

## Chapter 8 Review: Proportions

Textbook p.449-516

Summary: p.471-472, p.513-514

Practice Questions p.473, p.515-516

**Key Concepts:** Unit Rate, Scale Factor, Area, Volume

### Vocabulary

**Ratio:** a comparison of two quantities (2:3, 2 to 3, 2/3) is \_\_\_\_\_ a fraction

**Rate:** a ratio with \_\_\_\_\_ units (ex. 60 km : 2 hours)

**Unit Rate:** a rate where the second quantity is reduced to \_\_\_\_ (ex. 30 km **per** hour)

**Scale:** comparing a “\_\_\_\_\_” image to the “\_\_\_\_\_” (ex. map is 3 cm : 50 km)

**Scale Factor:** comparison using the \_\_\_\_\_ units (ex. 1 : 5 000 000)

### Prerequisite Skills

1) Scale factors can be expressed as a ratio, fraction, decimal, or percentage.

Ratio	Fraction	Decimal	Percentage
3:4			
		2.67	

2) Reducing Ratios

To reduce a ratio to lowest terms, you can use the calculator...

3) Solving Ratios

a)  $\frac{600 \text{ km}}{4.0 \text{ h}} : \frac{x}{1.0 \text{ h}}$

b)  $\frac{13.0\text{g}}{0.75\text{cups}} : \frac{x}{3\text{cups}}$

c)  $\frac{2\text{cm}}{10\text{km}} : \frac{5\text{cm}}{x}$

### Key Example – Scale Factor



You want to make a new globe, where the diameter is increased by a factor of 1.5

How much would the surface area increase by?

How much would the volume increase by?

**Practice #1:** Complete the chart

Ratio	Fraction	Decimal	Percentage
6:10			
			125%

**Practice #2:** Reduce each of the following ratios to lowest terms:

a)  $12 : 36 =$  \_\_\_\_\_

b)  $\frac{2}{3} : \frac{3}{4} =$  \_\_\_\_\_

**Practice #3:** Solve the following ratios

a)  $\frac{300 \text{ km}}{2.0 \text{ h}} : \frac{x}{1.0 \text{ h}}$

b)  $\frac{300 \text{ cal}}{500 \text{ mL}} : \frac{x}{1.0 \text{ L}}$

**Practice #4:** You go in to Save-on to buy some Salsa. They have two options. You don't care how spicy or juicy it is, you just want the most salsa for the least amount of money.

Brand A: 500mL for \$4.49

Brand B: 750mL for \$6.99

Find the unit price for each brand and circle the best deal:

Brand A: \_\_\_\_\_

Brand B: \_\_\_\_\_

**Practice #5:** Natasha drives 250 km in 3 hours and 30 minutes without stopping. What was her average speed?

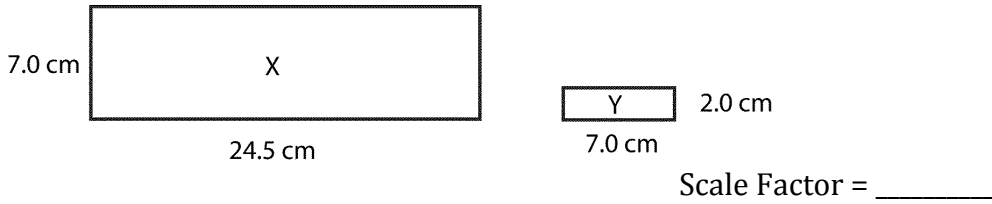
**Practice #6** On a map, an actual length of 50 km is represented by 5 cm.

a) What is the scale of this map? \_\_\_\_\_

b) What scale factor was used to create the map? \_\_\_\_\_

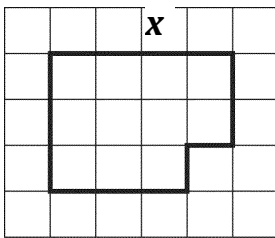
c) If two places are 10 cm apart on the map, how far apart are they in real life? \_\_\_\_\_

**Practice #7:** Determine the scale factor that was used to transform diagram X into diagram Y. Express your scale factor as a fraction or as a percent to one decimal place. (1 mark)



**Practice #8:** Jamia reduces this figure by a scale factor of 50%

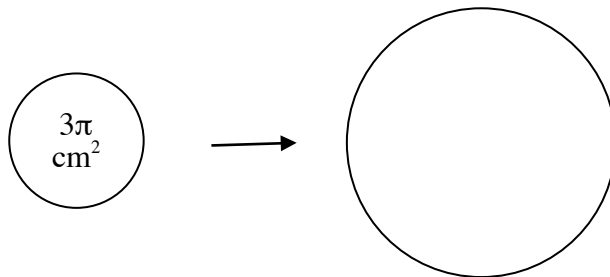
Determine the new length of side  $x$ , and the area of the reduced figure, to the nearest tenth of a square unit.



Length of new side  $x$  = \_\_\_\_\_

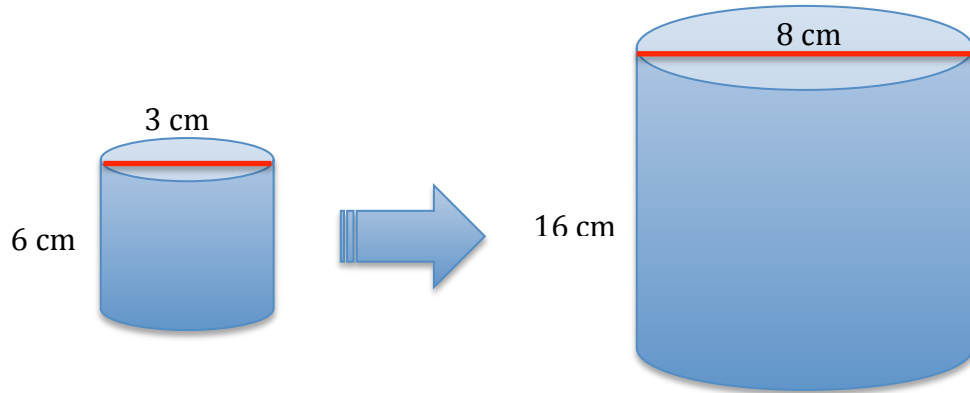
Area of reduction = \_\_\_\_\_

**Practice #9:** The area of a circle is  $64\pi$ . It is going to be enlarged by a scale factor of 3. Determine the area of the enlarged circle.

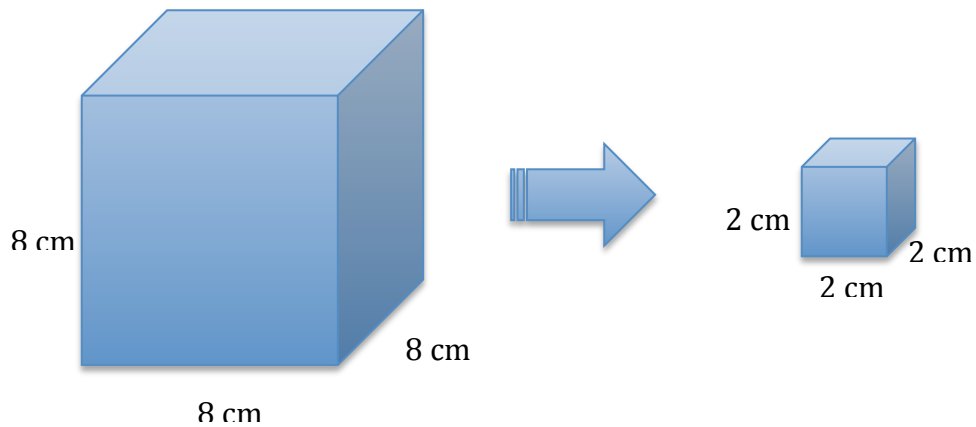


**Practice #10:** A small fridge has a capacity of 2.8 cubic feet. If the dimensions were all increased by 10%, what would be the new capacity of the fridge (to one decimal place)?

**Practice #11:** Was this scale diagram done correctly? In other words, are these two objects “similar”? Show your work.



**Practice #12:** Look at the scaled object and answer the questions below:



*Answer with a scale factor in fraction form*

- a) What scale factor was used to scale this 3D object? \_\_\_\_\_
- b) By what factor did the surface area change? \_\_\_\_\_
- c) By what factor did the volume change? \_\_\_\_\_

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**Unit Rate:** a rate where the second quantity is reduced to 1 (ex. 30 km **per** hour)

**Scale:** comparing a “new” image to the “original” (ex. map is 3 cm : 50 km)

**Scale Factor:** comparison using the same units (ex. 1 : 5 000 000)

### Prerequisite Skills

1) Scale factors can be expressed as a ratio, fraction, decimal, or percentage.

Ratio	Fraction	Decimal	Percentage
3:4	$\frac{3}{4}$	0.75	75%
16:6	$\frac{8}{3}$	2.67	267%

2) Reducing Ratios

To reduce a ratio to lowest terms, you can use the calculator...

3) Solving Ratios

a)  $\frac{600 \text{ km}}{4.0 \text{ h}} : \frac{x}{1.0 \text{ h}}$

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