



RIO GRANDE HIGH SCHOOL

Home of the Ravens

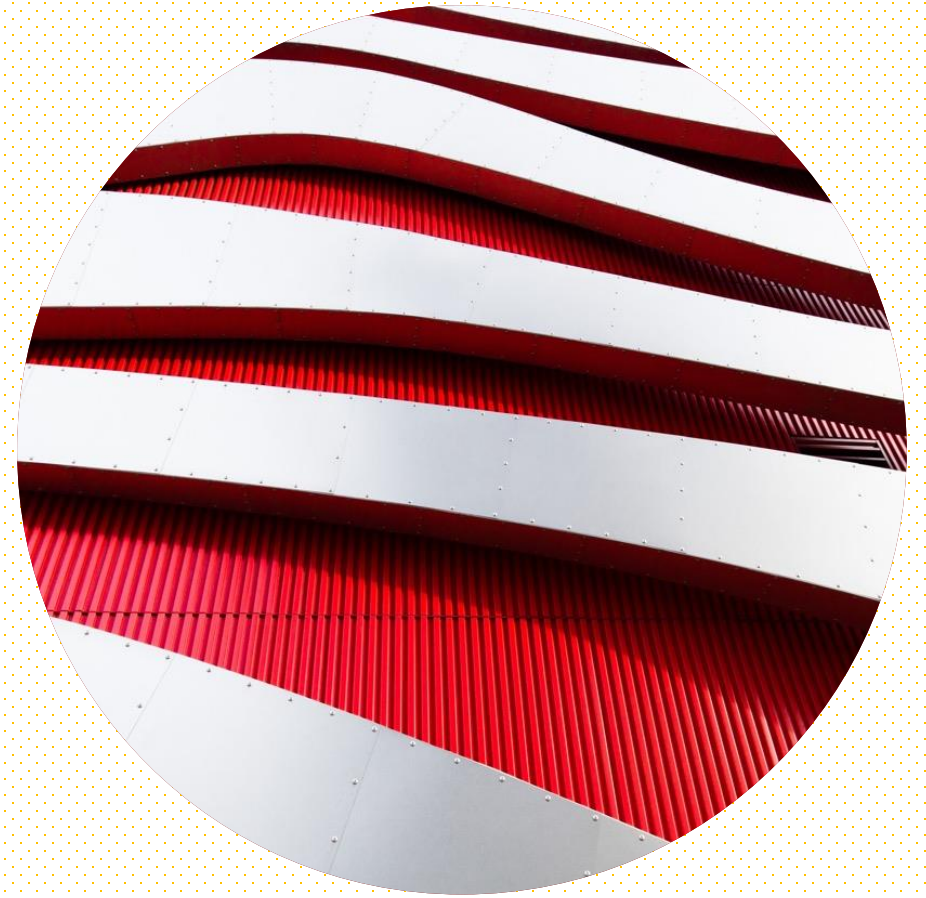
Properties of Probability Distributions
Mr. Renato

Properties of Probability Distributions

Today's Objectives:

You will learn how to:

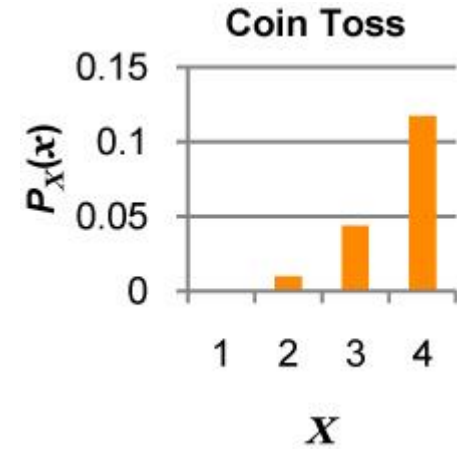
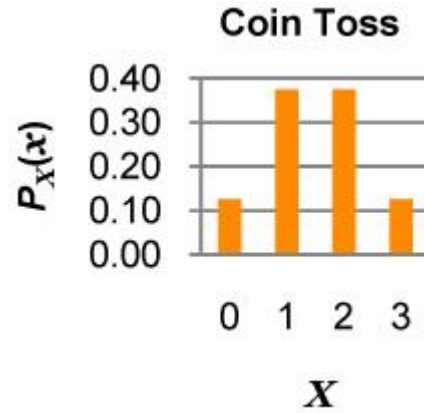
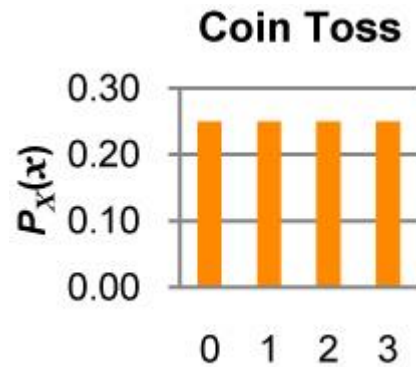
- Solve beginning probability problems
- Describe a few types of probability samples



Probability Distributions Sample

A coin is tossed three times, with possible outcomes: {HHH, HHT, HTH, THH, HTT, THT, TTH, TTT}

Identify the graph of the probability distribution for the random variable representing the number of heads.



Probability Calculations

A coin is tossed two times. The set of outcomes is given as $S = \{HH, HT, TH, TT\}$.

Let X represent the number of times heads occurs.

Complete the table.

Coin Toss	
Heads: X	Probability: $P_X(x)$
0	a
1	b
2	c

$a =$

$b =$

$c =$

Probability Calculations

A fundraiser sells 200 raffle tickets for \$5 each. There is 1 prize for \$30, 2 prizes for \$20, and 5 prizes for \$10. What table correctly displays the probability distribution?

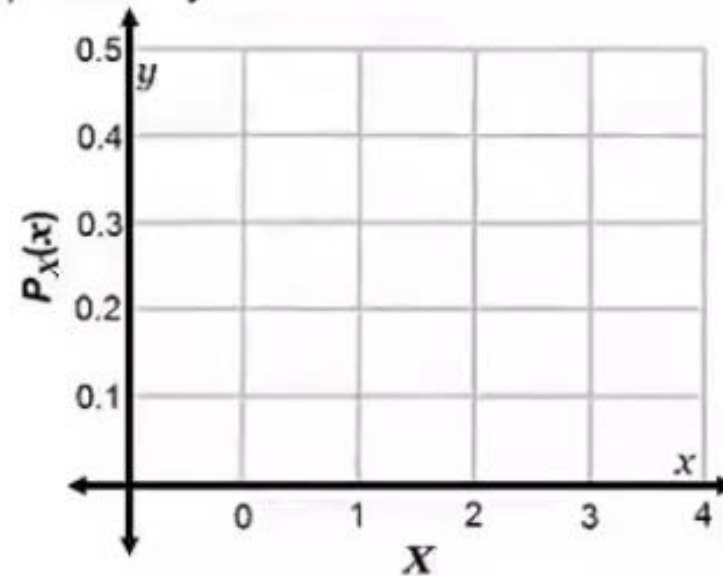
Distribution of Prizes	
X	$P_X(x)$

Probability Calculations

Hayden plays on her high school basketball team. She has developed the following probability distribution for the number of points she expects to make in any particular game.

Points Scored: X	Probability: $P_X(x)$
0	0.1
1	0.2
2	0.4
3	0.2
4	0.1

The **mean of a probability distribution** is a typical value used to represent the central location of a probability distribution.



Probability Calculations

In a survey, 100 people were asked how many car accidents they had in the past year. The estimated probability distribution for the number of accidents is shown in the table.

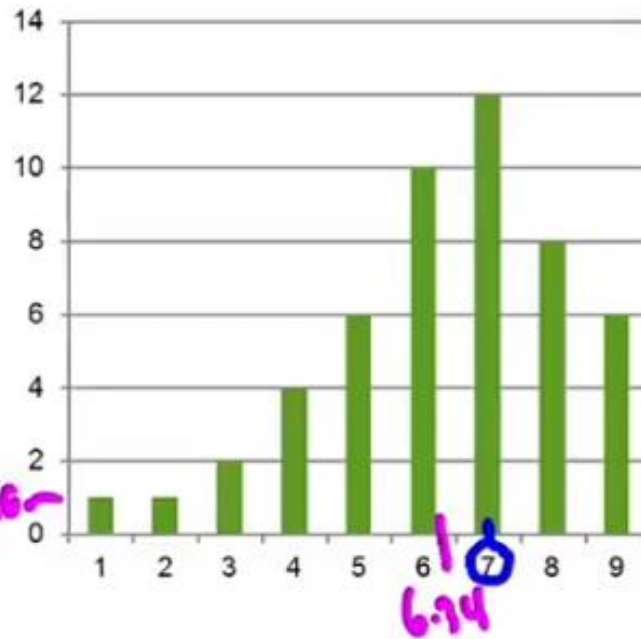
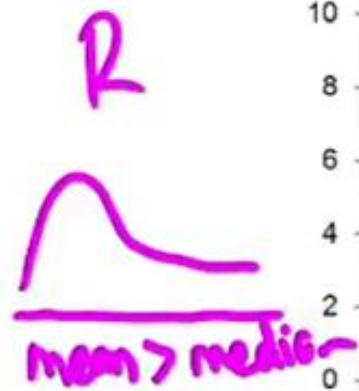
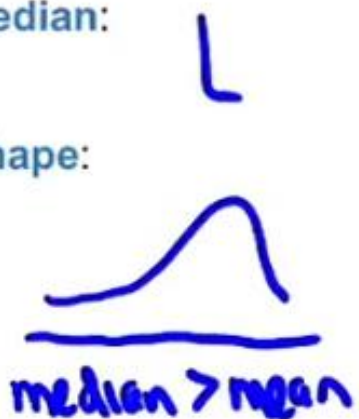
Accidents: X	Probability: $P_X(x)$
0	0.905
1	0.080
2	0.010
3	0.005

What is Skewed? Skewedness?

Mean:

Median:

Shape:



Skewed right: Data to the Left

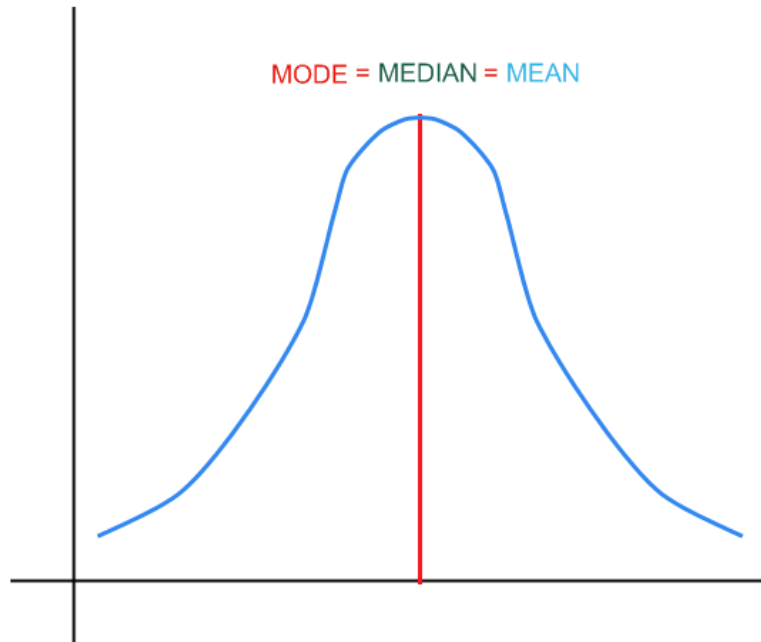
Skewed left: Data to the Right

What is Skewed? Skewedness?

When data are not equally represented, there is a tendency for the graph to look like it's leaning one direction or another, and not even.

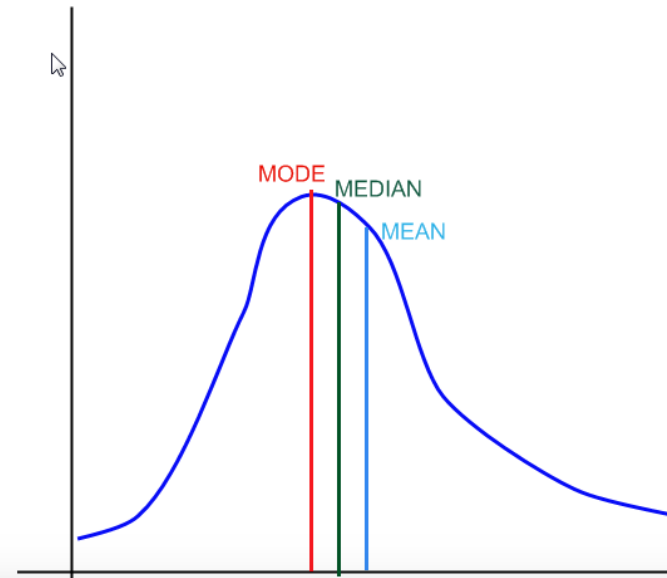
$$\text{Mode} \leq \text{Median} \leq \text{Mean}$$

Graphically:

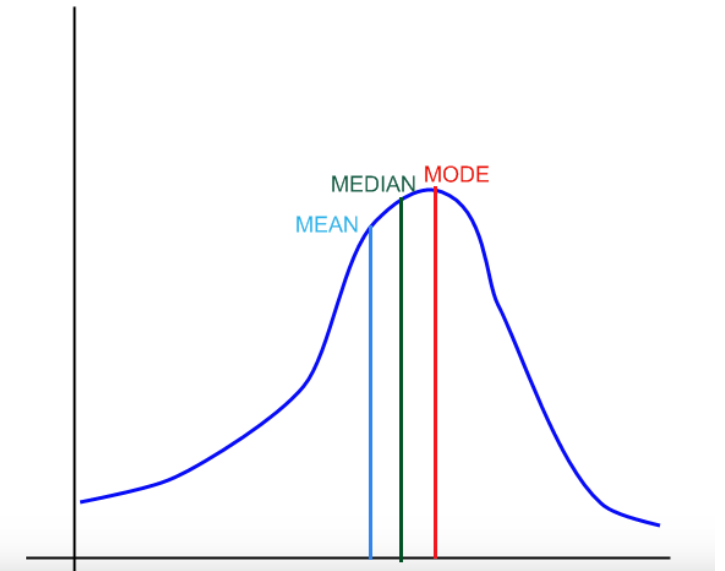


$$\text{Mean} \leq \text{Median} \leq \text{Mode}$$

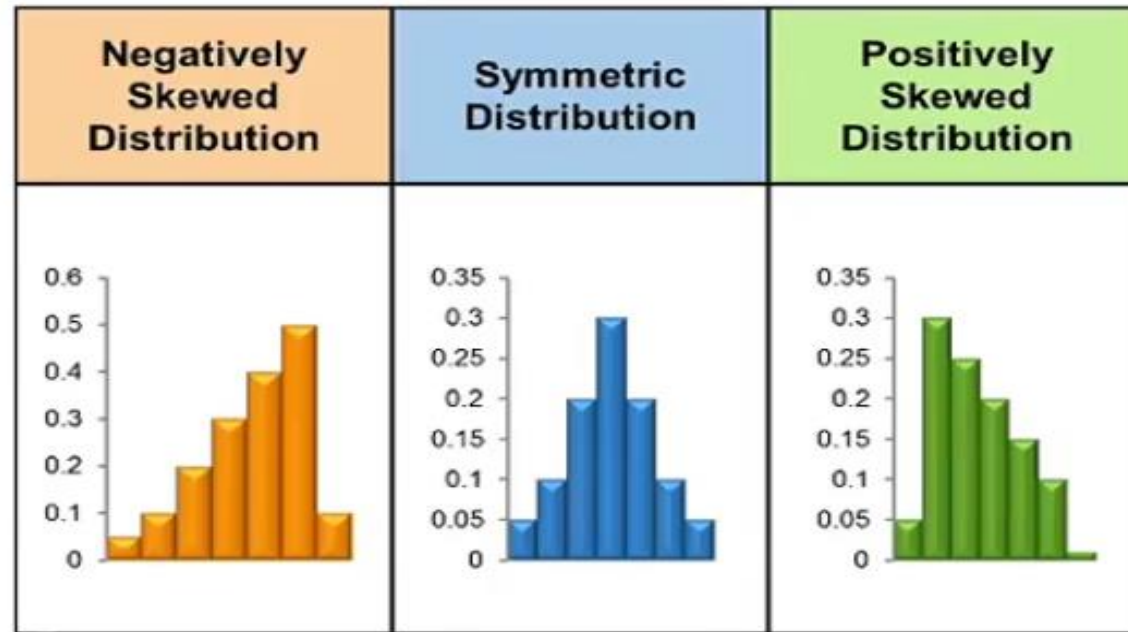
Graphically:



Graphically:

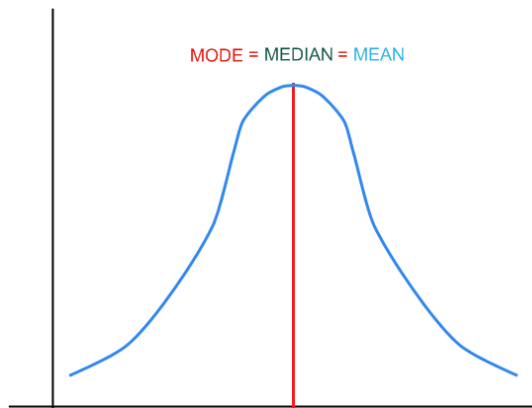


Probability Distributions

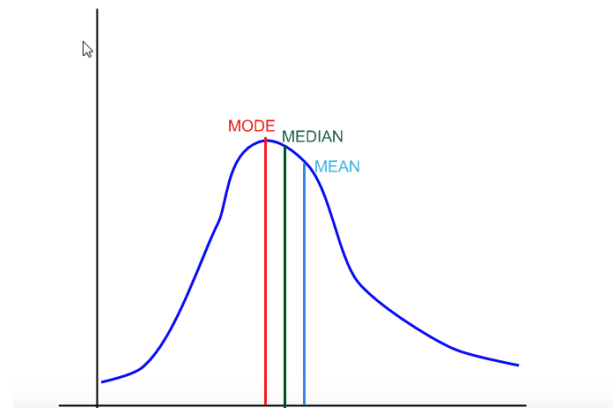


Mode \leq Median \leq Mean

Graphically:

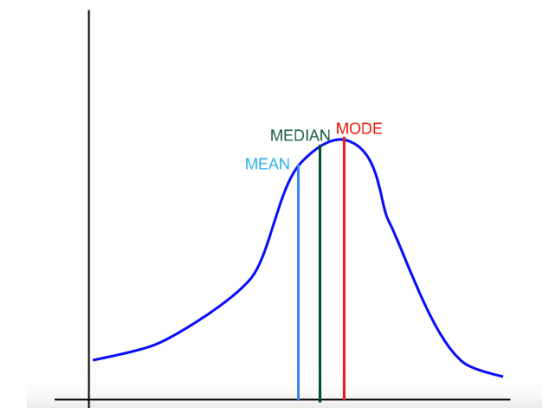


Graphically:



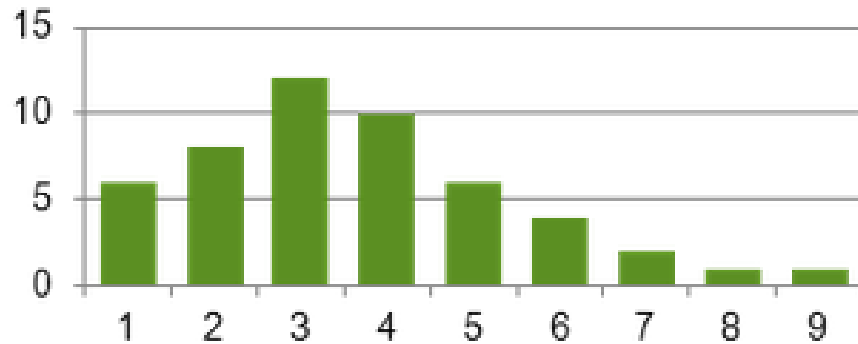
Mean \leq Median \leq Mode

Graphically:



What is Skewed? Skewedness?

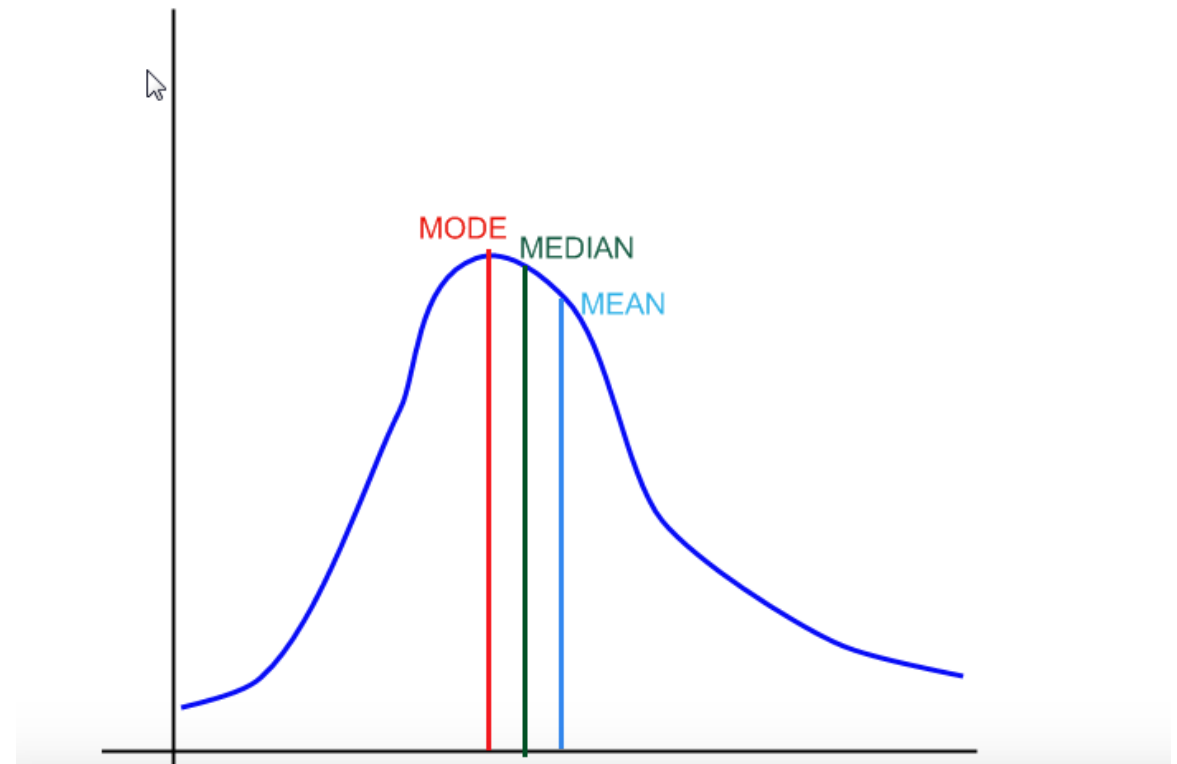
$$\text{Mode} \leq \text{Median} \leq \text{Mean}$$



Which of the following statements is true about a graph that is skewed, such as the one above?

- The mean is greater than the median.
- The mean is equal to the median.
- The mean is less than the median.

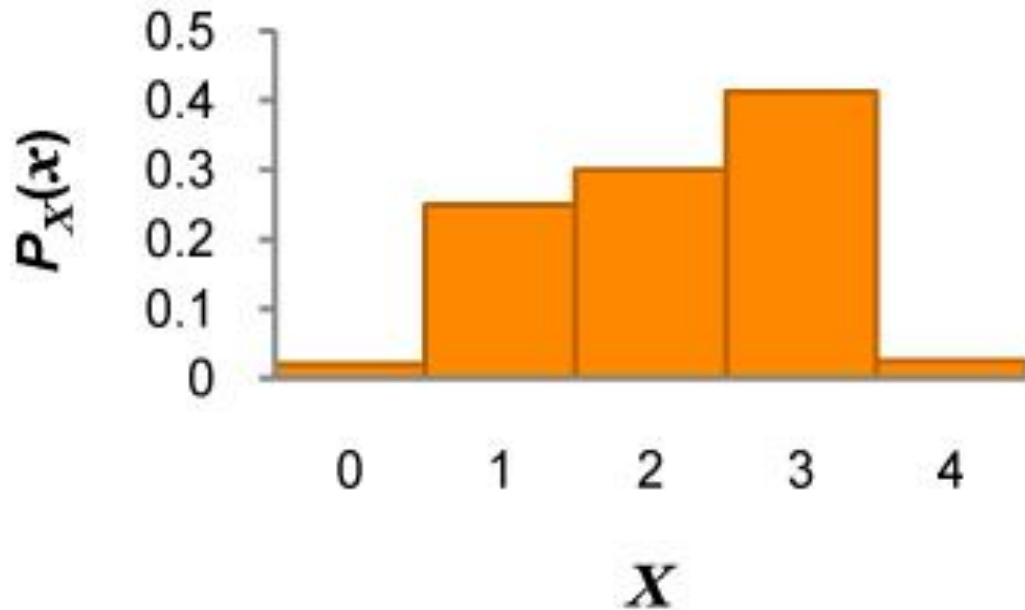
Graphically:



What is Skewed? Skewedness?

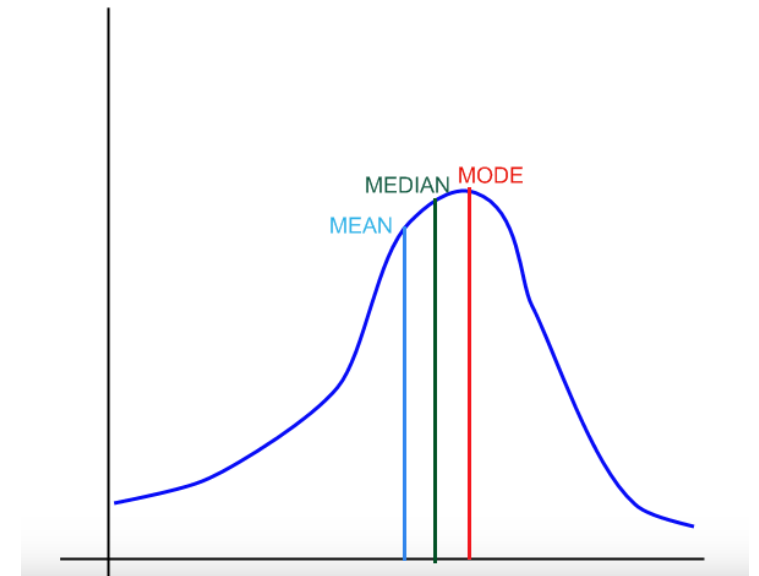
What type of data distribution is shown on the graph?

- Mean
- Median
- Mode



$$\text{Mean} \leq \text{Median} \leq \text{Mode}$$

Graphically:

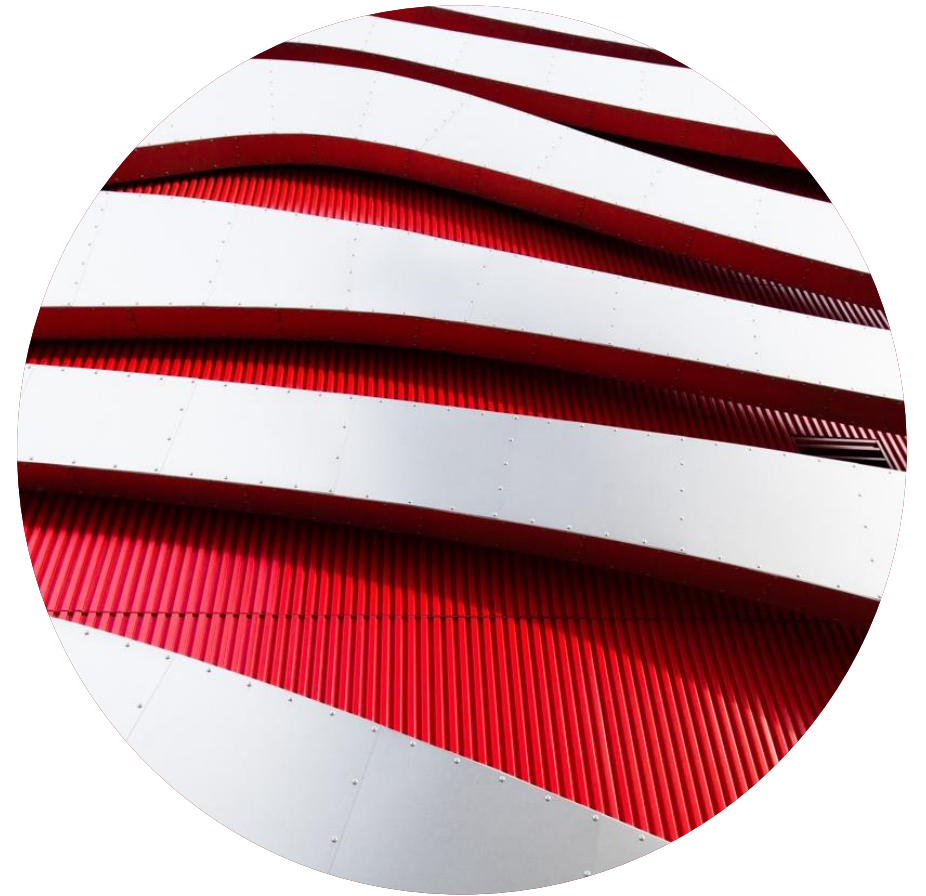


Review

Today's Objectives:

You learned how to:

- Solve beginning probability problems by reviewing distributions
- Describe a few types of probability samples by reviewing sample charts and skewed graphs



Questions?

Next: Finish Assignment and Complete Quiz