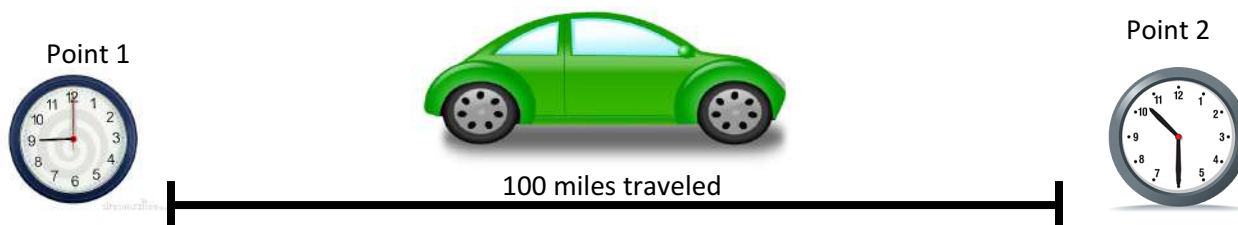
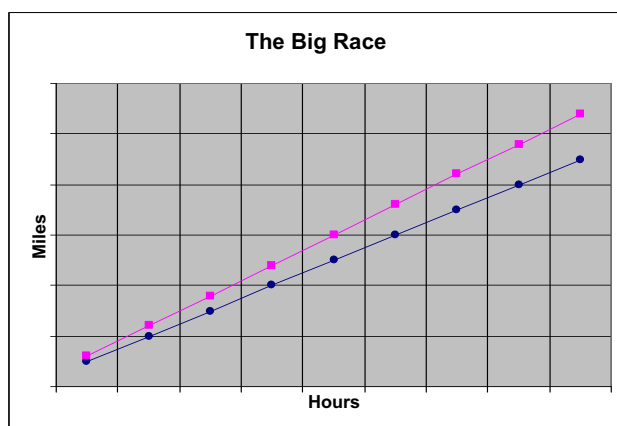


Sue and her family were traveling during their vacation. She checked the time at Point 1 in the diagram below, and then again at Point 2 in the diagram below. Her mom told her how far they traveled in that time, as noted in the diagram.



1. Based on this information, what is the **unit rate** of the car? Explain in writing what the unit rate means in the context of the problem.
2. Sue's dad said that the trip was 600 miles. **How many hours** will it take to complete the trip? Explain below.
3. Tom and Tammy raced cross-country on motor bikes. Tom drove 450 miles in 9 hours. Tammy took $7\frac{1}{2}$ hours to travel the same distance as Tom. Compute the **unit rate** that describes Tom's average driving speed and Tammy's average driving speed. **Show** how you made your decisions below.
4. A portion of the graph of Tom and Tammy's race appears below. Identify which line segment belongs to Tom and which belongs to Tammy. Explain in writing how you made your decision next to the graph.



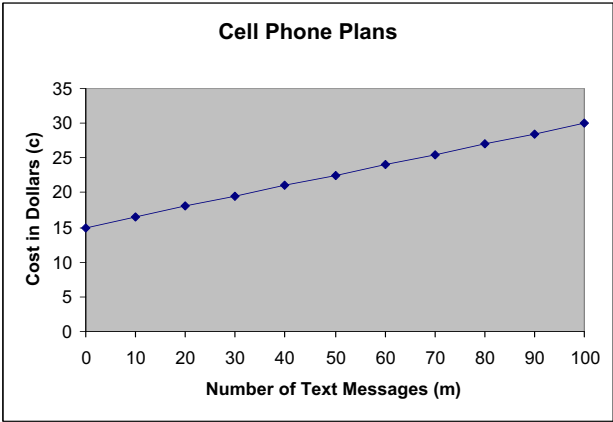
Kevin is planning to drive from Atlanta to San Diego in his car. He started to fill out the table below showing how many miles he can travel for each gallon of gas he uses. Use the information in Kevin’s table to answer the questions below.

Gallons	3	6		12	15	18
Miles	60		180	240		

5. Complete the table for Kevin. Assume the relationship in the table is proportional.
6. Based on the table, how many *miles per gallon* did Kevin’s car get? Explain how you made your decision below.
7. Write an equation that Kevin can use to find the distance (d) he can drive on any number of gallons of gas (g).
8. When Kevin’s tank is full, it holds 14 gallons of gas. How far can Kevin drive on a full tank of gas?

The monthly cost of Kim’s cell phone plan is graphed below. Her friend, Holly, selected a plan that charges \$0.30 per text message, with no monthly fee, because she only uses her phone for texting.

9. Write an equation to show the monthly cost of Holly’s plan for any number of texts. m = text messages, c = cost
10. Graph the monthly cost of Holly’s plan on the graph below.



11. Using the graphs, explain the meaning of the following pairs:

a. (0, 15)

b. (0, 0)

c. (100, 30)

d. (50, 15)
12. When one of the girls doubles the number of texts she sends, the cost doubles as well. Who is it? Explain your answer in the space below.

13. The environmental club at school does an annual community clean-up event, and they play recycling games. A team is assigned an area of land that is scattered with trash. The goal is for a pair of participants to clean up the area in the fastest time possible.

Anita, working alone, could clean one-half of the area in one hour. Her partner, Todd, could clean one-third of the area if he worked alone. If they work together, how long will it take them to clean the area? Explain how you found your solution.

14. Below is some information on the side of two cereal boxes.

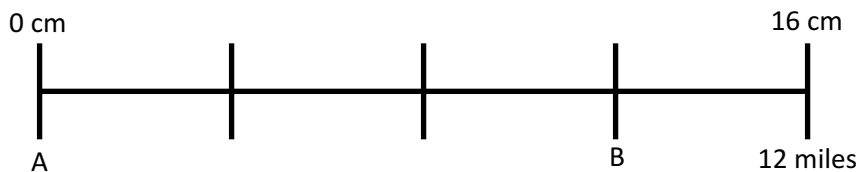
SUPER CRUNCH
15 grams of protein in 100 grams of cereal

CHOCO ROCKS
9 grams of protein in 81 grams of cereal

- a. How many grams of Super Crunch cereal will give you 6 grams of protein?
- b. Which cereal has the higher rate of protein? Explain how you found your answer.

Questions 15 – 25 will be multiple choice questions on the exam.

Use the diagram below to answer 15 – 17.



15. On a map of the United States, 16 centimeters represents 12 miles. How many centimeters represents one mile?
- A. 4 B. 3 C. $\frac{3}{4}$ D. $\frac{4}{3}$
16. How long is the line segment between A and B in centimeters?
- A. 12 B. 9 C. 6 D. 3
17. If A and B represent two cities, what is the actual distance between the two cities?
- A. 6 B. 8 C. 9 D. 12

18. Kristy was asked by her teacher to solve this equation using properties of equality. She also had to explain her reasoning along the way. Did she solve it correctly? If not, where did she go wrong? See Kristy's steps below.

$$4x + 2 = 20$$

Step 1 Explanation: I divided by 4 using the division property of equality.

$$x + 2 = 5$$

Step 2 Explanation: I subtracted 2 using the subtraction property of equality.

$$x = 3$$

- A. Kristy's solution is incorrect because she divided 20 and 4 by 5 and this is not a correct quotient.
 B. Kristy's solution is incorrect because she subtracted incorrectly.
 C. Kristy's solution is incorrect because she should have used the subtraction property of equality first.
 D. Kristy's solution is correct.

19. Katie borrowed money from her teacher several days to buy ice cream. She has borrowed a total of \$6. On Monday, Katie paid the teacher \$4. Which number sentence shows this scenario?

- A. $-6 + 4 = 2$ B. $-6 - 4 = -2$ C. $-6 + 4 = -2$ D. $-6 - 4 = 2$

20. Suppose a roller coaster ride begins by climbing to a height of 75 meters, stopping briefly, and falling rapidly to ground level (a height of 0 meter). As it falls, the roller coaster will gain speed.

The equation for this relationship is $75 - h = v^2/19.6$. What is h when $v = 14.0$?

- A. 10 meters B. 196 meters C. 65 meters D. 3831.6 meters

21. If a person walks $1/4$ mile in each $1/2$ hour, compute the unit rate as the complex fraction $(1/4)/(1/2)$ miles per hour. What would be the unit rate in simplest form?

$$\frac{1/4}{1/2}$$

- A. 10 meters B. 196 meters C. 65 meters D. 3831.6 meters

22. For an account balance of -25 dollars, $|-25|$ represents the size of debt in dollars. Which of the following is equivalent to this debt size?

- A. $-1/25$ dollars B. $1/25$ dollars C. 25 dollars D. -25 dollars

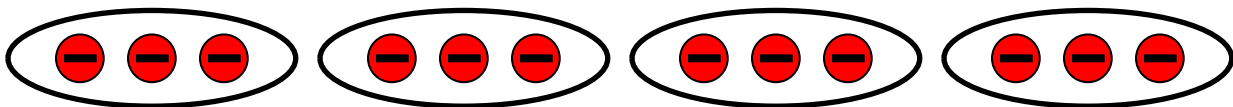
23. Which of the following inequalities expresses this fact: -7°F is warmer than -10°F ?

- A. $-7^\circ\text{F} < -10^\circ\text{F}$ B. $-7^\circ\text{F} \geq -10^\circ\text{F}$ C. $-7^\circ\text{F} \leq -10^\circ\text{F}$ D. $-7^\circ\text{F} > -10^\circ\text{F}$

24. Your mom is decorating your bathroom at home, and she wants to put the $8 \frac{3}{4}$ inch long towel bar in the center of the bathroom door that is $30 \frac{1}{2}$ inches wide. About how far from the edge will she need to place the bar?

- A. About $\frac{1}{4}$ inch from each edge B. About 11 inches from each edge
 C. About 21 inches from each edge D. About 10 inches from each edge

25. What does the following model demonstrate?



- A. $(4) + (-3) = -12$ B. $(3) - (-4) = 7$ C. $(-3)(4) = -12$ D. $(-3)(-4) = -12$