

Lesson 6-1

12/7/11

Ratios

(p265-269)

Ratio: a comparison of **2** quantities
(by division)

→ 3 ways to write a ratio:

1) $\frac{14 \div 14}{14 \div 14} = \frac{1}{1}$ * fraction bar

2) $14:14 = 1:1$ * colon

3) $14 \text{ to } 14 = 1 \text{ to } 1$ * word "to"

Write the ratio as a fraction in simplest form.

ex1: 12 baskets in 18 attempts

$$\frac{12 \div 6}{18 \div 6} = \frac{2}{3}$$

•• always reduce the fraction

Explain the meaning.

- ① → The ratio of baskets to attempts is 2 to 3.
- ② → For every 3 attempts, ~~two~~ 2 baskets are made.
- ③ → Thus, $\frac{2}{3}$ of the attempts were made baskets.

- ① Put the fraction in words using vocab word "ratio"
- ② Explain the denominator in relationship to the numerator
- ③ Use the fraction (all of it) to explain the problem.

ex 2: 10 out of every 30 Americans own an MP3 player.

$$\frac{10}{30} = \boxed{\frac{1}{3}}$$

The ratio of Americans who own an MP3 player is 1 to 3.

For every 3 Americans, 1 owns an MP3 player.
Thus, $\frac{1}{3}$ of Americans own an MP3 player.

Terms of Measurement "Labels"

ex 3: 8 oz. to 3 lb:

↓ ↓
8 oz to 48 oz

$$\frac{8 \div 8}{48 \div 8} = \boxed{\frac{1}{6}}$$

... Convert to like labels

ex 4: 9 in to 1 yd

↓ ↓
9 in to 3 ft
↓ ↓
9 in to 36 in

$$\frac{9 \div 9}{36 \div 9} = \boxed{\frac{1}{4}}$$

Lesson 6-2

12/8/11 Unit Rates (p270-274)

Rate: a ratio of two quantities having different units (terms of measurement)

ex: \$4.60 for 5 cans of soup
39 yds for 6 costumes

1

Unit Rate: when the rate is simplified to a denominator of 1.

typically, uses the word "per"

$$\begin{array}{r} .92 \\ 5 \overline{) 4.60} \\ \underline{45} \\ 10 \\ \underline{10} \\ 0 \end{array}$$

$$\frac{4.6}{5} \div 5 = \frac{.92}{1}$$

\$0.92 per can

- Write the rate as a fraction.
- Divide to get a denominator of 1.
- Write the answer using the word "per"

$$\begin{array}{r} 6.5 \\ 6 \overline{) 39} \\ \underline{36} \\ 3 \end{array}$$

$$\frac{39}{6} \div 6 = \frac{6.5}{1}$$

6.5 yds per costume

Don't forget labels

Lesson 6-4 (p281-285)

12/9/11 Proportional & Nonproportional Relationships

Proportional: two quantities that have the same constant rate/ratio

Example:

Pd 1	12 students per adult	Pd 2
<u>24 students</u>		<u>36 students</u>
2 adults		3 adults

12 students per adult

* The ratios are equal.

Non-Proportional: two quantities that are NOT constant

Example:

Pd 2	Pd 6
<u>36 students</u>	<u>30 students</u>
3 adults	2 adults

12 students per adult

15 students per adult

* The ratios are not equal.

Cookies	6	9	12	15
Cupcakes	4	6	8	10

$\left(\frac{3}{2}\right)$ $\left(\frac{3}{2}\right)$ $\left(\frac{3}{2}\right)$ $\left(\frac{3}{2}\right)$

* Determine whether the set of numbers in each table is proportional. Explain.

Yes; all rates are equal to $\frac{3}{2}$

"No; the rates are not equal"

Lesson 6-5

12/13/11 Proportions

(p 287-292)

Proportion: equal ratios/rates

ex: $\frac{2}{16} = \frac{4}{32}$

These two ratios are proportional because they both equal 1/8

Their cross products are equal

ex: $\frac{2}{15} = \frac{m}{30}$

• $15m = 2 \times 30$

• $\frac{15m}{15} = \frac{60}{15}$

• $m = 4$

• $m = 4$

① Find the Cross product
*Go the "variable" diagonal first

② Simplify each side of the equation

③ Solve for the variable

ex: $\frac{d}{21} = \frac{1.5}{3.5}$

• $3.5d = 21 \times 1.5$

• $3.5d = 31.5$

• $\frac{3.5}{3.5} = \frac{31.5}{3.5}$

• $d = 9$

$$\begin{array}{r} \times 21 \\ 1.5 \\ \hline 105 \\ 210 \\ \hline 315 \end{array}$$

$$\begin{array}{r} 9 \\ 3.5 \overline{) 31.5} \\ \underline{-31.5} \\ 0 \end{array}$$

Shortcuts

ex: $\frac{x}{39} = \frac{164}{1231}$

$x = 3 \cdot 4$
 $x = 12$

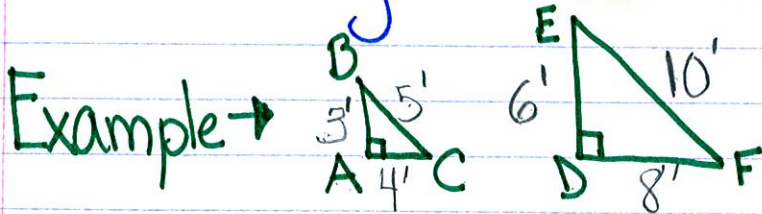
ex: $\frac{15}{420} = \frac{r}{9}$

$4r = 1 \times 9$
 $4r = 9$
 $\frac{4}{4} = \frac{9}{4}$
 $r = 2\frac{1}{4}$

Lesson 6-7

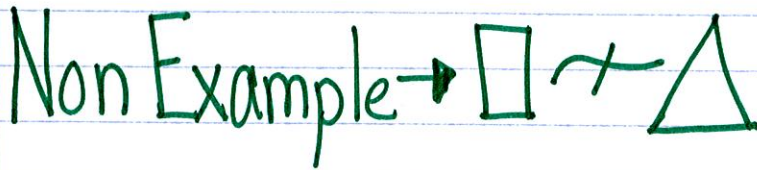
12/4/11 Similar Figures (p 301-305)

Similar Figures: figures that have the same shape but not necessarily the same size

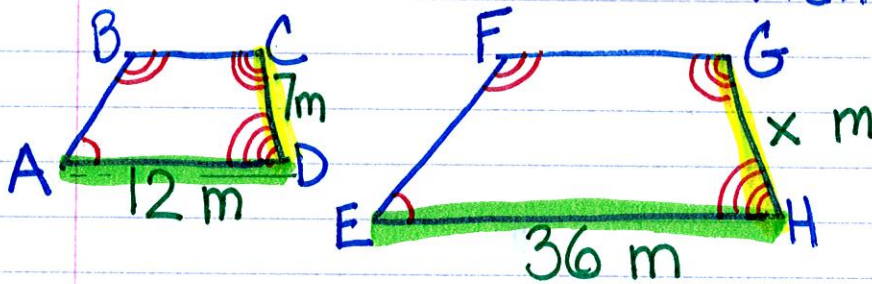


$$\triangle ABC \sim \triangle DEF$$

The corresponding angles have the same measure

$$\begin{aligned} \angle A &= \angle D \\ \angle B &= \angle E \\ \angle C &= \angle F \end{aligned}$$


ex: Trapezoid ABCD \sim Trapezoid EFGH



The corresponding sides are proportional

$$\frac{AD}{EH} = \frac{CD}{GH}$$

$$\frac{12}{36} = \frac{7}{x}$$

$$|x = 7 \cdot 3$$

$$x = 21 \text{ m}$$

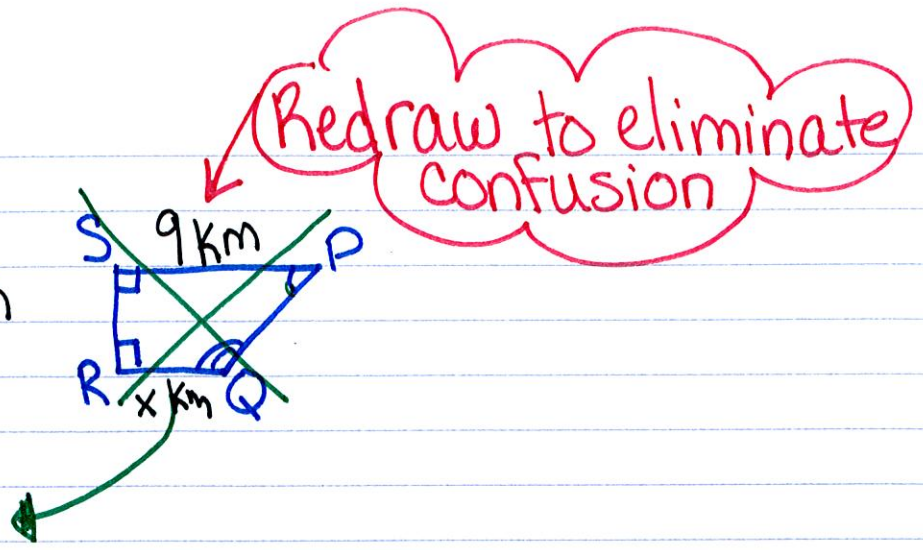
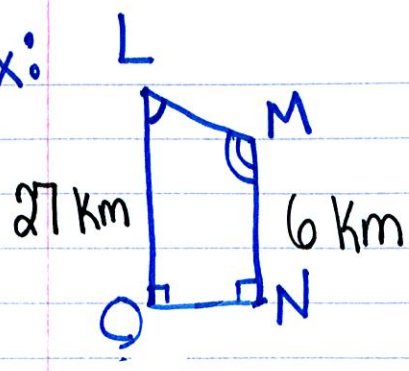
① Write a proportion (using the sides of the figure) to show the similarity

② Substitute the numbers

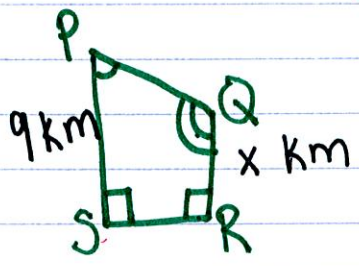
③ Solve the proportion using proportion steps.

FIVE STAR

ex:



FIVE STAR



$$\frac{LO}{PS} = \frac{MN}{QR}$$

~~$$\frac{27}{9} = \frac{6}{x}$$~~

$$|x = 2.1$$

$$\boxed{x = 2 \text{ km}}$$

FIVE STAR

FIVE STAR
