

THE YOGURT SHOP

Jell E. Bean owns the local frozen yogurt shop. At her store, customers serve themselves a bowl of frozen yogurt and top it with chocolate chips, frozen raspberries, and any of the different treats available. Customers must then weigh their creations and are charged by the weight of their bowls.



1 gallon!!

Jell E. Bean charges \$32 for five pounds of dessert, but not many people buy that much frozen yogurt. She needs you to help her figure out how much to charge her customers. She has customers that are young children who buy only a small amount of yogurt as well as large groups that come in and pay for everyone's yogurt together.

Is it reasonable to assume that the weight of the ^{sundae} yogurt is proportional to its cost? How can you tell?

Yes. If you double the weight, then you double the cost.

Make a table that lists the price for at least six different weights of yogurt. ~~Be sure to include at least two weights that are not whole numbers.~~

Weight (lbs)	Cost \$
5	32
1	6.40
0	0
2	12.80
3	19.20
4	25.60

What is the unit rate of the yogurt? (Stores often call this the unit price.)

\$6.40 / lb yogurt

Can you use the unit rate to write a formula that Jell E. Bean can use to calculate the amount any customer will pay?

\$6.40 / lb yogurt

or

$$P(6.40) = C$$

or

$$6.40 \cdot P = C$$

$$6.40P = C$$

P = pounds
C = cost \$

Jell E. Bean decides to start charging \$0.50 for each cup before her customers started filling it with yogurt and toppings. Write a new equation to find the cost of any sundae.

\$6.40/lb

$$C = (6.40 \cdot y) + 0.50$$



If Jell E. Bean charges \$0.50 for each cup ,would the weight of the yogurt still be proportional to its cost?

No. Doubling the yogurt weight won't double the cost.



Robert's ~~new~~ hybrid car has a gas tank that holds 12 gallons of gas. When the tank is full, he can drive 420 miles. Assume that his car uses gas at a steady rate.


- a. Is the relationship between the number of gallons of gas used and the number of miles that can be driven proportional? For example, does it change like Sonja's birdseed prediction, or is it more like Gustavo's college savings? Explain how you know.



- b. Show how much gas Robert's car will use at various distances by copying and completing the table below.

Gas used (gallons)	0	3	6	12
Distance driven (miles)	0	105	210	420

What is Robert's unit rate?

$$\frac{420 \text{ miles}}{12 \text{ gallons}} = \frac{35 \text{ miles}}{1 \text{ gallon}} \text{ unit rate}$$


Work with your team to write the **equation** to find the exact number of miles Robert can drive with any number of gallons of gas. Be prepared to share your strategy.

$$35 \cdot G = M \quad G = \text{gallons} \quad M = \text{miles}$$

Use your equation to find out how many gallons of gas Robert will need to drive 182 miles.

Guess and check

$$\begin{array}{r} 5.2 \\ 35 \overline{) 182} \\ \underline{175} \\ 70 \\ \underline{70} \\ 0 \end{array}$$

5.2 gallons

