

Probability

Learning Targets

- Describe the Likelihood of an Event
- Find the Probability of an Event
- Use Probability

Probability

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).



Page 408 in
Text Book

Impossible, Unlikely
Equally Likely to Happen or Not Happen
Likely, Certain



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

The probability of thunderstorms tomorrow is 80%.

⋮ likely



Describe the likelihood of the event given its probability.

1. The probability that you land a jump on a snowboard is $\frac{1}{2}$.
equally likely to happen
or not happen
2. There is a 100% chance that the temperature will be less than 120°F tomorrow. certain

Probability:

- Can be written as Fraction, Decimal or Percent
- Is a number 0-1
- Ratio of Favorable outcomes to all possible outcomes.

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

$$P(\text{orca}) = \frac{1}{6}$$

Finding the Probability of an Event

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



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

$$P(\text{odd}) = \frac{3}{6}$$

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



Finding the Probability of an Event

Extra Example 2

In Example 2, what is the probability of rolling a number greater than 4? 5, 6



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



3. In Example 2, what is the probability of rolling a number greater than 2? $\frac{5}{6} = \frac{5}{6}$
4. In Example 2, what is the probability of rolling a 7?

0

Using Probabilities

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



$$\frac{\text{Short}}{\text{Total}} = \frac{3}{20} = \frac{?}{40}$$

6

Using Probabilities

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?



SHORT

Total

5

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

Handwritten annotations: An arrow labeled "#5" points from the denominator 15 to the denominator 75. Another arrow labeled "#5" points from the numerator 1 to the numerator "?".

10.2 HW

pg 410 #4-17, 19-22