K-Means and

1. K-means

Jhon and Hanna should be together in group Maths1 with a center in (19.5,9.5)

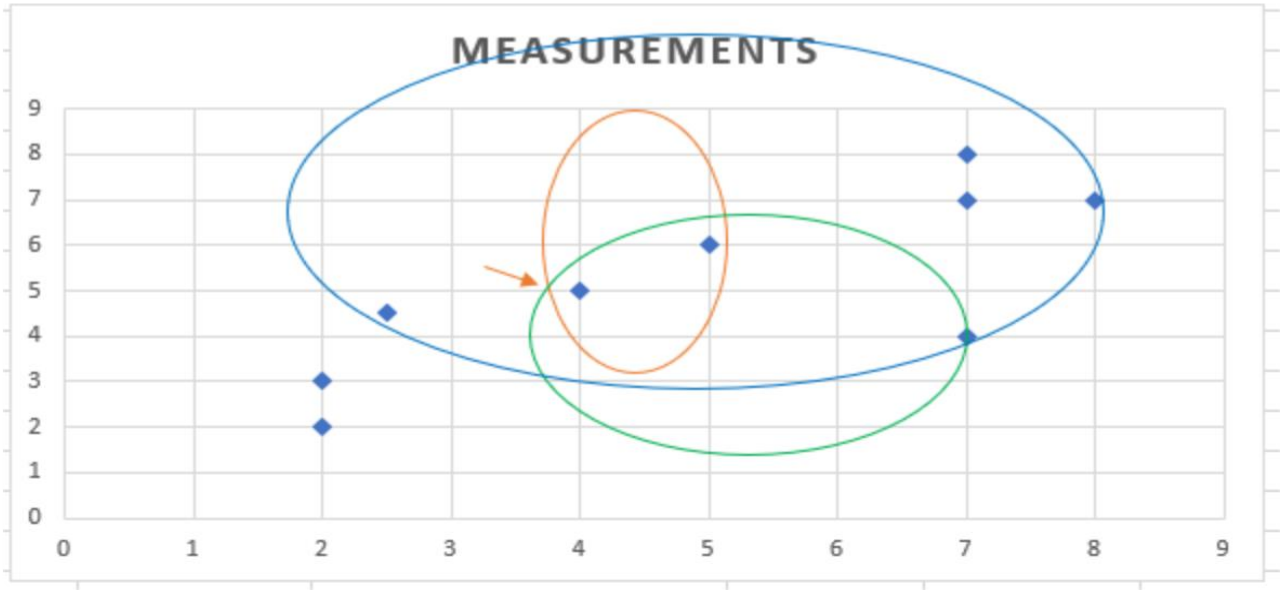
Michael and Lily should be in group Maths2 with a center in (14.5,6.5)

	Jhon	Michael	Hanna	Lily	Maths1	Maths2		Step 1
X	20	15	19	13	20	15		
Y	10	7	9	6	10	7		
DISTANCE	Jhon	Michael	Hanna	Lily				Step 2
Maths1	0	5.830952	1.414214	8.062258				
Maths2	5.830952	0	4.472136	2.236068				
					sum of "Yes"			Step 3
Maths1	Yes	No	Yes	No	2			
Maths2	No	Yes	No	Yes	2			
						Maths1		Step 4
Sum of X when Maths1 equal Yes					39	19.5	new X	
Sum of X when Maths2 equal Yes					19	9.5	new Y	
						Maths2		
Sum of Y when Maths1 equal Yes					28	14.000	new X	
Sum of Y when Maths2 equal Yes					13	6.500	new Y	

2 Knn

The new tissue is in range with (5,6), (7,4) and (2.4,4.5)

X1	X2	Y	distance	Sorting by value nearby	Is it included in your K = 3 closest neighbors?	value of Y classification
7	7	out of range	(7-4)2 +(7-5)2=3.15	5	NO	
7	4	out of range	(7-4)2 +(4-5)2=2.73	2	yes	
5	6	within range	(5-4)2 +(6-5)2=2	1	yes	
2.5	4.5	within range	(2.5-4)2 +(4.5-5)2=2.81	3	yes	
2	3		(2 -4)2 + (3 -5)2=2.83	4	NO	
2	2		(2 -4)2 + (2 -5)2=3.15	6	NO	
7	8		(7 -4)2 + (8 -5)2=3.46	8	NO	
8	7		(8 -4)2 + (7 -5)2=3.41	7	NO	
4	5	?		k=1	5,6	in range
				k=2	5,6 Y 7,4	? No k pair!!
				k=3	5,6;7,4 y 2.5,4.5	in range



3 Naïve Bayes

What is the probability that a randomly selected person will use an iPhone?
There are 5 iPhone users out of 10, so:
P (iPhone) = 5/10 = 0.5

What is the probability that a person has a given iPhone using a Mac laptop? $P(\text{iPhone} \mid \text{mac}) = \frac{P(\text{mac} \cap \text{iPhone})}{P(\text{mac})}$
First, there are 4 people who use both Mac and iPhone:
P (mac∩iPhone) = 4/10 = 0.4
And the probability that a random person uses a mac is: P (mac) = 6/10 = 0.6

So, the probability that someone uses an iPhone, since that person uses a Mac is:
P (iPhone | mac) = 0.4 / 0.6 = 0.667