

## **Role of the Dice**

### **For Grades 3-5**

#### **Math Learning Goals:**

- Analyze word problems.
- Recognize the use of fractions.

#### **Materials Needed:**

- “Role of the Dice” Story
- Role of the Dice Answer Sheet

#### **Activity:**

The teacher will read the first page of the story aloud to the students while the students read along. They will try to answer the questions by themselves. Then the students will get in groups of two or three to discuss their answers. A few students will be selected to give their answers and discuss how they came to their conclusions.

#### **Conclusion:**

After the students have finished the discussion, read the second page together. This activity is not meant to be long but can be integrated into a lesson about fractions and the real world.

#### **TN Math Standards:**

##### **3<sup>rd</sup> Grade:**

Number and Operations:

3a.) Understand two fractions as equivalent if they are the same size, or the same point on a number line.

##### **4<sup>th</sup> Grade:**

3d.) Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, by using visual fraction models and equations to represent the problem.

##### **5<sup>th</sup> Grade:**

2.) Solve word problems involving addition and subtraction referring to the same whole, including cases of unlike denominators, by using visual fraction models or equations to represent the problem.

#### **Source:**

One Minute Mysteries: 65 Short Mysteries You Solve with Math! By Eric Yoder and Natalie Yoder

Adapted by Virginia Parkman, Kelly Sturner, and Suzanne Lenhart

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“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.”

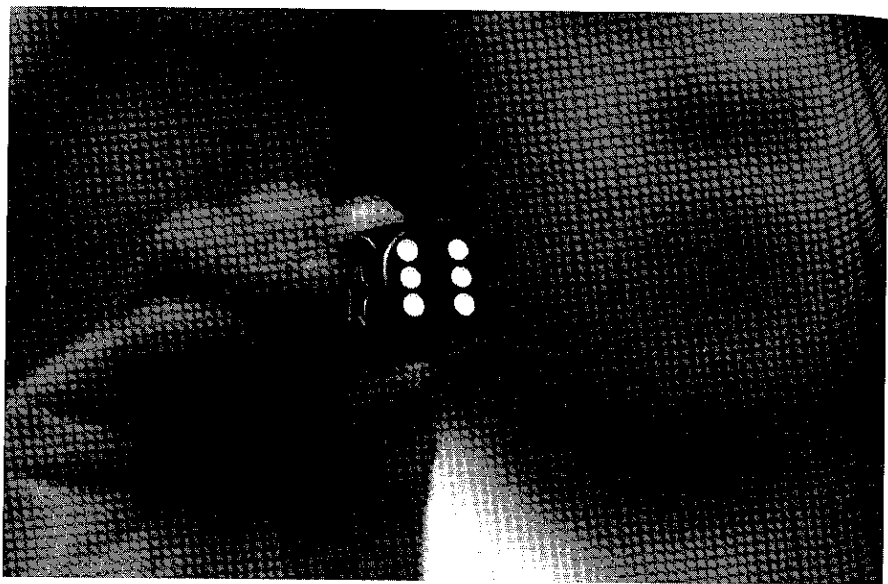
“That seems fair,” Kimberly said.

“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.



“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.”