Unit Rates

A **rate** is a ratio comparing two quanities of different kinds of units. A **unit rate** has a denominator of 1 unit when the rate is written as a fraction. To write a rate as a unit rate, divide the numerator and the denominator of the rate by the denominator.

Ratio	Rate	Unit Rate
$15:5 = \frac{15 \text{ characters}}{5 \text{ seconds}} = \frac{3 \text{ characters}}{1 \text{ second}}$		

Examples:

Samantha picked 45 oranges in 5 minutes. Write this rate as a unit rate.

Write the rate as a fraction.
Compare the number of oranges to the number of minutes.
Then divide.

$$\frac{45 \text{ oranges}}{5 \text{ minutes}} \overset{\div 5}{=} \frac{9 \text{ oranges}}{1 \text{ minute}}$$

So, the unit rate is $\frac{9 \text{ oranges}}{1 \text{ minute}}$, or 9 oranges per minute.

The Australian dragonfly can travel 18 miles in 30 minutes. How far can the dragonfly travel in 1 minute?

Write the rate as a fraction.
Compare the distance to the number of minutes. Then divide.

$$\frac{18 \text{ miles}}{30 \text{ minutes}} \overset{\div 6}{=} \frac{3 \text{ miles}}{5 \text{ minutes}}$$

The ratio 3 to 5 cannot be simplified to a whole number rate. It can be written as $\frac{3 \text{ miles}}{5 \text{ minutes}}$ or as a unit rate of $\frac{3}{5}$ mile to 1 minute.

The dragonfly can travel $\frac{3}{5}$ mile every minute.

Unit Rates Practice

	What is the rate?	Find the unit rate. Show your work!
 Jay drove 360 miles on 24 gallons of gas.		
 Maya drove 540 miles on 30 gallons of gas.	What is the rate?	Find the unit rate. Show your work!
 1452 calories in a 12-slice cake.	What is the rate?	Find the unit rate. Show your work!
 880 calories in an 8-slice pie	What is the rate?	Find the unit rate. Show your work!
 15-oz Cheerios for $3.95	What is the rate?	Find the unit rate. Show your work!
 10-oz Cheerios for $2.85	What is the rate?	Find the unit rate. Show your work!