Date 2.8.21
Page 3

Ex - 7.1 Ch-7 Coordinate Geometry

1. Find the distance between following

(i) (2,3), (4,1)

A. l = $\sqrt{(2-4)^2+(3-1)^2}$
= $\sqrt{(-2)^2+(2)^2}$ = $\sqrt{4+4}$ = $\sqrt{8}$ = $2\sqrt{2}$

(ii) (-5,7), (-1,3)

A. l = $\sqrt{(-5-(-1))^2+(7-3)^2}$ = $\sqrt{(-4)^2+(4)^2}$ = $\sqrt{16+16}$ = $\sqrt{32}$
= $4\sqrt{2}$

(iii) (a,b) (-a,-b)

A. l = $\sqrt{(a-(-a))^2+(b-(-b))^2}$ = $\sqrt{(2a)^2+(2b)^2}$ = $\sqrt{4a^2+4b^2}$
= $2\sqrt{a^2+b^2}$

2. A Distance between point (0,0) & (36,15)
= $\sqrt{(36-0)^2+(15-0)^2}$ = $\sqrt{36^2+15^2}$ = $\sqrt{1296+225}$
= $\sqrt{1521}$ = $\sqrt{39}$

Town A at origin point (0,0)
∴ Town B will be at point (36,15) with respect to town A.
So, Distance between A & B will be 39 km

3. A let points (1,5), (2,3) & (-2,-11) be A, B, C
AB = $\sqrt{(1-2)^2+(5-3)^2}$ = $\sqrt{5}$
BC = $\sqrt{(2-(-2))^2+(3-(-11))^2}$ = $\sqrt{4^2+14^2}$ = $\sqrt{16+196}$ = $\sqrt{212}$
CA = $\sqrt{(1-(-2))^2+(5-(-11))^2}$ = $\sqrt{3^2+16^2}$ = $\sqrt{9+256}$ = $\sqrt{265}$
So, AB + BC ≠ CA
∴ Points (1,5), (2,3) & (-2,-11) are not collinear

4. A let points (5,-2), (6,4) & (7,-2) are A, B & C
AB = $\sqrt{(5-6)^2+(-2-4)^2}$ = $\sqrt{(-1)^2+(-6)^2}$ = $\sqrt{1+36}$ = $\sqrt{37}$

$BC = \sqrt{(6-7)^2+(4-(-2))^2} = \sqrt{(-1)^2+(6)^2} = \sqrt{1+36} = \sqrt{37}$

$CA = \sqrt{(5-7)^2+(-2-(-2))^2} = \sqrt{(-2)^2+0^2} = 2$

$\therefore AB = BC$, two sides are equal in length

So, $\triangle ABC$ is an Isosceles $\triangle$

5A $A(3,4)$, $B(6,7)$, $C(9,4)$ & $D(6,1)$ are position of 4 friends

$AB = \sqrt{(3-6)^2+(4-7)^2} = \sqrt{(-3)^2+(-3)^2} = \sqrt{9+9} = \sqrt{18} = 3\sqrt{2}$

$BC = \sqrt{(6-9)^2+(7-4)^2} = \sqrt{(-3)^2+(3)^2} = \sqrt{9+9} = \sqrt{18} = 3\sqrt{2}$

$CD = \sqrt{(9-6)^2+(4-1)^2} = \sqrt{(3)^2+(3)^2} = \sqrt{9+9} = \sqrt{18} = 3\sqrt{2}$

$DA = \sqrt{(3-6)^2+(4-1)^2} = \sqrt{(-3)^2+(3)^2} = \sqrt{9+9} = \sqrt{18} = 3\sqrt{2}$

Diagonal $AC = \sqrt{(3-9)^2+(4-4)^2} = \sqrt{(-6)^2} = 6$

Diagonal $BD = \sqrt{(6-6)^2+(7-1)^2} = \sqrt{(6)^2} = 6$

So, all sides of quadrilateral ABCD are same length & also diagonal are of same length

$\therefore$ ABCD is a Square & shape is well formed