Lesson 2 Reteach

Theoretical and Experimental Probability

Experimental probability is found using frequencies obtained in an experiment or game. **Theoretical probability** is the expected probability of an event occurring.
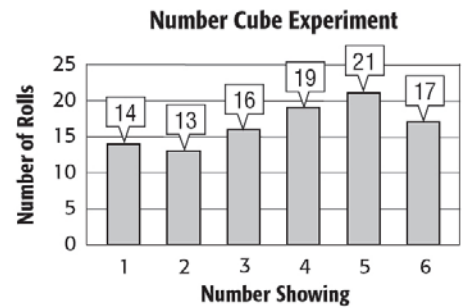
Example 1

The graph shows the results of an experiment in which a number cube was rolled 100 times. Determine the experimental probability of rolling a 3 for this experiment. Then compare it to the theoretical probability.

$$P(3) = \frac{\text{number of times 3 occur}}{\text{number of possible outcomes}}$$

$$= \frac{16}{100} \text{ or } \frac{4}{25}$$

The experimental probability of rolling a 3 is $\frac{4}{25}$, which is close to its

theoretical probability of $\frac{1}{6}$.

Number Cube Experiment

Example 2

In a telephone poll, 225 people were asked for whom they planned to vote in the race for mayor. What is the experimental probability of Juarez getting a vote from a person selected at random?

Of the 225 people polled, 75 planned to vote for Juarez.

So, the experimental probability is $\frac{75}{225}$ or $\frac{1}{3}$.

Candidates	Number of People
Juarez	75
Davis	67
Abramson	83

Example 3

Suppose 5,700 people vote in the election. How many can be expected to vote for Juarez?

$\frac{1}{3} \cdot 5{,}700 = 1{,}900$

About 1,900 will vote for Juarez.

Exercise

1. Use the graph of a survey of 150 students asked whether they prefer cats or dogs.

   a. What is the experimental probability of a student   preferring dogs?

   b. Suppose 100 students were surveyed. How many can be expected to prefer dogs?

   c. Suppose 300 students were surveyed. How many can be expected to prefer cats?

Pet Preferences