10.2 Probability

EQ: How can you describe the likelihood of an event?

Probability: a number that measures the likelihood that an event will occur.

*can be written as a fraction, decimal, or percent

Impossible	Unlikely	Equally Likely/ Unlikely	Likely	Certain
0	1/4	1/2	3/4	1
0	.25	.5	.75	1
0%	25%	50%	75%	100%

Probability Formula:

$$P(\text{event}) = \frac{\#\text{ of favorable outcomes}}{\#\text{ of possible outcomes}}$$

Example 1: You roll a dice. What is the probability of rolling an odd number? ← event

odd (3) = 1, 3, 5

total (6) = 1, 2, 3, 4, 5, 6

$$P(\text{odd}) = \frac{3}{6} \leftarrow \text{odd} \quad \leftarrow \text{total}$$

$= \frac{1}{2}$ or .5 or 50%

Example 2: The probability that you randomly draw a short straw from a group of 40 straws is $\frac{3}{20}$. How many are short straws

$$P(\text{short}) = \frac{3}{20} \begin{matrix} \leftarrow \text{short} \\ \leftarrow \text{total} \end{matrix}$$

Ratio $\frac{\text{short (favorable)}}{\text{total (all possible outcomes)}} = \frac{3}{20} \xrightarrow{\times 2} \frac{X = 6}{40}$ ← actual

$\frac{3}{20} \xrightarrow{\times 2}$ probability

There are 6 short straws