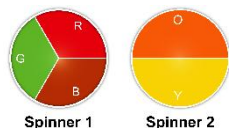# Activity 9 Assessment
Exploring Theoretical and Experimental Probability

Exploring Theoretical and Experimental Probability

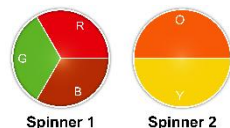| Identifies the experimental probability of an outcome for two independent events | Identifies the theoretical probability of an outcome for two independent events | Compares the theoretical and experimental probabilities for a probability experiment | Understands how experimental and theoretical probabilities may be related if many trials are conducted |

Spinner 1   Spinner 2

The results for 8 trials:

Spinner 1	Spinner 2
R	O
G	**O**
G	**O**
B	Y
G	Y
R	O
G	**O**
B	Y

The outcome, green, orange, occurred 3 times. So, the experimental probability of green, orange is:

$\frac{3}{8} = 0.375$

$= 37.5\%$

Spinner 1   Spinner 2

Sample space:

		Spinner 2	
		O	Y
Spinner 1	R	R, O	R, Y
	B	B, O	B, Y
	G	G, O	G, Y

For green, orange, there is 1 favourable outcome and 6 possible outcomes.
So, the theoretical probability of green, orange is:

$\frac{1}{6} = 0.1666\ldots$

$\approx 17\%$

The results for 10 trials.

Nickel	Dime
T	H
T	H
H	**H**
H	T
H	T
H	**H**
T	H
T	H
H	**H**
H	**H**

Sample space:

		Nickel	
		H	T
Dime	H	H, H	H, T
	T	T, H	T, T

Experimental probability of 2 heads is: $\frac{4}{10} = 0.4 = 40\%$

Theoretical probability of 2 heads is: $\frac{1}{4} = 0.25 = 25\%$

The experimental probability is greater than the theoretical probability.

For 100s of trials of an experiment, the experimental probability of an outcome may approach its theoretical probability.

Observations/Documentation