**Lower Elementary:**

*Question:* The Woodhouse family moves into a new apartment on the 7th floor of the Bramford building. The lobby is on the 1st floor. How many floors are in between the lobby and the Woodhouses’ apartment?

**Upper Elementary:**

*Question:* Minnie makes 3 pints of chocolate mousse and divides it into 4 servings. How many cups of chocolate mousse are in each serving?

****

**Middle School:**

*Question:* Rosemary and Guy play a game of Scrabble. If 448 points were scored in total and Rosemary lost by 16 points, then what was each player’s score?

**Algebra and Up:**

*Question:* A cylindrical frosted birthday cake fits perfectly inside a square-based box with a volume of 845 cubic inches. If the box is 5 inches tall, then what is the volume of the cake? Give your answer in terms of π.

**Lower Elementary:**

*Question:* The Woodhouse family moves into a new apartment on the 7th floor of the Bramford building. The lobby is on the 1st floor. How many floors are in between the lobby and the Woodhouses’ apartment?

*Answer:* 5 floors

*Solution:* If we look at the numbers 1, 2, 3, 4, 5, 6, and 7, we can see that the numbers 2, 3, 4, 5, and 6 are in between 1 and 7. Since that’s 5 floor numbers, there are 5 floors between the 1st and 7th floor.

**Upper Elementary:**

*Question:* Minnie makes 3 pints of chocolate mousse and divides it into 4 servings. How many cups of chocolate mousse are in each serving?

*Answer:* 1½ cups

*Solution:* A pint is 2 cups, so 3 pints is 3 × 2 = 6 cups. If we want to divide 6 cups among 4 servings, then we can split the mousse in half, twice. Half of 6 cups is 3 cups, and half of 3 cups is 1½ cups. So, each serving is 1½ cups of chocolate mousse.

****

**Middle School:**

*Question:* Rosemary and Guy play a game of Scrabble. If 448 points were scored in total and Rosemary lost by 16 points, then what was each player’s score?

*Answer:* Rosemary scored 216, and Guy 232.

*Solution:* We can solve this problem by reasoning that since the scores were relatively close together, both players must have scored about half the points. Half of 448 is 224 points. Since there was a difference of 16 points, each player scored half of 16 points more or less than 224. So, Rosemary scored 224 – 8 = 216, and Guy scored 224 + 8 = 232.

**Algebra and Up:**

*Question:* A cylindrical frosted birthday cake fits perfectly inside a square-based box with a volume of 845 cubic inches. If the box is 5 inches tall, then what is the volume of the cake? Give your answer in terms of π.

*Answer:* 211.25π cubic inches

*Solution:* If the box is 5 inches tall, then the area of its base is 845 ÷ 5 = 169 square inches. Since we know the box is square and the square root of 169 is 13, we know that each side of the box is 13 inches. Since the cylindrical cake fits perfectly in the box, we know its radius is 13 ÷ 2 = 6.5 inches and its height is 5 inches. So, the volume of the cake is π × 6.52 × 5 = 211.25π cubic inches.