We will spend some time now going through real-life applications of proportions and ratios; thinking of how we compare two rates to solve a problem, and different ways that we can represent a rate to solve a problem.

1. A quart (32 ounces) container of yogurt contains 920 calories. Approximately how many calories would there be in a 5-ounce serving?

2. An advertisement says that 5 out of 8 dentists recommend the new zigzag toothbrush. If 264 dentists were interviewed, how many recommended the toothbrush?

3. A car travels 60 miles per hour, and a plane travels 15 miles per minute. How far does the car travel while the plane travels 600 miles?

4. Luis mixed 6 ounces of cherry syrup with 53 ounces of water to make a cherry-flavored drink. Martin mixed 5 ounces of the same cherry syrup with 42 ounces of water. Who made the drink with the stronger cherry flavor?

5. On a TV game show, a contestant makes $700 for every correct answer but loses $500 for every wrong answer. After answering 24 questions, Sarah broke even. How many questions did she answer correctly? (I encourage you to think of ways to represent the situation so that you can find this answer.

6. A farmer has determined that he has enough hay for 4 cows for 3 weeks.

   (a) If the farmer suddenly obtains 2 more cows, how long can he expect the hay to last?

   (b) How long would the hay last if there were $x$ cows? Write a generic formula for this.

7. Jack and Jill are traveling across the country, but they are not going on the interstate highways, which they find boring, and they do not have a GPS in the car. They just passed Munsonville and their destination is Salyan. Jill asks Jack how far away Salyan is.

   (a) On the map, 1 inch represents 40 miles, and Jack determines that the two towns are $2\frac{1}{4}$ inches apart. How far until Salyan?

   (b) What if, on the map, $\frac{3}{4}$ inch represents 48 miles. If tomorrow’s destination, Shangrila, is $4\frac{1}{2}$ inches from Salyan, how many miles would it be?

8. Ginger wants to fill her new swimming pool. She has two pumps; the large pump takes 40 minutes to fill the pool, and the small pump takes 60 minutes. How long will it take to fill the pool if both pumps are working?