

Concept: Ratios and Proportions

Name: _____

Warm-Up:

Fill the following charts creating equivalent fractions

$$\frac{2}{3} \xrightarrow{\times 2} \frac{4}{6} \xrightarrow{\times 2} \frac{8}{12}$$

Remember: What you do to the top of the fraction, you must also do to the bottom of the fraction.

$\frac{4}{5} =$	$\frac{6}{8} =$	$\frac{3}{9} =$
$\frac{24}{35} =$	$\frac{11}{20} =$	$\frac{2}{7} =$

Compare:

Pictures		Words / Numbers	
	to		blue squares to yellow squares
<input type="text"/>	to	<input type="text"/>	
	to		cups of blueberries to spoons
<input type="text"/>	to	<input type="text"/>	
	to		balls to triangles
<input type="text"/>	to	<input type="text"/>	

Group Activity:

To demonstrate prior knowledge and understanding of ratios and proportions, arrange the following ratio and proportion words, phrases, numbers, and concepts into groups and explain why you have grouped them the way you did.

$\frac{2}{3}$	rate	equivalent	1 to 3
order	type of unit	comparison	proportion
Sizing	relative size	related to	unit of measure
ratio	equal	number of heart beat per minute	twice as big

Whole Class Activity:

Have students present their groupings and as a class discuss grouping reasons. Throughout this section review groupings and have students make changes as concepts about ratios and proportions are clarified.

COMPUTER COMPONENT

Instructions: In  follow the **Content Menu** path:

Percent > Ratios and Proportions



Work through all Sub Lessons of the following Lessons **in order**:

- *Ratios in the News*
- *Ratio, Tape Diagram*
- *Writing Ratios*
- *Rate and Unit Rate*
- *What is a Proportion*
- *Proportion with Pattern Blocks*
- *Proportions*
- *Ratio Table*
- *Ratios and Your Body*



As you work through the computer exercises, you will be prompted to make notes in your notebook/math journal.

NOTES:

Fill in the blanks with the following words (order, different, rates, equivalent, proportion, comparison, ratio, compares, simplified, units.) *You may need to use some words more than once.*

- (a) A _____ is a _____ of one number with another number.
- (b) _____ should always be _____.
- (c) A _____ works with _____ fractions.
- (d) The _____ you write the _____ is important.
- (e) When dealing with a _____ one must always use the same _____.
- e) A rate _____ quantities with _____ types of measurements.

A **ratio** is a _____ of _____ quantities that have the same type of units. If we want to write the ratio of boys to girls in the room, we have three different ways to express it.

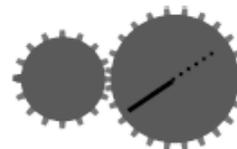
1.

2.

3.

Sample:

$$\text{Gear Ratio} = \frac{\text{number of teeth on the small gear (drive gear)}}{\text{number of teeth on the large gear (driven gear)}}$$



$$= \frac{24}{16} = \text{--- or --- or ---}$$

A **rate** is a special kind of _____. It _____ two quantities with _____ types of _____.

Are all rates ratios and are all ratios rates?

A **unit rate** is a type of _____ in which the second term is _____. This involves _____ the fraction.

Example: 120 miles in two hours
 _____ miles in 1 hour

A **proportion** is a statement that _____ ratios are _____.

Example: $\frac{4}{5} = \frac{16}{\quad}$

4 : _____ = 16 : _____

OFF COMPUTER EXERCISES

1. Indicate whether the following are rates, ratios or proportions.

- (a) Seven parrots to two cats _____
- (b) Six people per room _____
- (c) A dollar (US) is worth \$1.21 (CDN) _____
- (d) If a room holds 42 people then 3 rooms will hold 138 people _____
- (e) $\frac{6}{15} = \frac{4}{10}$ _____
- (f) A camp has 5 campers per counselor _____

2. Complete the following:

- (a) A _____ is a comparison between two or more like quantities.
- (b) A _____ is a comparison between two quantities with different units.
- (c) A _____ is an equality between two equivalent ratios or rates.

3. Look at the following items and write the ratios of:

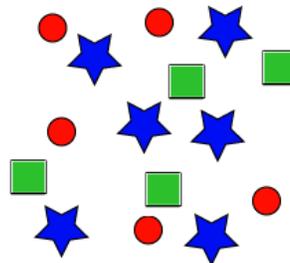
(a) Red circles to green squares

(b) Green squares to red circles

(c) Green squares to blue stars

(d) Red circles to green squares to blue stars

(e) Blue stars to purple triangles



Interesting fact:

Archaeologists use ratios when calculating the carbon dating of woolly mammoth's skeletons.

4. Solve these problems.

(a) Find each person's hourly rate of pay. (dollars per one hour)

i. Rahia earns \$40 for 5 hours of works.

ii. Shella earns \$39 for 3 hours of work.

(b) Tilly is thirsty and wants a pop. Store A sells the pop for 1.25 liters for \$2.50. Store B sells the pop for 0.75 liters for \$1.35. *Where can Tilly find the best deal?*

i. Justify your answers

ii. Solve it in at least two different ways.

Interesting fact: 25 % of all cookies baked in the United States are chocolate chip cookies.

- (c) A chocolate chip-lover's ratio of chips to cookie requires 324 chocolate chips per batch of cookie dough. *If the recipe makes 24 cookies, how many chocolate chips are in each cookie?*



- (d) Rob drove 654 Km in 6 hours. If we assume that Rob was travelling at constant speed,

i. *How far had Rob driven after 2 hours?*

ii. *How far could Rob drive in 8 hours?*

- (e) Using your math class as the sample population, determine the number of students in your class that download music videos at least twice a week. Use this information to estimate the number of students in the school who download music videos at least two nights a week. *Do you think that this sample is appropriate for predicting the viewing habits of all teenagers throughout the country? Explain your reasoning.*

A Second Look!

To demonstrate knowledge and understanding of ratios and proportions, arrange the following ratio and proportion words, phrases, numbers, and concepts into groups and explain why you have grouped them the way you did.

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Note to teachers:

This activity can be used as an assessment of student understanding of the big ideas around ratios and proportions.