

Name: _____

Date: _____

Learning Goal 9.1	I can calculate probabilities.
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When you flipped a coin, how many times did it land on $\frac{1}{2}$ Chance = 50% *Theoretical Probability*

a head? 10 9 7 7 10 9 10 11 13 12 10 13 11 8 11 8 8 11 11 9 8 8 12 10 14 8 8	a tail? 10 11 13 13 10 11 10 9 7 8 10 7 9 12 9 12 12 9 9 11 12 12 8 10 6 12 12
266	274

49.2% ← Experimental Probability → 50.7%

Total Possible Outcomes: 540 coin tosses

$\frac{1}{6} = 17%$ *Theoretical*

When you rolled a die, how many times did you roll

a 1? 4 2 3 3 3 4 0 2 2 7 4 2 2 6 6 5 2 3 0 5 1 3 3 2	a 2? 6 1 6 1 1 2 2 2 3 2 1 7 2 0 2 3 4 2 2 1 4 4 4 4	a 3? 1 3 1 1 2 4 7 3 2 2 5 1 4 2 4 2 2 2 2 4 7 3 4 1	a 4? 5 5 2 4 8 4 3 5 4 4 4 3 1 4 5 4 3 2 5	a 5? 7 1 3 3 3 2 3 3 3 3 2 4 7 5 5 3 2 5 6	a 6? 2 4 6 6 2 3 4 2 5 5 2 3 4 4 6 3 5 2 2
74	66	69	78	90	70

15.4% 13.7% 14.3% 16.2% 18.7% 14.5%

Total Possible Outcomes: 480 rolls of a die

When you flipped a card, how many times did it turn up $\frac{1}{4} = 25%$

a heart? 3 6 4 6 6 8 8 8 3 4 4 4 1 3 3 8 5 8 6 1	a club? 5 6 5 3 6 4 3 5 3 6 3 3 6 8 4 3 8 3 5 6	a spade? 5 1 6 6 1 4 2 5 6 3 9 3 6 3 4 2 5 3 5 9	a diamond? 7 7 5 5 7 4 3 7 8 7 4 10 7 6 4 7 2 6 4 4
94	103	88	110

23.5% 25.8% 22% 27.5%

Total Possible Outcomes: 400 cards flipped

Probability

$$\frac{\text{the number of outcomes you are interested in}}{\text{total number of outcomes}}$$

Example Find the following probabilities.

a. Rolling a 5 on a die.

6 sided

b. Flipping a coin and landing on heads.

c. Choosing a heart from a deck of cards.

$$P(5) = \frac{1}{6}$$

↑ probability
 ↑ outcome of interest
 ← one 5 on a die
 ← 6 different numbers

$$P(H) = \frac{1}{2}$$

$$P(\heartsuit) = \frac{13}{52} = \frac{1}{4}$$

P(flipping a head on a fair coin)

Sample Space is

a list of all possible outcomes.

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Example What is the sample space for rolling a die?

{1, 2, 3, 4, 5, 6}

Example What is the sample space for tossing **two** coins?

{HH, HT, TH, TT}

1 2
1 2