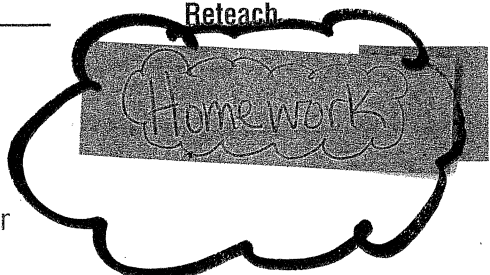Name _____

Algebra • Use Equivalent Ratios

You can find equivalent ratios by using a table or by multiplying or dividing the numerator and denominator by the same number.

Kate reads 5 chapters in 2 hours. At this rate, how many chapters will she read in 6 hours?

Step 1 Make a table of equivalent ratios.

		5·2	5·3
Chapters read	5	10	15
Time (hours)	2	4	6
		2·2	2·3

Step 2 Find 6 hours in the table. Find the number of chapters that goes with 6 hours: 15

Step 3 Write the new ratio: $\frac{15}{6}$

The ratios $\frac{5}{2}$ and $\frac{15}{6}$ are equivalent ratios. So, Kate will read 15 chapters in 6 hours.

Julian runs 10 kilometers in 60 minutes. At this pace, how many kilometers can he run in 30 minutes?

Step 1 Write equivalent ratios with a missing value.

$$\frac{10}{60} = \frac{\blacksquare}{30}$$

Step 2 Divide the numerator and denominator by 2 to write the ratios using a common denominator.

$$\frac{10 \div 2}{60 \div 2} = \frac{\blacksquare}{30}$$

The denominators are the same, so the numerators are equal to each other.

$$\frac{5}{30} = \frac{\blacksquare}{30} \rightarrow \blacksquare = 5$$

So, Julian can run 5 kilometers in 30 minutes.

Use equivalent ratios to find the unknown value.

1. $\frac{4}{5} = \frac{\square}{20}$

	4·2	4·3	4·4
4		12	
5	10		20
	5·2	5·3	5·4

2. $\frac{\square}{12} = \frac{2}{3}$

	2·2	2·3	2·4
2			
3			12
	3·2	3·3	3·4

3. $\frac{24}{27} = \frac{\square}{9}$

4. $\frac{3}{7} = \frac{9}{\square}$

5. $\frac{8}{10} = \frac{\square}{5}$

6. $\frac{30}{45} = \frac{6}{\square}$

Find Unit Rates

When comparing prices of items, the better buy is the item
with a lower unit price.

Determine the better buy by comparing unit rates.

A 12-ounce box of Wheat-Os costs $4.08, and a 15-ounce box of
Bran-Brans costs $5.40. Which brand is the better buy?

Step 1 Write a rate for each.

Wheat-Os

$$\frac{\$4.08}{12\,oz}$$

Since you are
looking for the lower
cost per ounce, write
cost over ounce.

Bran-Brans

$$\frac{\$5.40}{15\,oz}$$

Step 2 Write each rate as a unit rate.

$$\frac{\$4.08 \div 12}{12\,oz \div 12} = \frac{\$0.34}{1\,oz}$$

Divide the numerator
and denominator by
the number in the
denominator.

$$\frac{\$5.40 \div 15}{15\,oz \div 15} = \frac{\$0.36}{1\,oz}$$

Step 3 Choose the brand that costs less.

$$\frac{\$0.34}{1\,oz}$$

$0.34 is less than $0.36.

$$\frac{\$0.36}{1\,oz}$$

So, Wheat-Os are the better buy.

Determine the better buy by comparing unit rates.

1. 20 pens for $1.60 or 25 pens for $2.25

a. Write a rate for each.

_____ and _____

b. Write each rate as a unit rate.

_____ and _____

c. Which is the better buy?

_____

2. 13 berries for $2.60 or 17 berries for $3.06

a. Write a rate for each.

_____ and _____

b. Write each rate as a unit rate.

_____ and _____

c. Which is the better buy?

_____