Lesson 3.4 Understanding Unit Rates

A **rate** is a special ratio that compares quantities of two different types of items—for example, *340 miles per 10 gallons (340 mi./10 gal.)*. In a **unit rate**, the second quantity is always 1, such as in *34 miles per gallon (34 mi./1 gal.)*. This allows you to see how many of the first item corresponds to just one of the second item.

Suppose you want to divide students equally between buses for a field trip. To see how many students should go on each bus, find the unit rate.

If there are 160 students and 4 buses, how many students should go on each bus?

$\frac{160}{4} = \frac{s}{1}$ To find the number of students for one bus, divide by the number of buses total.

$\frac{160}{4} = \frac{40}{1}$ The unit rate is $\frac{40}{1}$, or 40 students per bus.

SHOW YOUR WORK

Solve each problem by finding the unit rate.

1. John can create 20 paintings in 4 weeks. How many paintings can he create each week?

1.
5 paintings

2. Sasha can walk 6 miles in 3 hours. If she has to walk 1 mile, how long will it take her?

2.
30 minutes (1/2 hour)

3. Todd keeps his 4-room house very clean. It takes him 1 hour and 36 minutes to clean his whole house. How long does it take him to clean one room?

3.
24 minutes

4. Victoria can make 8 necklaces in 4 days. How long does it take her to make one necklace?

4.
1/2 day

5. Byron has his own bakery. He bakes 84 cakes each week. How many cakes can he make in one day?

5.
12 cakes

6. Charlie buys 3 computer tables for $390. How much did he pay for each table?

6.
$130

Lesson 3.5 Problem Solving

SHOW YOUR WORK

Solve the problems below using ratios and unit rates.

1. Gas mileage is the number of miles you can drive on a gallon of gasoline. A test of a new car results in 440 miles driven on 20 gallons of gas. How far could you drive on 60 gallons of gas? __1320 miles__

What is the car's gas mileage? __22 miles per gallon__

1.

2. An ice-cream factory makes 100 quarts of ice cream in 5 hours. How many quarts could be made in 36 hours? __720 quarts__

What was that rate per day? __480 quarts per day__

2.

3. A jet travels 590 miles in 5 hours. At this rate, how far could the jet fly in 10 hours? __1180 miles__

What is the rate of speed of the jet? __118 miles per hour__

3.

4. You can buy 5 cans of green beans at the Village Market for $2.30, or you can buy 10 of them at Best Food for $5.10.

Which place is the better buy? __Village Market__

4.

5. You can buy 3 apples at the Quick Stop for $1.29. You can buy 5 apples at Shop and Save for $2.45.

Which place is the better buy? __Quick Stop__

5.

6. A ferris wheel can accommodate 55 people in 15 minutes.

How many people could ride the ferris wheel in 2 hours? __440 people__

What is the rate per hour? __220 people per hour__

6.