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Practice Set 1.1 Geometry 9th Std Maths Part 2 Answers Chapter 1 Basic Concepts in Geometry

Question 1.
Find the distances with the help of the number line given below.

i. d(B, E)
ii. d (J, J)
iii. d(P, C)
iv. d(J, H)
v. d(K, O)
vi. d(O, E)
vii. d(P, J)
viii. d(Q, B)
Solution:
i. Co-ordinate of the point B is 2.
Co-ordinate of the point E is 5.
Since, 5 > 2
∴ d(B, E) = 5 – 2
∴ d(B, E) = 3

ii. Co-ordinate of the point J is -2.
Co-ordinate of the point A is 1.
Since, 1 > -2
∴ d(J, A) = 1 – (-2)
= 1 + 2
∴ d(J, A) = 3

iii. Co-ordinate of the point P is -4.
Co-ordinate of the point C is 3.
Since, 3 > -4
∴ d(P,C) = 3 – (-4)
= 3 + 4
∴ d(P,C) = 7

iv. Co-ordinate of the point J is -2.
Co-ordinate of the point H is -1.
Since, -1 > -2
∴ d(J,H) = – 1 – (-2)

= -1 + 2
∴ d(J,H) = 1

v. Co-ordinate of the point K is -3.
Co-ordinate of the point O is 0.
Since,0 > -3
∴ d(K, O) = 0 – (-3)
= 0 + 3
∴ d(K, O) = 3

vi. Co-ordinate of the point O is 0.
∴ Co-ordinate of the point E is 5.
Since, 5 > 0
∴ d(O, E) = 5 – 0
∴ d(O, E) = 5

vii. Co-ordinate of the point P is -4.
Co-ordinate of the point J is -2.
Since -2 > -4
∴ d(P, J) = -2 – (-4)
= – 2+ 4
∴ d(P, J) = 2

viii. Co-ordinate of the point Q is -5.
Co-ordinate of the point B is 2.
Since,2 > -5
∴ d(Q,B) = 2 – (-5)
= 2 + 5
∴ d(Q, B) = 7

Question 2.
If the co-ordinate of A is x and that of B is . y, find d(A, B).
i. x = 1, y = 7
ii. x = 6, y = -2
iii. x = -3, y = 7
iv. x = -4, y = -5
v. x = -3, y = -6
vi. x = 4, y = -8
Solution:
i. Co-ordinate of point A is x = 1.
Co-ordinate of point B is y = 7
Since, 7 > 1
∴ d(A, B) = 7 – 1
∴ d(A, B) = 6

ii. Co-ordinate of point A is x = 6.
Co-ordinate of point B is y = -2.
Since, 6 > -2
∴ d(A, B) = 6 – (-2) = 6 + 2
∴ d(A, B) = 8

iii. Co-ordinate of point A is x = -3.
Co-ordinate of point B is y = 7.
Since, 7 > -3
∴ d(A, B) = 7 – (-3) = 7 + 3
∴ d(A, B) = 10

iv. Co-ordinate of point A is x = -4.
Co-ordinate of point B is y = -5.
Since, -4 > -5
∴ d(A, B) = -4 – (-5)
= -4 + 5
∴ d(A, B) = 1

v. Co-ordinate of point A is x =-3.
Co-ordinate of point B is y = -6.
Since, -3 > -6
∴ d(A, B) = -3 – (-6)
= -3 + 6
∴ d(A, B) = 3

vi. Co-ordinate of point A is x = 4.
Co-ordinate of point B is y = -8.
Since, 4 > -8
∴ d(A, B) = 4 – (-8)
= 4 + 8
∴d(A, B) = 12

Question 3.
From the information given below, find which of the point is between the other two.
If the points are not collinear, state so.
i. d(P, R) = 7, d(P, Q) = 10, d(Q, R) = 3
ii. d(R, S) = 8, d(S, T) = 6, d(R, T) = 4
iii. d(A, B) = 16, d(C, A) = 9, d(B, C) = 7
iv. d(L, M) =11, d(M, N) = 12, d(N, L) = 8
v. d(X, Y) = 15, d(Y, Z) = 7, d(X, Z) = 8
vi. d(D, E) = 5, d(E, F) = 8, d(D, F) = 6
Solution:
i. Given, d(P, R) = 7, d(P, Q) = 10, d(Q, R) = 3
d(P, Q) = 10 …(i)

d(P, R) + d(Q, R) = 7 + 3 = 10 .. .(ii)
∴ d(P, Q) = d(P, R) + d(Q, R) …[From (i) and (ii)]
∴ Point R is between the points P and Q
i. e., P – R – Q or Q – R – P.
∴ Points P, R, Q are collinear.

ii. Given, d(R, S) = 8, d(S, T) = 6, d(R, T) = 4
d(R, S) = 8 …(i)
d(S, T) + d(R, T) = 6 + 4 = 10 …(h)
∴ d(R, S) ≠ d(S, T) + d(R, T) … [From (i) and (ii)]
∴ The given points are not collinear.

iii. Given, d(A, B) = 16, d(C, A) = 9, d(B, C) = 7
d(A, B) = 16 …(i)
d(C, A) + d(B, C) = 9 + 7 = 16 …(ii)
∴ d(A, B) = d(C, A) + d(B, C) …[From(i) and (ii)]
∴ Point C is between the points A and B.
i. e., A – C – B or B – C – A.
∴ Points A, C, B are collinear

iv. Given, d(L, M) = 11, d(M, N) = 12, d(N, L) = 8
d(M, N) = 12 …(i)
d(L, M) + d(N, L) = 11 + 8 = 19 …(ii)
∴d(M, N) + d(L, M) + d(N, L) … [From (i) and (ii)]
∴ The given points are not collinear.

v. Given, d(X, Y) = 15, d(Y, Z) = 7, d(X, Z) = 8
d(X, Y) = 15 …(i)
d(X,Z) + d(Y, Z) = 8 + 7= 15 …(ii)
∴ d(X, Y) = d(X, Z) + d(Y, Z) …[From (i) and (ii)]
∴ Point Z is between the points X and Y
i. e.,X – Z – Y or Y – Z – X.
∴ Points X, Z, Y are collinear.

vi. Given, d(D, E) = 5, d(E, F) = 8, d(D, F) = 6
d(E, F) = 8 …(i)
d(D, E) + d(D, F) = 5 + 6 = 11 …(ii)
∴ d(E, F) ≠ d(D, E) + d(D, F) … [From (i) and (ii)]
∴ The given points are not collinear.

Question 4.
On a number line, points A, B and C are such that d(A, C) = 10, d(C, B) = 8. Find d(A, B) considering all possibilities.

Solution:
Given, d(A, C) = 10, d(C, B) = 8.

Case I: Points A, B, C are such that, A – B – C.

∴ d(A, C) = d(A, B) + d(B, C)
∴ 10 = d(A, B) + 8
∴ d(A, B) = 10 – 8
∴ d(A, B) = 2

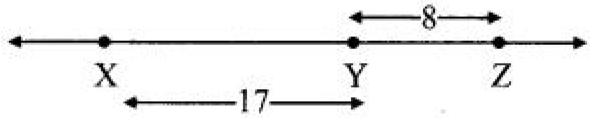
Case II: Points A, B, C are such that, A – C – B.

∴ d(A, B) = d(A, C) + d(C, B)
= 10 + 8
∴ d(A, B) = 18

Case III: Points A, B, C are such that, B – A – C.

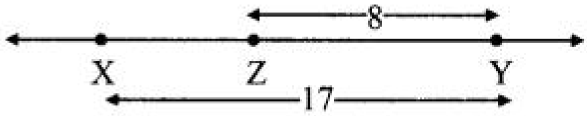
From the diagram,
d (A, C) > d(B, C)
Which is not possible
∴ Point A is not between B and C.
∴ d(A, B) = 2 or d(A, B) = 18.

Question 5.
Points X, Y, Z are collinear such that d(X, Y) = 17, d(Y, Z) = 8, find d(X, Z).
Solution:
Given,d(X, Y) = 17, d(Y, Z) = 8
Case I: Points X, Y, Z are such that, X – Y – Z.



∴ d(X, Z) = d(X, Y) + d(Y, Z)
= 17 + 8
∴ d(X, Z) = 25

Case II: Points X, Y, Z are such that, X – Z – Y.



∴ d(X,Y) = d(X,Z) + d(Z,Y)
∴ 17 = d(X, Z) + 8
∴ d(X, Z) = 17 – 8
∴ d(X, Z) = 9

Case III: Points X, Y, Z are such that, Z – X – Y.

From the diagram,
d(X, Y) > d (Y, Z)
Which is not possible
∴ Point X is not between Z and Y.
∴ d(X, Z) = 25 or d(X, Z) = 9.

Question 6.
Sketch proper figure and write the answers of the following questions. [2 Marks each]
i. If A – B – C and l(AC) = 11,
l(BC) = 6.5, then l(AB) = ?
ii. If R – S – T and l(ST) = 3.7,
l(RS) = 2.5, then l(RT) = ?
iii. If X – Y – Z and l(XZ) = $3\sqrt{7}$,
l(XY) = $\sqrt{7}$, then l(YZ) = ?
Solution:
i. Given, l(AC) =11, l(BC) = 6.5

l(AC) = l(AB) + l(BC) … [A – B – C]
∴ 11= l(AB) + 6.5
∴ l(AB) = 11 – 6.5
∴ l(AB) = 4.5

ii. Given, l(ST) = 3.7, l(RS) = 2.5

l(RT) = l(RS) + l(ST) … [R – S – T]
= 2.5 + 3.7
∴ (RT) = 6.2

iii. l(XZ) = $3\sqrt{7}$, l(XY) = $\sqrt{7}$,

l(XZ) = l(X Y) + l(YZ) … [X – Y – Z]
∴ $3\sqrt{7} \Rightarrow \sqrt{7}$ + l(YZ)
∴ l(YZ)= $3\sqrt{7} - \sqrt{7}$
∴ l(YZ) = $2\sqrt{7}$

Question 7.
Which figure is formed by three non-collinear points?
Solution:
Three non-collinear points form a triangle.

Practice Set 1.2 Geometry 9th Std Maths Part 2 Answers Chapter 1 Basic Concepts in Geometry

Question 1.
The following table shows points on a number line and their co-ordinates. Decide whether the pair of segments given below the table are congruent or not.

Point	A	B	C	D	E
Co-ordinate	–3	5	2	–7	9

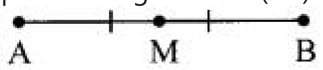
i. seg DE and seg AB
ii. seg BC and seg AD
iii. seg BE and seg AD
Solution:
i. Co-ordinate of the point E is 9.
Co-ordinate of the point D is -7.
Since, 9 > -7
∴ d(D, E) = 9 – (-7) = 9 + 7 = 16
∴ l(DE) = 16 …(i)
Co-ordinate of the point A is -3.
Co-ordinate of the point B is 5.
Since, 5 > -3
∴ d(A, B) = 5 – (-3) = 5 + 3 = 8
∴ l(AB) = 8 …(ii)
∴ l(DE) ≠ l(AB) …[From (i) and (ii)]
∴ seg DE and seg AB are not congruent.

ii. Co-ordinate of the point B is 5.
Co-ordinate of the point C is 2.
Since, 5 > 2
∴ d(B, C) = 5 – 2 = 3
∴ l(BC) = 3 …(i)

Co-ordinate of the point A is -3.
Co-ordinate of the point D is -7.
Since, -3 > -7
∴ d(A, D) = -3 – (-7) = -3 + 7 = 4
∴ l(AD) = 4 . ..(ii)
∴ l(BC) ≠ l(AD) … [From (i) and (ii)]
∴ seg BC and seg AD are not congruent.

iii. Co-ordinate of the point E is 9.
Co-ordinate of the point B is 5.
Since, 9 > 5
∴ d(B, E) = 9 – 5 = 4
∴ l(BE) = 4 …(i)
Co-ordinate of the point A is -3.
Co-ordinate of the point D is -7.
Since, -3 > -7
∴ d(A, D) = -3 – (-7) = 4
∴ l(AD) = 4 …(ii)
∴ l(BE) =l(AD) …[From (i) and (ii)]
∴ seg BE and seg AD are congruent.
i.e, seg BE ≅ seg AD

Question 2.
Point M is the midpoint of seg AB. If AB = 8, then find the length of AM.
Solution:
Point M is the midpoint of seg AB and l(AB) = 8. …[Given]



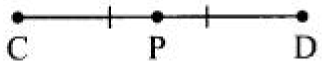
$$l(\text{AM}) = \frac{1}{2} l(\text{AB})$$

…[∵ M is midpoint of seg AB]

$$\therefore \quad l(\text{AM}) = \frac{1}{2} \times 8 = 4$$

$$\therefore \quad \boldsymbol{l(\text{AM}) = 4}$$

Question 3.
Point P is the midpoint of seg CD. If CP = 2.5, find l(CD).
Solution:
Point P is the midpoint of seg CD and l(CP) = 2.5 …[Given]



$$l(CP) = \frac{1}{2} l(CD)$$

...[∵ P is midpoint of seg CD]

$$\therefore \quad 2.5 = \frac{1}{2} \times l(CD)$$

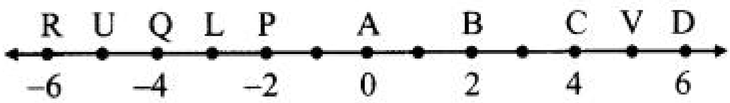
∴ l(CD) = 2.5 x 2
∴ l(CD) = 5

Question 4.
If AB = 5 cm, BP = 2 cm and AP = 3.4 cm, compare the segments.
Solution:
Given, l(AB) = 5 cm, l(BP) = 2 cm,
l(AP) = 3.4 cm ... [Given]
r Since, 2 < 3.4 < 5
∴ l(BP) < l(AP) < l(AB)
i.e., seg BP < seg AP < seg AB

Question 5.
Write the answers to the following questions with reference to the figure given below:

i. Write the name of the opposite ray of ray RP
ii. Write the intersection set of ray PQ and ray RP.
iii. Write the union set of ray PQ and ray QR.
iv. State the rays of which seg QR is a subset.
v. Write the pair of opposite rays with common end point R.
vi. Write any two rays with common end point S.
vii. Write the intersection set of ray SP and ray ST.
Answer:
i. Ray RS or ray RT
ii. Ray PQ
iii. Line QR
iv. Ray QR, ray QS, ray QT, ray RQ, ray SQ, ray TQ
v. Ray RP and ray RS, ray RQ and ray RT vi. Ray ST, ray SR
vii. Point S

Question 6.
Answer the questions with the help of figure given below.



i. State the points which are equidistant from point B.
ii. Write a pair of points equidistant from point iii. Find d(U,V), d(P,C), d(V,B), d(U, L).

Answer:
i. Points equidistant from point B are a. A and C, because d(B, A) = d(B, C) = 2 b. D and P, because d(B, D) = d(B, P) = 4
ii. Points equidistant from point Q are a. L and U, because d(Q, L) = d(Q, U) = 1 b. P and R, because d(P, Q) = d(Q, R) = 2
iii. a. Co-ordinate of the point U is -5. Co-ordinate of the point V is 5. Since, 5 > -5
∴ d(U, V) = 5 – (-5)
= 5 + 5
∴ d(U, V) = 10

b. Co-ordinate of the point P is -2.
Co-ordinate of the point C is 4.
Since, 4 > -2
∴ d(P, C) = 4 – (-2)
= 4 + 2
∴ d(P, C) = 6

c. Co-ordinate of the point V is 5.
Co-ordinate of the point B is 2.
Since, 5 > 2
∴ d(V, B) = 5 – 2
∴ d(V, B) = 3

d. Co-ordinate of the point U is -5.
Co-ordinate of the point L is -3.
Since, -3 > -5
∴ d(U, L) = -3 – (-5)
= -3 + 5
∴ d(U, L) = 2

Practice Set 1.3 Geometry 9th Std Maths Part 2 Answers Chapter 1 Basic Concepts in Geometry

Question 1.
Write the following statements in 'if-then' form.
i. The opposite angles of a parallelogram are congruent.
ii. The diagonals of a rectangle are congruent.
iii. In an isosceles triangle, the segment joining the vertex and the midpoint of the base is perpendicular to the base.
Answer:
i. If a quadrilateral is a parallelogram, then its opposite angles are congruent.
ii. If a quadrilateral is a rectangle, then its diagonals are congruent.
iii. If a triangle is isosceles triangle, then segment joining the vertex of a triangle and midpoint of the base is perpendicular to the base.

Question 2.
Write converses of the following statements.
i. The alternate angles formed by two parallel lines and their transversal are congruent.
ii. If a pair of the interior angles made by a transversal of two lines are supplementary, then the lines are parallel.
iii. The diagonals of a rectangle are congruent.
Answer:
i. If the alternate angles made by two lines and their transversal are congruent, then the two lines are parallel.
ii. If two parallel lines are intersected by a transversal, then the interior angles formed bv the transversal are supplementary.
iii. If the diagonals of a quadrilateral are congruent, then that quadrilateral is a rectangle.

Problem Set 1 Geometry 9th Std Maths Part 2 Answers Chapter 1 Basic Concepts in Geometry

Question 1.
Select the correct alternative answer for the questions given below.

i. How many midpoints does a segment have ?
(A) only one
(B) two
(C) three
(D) many
Answer:
(A) only one

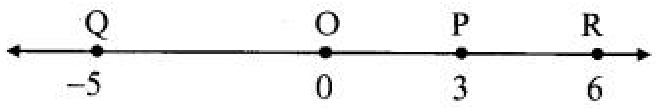
ii. How many points are there in the intersection of two distinct lines ?
(A) infinite
(B) two
(C) one
(D) not a single
Answer:
(C) one

iii. How many lines are determined by three distinct points?
(A) two
(B) three
(C) one or three
(D) six
Answer:
(C) one or three

iv. Find d(A, B), if co-ordinates of A and B are – 2 and 5 respectively.
(A) -2
(B) 5

(C) 7
(D) 3
Answer:
Since, 5 > -2
∴ d(A, B) = 5 – (-2) = 5+2 = 7
(C) 7

v. If P – Q – R and d(P, Q) = 2, d(P, R) = 10, then find d(Q, R).
(A) 12
(B) 8
(C) √96
(D) 20
Answer:
d(P, R) = d(P, Q) + d(Q, R)
∴ 10 = 2 + d(Q, R)
∴ d(Q, R) = 8
(B) 8

Question 2.
On a number line, co-ordinates of P, Q, R are 3,-5 and 6 respectively. State with reason whether the following statements are true or false.
i. d(p, Q) + d(Q, R) = d(P, R)
ii. d(P, R) + d(R, Q) = d(P, Q)
iii. d(R, P) + d(P, Q) = d(R, Q)
iv. d(P, Q) – d(P, R) = d(Q, R)
Solution:


Co-ordinate of the point P is 3.
Co-ordinate of the point Q is -5.
Since, 3 > -5
d(P, Q) = 3 – (-5) = 3 + 5
∴ d(P,Q) = 8
Co-ordinate of the point Q is -5.
Co-ordinate of the point R is 6.
Since, 6 > -5
d(Q, R) = 6 – (-5) = 6 + 5
∴ d(Q, R) = 11
Co-ordinate of the point P is 3.
Co-ordinate of the point R is 6.
Since, 6 > 3
d(P, R) = 6 – 3
∴ d(P, R) = 3

i. d(P, Q) + d(Q, R) = 8 + 11
= 19 ...(i)
d(P, R) = 3 ...(ii)

∴ d(P, Q) + d(Q, R) ≠ d(P, R) … [From (i) and (ii)]
∴ The given statement is false.

ii. d(P, R) + d(R, Q) = 3 + 11
d(P,Q) = 8 …(ii)
∴ d(P, R) + d(R, Q) + d(P, Q) …[From (i) and (ii)]
∴ The given statement is false.

iii. d(R, P) + d(P, Q) = 3 + 8
= 11 …(i)
d(R, Q) =11 . -(ii)
∴ d(R,P) + d(P,Q) = d(R,Q) ….[From (i) and (ii)]
∴ The given statement is true.

iv. d(P, Q) – d(P, R) = 8 – 3
= 5 …(i)
d(Q,R) = 11 ..(h)
∴ d(P, Q) – d(P, R) ≠ d(Q, R) …[From (i) and (ii)]
∴ The given statement is false.

Question 3.
Co-ordinates of some pairs of points are given below. Hence find the distance between each pair.
i. 3,6
ii. -9, -1
iii. A, 5
iv. 0,-2
v. x + 3, x – 3
vi. -25, -47
vii. 80, -85
Solution:
i. Co-ordinate of first point is 3.
Co-ordinate of second point is 6.
Since, 6 > 3
∴ Distance between the points = 6 – 3 = 3

ii. Co-ordinate of first point is -9.
Co-ordinate of second point is -1.
Since, -1 > -9
∴ Distance between the points = -1 – (-9) = -1+9 = 8

iii. Co-ordinate of first point is -4.
Co-ordinate of second point is 5.
Since, 5 > -4
∴ Distance between the points = 5 – (-4)
= 5 + 4 = 9

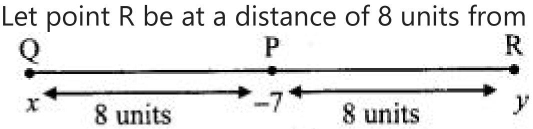
iv. Co-ordinate of first point is 0.
Co-ordinate of second point is -2. Since,
0 > – 2
∴ Distance between the points = 0 – (-2)
= 0 + 2
= 2

v. Co-ordinate of first point is x + 3.
Co-ordinate of second point is x – 3.
Since, x + 3 > x – 3
∴ Distance between the points = x + 3 – (x – 3)
= x + 3 – x + 3 = 3 + 3
= 6

vi. Co-ordinate of first point is -25.
Co-ordinate of second point is -47.
Since, -25 > -47
∴ Distance between the points = -25 – (-47)
= -25 + 47
= 22

vii. Co-ordinate of first point is 80.
Co-ordinate of second point is -85.
Since, 80 > -85
∴ Distance between the points = 80 – (-85)
= 80 + 85
= 165

Question 4.
Co-ordinate of point P on a number line is – 7. Find the co-ordinates of points on the number line which are at a distance of 8 units from point P.
Solution:
Let point Q be at a distance of 8 units from P and on left side of P
Let point R be at a distance of 8 units from P and on right side of P.



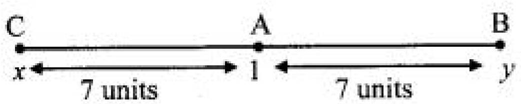
i. Let the co-ordinate of point Q be x.
Co-ordinate of point P is -7.
Since, point Q is to the left of point P.
∴ -7 > x
∴ d(P, Q) = -7 -x
∴8 = -7 – x
∴ x = – 7 – 8
∴x = -15

ii. Let the co-ordinate of point R be y.
Co-ordinate of point P is -7.
Since, point R is to the right of point P.
∴ $y > -7$
∴ d(P, R) = 7- (-7)
∴ 8 = y + 7
∴ 8 – 7 = 7
∴ y = 1
∴ The co-ordinates of the points at a distance of 8 units from P are -15 and 1.

Question 5.
Answer the following questions.
i. If A – B – C and d(A, C) = 17, d(B, C) = 6.5, then d (A, B) = ?
ii. If P – Q – R and d(P, Q) = 3.4, d(Q, R) = 5.7, then d(P, R) = ?
Solution:
i. Given, (A, C) = 17, d(B, C) = 6.5
d(A, C) = d(A, B) + d(B, C) …[A – B – C]
∴ 17 = d(A, B) + 6.5
∴ d(A,B)= 17 – 6.5
∴ d(A, B) = 10.5

ii. Given, d(P, Q) = 3.4, d(Q, R) = 5.7
d(P,R) = d(P,Q) + d(Q,R) …[P – Q – R]
= 34 + 5.7
∴ d(P, R) = 9.1

Question 6.
Co-ordinate of point A on a number line is 1. What are the co-ordinates of points on the number line which are at a distance of 7 units from A ?
Solution:
Let point C be at a distance of 7 units from A and on left side of A
Let point B be at a distance of 7 units from A and on right side of A.



i. Let the co-ordinate of point C be x.
Co-ordinate of point A is 1.
Since, point C is to the left of point A.
∴ 1 > x
∴ d(A, C) = 1 – x
∴ 7 = 1 -x
∴x = 1 – 7
∴ x = – 6

ii. Let the co-ordinate of point B be y.
Co-ordinate of point A is 1.
Since, point B is to the right of point A.

∴y > 1
∴ d(A, B) = 7 – 1
∴ 7 = y – 1
∴ 7 + 1 = 7
∴ 7 = 8
∴ The co-ordinates of the points at a distance of 7 units from A are -6 and 8.

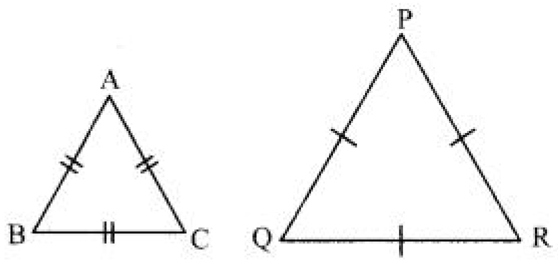
Question 7.
Write the following statements in conditional form.
i. Every rhombus is a square.
ii. Annies in a linear pair are supplementary.
iii. A triangle is a figure formed by three segments
iv. A number having only two divisors is called a prime number.
Solution:
i If a quadrilateral is a rhombus, then it is a square.
ii. If iwo angles are in a linear pair, then they are supplementary.
iii. If a figure is a triangle, then it is formed by three segments.
iv. If a number has only two divisors, then it is a prime number.

Question 8.
Write the converse of each of the following statements.
i. If the sum of measures of angles in a figure is 180°, then the figure is a triangle.
ii If the sum of measures of two angles is 90°, thfcn they are eomplement of each other.
iii. If the corresponding angles formed by a transversal of two lines are congruent, then the two lines are parallel.
iv. If the sum of the digits of a number is divisible by 3, then the number is divisible by 3.
Answer:
i. If a figure is a triangle, then the sum of the measures of its angles is 180°.
ii. if two angles are eomplement of each other, then sum of their measures is 90°,
iii. If two lines are parallel, then the corresponding angles formed by a transversal of two lines are congruent.
iv. If a number is divisible by 3, then the sum of its digits is also divisible by 3.

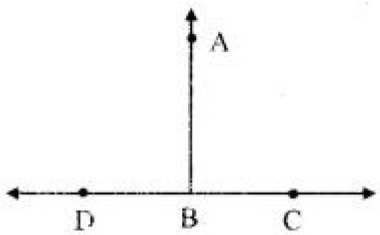
Question 9.
Write the antecedent (given part) and the consequent (part to be proved) in the following statements.
i. If all sides of a triangle are congruent, then its all angles are congruent.
ii. The diagonals of a parallelogram bisect each other.
Answer:
i. If all sides of a triangle are congruent, then its all angles are congruent.
Antecedent (Given): All the sides of the triangle are congruent.
Consequent (To prove): All the angles are congruent.

ii. The diagonals of a parallelogram bisect each other.
Conditional statement: "If a quadrilateral is a parallelogram then its diagonals bisect each other.
Antecedent (Given): Quadrilateral is a parallelogram.
Consequent (To prove): Its diagonals bisect each other.

Question 10.
Draw a labelled figure showing information in each of the following statements and write the antecedent and the consequent.
i. Two equilateral triangles are similar.
ii. If angles in a linear pair are congruent, then each of them is a right angle.
iii. If the altitudes drawn on two sides of a triangle are congruent, then these two sides are congruent.
Answer:
i. Two equilateral triangles are similar.
Conditional statement: "If two triangles are equilateral, then they are similar.
Antecedent (Given): Two triangles are equailateral.
i.e. ΔABC and ΔPQR are equilatral triangle.
Consequent (To prove): Triangles are similar
i.e. ΔABC ~ ΔPQR

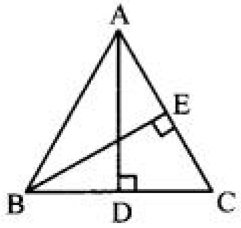


ii. If angles in a linear pair are congruent, then each of them is a right angle.
Antecedent (Given): Angles in a linear pair are congrunent.
∠ABC and ∠ABD are angles in a linear pair i.e. ∠ABC = ∠ABD
Consequent (To prove): Each angle is a right angle.
i.e. ∠ABC – ∠ABD = 90°



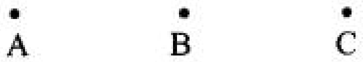
iii. If the altitudes drawn on two sides of a triangle are congruent, then these two sides are congruent.
Antecedent (Given): Altitude drawn on two sides of triangle are congrunent.
In ΔABC, AD ⊥ BC . and BE ⊥ AC. seg AD ≅ seg BE

Consequent (To prove): Two sides are congruent.
side BC ≅ side AC A



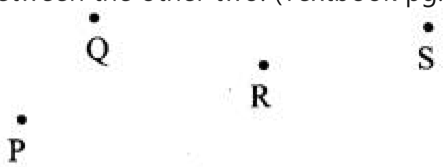
Maharashtra Board Class 9 Maths Chapter 1 Basic Concepts in Geometry Problem Set 1 Intext Questions and Activities

Question 1.
Points A, B, C are given below. Check, with a stretched thread, whether the three points are collinear or not. If they are collinear, write which one of them is between the other two. (Textbook pg. no. 4)



Answer:
Point B is between the points A and C.

Question 2.
Given below are four points P, Q, R, and S. Check which three of them are collinear and which three are non collinear. In the case of three collinear points, state which of them is between the other two. (Textbook pg. no. 4)



Answer:
Points P, R and S are collinear.
Point R is between the points P and S.

Question 3.
Students are asked to stand in a line for mass drill. How will you check whether the students standing are in a line or not ? (Textbook pg. no. 4)
Answer:
If one stands in front of the line and observes only the first student standing in the line, then all the students standing in that line are collinear i.e., standing in the same line. We can use this property of collinearity to check whether the students are standing in the same line or not.

Question 4.
How had you verified that light rays travel in a straight line? Recall an experiment in science which you have done in a previous standard. (Textbook pg. no. 4)

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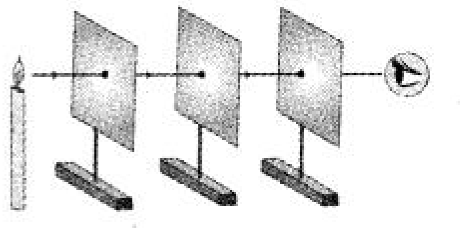
Answer:



The flame of the candle can be seen only when the pin holes in all cardboards are in the same straight line. We can use the set up shown in the figure above to verify that light rays travels in a straight line.