

# INQUIRY STEMS FROM MYSTERY!

## Short Mystery You Solve with Math...



### Roll of the Dice

“Five-minute warning, kids!” came their father’s voice from the back yard. He was grilling dinner, and he meant it was time for the table to be set. That was one of the three chores that Kimberly, Quentin and Brian split each evening. The other chores were cleaning up after dinner and taking out the recycling and the trash. The chores were about equal, but like many evenings, no one wanted to go first.

Kimberly, who was seven years old, was playing Quentin, who was nine, at backgammon on the screened-in porch where they ate supper during the summer. Eleven-year-old Brian was watching the game.

“Whose turn is it to set the table?” Kimberly asked.

Quentin and Brian shrugged. They didn’t remember either.

“How about we toss a pair of dice for it?” Quentin suggested. “Whoever’s age comes up first sets the table, and whoever’s age comes up second clears it.”

“That seems fair,” Kimberly said.

“No, it’s not,” Brian said.

“Sure it is,” Quentin said. “You can’t control how the dice will come out, so each of us has an equal chance of our age coming up. What can be fairer than that?”

“It’s true, you can’t control how the dice will come out,” Brian said, “but that doesn’t mean our ages have an equal chance of coming up.”

“Why wouldn’t they?” Kimberly asked.



Mystery No. 2 (page 19) from  
*One Minute Mysteries: 65 Short Mysteries You Solve With Math!*



725 8<sup>th</sup> Street, SE, Washington, DC 20003  
Toll-Free: 1-866-SCI-9876 / Fax: 202-558-2132  
Info@ScienceNaturally.com  
www.ScienceNaturally.com

# INQUIRY STEMS FROM MYSTERY!

**Answer to...**



## **Roll of the Dice**

“When you roll two dice, the combined numbers can fall between 2 and 12,” Brian said. “There’s only one way to get a 2—a 1 on both dice—and only one way to get a 12—a 6 on both. There are two ways to get a 3 or an 11. To get a 3, you can have a 1 on the first die and a 2 on the second, or a 2 on the first die and a 1 on the second. To get an 11, you can have a 6 on the first die and a 5 on the second, or a 5 on the first die and a 6 on the second.”

“The pattern goes on that way,” Brian said. “There are three ways to get either a 4 or a 10, four ways to get a 5 or a 9, five ways to get a 6 or an 8, and six ways to get a 7. That means that when you roll two dice, the number most likely to come up is 7. Since Kimberly is seven years old, she’s the most likely one to have to set the table.”

“It won’t necessarily happen that way, though,” Quentin said, “Any number from 2 through 12 still can come up.”

“True,” Brian said. “But we’re talking about probability here. On any roll of two dice, the number most probable to come up is Kimberly’s seven. And your age of nine, Quentin, is more probable to come up than my age of eleven.”

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# Roll of the Dice Activity

**Part 1:** Roll a pair of dice 12 times.  
Tally the total of each roll below.  
Circle the number that came up the most.

1	_____	4	_____	7	_____	10	_____
2	_____	5	_____	8	_____	11	_____
3	_____	6	_____	9	_____	12	_____

**Part 2:** Imagine rolling the dice 1,000 times.  
Make a prediction of which 3 numbers will be rolled most often:

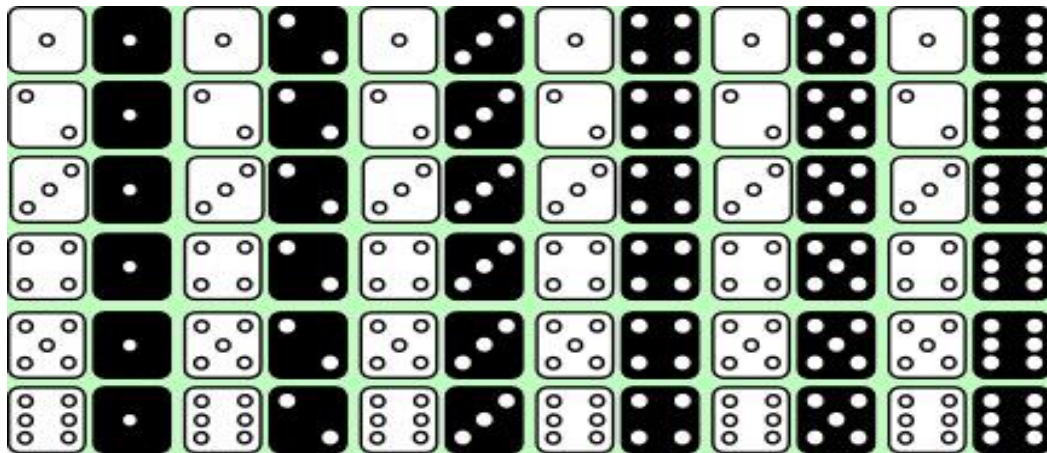
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Make a prediction which three numbers will be rolled least often:

\_\_\_\_\_

**Part 3:** Look carefully at the dice images below.  
These represent all possible combinations of two dice.  
Tally the total for all the possible combinations.

		4	_____	7	_____	10	_____
2	_____	5	_____	8	_____	11	_____
3	_____	6	_____	9	_____	12	_____



What number has the highest probability of being thrown? \_\_\_\_\_

What numbers have the lowest probability of being thrown? \_\_\_\_\_

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