

## Let 'Em Roll™ Simulation – Teacher Guide

Prior to the student simulation activity:

- A. The teacher should explain the Let 'Em Roll™ game.
- B. The teacher should use the Price\_Is\_Right.ftm document to demonstrate the Let 'Em Roll™ game.
- C. Teacher should explain the output of the “PRICE\_IS\_RIGHT\_LARGE\_SAMPLE.ftm” document.

**A.** *The teacher should explain the Let 'Em Roll™ game.*

As described on The Price is Right™ website, Let 'Em Roll™ is played for a car. There are five cubes each with six sides. Three sides have the symbol of a car and three have sums of money. The contestant has one free roll and then plays a small pricing game for two more rolls. The object of the game is to get five cars showing on the cubes. If not, the contestant gets whatever money is showing on the cubes. At the end of each earned roll, the contestant can set aside the dice that show a car and re-roll the remaining dice. For the purpose of this simulation, let's assume that it is the strategy of the contestant to win the car.

For example, suppose a contestant has earned three rolls to win the car. On the first roll, two of the five dice have a car showing. So the contestant will set those two dice aside and re-roll the remaining three. On the second roll, two of the three show a car, and are set aside. On the third roll, the one remaining die shows a sum of money. Therefore, since all five dice do not show a car after the three rolls, the contestant does not win the car.

**B.** *The teacher should use the Price\_Is\_Right.ftm document to demonstrate the Let 'Em Roll™ game.*

The simulation in the Price\_Is\_Right.ftm document designates cube sides 1, 2 and 3 as the sides that have a “CAR” on them. So if at any roll, the contestant rolls a 1, 2, or 3 (CAR), the contestant sets those aside.

To simulate the Let 'Em Roll™ game given three rolls:

1. Click on the 3 rolls case table.
2. Choose **Collection > Rerandomize**.
3. Repeat the previous step to simulate another game.

To simulate the Let 'Em Roll™ game given two rolls:

1. Click on the 2 rolls case table.
2. Choose **Collection > Rerandomize**.

3. Repeat the previous step to simulate another game.
- C. *The teacher should explain the output of the “PRICE\_IS\_RIGHT\_LARGE\_SAMPLE.ftm” document.*

Figure 1 is a sample of a case of the simulation from the PRICE\_IS\_RIGHT\_LARGE\_SAMPLE.ftm document that students will use.

AFTER 3 ROLLS						
	Dice_1	Dice_2	Dice_3	Dice_4	Dice_5	CAR_or_MONEY
1	CAR	MONEY	CAR	CAR	CAR	MONEY

**Figure 1**

Interpreting Figure 1:

- Dice #1 ends up with a car showing after 3 rolls.
- Dice #2 ends up with money showing after 3 rolls.
- Dice #3 ends up with a car showing after 3 rolls.
- Dice #4 ends up with a car showing after 3 rolls.
- Dice #5 ends up with a car showing after 3 rolls.

Therefore, the contestant doesn't win the car.

**ANSWERS TO STUDENT GUIDE:**

*Experimental Probability Section*

**Case 1:**

1<sup>st</sup> – 4<sup>th</sup> sample: Answers may vary.

1. Students might take the average of the answers from the four samples.
2. The probability will decrease, because the contestant will have fewer rolls to get the “CAR” showing on each dice.

**Case 2:**

1<sup>st</sup> – 4<sup>th</sup> sample: Answers may vary.

3. Students might take the average of the answers from the four samples.

*Theoretical Probability Section*

**Case 1:**

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

2.  $\frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$

3.  $\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{8}$

4.  $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} = \frac{7}{8}$

5.  $\left(\frac{7}{8}\right)^5 \approx 51.29\%$

4. Yes, because the sample size was large the experimental probability will be close to the theoretical probability.

**Case 2:**

1.  $\left(\frac{3}{4}\right)^5 \approx 23.73\%$

5. Yes, because the sample size was large the experimental probability will be close to the theoretical probability.