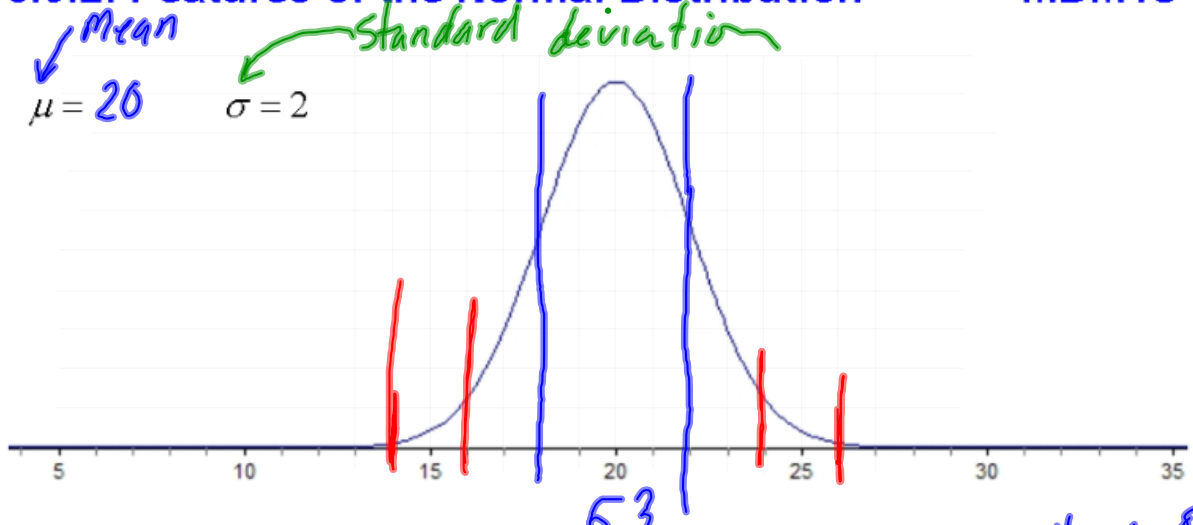
5.3.2: Features of the Normal Distribution

MDM4U

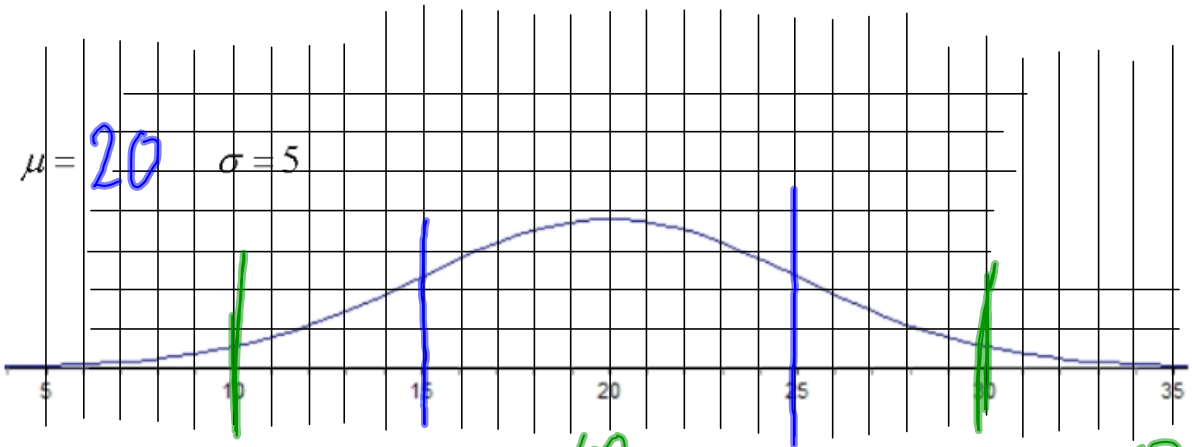


Total number of squares under the curve: 53

Number of squares ± 1 Std. Dev of mean: 34 Fraction of Total: $\frac{34}{53} = 64\%$

Number of squares ± 2 Std. Dev of mean: 48 Fraction of Total: $\frac{48}{53} = 91\%$

Number of squares ± 3 Std. Dev of mean: 52 Fraction of Total: $\frac{52}{53} = 98\%$



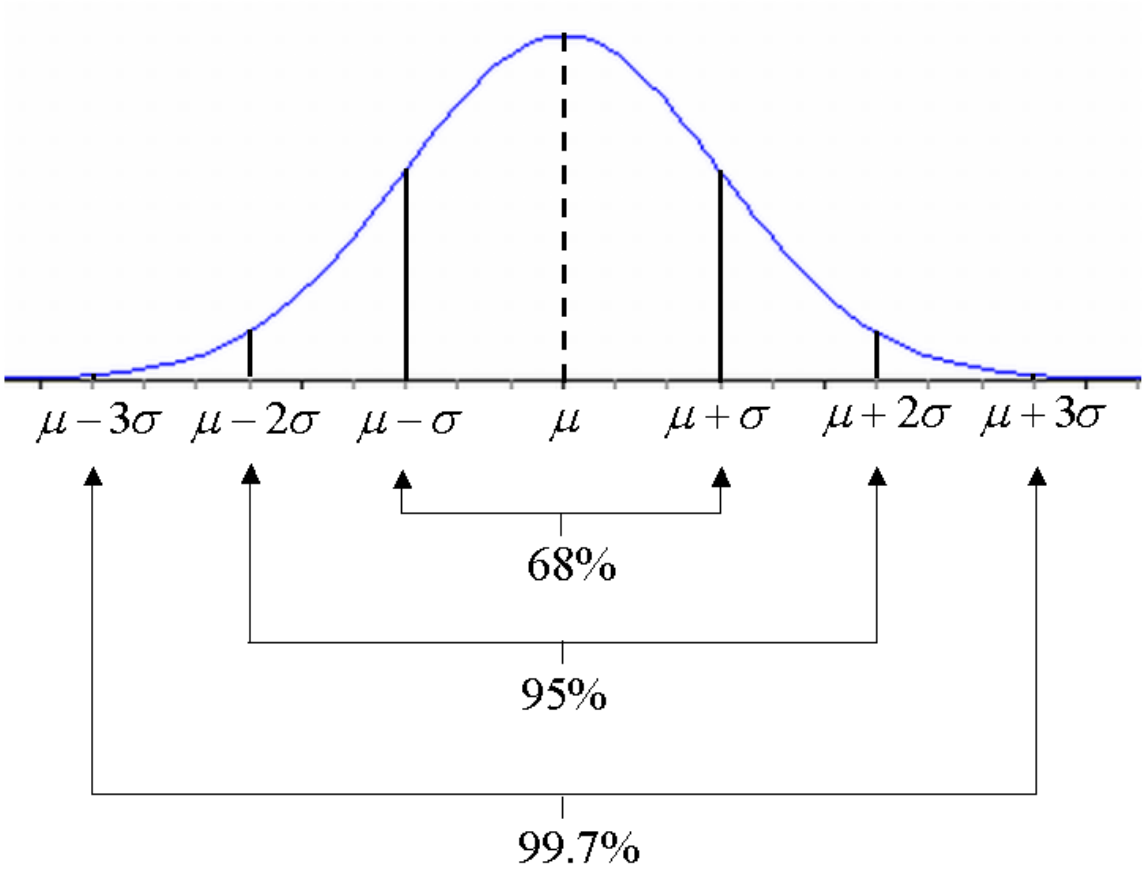
Total number of squares under the curve: 60

Number of squares ± 1 Std. Dev of mean: 36 Fraction of Total: 60%

Number of squares ± 2 Std. Dev of mean: _____ Fraction of Total: 95%

Number of squares ± 3 Std. Dev of mean: _____ Fraction of Total: 100%

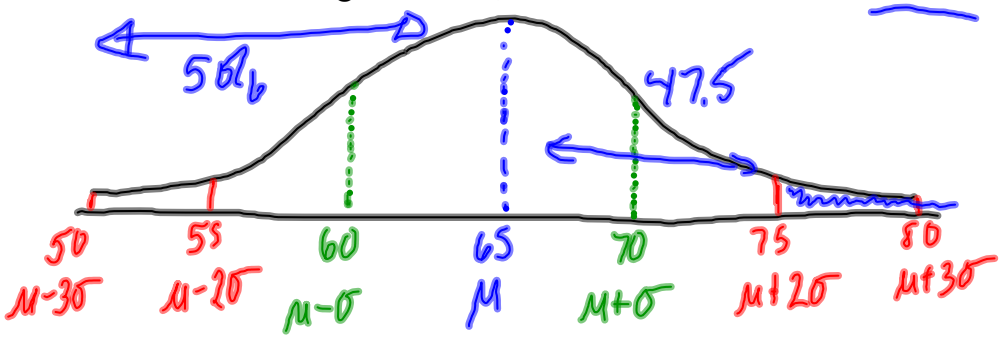
Summarize Your Observations: What do you notice about the number of squares under the curve for each distribution? Write a rule for the percentage of data points within 1, 2 and 3 standard deviations of the mean.



Example:

The mass of 17 year olds in a data management course is normally distributed. The mean is 65 kg and the standard deviation is 5 kg.

a) Sketch the curve including the mean, and standard deviation intervals.



b) Determine the probability that a student in the class has a mass between 60kg and 65kg. P(60 < X < 65) $= \frac{68}{2} = 34\%$

c) Determine the probability that a student in the class has a mass greater than 75kg. P(X > 75) $100 - (50 + 47.5) = 2.5\%$