

## Lesson 6-9

### Example 1 Find Probability

**Suppose a number cube is rolled. What is the probability of rolling a number no larger than 4?**

There are 4 numbers no larger than 4 on a number cube: 1, 2, 3, 4.

There are 6 possible outcomes: 1, 2, 3, 4, 5, 6.

$$\begin{aligned} P(\text{no larger than } 4) &= \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}} \\ &= \frac{4}{6} \text{ or } \frac{2}{3} \end{aligned}$$

So, the probability of rolling a number no larger than 4 is  $\frac{2}{3}$  or about 66.7%.

### Example 2 Find Probability

**Suppose a fair coin is flipped and then a number cube is rolled. Find the probability of flipping a head and rolling an odd number.**

Sample Space = {(H, 1), (H, 2), (H, 3), (H, 4), (H, 5), (H, 6),  
(T, 1), (T, 2), (T, 3), (T, 4), (T, 5), (T, 6)}

There are 3 outcomes in which a head is flipped and an odd number is rolled.

$$\text{So, } P(\text{head and odd number}) = \frac{3}{12} \text{ or } \frac{1}{4}.$$

This means there is a 25% chance of flipping a head and rolling an odd number.

### Example 3 Find Experimental Probability

**A coin is flipped 40 times resulting in 17 heads and 23 tails. Find the experimental probability of landing on heads for this experiment.**

$$\frac{\text{number of times heads occur}}{\text{number of possible outcomes}} = \frac{17}{17 + 23} \text{ or } \frac{17}{40}$$

The experimental probability of landing on heads in this case is  $\frac{17}{40}$  or 42.5%.

**Example 4 Make a Prediction**

**COLORS** A newspaper article about favorite colors states that 23% of people prefer blue, 18% prefer red, and 15% prefer green. Out of a group of 150 people, how many would you expect to say that they prefer red?

Let  $x$  = the number out of 150 who prefer red.

$$\begin{array}{l} \text{part} \rightarrow \frac{x}{150} = \frac{18}{100} \leftarrow \text{percent} \\ \text{base} \rightarrow \end{array}$$

$$100 \cdot x = 150 \cdot 18$$

$$100x = 2700$$

$$x = 27$$

Find the cross products.

Simplify.

Mentally divide each side by 100.

You can expect 27 people to say that red is their favorite color.