Exercise – 7.1

1. Define the following terms:

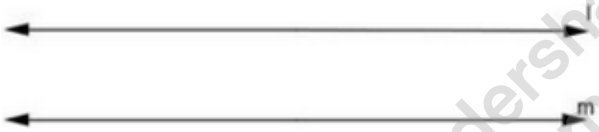
(i) Line segment
(ii) Collinear points
(iii) Parallel lines
(iv) Intersecting lines
(v) Concurrent lines
(vi) Ray
(vii) Half-line

Sol:

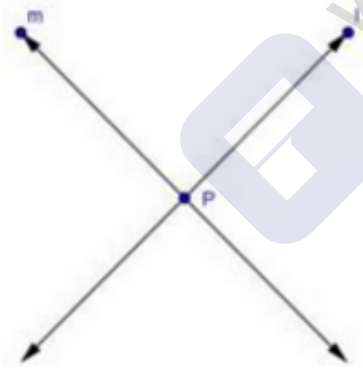
(i) Line-segment- Give two points A and B on a line *l*, the connected part (segment) of the line with end points at A and B is called the line segment AB.

(ii) Collinear points – Three or more points are said to be collinear if there is a line which contains all of them.

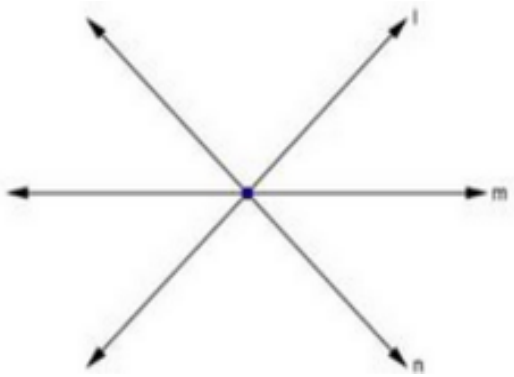
(iii) Parallel lines – Two lines *l* and m in a plane are said to be parallel lines if they do not intersect each other.



(iv) Intersecting lines – Two lines are intersecting if they have a common point. The common point is called point of intersection.

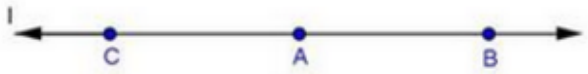


(v) Concurrent lines – Three or more lines are said to be concurrent if there is a point which lies on all of them.



(vi) Ray – A line in which one end point is fixed and the other part can be extended endlessly.

(vii) Half-line – If A, B, C be the points on a line *l*, such that A lies between B and C, and we delete the point A from line *l*, the two parts of l that remain are each called half-line.



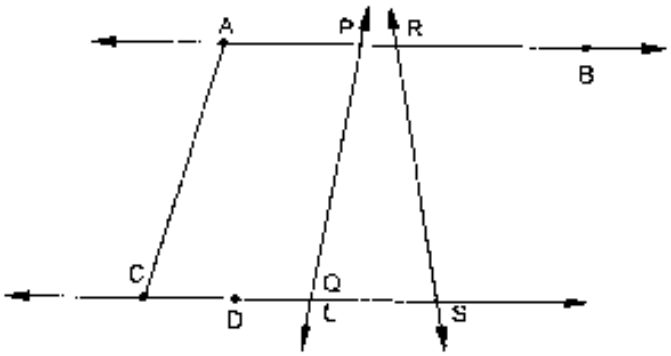
2. (i) How many lines can pass through a given point?
(ii) In how many points can two distinct lines at the most intersect?
Sol:
(i) Infinitely many
(ii) one

3. (i) Given two points P and Q, find how many line segments do they deter-mine.
(ii) Name the line segments determined by the three collinear points P, Q and R.
Sol:
(i) One
(ii) PQ, QR, PR

4. Write the truth value (T/F) of each of the following statements:
(i) Two lines intersect in a point.
(ii) Two lines may intersect in two points.
(iii) A segment has no length.
(iv) Two distinct points always determine a line.
(v) Every ray has a finite length.
(vi) A ray has one end-point only.
(vii) A segment has one end-point only.
(viii) The ray AB is same as ray BA.
(ix) Only a single line may pass through a given point.
(x) Two lines are coincident if they have only one point in common.
Sol:
(i) False
(ii) False
(iii) False
(iv) True
(v) False
(vi) True
(vii) False

(viii) False
(ix) False
(x) False

5. In the below fig., name the following:



Sol:

(i) Five line segments
AB, CD, AC, PQ, DS

(ii) Five rays $\overrightarrow{PA}, \overrightarrow{RB}, \overrightarrow{DC}, \overrightarrow{QS}, \overrightarrow{DS}$

(iii) Four collinear points. C, D, Q, S

(iv) Two pairs of non–intersecting line segments AB and CD
AB and LS

6. Fill in the blanks so as to make the following statements true:

(i) Two distinct points in a plane determine a _____ line.

(ii) Two distinct _____ in a plane cannot have more than one point in common.

(iii) Given a line and a point, not on the line, there is one and only _____ line which passes through the given point and is _____ to the given line.

(iv) A line separates a plane into _____ parts namely the and the _____ itself.

Sol:

(i) Unique

(ii) Lines

(iii) Perpendicular, perpendicular

(iv) Three, two half planes, line.