
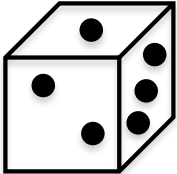
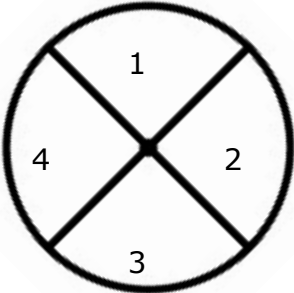
 **Theoretical and Experimental Probability**  
*Explain – Answer Key*

**Part 1: Compound Probability**

**Directions:** Determine the probability of each situation.

Diagram	Find this...	Process	Probability
	<p>P(Green and Red) without replacement</p>	$\frac{1}{10} \cdot \frac{2}{9}$	$\frac{2}{90}$
	<p>P(rolling a 2 followed by rolling a 5)</p>	$\frac{1}{6} \cdot \frac{1}{6}$	$\frac{1}{36}$
	<p>P(spinning 4 followed by spinning 1)</p>	$\frac{1}{4} \cdot \frac{1}{4}$	$\frac{1}{16}$



**Part 2: Selecting and Using Simulations**

**Directions:** Different ways of using simulations are shown below. For the situations that follow, select a simulation that you could use to model the situation.

**Simulation 1: Color Tiles**

Place 4 red tiles and 4 green tiles in a bag. Draw tiles to represent outcomes.

**Simulation 2: Number Cube**

Roll a 6-sided fair number cube. Use the number landing on the top face to represent the outcome.

**Simulation 3: Random Number Generator**

Use a random number generator from a graphing calculator or online. The random number represents a particular outcome.

1. Mrs. Jefferson has 25 students in her math class. She wants to randomly select two students to answer questions from last night's homework. She assigns each student a number from 1 to 25. Which simulation should she use? Justify your answer.

**Simulation 3: Random Number Generator, because there are 25 possible outcomes. Mrs. Jefferson can select two random numbers from 1 to 25 using an online random number generator.**

2. Coach Esparza has 40 students in his P.E. class and wants to divide them into two teams. As students enter the gym, he wants to randomly select students for either Team A or Team B. Which simulation should he use? Justify your answer.

**Simulation 1: Color Tiles, because there are two possible outcomes for each student: Team A or Team B. Since there are an equal number of red tiles and green tiles in the bag, a student has a 50% chance of drawing either color. As students enter the gym, they could select a tile, note the color, and replace the tile into the bag.**

3. At a neighborhood meeting, there are six issues that need to be discussed. The moderator of the meeting wants to randomly assign each attendee to one discussion group. Which simulation should the moderator use? Justify your answer.

**Simulation 2: Number Cube, because there are six possible outcomes; one for each discussion group. Each attendee could roll the number cube and join the group matching the number on the top face of the cube.**

4. Select one of the three simulations to actually run. Do the actual results from the simulation match what you expected? Why or why not?

**Answers may vary. Possible answer: The actual results match what we expected. For example, we ran Simulation 3, randomly selecting 2 students for Mrs. Jefferson's math class. We expected two different students to be randomly selected using the random number generator, and that's what happened.**

