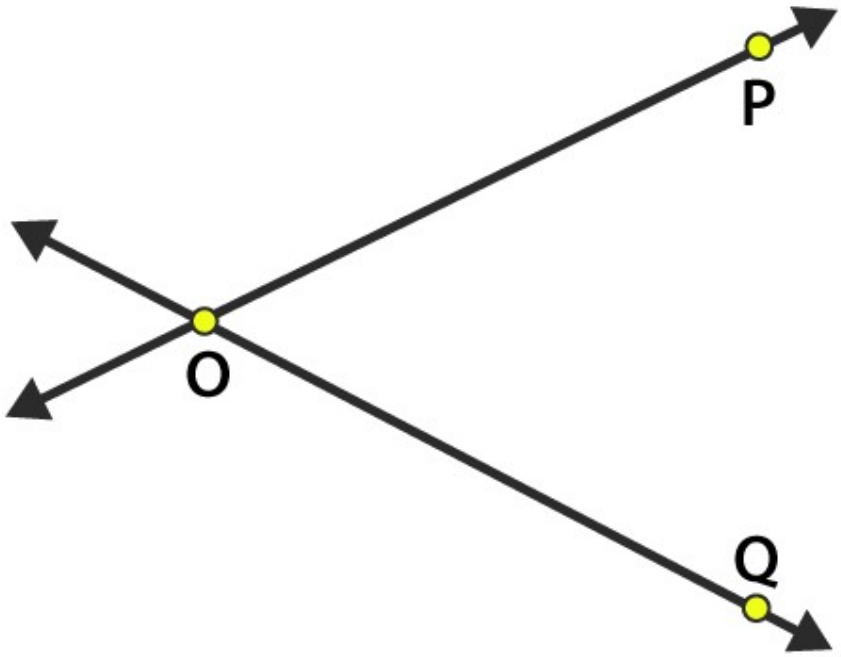
(b)



(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 $\overrightarrow{OP}$.

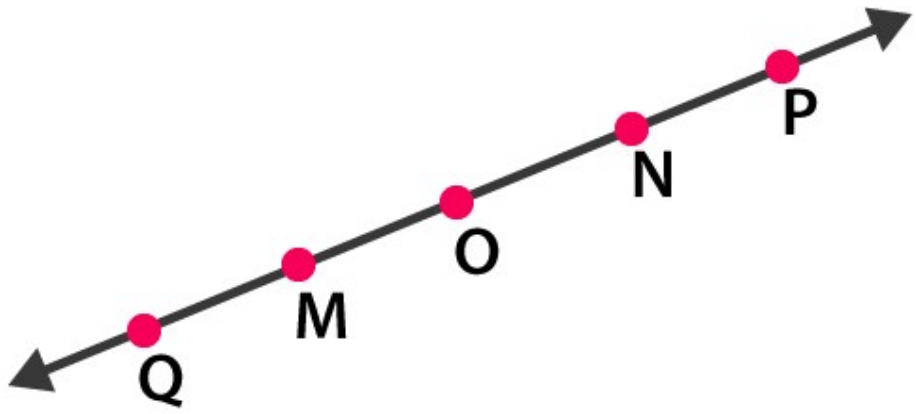
(g) Ray $\overrightarrow{OP}$ is different from ray $\overrightarrow{QP}$.

(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 $\overrightarrow{NM}$.



Solutions:

(a) True

(b) True

(c) True

(d) False

(e) False

(f) False

(g) True

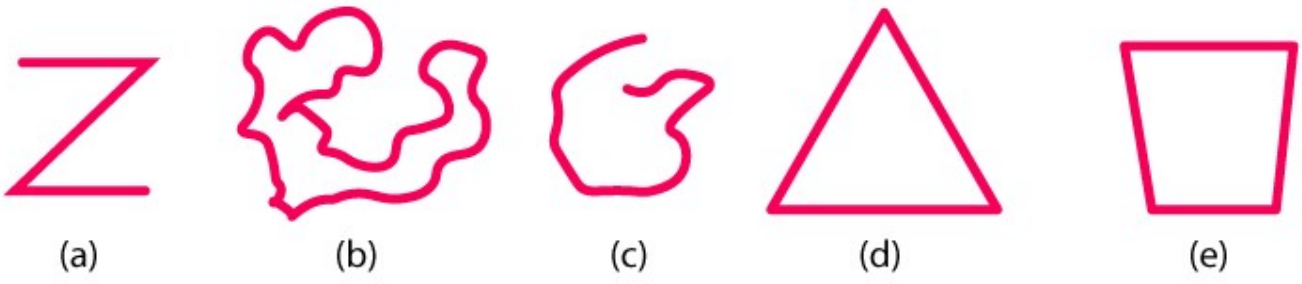
(h) False

(i) False

(j) False

(k) True

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



Solutions:

(a) The given curve is an open curve

(b) The given curve is a closed curve

(c) The given curve is an open curve

(d) The given curve is a closed curve

(e) The given curve is a closed curve

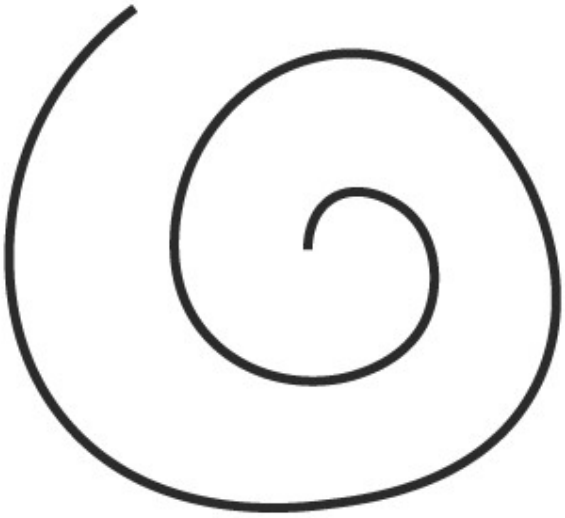
8. Draw rough diagrams to illustrate the following:

(a) Open curve

(b) Closed curve

Solutions

(a) The below figure is an open curve

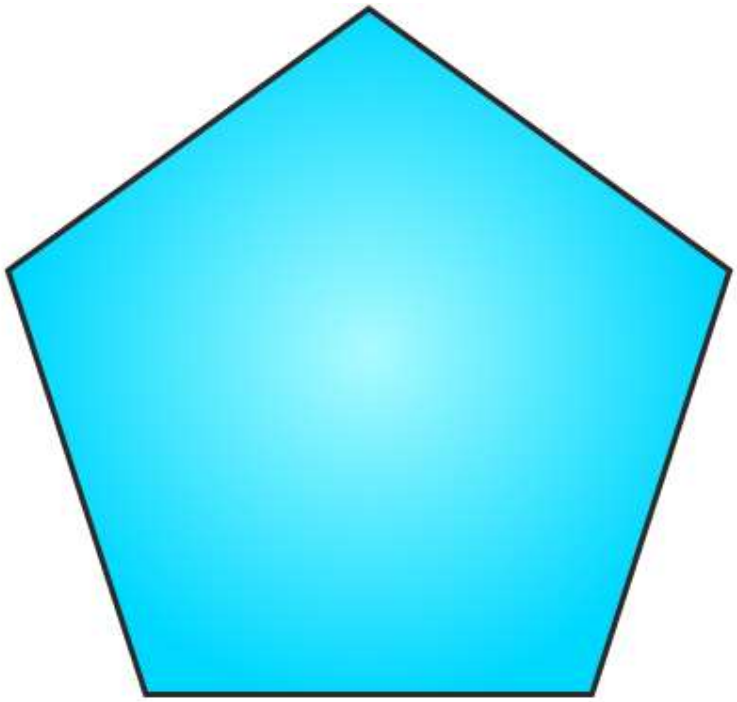


(b) The below figure is a closed curve

9. Draw any polygon and shade its interior.

Solutions:

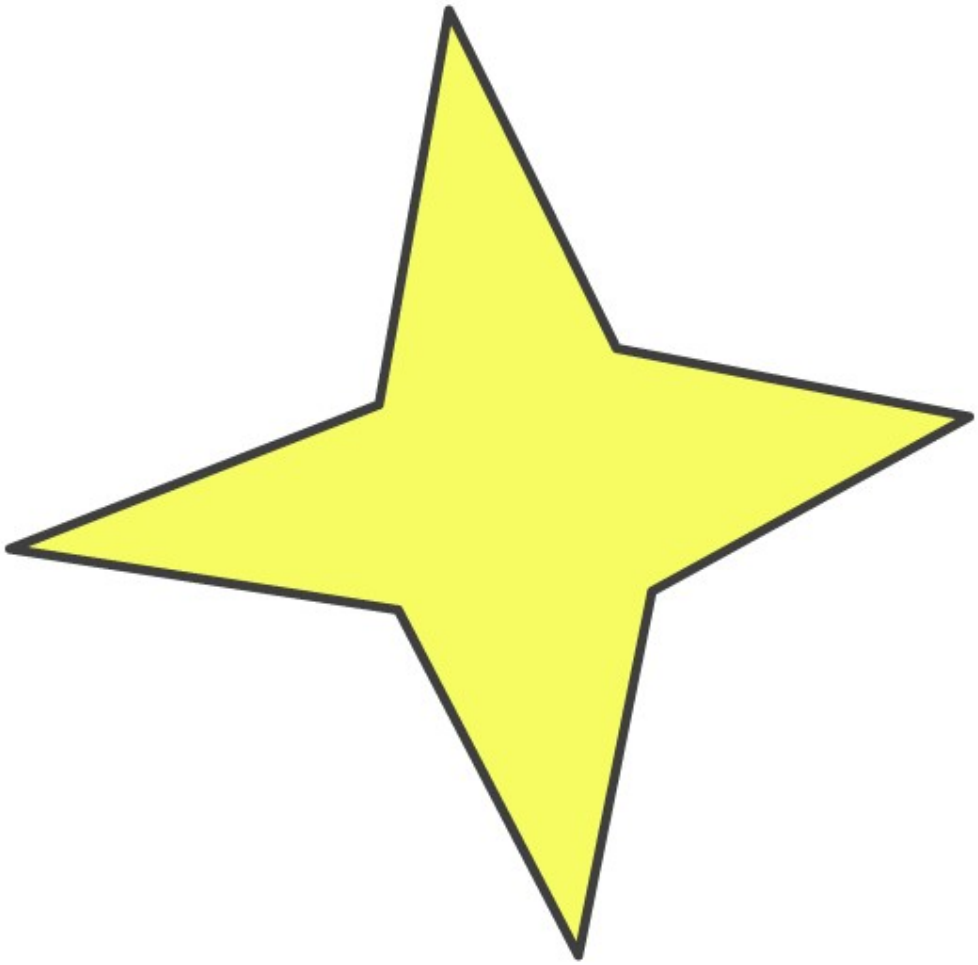
The below figure is a polygon with a shaded interior.



10. Consider the given figure and answer the questions:

(a) Is it a curve?

(b) Is it closed?



Solutions:

(a) Yes, it is a curve

(b) Yes, it is a closed curve