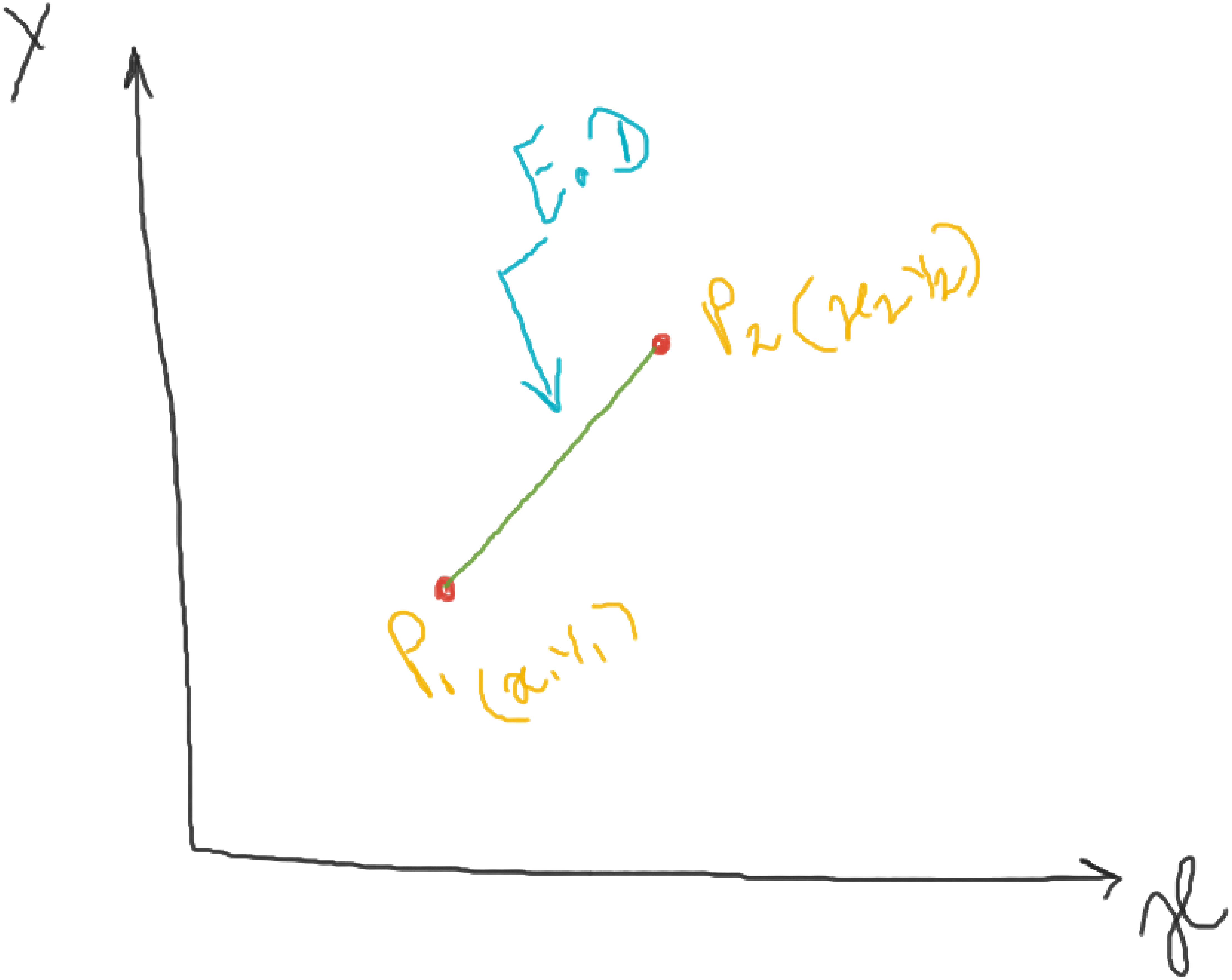

Y
x
E.D
P2 (x2, y2)
P1 (x1, y1)

$$E.D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$p = 2$$

$P_1(1,2)$ & $P_2(4,6)$

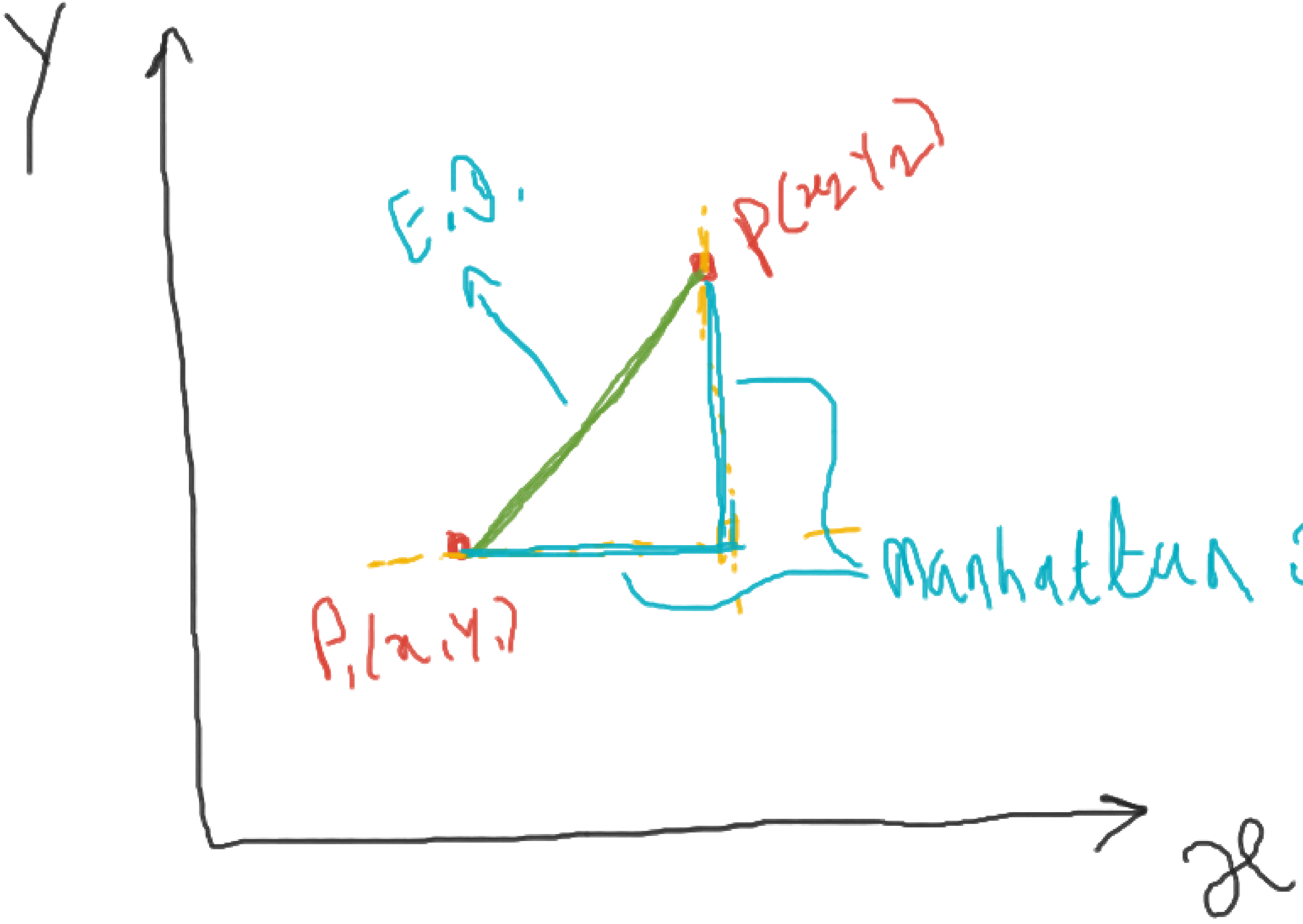
$$E.D = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2} = \sqrt{(4-1)^2+(6-2)^2} = \sqrt{(3)^2+(4)^2}$$

$$= \sqrt{9+16} = \sqrt{25}$$

$$E.D = 5$$

11] Manhattan Distance :-

$\underline{\underline{P = 1}}$



$$M.D. = |x_2 - x_1| + |y_2 - y_1|$$

Manhattan distance is always greater than the Euclidean distance

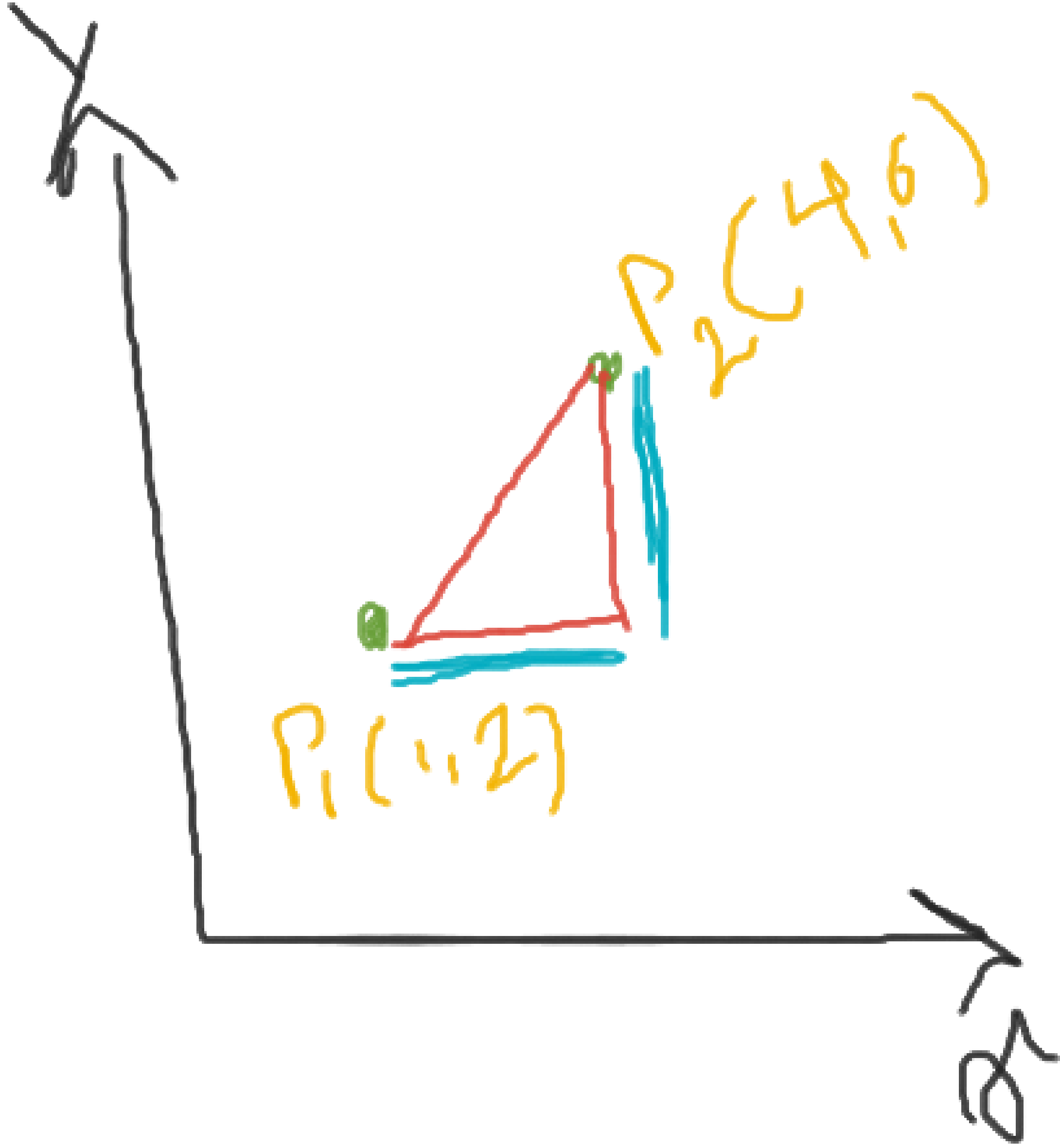
$$M.D. > E.D.$$

$$M.D. = |x_2 - x_1| + |y_2 - y_1|$$

$$= |4 - 1| + |6 - 2|$$

$$= |3| + |4|$$

$$= 7 \,//$$



$E.D = 5, \quad M.D = 7,$

$M.D > E.D$

iii] Minkowski Distance Metrics :-

$$= \left(\sum |x_i - y_i|^p \right)^{1/p}$$

E.g. ① $p = 2$

$$= \left(\sum |x_i - y_i|^p\right)^{1/p} = \left(\sum |x_i - y_i|^2\right)^{1/2} = \sqrt{\left(\sum |x_i - y_i|^2\right.}$$

$$= \sqrt{(x_2 - x_1)^2}$$

M.D : $\quad p = 1$

$$= \left(\sum |x_i - y_i|^p\right)^{1/p} = \left(\sum |x_i - y_i|^1\right)^{1/1}$$

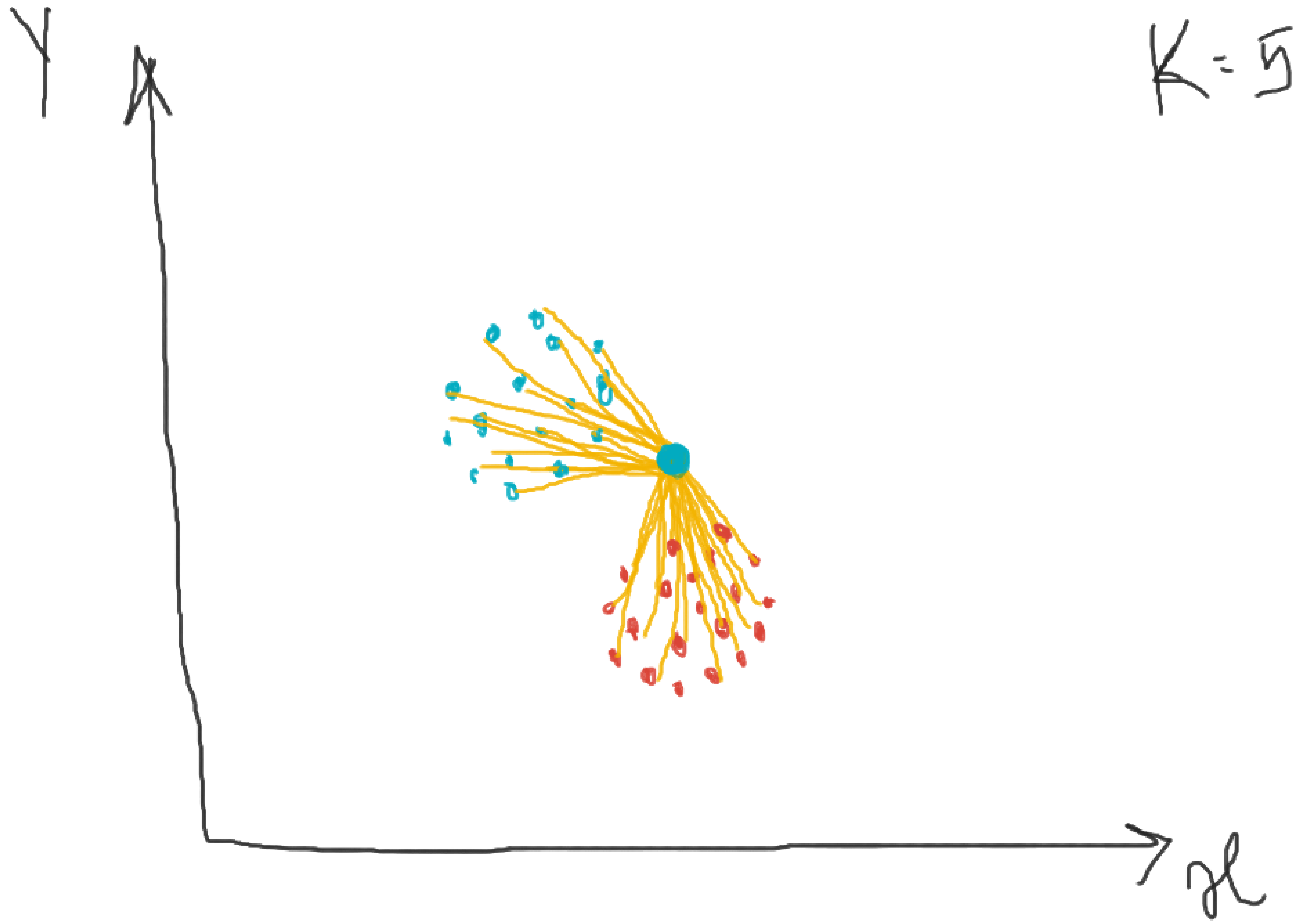
$$= \left(\sum |x_i - y_i|^1 = |x_2 - x_1|\right.$$

$$E.D. = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$ (Euclidean Distance)

$P = 2$

$$M.D. = |x_2 - x_1| + |y_2 - y_1|$$ (Manhattan Distance)

$P = 1$



Y
K=5
x

$K=5$

15 → R	1 → R
18 → B	2 → B
12 → R	3 → R
4 → B	4 → B
3 → R	5 → B
10 → R	8 → B
2 → B	9 → R
8 → B	10 → R
1 → R	12 → R
5 → B	15 → R
9 → R	18 → B

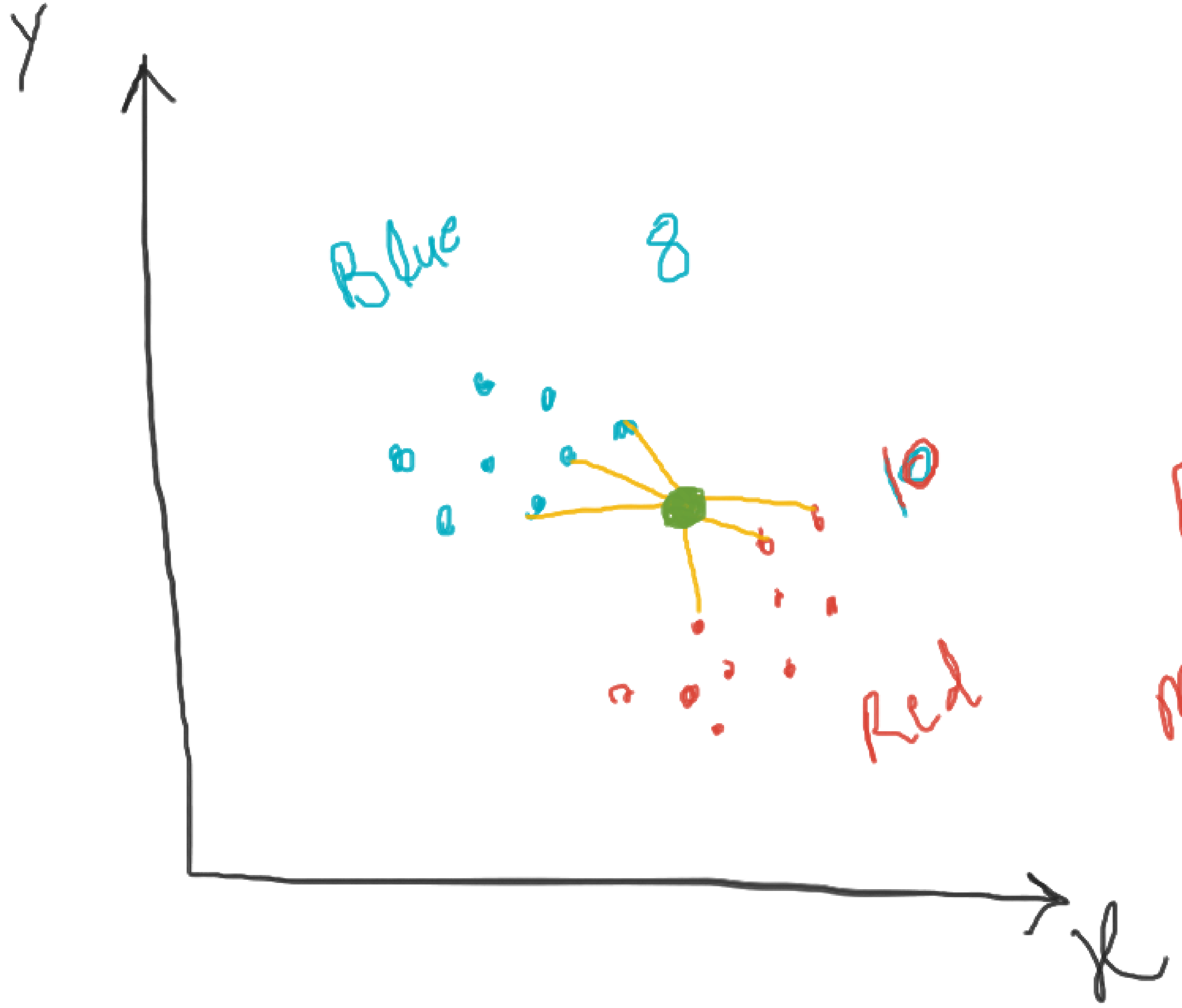
Red → 2

Blue → 3

Blue

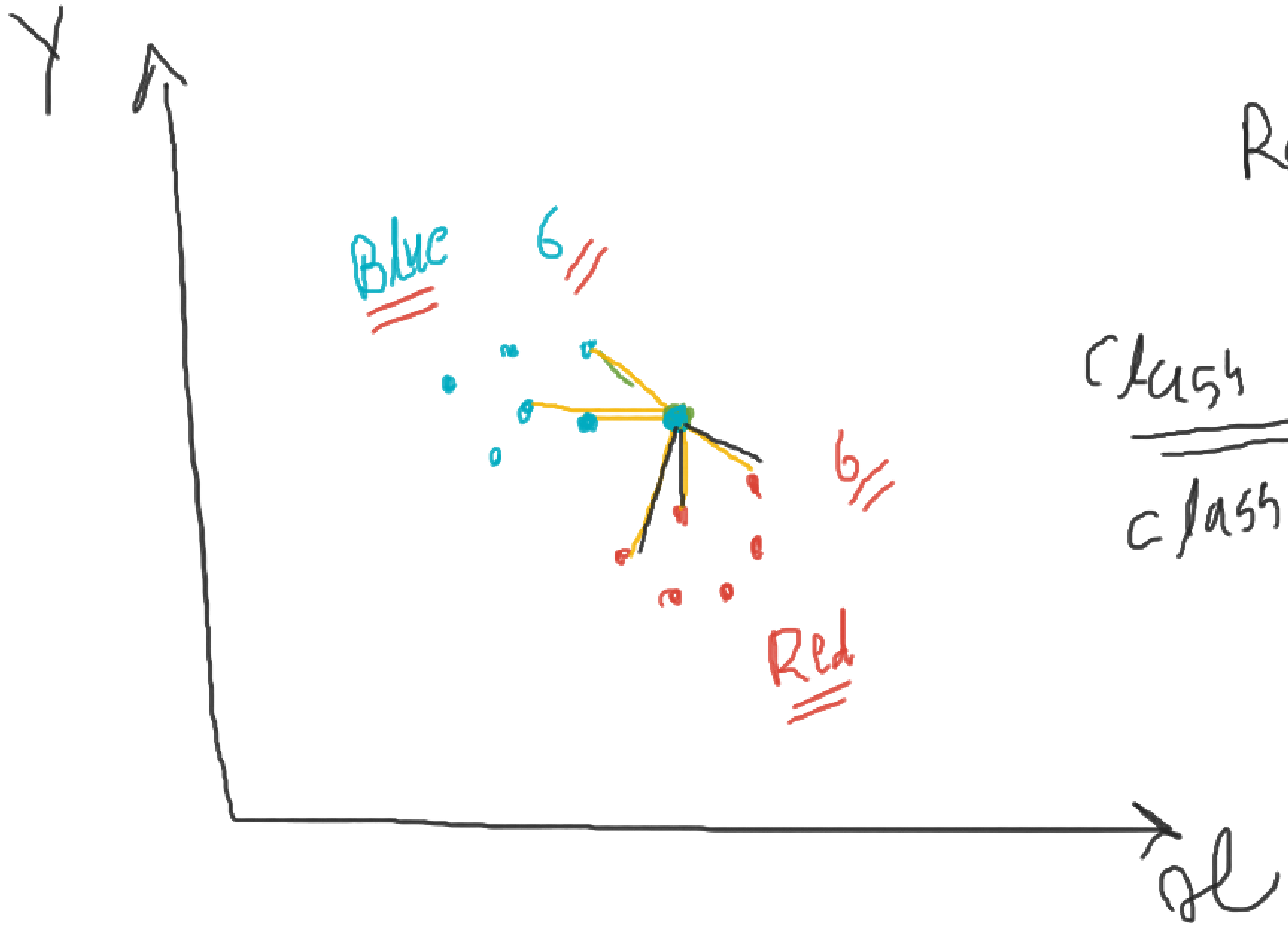
Volting criteria

K = 6



Red

Maximum no of data points, which is present in red class.



K = 6

Replace = Blue / Red

Class = 0 → B

class = 1 → R

target	
Red	0
Blue	1
Red	0
B	1
R	0
B	1
B	1

→ Replace.

= [Red = 0 , Blue = 1]

tar
1→B
0→R
0
0
1
1

	Salary x_1	x_2 Age
1]	20000	30
2]	30000	32
3]	35000	27
4]	27000	28
5]	50000	31
6]	40000	26

$$E.D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$= \sqrt{(40k - 20k)^2 + (26 - 30)^2}$$

$$= \sqrt{(2000)^2 + (4)^2}$$

$$= \sqrt{4\upsilon^2 + 16}$$

$$= 2.11 \sqrt{}$$

x_1
20
30
25
35
50

I] $$x_{new} = \frac{x - \bar{x}_{mean}}{std}$$

mean = 32

std = 10

$$= \frac{20 - 32}{10} = \frac{-12}{10} = \underline{\underline{-1.2}}$$

II] $$x_{new} = \frac{30-32}{10} = \frac{-2}{10} = \underline{\underline{-0.2}}$$

$$= x_{new} = \frac{50-32}{10} = {}^{18}/_{10} = \underline{\underline{1.8}}$$

$-\infty$ to $+\infty$

Year x_1	Days x_2
1	365
2	730
1.5	547
3	1095

Normalization:—

$$\frac{x - x_{min}}{x_{max} - x_{min}}$$

$$= \frac{1-1}{3-1} = \frac{0}{2} = 0$$

$$= \frac{2-1}{3-1} = \frac{1}{2} = 0.5$$

$$= \frac{3-1}{3-1} = \frac{\cancel{2}}{\cancel{2}} = 1$$