Comparing Ratios
Extend Your Learning
Answers and Explanations

Answer the following questions using number sense and estimation.

1. Samantha's mom left a message on her cell phone asking her to stop by the grocery store and buy honey. She told Samantha to find the best buy. Honey is available in four sizes at the following prices. Which should Samantha buy? Explain your reasoning.

   12 oz. $1.99 16 oz. $3.69 24 oz. $4.69 40 oz. $7.55

   The 24 oz. jar has twice as much honey as the 12 oz. jar, but it costs over twice the amount. Of the two sizes, the 12 oz. jar is the better buy.

   The 12 oz. jar costs about $0.67 for 4 oz. ($2.00 ÷ 3 ≈ $0.67). Since the 16 oz. jar is 4 oz. more than the 12 oz. jar, it should cost about $2.67. ($2.00 + $0.67 = $2.67). The 16 oz. jar costs a lot more, so the 12 oz. jar is still the better buy.

   Using the fact that 4 oz. of honey costs about $0.67 (when buying the 12 oz. size), 40 oz. of honey should cost about $6.70 ($0.67 x 10 = $6.70). Since the 40 oz. jar costs $7.55, the 12 oz. jar is a better value.

   Samantha should buy the 12 oz. jar of honey.

2. A chocolate chip cookie recipe calls for 1¼ cups of chocolate chips. Haylie followed the original recipe using 1¼ cups of chocolate chips. Renee used the same recipe but needed to make three batches of chocolate chips cookies for a party. Instead of measuring the chocolate chips, she used a giant sized bag of chocolate chips. Later, she checked the label on the bag of chocolate chips and found that the giant bag contained 4 cups of chocolate chips. Whose cookies will be more "chocolatey?" Explain your reasoning.
   The original recipe requires 1¼ cups of chocolate chips. If Renee triples the recipe, she should triple the amount of chocolate chips. This means she should add 3¾ cups of chocolate chips. Because Renee added a giant bag with 4 cups of chocolate chips, her cookies will be more "chocolatey" than Haylie's cookies.

3. Katie, Felipe, and Jeremy each made lemonade, but none of them read the directions. Katie mixed 3 scoops of lemonade mix with 6 cups of water. Felipe mixed 1 scoop of mix with 3 cups of water. Jeremy mixed 2 scoops of mix with 5 cups of water. Whose lemonade mixture will be the strongest? Explain your reasoning.

   Whose lemonade mixture will be the weakest? Explain your reasoning.
   One way to solve this problem is to determine the amount of water each person used for one scoop of lemonade mix. The following ratio tables show that Katie used the least amount of water for one scoop of mix, making her lemonade the strongest, and that Felipe used the largest amount of water for one scoop of mix, making his lemonade the weakest.

Katie's Lemonade		
Scoops of Mix	3	1
Cups of Water	6	2

Felipe's Lemonade	
Scoops of Mix	1
Cups of Water	3

Jeremy's Lemonade		
Scoops of Mix	2	1
Cups of Water	5	2½

Another way to solve this problem is to determine the amount of mix each person would use for a set amount of water. The following ratio tables show that Katie would use the largest number of scoops of mix for 30 cups of water, making her lemonade the strongest, and that Felipe would use the smallest number of scoops of mix for 30 cups of water, making his lemonade the weakest.

Katie's Lemonade		
Scoops of Mix	3	15
Cups of Water	6	30

Felipe's Lemonade		
Scoops of Mix	1	10
Cups of Water	3	30

Jeremy's Lemonade		
Scoops of Mix	2	12
Cups of Water	5	30

View the *Equal Ratios* video to review ratio tables.

4. The dimensions of Classroom A are 25 feet x 20 feet, and this classroom has 15 students. The dimensions of Classroom B are 48 feet x 41 feet and has 45 students. Which classroom is the most crowded? Explain your reasoning.
Classroom A has an area of 500 square feet (25 ft. x 20 ft. = 500 sq. ft.). The classroom has about 33 square feet of area for each student (500 sq. ft. ÷ 15 students ≈ 33 sq. ft. per student). Classroom B has an area of 1,968 square feet (48 ft. x 41 ft. = 1,968 sq. ft.). The classroom has about 44 square feet of area for each student (1,968 sq. ft. ÷ 45 students ≈ 44 sq. ft. per student). Therefore, Classroom A is more crowded.

5. There are two parking lots available at the mall. East Lot has 242 spaces and West Lot has 312 spaces. Electronic signs are placed at the entrances to the parking lots to inform shoppers about parking availability. As cars enter and exit each parking lot, the "number occupied" changes.

East Lot
Number of spaces: 242
Number occupied: 170

West Lot
Number of spaces: 312
Number occupied: 234

Which lot is more occupied? Explain your reasoning. In which lot are you more likely to find a parking space? Explain your reasoning.
The ratio of occupied spaces to total spaces in East Lot is 170 to 242, so about 70% of East Lot is occupied (170 ÷ 242 ≈ 0.70). The ratio of occupied spaces to total spaces in West Lot is 234 to 312, so about 75% of West Lot is occupied (170 ÷ 242 ≈ 0.70). West Lot is more occupied if you look at the ratio of occupied spaces to total spaces or the percentage of occupied spaces.

West Lot actually has more spaces available in which to park, so you are more likely to find a parking space in the West Lot (78 spaces compared to 72 spaces).