Name:_____ Class:_____ Date:_____

Learning Target: I can calculate and apply a unit rate.

Review
A **Rate** compares quantities measured in different units.
Example: I drove 350 miles on 70 gallons of gas. The rate is:

$$\frac{350 \text{ miles}}{70 \text{ gallons}}$$

What are the two units being compared? _____ & _____

Unit Rate:
A rate is not necessarily useful in that form, sometimes it is more useful to find a **unit rate**. Unit means one.
So, a **unit rate** is the rate of _____ _____ of a given quantity.

You can use **proportions** to find the unit rate.
A **proportion** is an equation stating that _____ ratios are _____.

In order to correctly create the proportion, you must decide what the question is asking. If you are told that I drove 350 miles using 70 gallons of gas, there are two unit rate questions that could be asked.

Question 1:   How many miles did I travel per gallon of gas?
Create the proportion:

Per = per 1

Fill in the units that you know, they need to match up on either side of the = sign.

$$\frac{miles}{gallons} = \frac{miles}{gallons} \qquad \frac{350}{70} = \frac{x}{1}$$

The variable is your unknown.

Substitute in the rate that you are given

Fill in one based on the question. "per gallon of gas" 1 represents the gallons.

Solve this proportion by cross multiplying:
350(1) = 70(x)
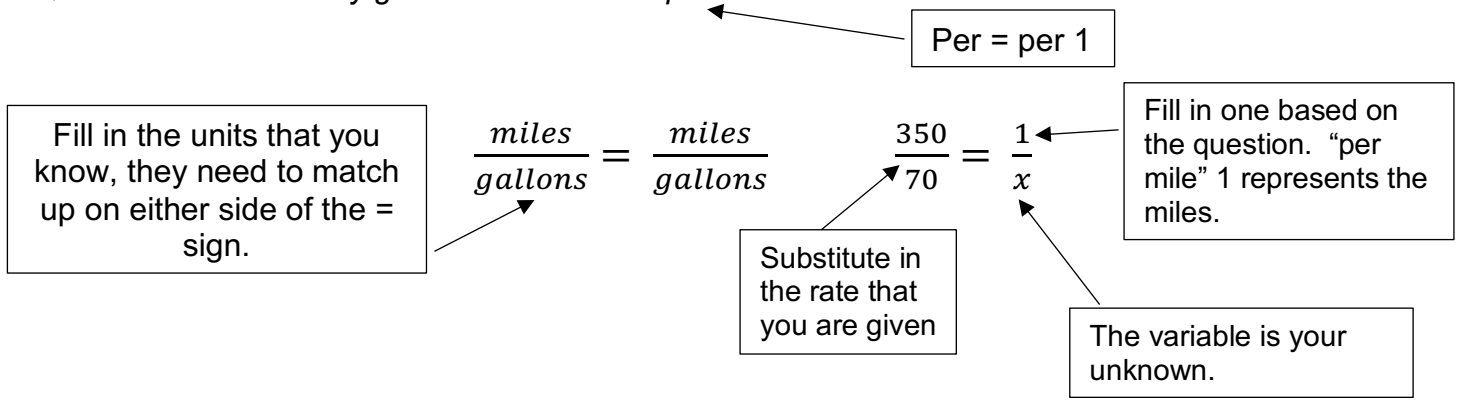350 = 70x
$$\frac{350}{70} = \frac{70x}{70}$$

5 = x

This means, I can go 5 miles per 1 gallon of gas.

Question 2: How many gallons did it take to per mile?

Per = per 1

Fill in the units that you know, they need to match up on either side of the = sign.

$$\frac{miles}{gallons} = \frac{miles}{gallons}$$

$$\frac{350}{70} = \frac{1}{x}$$

Fill in one based on the question. "per mile" 1 represents the miles.

Substitute in the rate that you are given

The variable is your unknown.

Solve this proportion by cross multiplying:

350(x) = 70(1)

350x = 70

$$\frac{350x}{350} = \frac{70}{350}$$

x = 0.2

This means, it takes 0.2 gallons per 1 mile.

Example:

Cory earns $52.50 in 7 hours. Find the unit rate.

$$\frac{52.50}{7} = \frac{x}{1}$$ *Write a proportion to find an equivalent ratio with a second quantity of 1.*

7.5 = x   *Divide on the left side to find x.*

The unit rate is $7.50 per hour.

What is the unit rate question that was asked here?

_____

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Directions:
(1) Read each problem.
(2) Underline the unit rate question.
(3) Create & solve a proportion
(4) Write the "per" statement

Problem	Proportion & Solution	Per Statement
Jayden ran 5 miles in 40 minutes. How long did it take him to run per mile?		
Dayanara purchased 3 new shirts for $27.00. How much did each shirt cost?		
Lahja earned $75.00 for getting her neighbor's mail each day that she was away. She was away for 15 days. How much did she earn per day?		
Mr. Warnock drove 595 miles to go on vacation. He used 35 gallons of gas. How many miles did he travel per gallon?		
Neveaha purchased 16 lbs. of candy for Halloween. It cost $64.00. How much did each pound cost?		