

Unit 8 Lesson 7: Related Events

1 Drawing Crayons (Warm up)

Student Task Statement

A bag contains 1 crayon of each color: red, orange, yellow, green, blue, pink, maroon, and purple.



1. A person chooses a crayon at random out of the bag, uses it for a bit, then puts it back in the bag. A second person comes to get a crayon chosen at random out of the bag. What is the probability the second person gets the yellow crayon?
2. A person chooses a crayon at random out of the bag and walks off to use it. A second person comes to get a crayon chosen at random out of the bag. What is the probability the second person gets the yellow crayon?

2 Choosing Doors

Student Task Statement

1. On a game show, a contestant is presented with 3 doors. One of the doors hides a prize and the other two doors have nothing behind them.
 - The contestant chooses one of the doors by number.
 - The host, knowing where the prize is, reveals one of the empty doors that the contestant did not choose.
 - The host then offers the contestant a chance to stay with the door they originally chose or to switch to the remaining door.
 - The final chosen door is opened to reveal whether the contestant has won the prize.

Choose one partner to play the role of the host and the other to be the contestant. The host should think of a number: 1, 2, or 3 to represent the prize door. Play the game keeping track of whether the contestant stayed with their original door or switched and whether the contestant won or lost.

Switch roles so that the other person is the host and play again. Continue playing the game until the teacher tells you to stop. Use the table to record your results.

	stay	switch	total
win			
lose			
total			

- a. Based on your table, if a contestant decides they will choose to stay with their original choice, what is the probability they will win the game?
 - b. Based on your table, if a contestant decides they will choose to switch their choice, what is the probability they will win the game?
 - c. Are the two probabilities the same?
2. In another version of the game, the host forgets which door hides the prize. The game is played in a similar way, but sometimes the host reveals the prize and the game immediately ends with the player losing, since it does not matter whether the contestant stays or switches.

Choose one partner to play the role of the host and the other to be the contestant. The contestant should choose a number: 1, 2, or 3. The host should choose one of the other two numbers. The contestant can choose to stay with their original number or switch to the last number.

After following these steps, roll the number cube to see which door contains the prize:

- Rolling 1 or 4 means the prize was behind door 1.
- Rolling 2 or 5 means the prize was behind door 2.
- Rolling 3 or 6 means the prize was behind door 3.

Play the game keeping track of whether the contestant stayed with their original door or switched and whether the contestant won or lost.

Switch roles so that the other person is the host and play again. Continue playing the game until the teacher tells you to stop. Use the table to record your results.

	stay	switch	total
win			
lose			
total			

- Based on your table, if a contestant decides they will choose to stay with their original choice, what is the probability they will win the game?
- Based on your table, if a contestant decides they will choose to switch with their original choice, what is the probability they will win the game?
- Are the two probabilities the same?