Probability

1 Learn the Skill

When you flip a coin, you have an equal chance of flipping heads or tails. The chance of it landing on heads can be expressed as 1:2, where 1 represents the number of favored outcomes (flipping heads) and 2 represents the number of possible outcomes. This ratio expresses the **theoretical probability** of the event. In theory, each time you flip a coin, you have a 50% chance of flipping heads. You can express theoretical probability as a fraction $\frac{1}{2}$, ratio (1:2), or percent (50%).

Probability based on the results of an experiment is called **experimental probability**. As with theoretical probability, you can express experimental probability as a fraction, ratio, or percent. If you toss a quarter 10 times and get heads 6 times, the experimental probability is $\frac{6}{10}$, which simplifies to $\frac{3}{5}$.

2 Practice the Skill

By practicing the skill of probability, you will improve your study and test-taking abilities, especially as they relate to the GED® Mathematical Reasoning Test. Read the example and strategies below. Then answer the question that follows.

a By choosing a striped marble from the bag during the first event and not replacing it, Marc affected the outcome of the second event. The two events are said to be **dependent**. When events are dependent, the number of outcomes changes.

If Marc had replaced the marble after the first event, the first event would not have affected the outcome of the second event. In this case, the first event and the second event would have been **independent**.

A bag of 10 marbles contains 7 striped marbles and 3 black marbles.
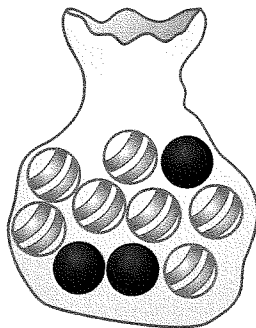
b Probability can be expressed as a ratio. If the bag contained two black marbles and three striped marbles, the probability of drawing a black marble would be 2:5, meaning that there are two black marbles and five possible outcomes. The same probability can be expressed as a fraction $\left(\frac{2}{5}\right)$, as a decimal (0.4), and as a percent (40%).

When answering a probability problem, always check whether the events are independent or dependent. Then determine the probability in the form that is easiest for you.

a

1. In the first event, Marc draws a striped marble. He does not replace it. In the next three events, Marc draws 2 striped marbles and 1 black marble. He does not replace those marbles, either. What is the probability that he will select a black marble on the fifth event?

   A. 1:10
   B. 1:3
   C. 2:7
   D. 2:3

DIRECTIONS: Study the spinner, read each question, and choose the **best** answer.

Maude uses this spinner to conduct a probability experiment.
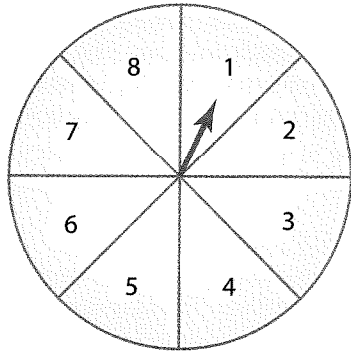
2. On the first spin, what is the probability that the spinner will land on 6?

   A. 1:8
   B. 1:7
   C. 1:6
   D. 6:8

3. On the second spin, what is the probability that the spinner will land on 4 or 8?

   A. 0.48
   B. 0.28
   C. 0.25
   D. 0.16

4. Maude spins the spinner twice. She lands on 4 and 6. So far, what is her experimental probability of spinning an odd number?

   A. $\frac{0}{2}$
   B. $\frac{1}{6}$
   C. $\frac{1}{8}$
   D. $\frac{1}{1}$

5. Maude spins the spinner two times. What is the probability she lands on an odd number and then the number 2?

   A. 0.5
   B. 0.0625
   C. 0.5
   D. 0.625

DIRECTIONS: Examine the information and table, read each question, and choose the **best** answer.

A large chain store keeps track of its daily customer complaints.

COMPLAINT CALLS

Department	Number of Complaints
Electronics	6
Housewares	4
Automotive	2
Clothing	3

6. What is the probability that the next complaint call to the store will concern the clothing department?

   A. 20%
   B. 25%
   C. 30%
   D. 50%

7. What is the probability that the next complaint call will concern the electronics department or the housewares department?

   A. $\frac{4}{15}$
   B. $\frac{1}{2}$
   C. $\frac{3}{5}$
   D. $\frac{2}{3}$

8. What is the probability that the next call will concern a department other than electronics?

   A. 0.2
   B. 0.4
   C. 0.6
   D. 1.0

DIRECTIONS: Read the question, and choose the **best** answer.

9. Ian read in the newspaper that there is a 40% chance of rain tomorrow. What is the probability that it will **not** rain tomorrow?

   A. $\frac{1}{25}$
   B. $\frac{3}{50}$
   C. $\frac{3}{5}$
   D. $\frac{1}{1}$

UNIT 2