Work in groups of three

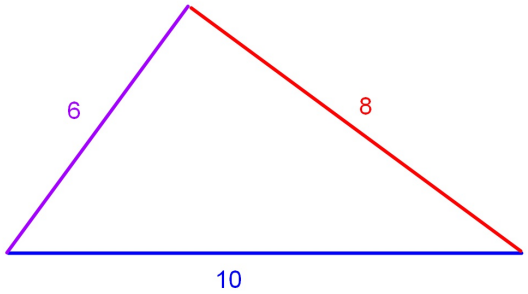
1. Working together using some string and tape make a triangle that have the following lengths of sides.

10 in 8 in 6 in

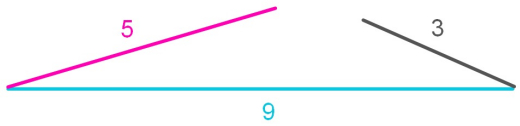
2. Now make a triangle with the following lengths of sides:

5 in 3 in 9 in

10 in 8 in 6 in



5 in 3 in 9 in



Explain why the three sides of a triangle can't have the following lengths.

5 in 3 in 9 in

5 in. and 3 in. aren't long enough to actually connect if they are attached to the end of a side that is 9 inches long.

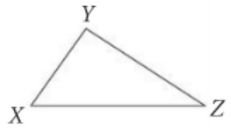
Theorem 5-12 **Triangle Inequality Theorem**

The sum of the lengths of any two sides of a triangle is greater than the length of the third side.

$XY + YZ > XZ$

$YZ + ZX > YX$

$ZX + XY > ZY$



Can a triangle have sides with the following lengths?

1. 13, 20, 8

Yes

2. 61, 12, 49

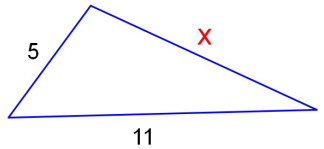
NO

3. 74, 41, 23

NO

The lengths of two sides of a triangle are given. Describe the possible lengths of the third side using an inequality.

5 ft and 11 ft.



$5 + x > 11$

$x > 6$

$5 + 11 > x$

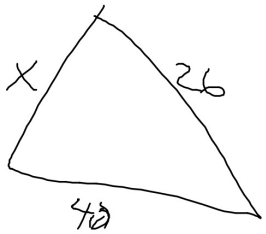
$x < 11 + 5$

$x < 16$

$6 < x < 16$

The lengths of two sides of a triangle are given. Describe the possible lengths of the third side using an inequality.

40 cm and 26 cm



$26 + 40 > x$

$66 > x$

$x + 26 > 40$

$x > 14$

$14 < x < 66$

Two sides of a triangle are 77 and 43, find the possible values for the third side. Write the answer as a compound inequality.

$34 < x < 120$

$77 + 43 > x$

$x + 43 > 77$

Hwk #3

Sec 5-5

Pages 293-294

Problems: 4, 8, 10, 13, 16, 17, 25, 26, 37

Due Friday

Ratio: A comparison of two quantities

Three ways to write a ratio:

a to b a : b $\frac{a}{b}$

Proportion: A mathematical statement showing two ratios are equal

Properties of Proportions:

Given: $\frac{a}{b} = \frac{c}{d}$

1. $ad = bc$
   cross products are =

2. $\frac{b}{a} = \frac{d}{c}$ reciprocal of BOTH ratios are equal

3. $\frac{a}{c} = \frac{b}{d}$
   Interchange the denominator of one ratio with the numerator of the other ratio.

4. $\frac{a+b}{b} = \frac{c+d}{d}$

$\frac{a}{b}+\frac{b}{b} = \frac{c}{d}+\frac{d}{d}$

Use this proportion to confirm each of the four properties is true.

$$\frac{3}{2} = \frac{9}{6}$$

1. $9 \cdot 2 = 3 \cdot 6$, $18 = 18$

2. $\frac{2}{3} = \frac{6}{9}$

3. $\frac{3}{9} = \frac{2}{6}$

4. $\frac{5}{2} = \frac{15}{6}$

Use this proportion to complete each statement.

$$\frac{8}{8} + \frac{m}{8} = \frac{7}{12} + \frac{12}{12}$$

1. $\frac{12}{7} = \frac{8}{m}$

2. $\frac{12}{8} = \frac{7}{m}$

3. $56 = 12m$

4. $\frac{19}{12} = \frac{m+8}{8}$

5. $\frac{8}{12} = \frac{m}{7}$

The scale on a map is 3in = 40 mi

1. Two cities are actually 300 miles apart. How far apart will they be on the map?

$\frac{3 \text{ in}}{40 \text{ mi}} = \frac{x \text{ in}}{300 \text{ mi}}$ $\quad x = 22.5 \text{ in}$

2. A road on a map is 9 inches long. How long is the actual road?

$\frac{3 \text{ in}}{40 \text{ mi}} = \frac{9 \text{ in}}{x \text{ mi}}$ $\quad 120 \text{ mi}$

Scale Drawing:
A drawing of an actual object that is similar but either larger than the actual object (enlargement) or smaller than the actual object (reduction)

Scale: the scale on a drawing is a ratio

$$\text{Scale} = \frac{\text{Drawing measure}}{\text{Actual measure}} - \frac{\text{image}}{\text{original}}$$

Does each scale represent an enlargement or a reduction?

1. 5:6 Reduction

2. 45:8 enlargement

3. $\frac{12}{7}$ enlargement

4. $\frac{43}{50}$ Reduction

The scale on a drawing of a boat is 6:275

1. The drawing of the boat is 10 inches long. How long is the actual boat, in feet?

$\frac{10\text{ in}}{X} = \frac{6}{275}$

$X = 458.33\text{ in} / 12\text{ in} = 38.19\text{ ft}$

2. The boat is actually 15 feet wide. How wide is the boat in the drawing?

$\frac{X}{15\text{ ft}} = \frac{6}{275}$ $X = .33\text{ ft} \times 12\text{ in}$

3.96 in