

Probability Part 1

Probability is the chance of something happening.

Fair means that there is an equal chance of something happening.

**Flipping a Coin**

What are the total possible outcomes when flipping a fair coin?

2

How many of those outcomes are a head?

1

How many of those outcomes are a tail?

1



The numerical probability of something happening is the # of desired outcomes over the number of total possible outcomes

**Formula:** Probability =  $\frac{\text{\# of desired outcomes}}{\text{total possible outcomes}}$

What is the probability that the outcome is a head when flipping a fair coin?

$\frac{1}{2}$

What is the probability that the outcome is a tail when flipping a fair coin?

$\frac{1}{2}$

What do the probabilities of all the individual outcomes always add up to?

$\frac{1}{2} + \frac{1}{2} = \frac{2}{2} = \boxed{1}$

**Rolling a Die**

What are the total possible outcomes when rolling a fair die?

6

How many of those outcomes are odd?

3

How many of those outcomes are even?

3

How many of those outcomes are a two?

1

What is the probability that the outcome is a five?

~~$\frac{1}{6}$~~   $\frac{1}{6}$

What is the probability that the outcome is ~~even~~ less than 5?

$\frac{4}{6} = \frac{2}{3}$

What do the probabilities of all the individual outcomes always add up to?

$\frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{6}{6} = \boxed{1}$



**Ex 1:**

a) What is the probability of getting a tail when flipping a fair coin?

$$\boxed{\frac{1}{2}}$$

b) What is the probability of getting a four when rolling a fair die?

$$\boxed{\frac{1}{6}}$$

c) What is the probability of rolling a 1,2,5, or 6 for a fair die

$$\frac{4}{6} = \boxed{\frac{2}{3}}$$

d) What is the probability of rolling less than three for a fair die.

$$\frac{2}{6} = \boxed{\frac{1}{3}}$$

**Ex 2:**

a) There are 5 red marbles, 4 blue marbles, and 7 green marbles in a bag. What is the probability of randomly picking a red marble.

$$\boxed{\frac{5}{16}}$$

b) A bucket contains 3 bottles of apple juice, 2 bottles of orange juice, 6 bottles of soda, and 8 bottles of water. If Kira randomly selects a bottle, what is the probability that she will select a bottle of orange juice.

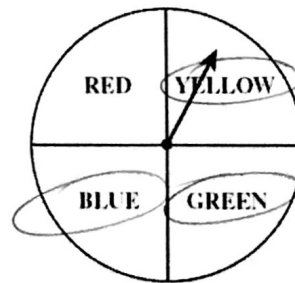
$$\boxed{\frac{2}{19}}$$

**Ex 3:**

a) Leaner has 4 blue, 3 black, and 5 red ties on his rack. If he randomly selects a tie, what is the probability that he will select a tie that is NOT red?

$$\boxed{\frac{7}{12}}$$

b) The spinner shown below is fair. What is the probability that the spinner will NOT stop on red if you spin it one time? State the probability as a percentage.



$$\begin{aligned} & \frac{3 \cdot 25}{4 \cdot 25} \\ &= \frac{75}{100} \\ &= \boxed{75\%} \end{aligned}$$