

Kayla's grandparents drove a Ford Country Squire station wagon. When they took road trips, they could drive about 320 miles on a full tank of gas. When we think about the cost of having a car, we often think about the gas mileage, which is measured in miles per gallon (or mpg).



1. Use a double number line to find the mpg for Kayla's grandparents car if the gas tank holds 16 gallons.

2. a. In groups, compare and discuss how you used a double number line to find the mpg for the Country Squire station wagon.

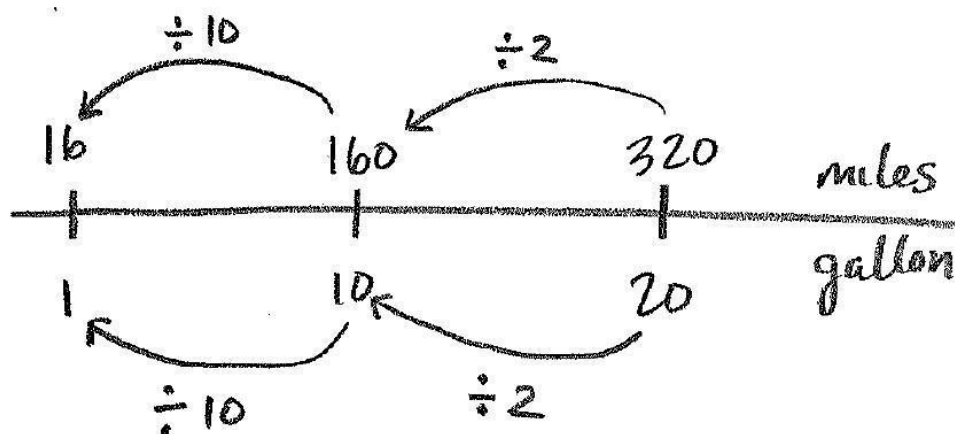


- b. What are typical miles/gallon for cars used today?



3. What are some reasons cars manufactured today should be designed to get more miles per gallon?

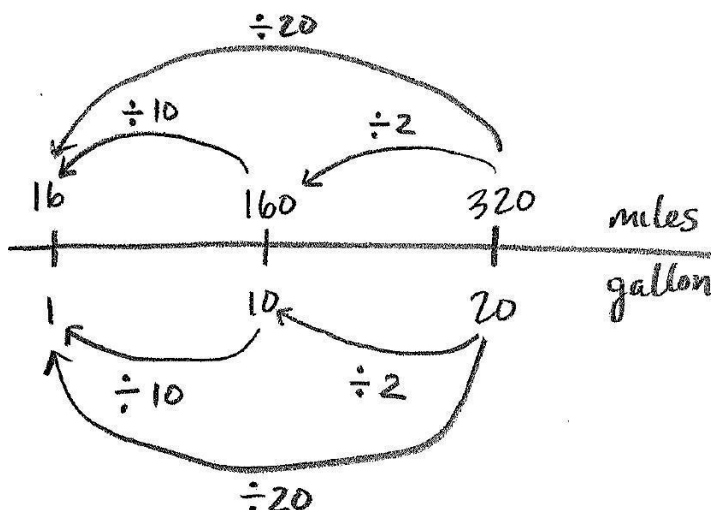
To find a unit rate using a double number line, like miles / gallon,
you set the bottom number (the denominator) of the rate to one.
 Then compute different ratios on the double number to find the number of miles for one gallon.



Notice how in the double number line on the right, when you divide 320 by 2, and then divide its result (160) by 10, it is the same as dividing 320 by 20.

So, this hints at another strategy for finding a unit rate:

- Divide the value of the top unit by the value of the bottom unit.



By dividing the number of miles by the number of gallons, you are finding the number of miles for one gallon.



Back at the market, Sam and Alexis are picking up a few more things. They are in the cereal aisle and comparing the price for different sizes of the same type of cereal.

The “Family Size” box is 18.8 ounces and has a price of \$6.79.

A “Large Size” box that is 15.4 ounces has a price of \$5.99.

The smallest box of Honey Nut Cheerios is 10.8 ounces and is on sale for \$4.79.



4. Find the unit rate of \$/ounce (or \$/oz.) for each size box.

- Family Size: _____ \$/oz.
- Large Size: _____ \$/oz.
- Small Size: _____ \$/oz.



5. If the small box (10.8 oz.) of Honey Nut Cheerios was on sale for \$4.00, would it be the best deal for the three boxes? Explain.



6. What would the price of the small box need to be so that it was the best value for the three different sized options of Honey Nut Cheerios? Explain.

Near the end of the cereal aisle, Sam sees a large bag of Honey Nut Cheerios. The price for this 32 ounce bag is \$6.99.



7. Is this bag a good deal compared to the three cereal boxes? Explain.

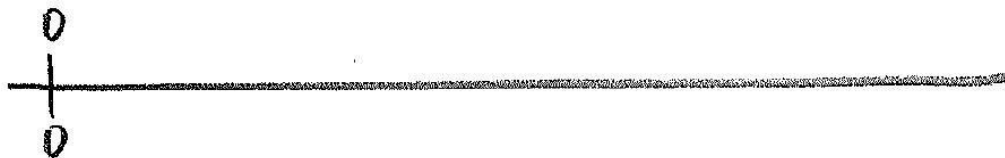


Ratios at School

8. A school bus can transport 54 passengers. Assume 420 students attend Highview 6th Grade Center. Use the double number line below to find the minimum number of school buses needed to transport all Highview students to Middletown High School.



9. The school cafeteria purchases juice in large packages of 32 juice boxes per package. How many packages does the school cafeteria need to purchase each day to supply juice for 420 students?



10. Gabriel reads 6 pages of a book in 5 minutes. At this rate, how long will it take Gabriel to read a book for class that has 156 pages?



11. Sam read the book that Gabriel did. Sam finished in 104 minutes. Choose a strategy to find Sam's unit rate for reading this book.
12. The district office ordered 575 calculators for school supplies. If 25 calculators come in each box, how many boxes should the district office expect to receive?

Summary

- Double number lines can be used to solve problems involving ratios. **Unit rates can be found with double number lines** by computing the value of one unit when the other unit in the denominator has a value of one.
- **We can also find unit rates using division.** Unit rates are usually written as a single number followed by the combined units, such as 26.3 miles/gallon, or 55 miles/hour.
- Unit rates can also be used to find the best value when comparing different sizes of the same item.