

Develop Finding Experimental Probability

► Read and try to solve the problem below.

Erin rolls a standard number cube and records the results.

Number Rolled	1	2	3	4	5	6
Frequency						

Based on these results, what is the probability of rolling each number?

TRY IT



Math Toolkit grid paper, number cubes, number lines, sticky notes

10 total rolls

$$P(1) = \frac{1}{10}$$

$$P(2) = \frac{1}{10}$$

$$P(3) = \frac{4}{10} \text{ or } \frac{2}{5}$$

$$P(4) = 0$$

$$P(5) = \frac{2}{10} \text{ or } \frac{1}{5}$$

$$P(6) = \frac{2}{10} = \frac{1}{5}$$

DISCUSS IT

Ask: How do you know your answer is reasonable?

Share: I know my answer is reasonable because ...

► Explore different ways to find experimental probability.

Erin rolls a standard number cube and records the results.

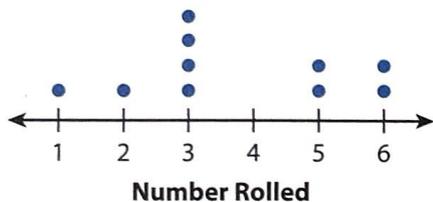
Number Rolled	1	2	3	4	5	6
Frequency						

Based on these results, what is the probability of rolling each number?

Picture It

You can use a dot plot to display the results of an experiment.

Results of Rolling a Number Cube



Model It

You can write the experimental probability of each possible outcome in words.

$$\text{Probability of rolling a 1} = \frac{\text{number of 1s rolled}}{\text{number of trials}}$$

$$\text{Probability of rolling a 2} = \frac{\text{number of 2s rolled}}{\text{number of trials}}$$

$$\text{Probability of rolling a 3} = \frac{\text{number of 3s rolled}}{\text{number of trials}}$$

$$\text{Probability of rolling a 4} = \frac{\text{number of 4s rolled}}{\text{number of trials}}$$

$$\text{Probability of rolling a 5} = \frac{\text{number of 5s rolled}}{\text{number of trials}}$$

$$\text{Probability of rolling a 6} = \frac{\text{number of 6s rolled}}{\text{number of trials}}$$

CONNECT IT

► Use this page to deepen your understanding of finding experimental probability.

1 Talk About It

- a. How does the experimental probability of rolling a 3 compare to that of rolling a 6? Why?

Rolling a three has double the probability of rolling a six

- b. Erin conducts the experiment again. The results of this experiment are below.

Number Rolled	1	2	3	4	5	6
Frequency						
Experimental Probability	$\frac{3}{10}$	$\frac{1}{10}$	$\frac{2}{10}$	$\frac{2}{10}$	$\frac{1}{10}$	$\frac{1}{10}$

Erin rolled a number cube 10 times in both experiments. The experimental probability of rolling a 4 is different in Erin's two experiments. Why?

Experimental probability is what does happen and different trials will result in different outcomes

2 Show What You Know

Suppose you conduct the same experiment as Erin. Should you expect your probabilities to be the same as those from either of Erin's experiments? Explain.

No. Each experiment could result in different outcomes.

- 3 **Reflect** Think about all the models and strategies you have discussed today. Describe how one of them helped you better understand how to find experimental probability.

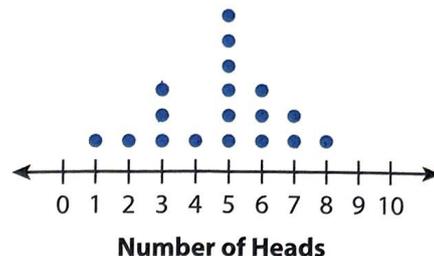
Apply It

► Use what you learned to solve these problems.

- 4 In a class, 18 students each toss a coin 10 times. They record how many times the result is heads. Based on these results, what is the probability of getting more than 5 heads? Show your work.

$$\frac{6}{18} \text{ or } \frac{1}{3}$$

Results of Tossing a Coin 10 Times



SOLUTION The probability is $\frac{6}{18}$ or $\frac{1}{3}$

- 5 At a store, cash registers print coupons on some receipts, selected at random. A coupon was printed on 18 of the last 1,200 receipts. Based on these results, what is the probability that a coupon will be printed on the next receipt? Show your work.

$$\frac{18}{1200} = \frac{3}{200} = \frac{1.5}{100}$$



1,200 receipts, 18 coupons printed

SOLUTION The probability is 1.5%

- 6 Soledad has a spinner with a red, a blue, and a white section. She spins the spinner 20 times. Based on her results, what is the probability that the spinner lands on each color? Show your work.

$$R \quad \frac{5}{20} = \frac{1}{4} \quad B \quad \frac{9}{20} \quad W \quad \frac{6}{20} = \frac{3}{10}$$

Color	Red	Blue	White
Frequency	5	9	6

SOLUTION The probability of red is $\frac{5}{20}$ or 25%, Blue is $\frac{9}{20}$ or 45% and white $\frac{6}{20}$ or 30%