

Lesson 15.2:

Probability

Essential Question

How can you describe the likelihood of an event?

Key Idea

Probability

The **probability** of an event is a number that measures the likelihood that the event will occur. Probabilities are between 0 and 1, including 0 and 1. The diagram relates likelihoods (above the diagram) and probabilities (below the diagram).



There is an 80% chance of thunderstorms tomorrow. Describe the likelihood of the event.

Between equally likely (50%) and certain (100%)...

LIKELY

Describe the likelihood of the event given its probability.

1. The probability that you land a jump on a snow board is $\frac{1}{2}$.

Exactly 50%...

EQUALLY LIKELY TO HAPPEN OR NOT HAPPEN

2. There is a 100% chance that the temperature will be less than 120°F tomorrow.

Exactly 100%...

CERTAIN

Key Idea

Finding the Probability of an Event

When all possible outcomes are equally likely, the probability of an event is the ratio of the number of favorable outcomes to the number of possible outcomes. The probability of an event is written as $P(\text{event})$.

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

Make the event
true

You roll the number cube. What is the probability of rolling an odd number?



$$1, 3, 5 \rightarrow \frac{3}{6} = \frac{1}{2} \text{ or } 0.5 \text{ or } 50\%$$

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

(A) 4

(B) 6

(C) 15

(D) 34

Simplified probability

$$\frac{?}{40} = \frac{3}{20}$$

3. In Example 2, what is the probability of rolling a number greater than 2?

$$3, 4, 5, 6 \rightarrow \frac{4}{6} = \frac{2}{3} \text{ or } 0.\bar{6} \text{ or } 67\%$$

4. In Example 2, what is the probability of rolling a 7?

$$\frac{0}{6} = 0 \text{ or } 0\%$$

5. The probability that you randomly draw a short straw from a group of 75 straws is $\frac{1}{15}$. How many are short straws?

$$\frac{1}{15} = \frac{5}{75}$$

Write an example of an event that has the following probabilities.

a. close to 1

We will have school tomorrow.

b. exactly $\frac{1}{2}$

Flipping heads

c. close to 0

It will snow this week.