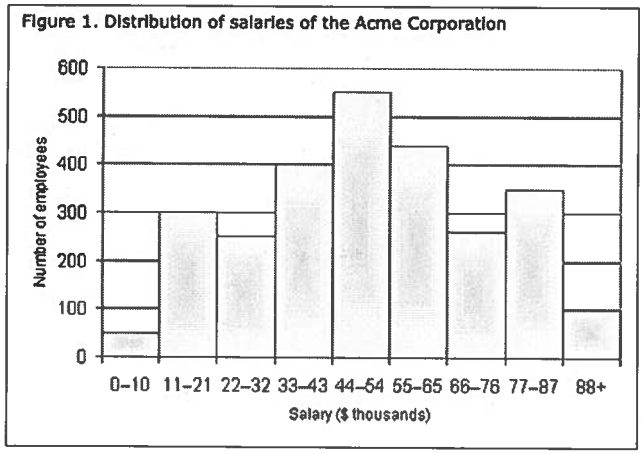
Math 20-2

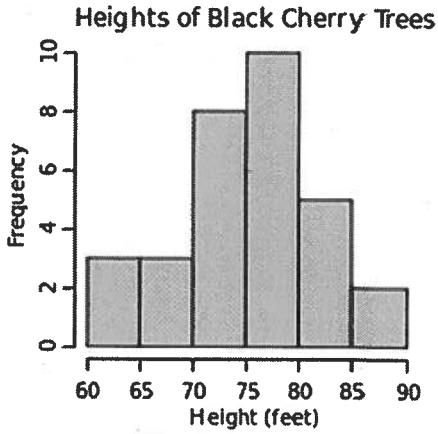
KEY

L37 – Frequency Tables, Histograms

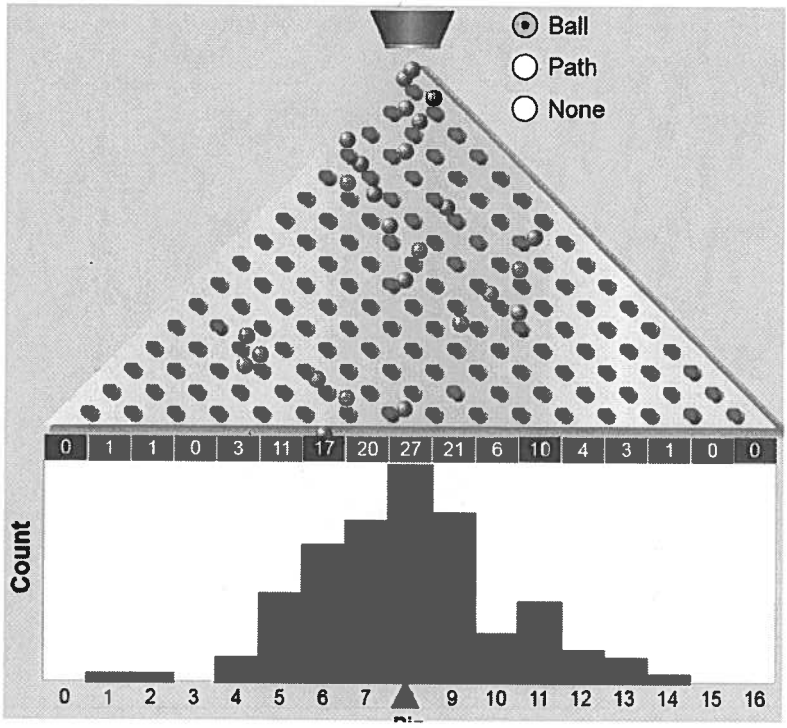
Part 1 – What is a Histogram?

Histogram - a diagram consisting of rectangles whose area is proportional to the frequency of a variable and whose width is equal to the class interval.





https://phet.colorado.edu/en/simulation/plinko-probability



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Part 2 – Building Frequency Tables and Histograms

Use the following information to answer Q1-Q2:

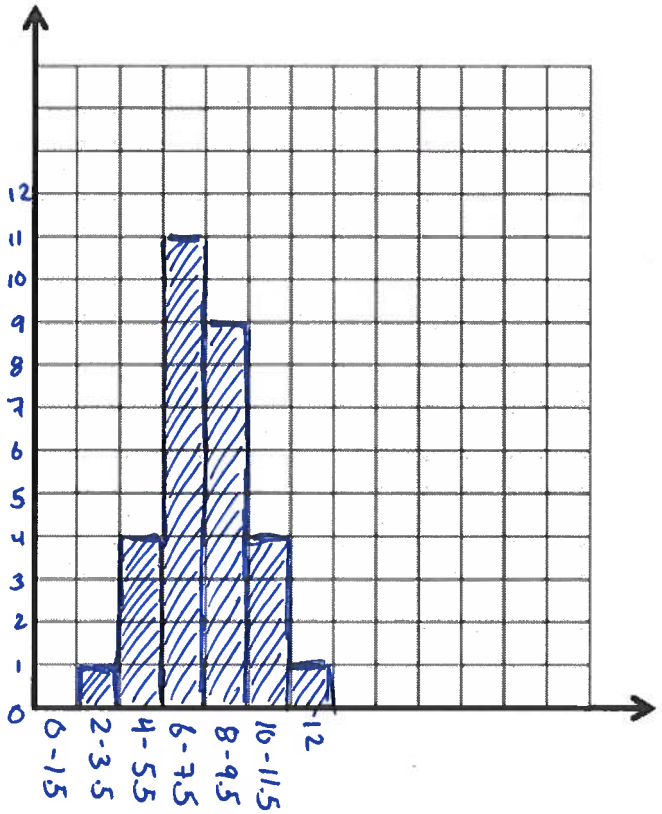
Marks on a 12 question quiz are as follows:

2	4.5	5	5	5.5	6	6	6.5	6.5	7
7	7	7.5	7.5	7.5	7.5	8	8	8.5	8.5
8.5	8.5	9	9	9.5	10	10	10.5	11	12

Q1: Build a Frequency Table

Data Range	Frequency
0-1.5	0
2-3.5	1
4-5.5	4
6-7.5	11
8-9.5	9
10-11.5	4
12	1

Q2: Draw a Histogram



KEY

Math 20-2

Use the following information (from L36) to answer Q3-Q4:

Measured Lifespans of 30 Car Batteries (years)									
Brand X					Brand Y				
5.1	7.3	6.9	4.7	5.0	5.4	6.3	4.8	5.9	5.5
6.2	6.4	5.5	5.7	6.8	4.7	6.0	4.5	6.6	6.0
6.0	4.8	4.1	5.2	8.1	5.0	6.5	5.8	5.4	5.1
6.3	7.5	5.0	5.7	8.2	5.7	6.8	5.6	4.9	6.1
3.3	3.1	4.3	5.9	6.6	4.9	5.7	6.2	7.0	5.8
5.8	6.4	6.1	4.6	5.7	6.8	5.9	5.3	5.6	5.9

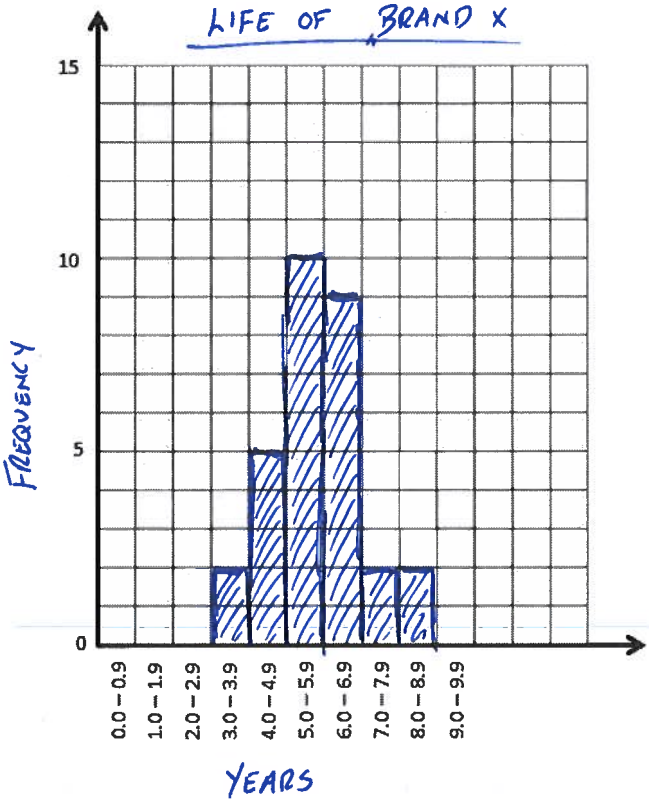
Reorganize the data from least to greatest

3.1 3.3 4.1 4.3 4.6 4.7 4.8 5 5 5.1 5.2 5.5 5.7 5.7
5.7 5.8 5.9 6 6.1 6.2 6.3 6.4 6.4 6.6 6.8 6.9 7.3 7.5
8.1 8.2

Mean	*Median*	*Mode*	*Minimum*	*Maximum*	*Range*
$\bar{x} = 5.74\overline{3}$	5.75	5.7	3.1	8.2	8.2 − 3.1 = 5.1

Q3: Create a Histogram for ***Brand X***.

Lifespan in Years	Frequency
0.0 – 0.9	0
1.0 – 1.9	0
2.0 – 2.9	0
3.0 – 3.9	2
4.0 – 4.9	5
5.0 – 5.9	16
6.0 – 6.9	9
7.0 – 7.9	2
8.0 – 8.9	2
9.0 – 9.9	0



Math 20-2

KEY

Use the following information (from L36) to answer Q3-Q4:

Measured Lifespans of 30 Car Batteries (years)									
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5.1	7.3	6.9	4.7	5.0	5.4	6.3	4.8	5.9	5.5
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6.0	4.8	4.1	5.2	8.1	5.0	6.5	5.8	5.4	5.1
6.3	7.5	5.0	5.7	8.2	5.7	6.8	5.6	4.9	6.1
3.3	3.1	4.3	5.9	6.6	4.9	5.7	6.2	7.0	5.8
5.8	6.4	6.1	4.6	5.7	6.8	5.9	5.3	5.6	5.9

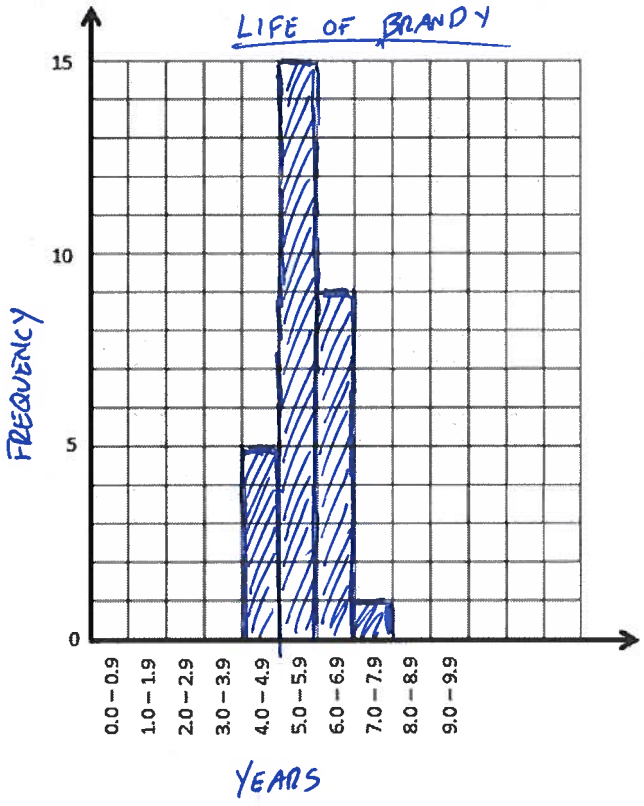
Reorganize the data from least to greatest

4.5 4.7 4.8 4.9 4.9 5 5.1 5.3 5.4 5.4 5.5 5.6 5.6 5.7 5.7
5.8 5.8 5.9 5.9 5.9 6 6 6.1 6.2 6.3 6.5 6.6 6.8 6.8 7

Mean	*Median*	*Mode*	*Minimum*	*Maximum*	*Range*
$\bar{x} = 5.723$	5.75	5.9	4.5	7	7 − 4.5 = 2.5

Q4: Create a Histogram for ***Brand Y***.

Lifespan in Years	Frequency
0.0 – 0.9	0
1.0 – 1.9	0
2.0 – 2.9	0
3.0 – 3.9	0
4.0 – 4.9	5
5.0 – 5.9	15
6.0 – 6.9	9
7.0 – 7.9	1
8.0 – 8.9	0
9.0 – 9.9	0



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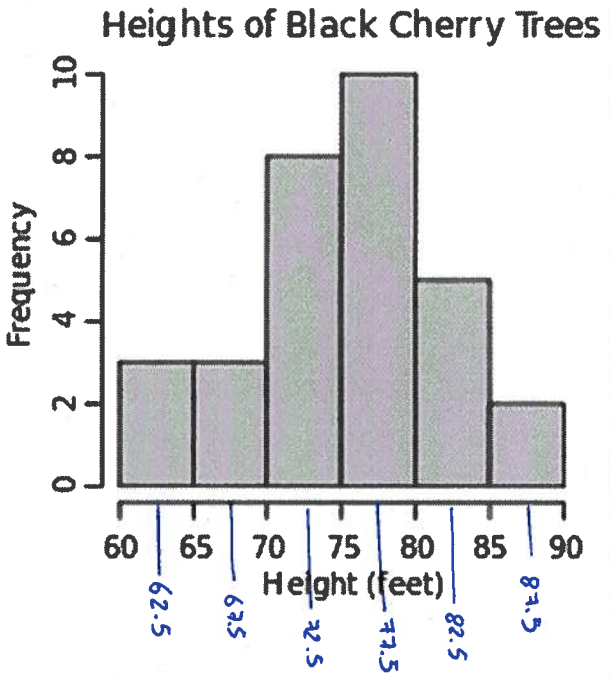
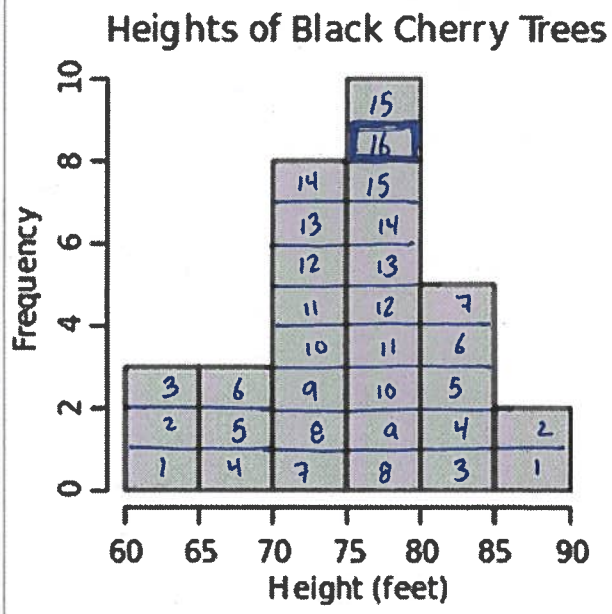
Part 3 – Calculating Mean, Median, and Mode from a Histogram

Q5: How do we calculate the ***mean, median,*** and ***mode*** for the average height of a cherry tree?





MEAN

$$\bar{x} = \frac{3(62.5) + 3(67.5) + 8(72.5) + 10(77.5) + 5(82.5) + 2(87.5)}{31}$$

$$\bar{x} = \frac{2308.5}{31}$$

$$\bar{x} = 74.47 \text{ ft}$$

MODE

77.5

MEDIAN

77.5