Date :

K-Means Clustering

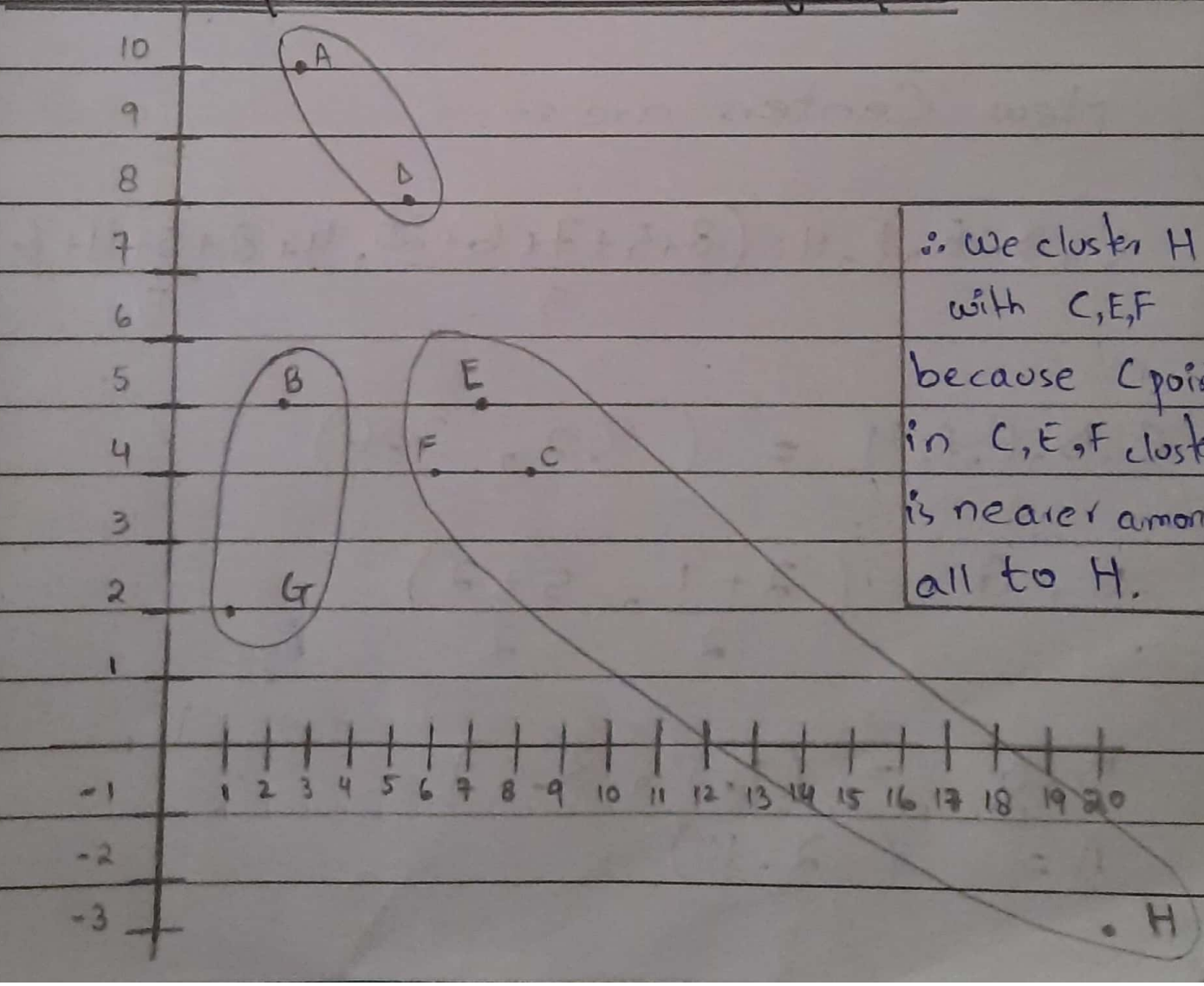
A(2,10) , B(2,5) , C(8,4)

D(5,8) , E(7,5) , F(6,4)

G(1,2) , H(20,-3)

Start from center A, D, G

Visual Representation on a graph



∴ we cluster H with C, E, F because C point in C, E, F cluster is nearer among all to H.

Date :

Iteration #1

	A(2,10)	D(5,8)	G(1,2)
A	0 +	3.605	8.062
B	5	4.242	3.162 +
C	8.485	5 +	7.280
D	3.605	0 +	7.211
E	7.071	3.605 +	6.708
F	7.211	4.123 +	5.385
G	8.062	7.211	0 +
H	22.203	18.601 +	19.646

New Centers are :-

$$C, D, E, F, H = \left(\frac{8+5+7+6+20}{5}, \frac{4+8+5+4+(-3)}{5}\right)$$

$$C, D, E, F, H = (9.2, 3.6)$$

$$B, G = \left(\frac{2+1}{2}, \frac{5+2}{2}\right)$$

$$B, G = (1.5, 3.5)$$

$$A = (2, 10)$$

Date :

Iteration #2

	A(2,10)	C,D,E,F,H (9.2, 3.6)	B, G (1.5, 3.5)
A	0 +	9.633	6.519
B	5	7.334	1.581 +
C	8.485	1.264 +	6.519
D	3.605+	6.082	5.700
E	7.071	2.607 +	5.700
F	7.211	3.224 +	4.527
G	8.062	8.354	1.581 +
H	22.203	12.657 +	19.608

New Centers are :-

$$A, D = \left(\frac{2+5}{2}, \frac{10+8}{2}\right) = (3.5, 9)$$

$$C, E, F, H = \left(\frac{8+7+6+20}{4}, \frac{4+5+4+(-3)}{4}\right)$$

$$C, E, F, H = (10.25, 2.5)$$

$$B, G = \left(\frac{2+1}{2}, \frac{5+2}{2}\right) = (1.5, 3.5)$$

Date

	A,D (3.5, 9)	C, E, F, H (10.25, 2.5)	B, G (1.5, 3.5)
A	1.802 +	11.149	6.519
B	4.272	8.620	1.581 +
C	6.726	2.704 +	6.519
D	1.802 +	7.603	5.700
E	5.315	4.100 +	5.700
F	5.590	4.506 +	4.527
G	7.433	9.263	1.581 +
H	20.402	11.194 +	19.608

New Centers are:-

(A, D)

(C, E, F, H)

(B, G)

Not updation in a result so upper listed clusters are a final result and this answer is also matched with our visual representation on a graph.