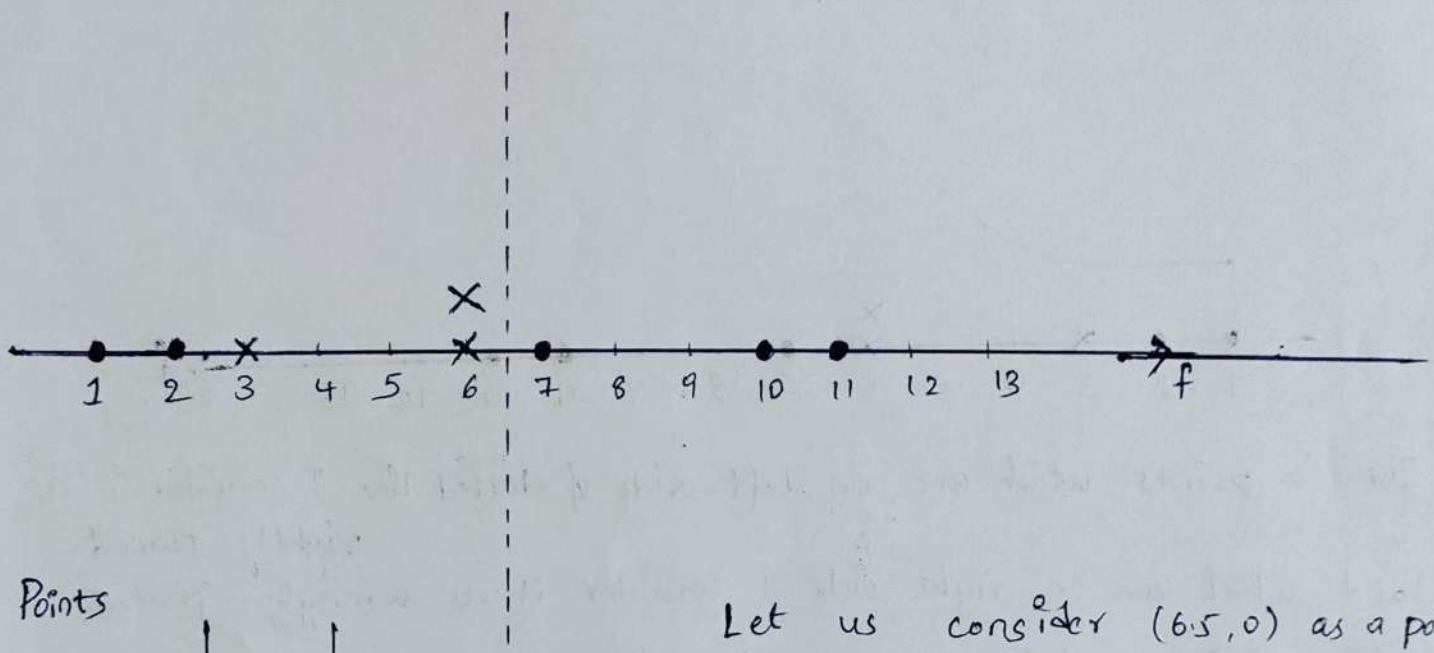
10th) Given



Points

X	Y	
1	0	5.5
2	0	4.5
7	0	0.5
10	0	3.5
11	0	4.5
3	0	3.5
6	0	0.5
6.5	0.5	0.44
6.5	0	?

Let us consider (6.5, 0) as a point

⇒ Calculating distance from all points to target point.

$$\sqrt{(6.5-1)^2+(0-0)^2} = 5.5$$

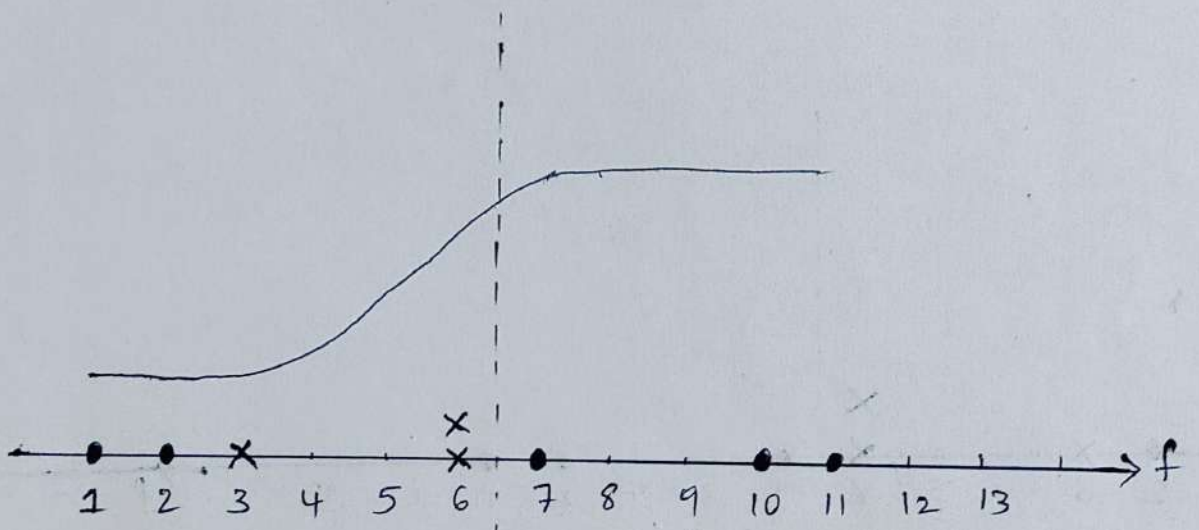
Given k=3. So the three nearest points are:

0.44, 0.5 ⟶ Set 2

0.5 ⟶ Set 1

As majority is from set 2, the target point belongs to set 2

Let us consider:



→ The 'x' points which are on left side of dotted line. I consider it as rightly placed.
and which are on right side I consider it as wrongly placed.

→ Point (•) on left side → Wrongly placed.
Point (•) on right side → Rightly placed.

Hence, 3 points (X) are on rightly placed.
0 points (x) are wrongly placed.
3 points (•) are rightly placed.
2 points (•) are wrongly placed.

Confusion matrix:

Truth \ Prediction		
	3	0
	2	3

TN = 3 | FN = 0
TP = 3 | FP = 2

$$\text{Accuracy} = \frac{TP+TN}{P+N} = \frac{TP+TN}{(TP+FN)+(FP+TN)}$$

$$= \frac{3+3}{(3+0)+(2+3)} = \frac{6}{8} = 0.75$$

$$\text{Sensitivity (TPR)} = \frac{TP}{P} = \frac{TP}{TP+FN}$$

$$= \frac{3}{3+0} = 1.$$

$$\text{Specificity (TNR)} = \frac{TN}{N} = \frac{TN}{FP+TN}$$

$$= \frac{3}{2+3} = \frac{3}{5} = 0.6$$