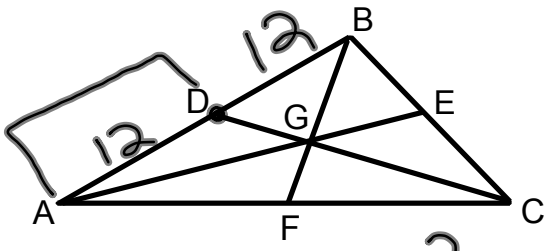
Bellwork
11/16/2011

For problems 1-3, use the diagram below. *G* is the centroid of ΔABC.



1. If *BG*=9, find *BF.*

$\frac{3}{2}9 = \frac{3}{2}BF \cdot \frac{2}{3}$

$BF = \frac{27}{2}$

2. If *BD*=12, find *AD.*

$AD = 12$

3. If *CD*=27, find *GC.*

$CG = \frac{2}{3}(27)$

$CG = 18$

$BG = \frac{2}{3}BF$

$CG = \frac{2}{3}CD$

$AG = \frac{2}{3}AE$

Geometry
5.5 Use Inequalities in a Triangle
Standard(s): 3,9

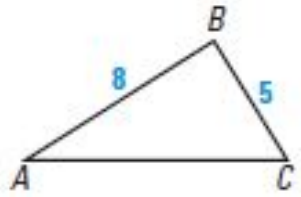
Vocabulary:

THEOREMS *For Your Notebook*

THEOREM 5.10

If one side of a triangle is longer than another side, then the angle opposite the longer side is larger than the angle opposite the shorter side.

Proof: p. 329

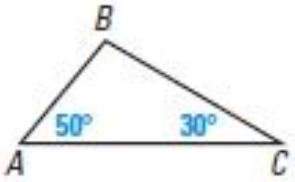


$AB > BC$, so $m\angle C > m\angle A$.

THEOREM 5.11

If one angle of a triangle is larger than another angle, then the side opposite the larger angle is longer than the side opposite the smaller angle.

Proof: Ex. 24, p. 340



$m\angle A > m\angle C$, so $BC > AB$.

THEOREM *For Your Notebook*

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.

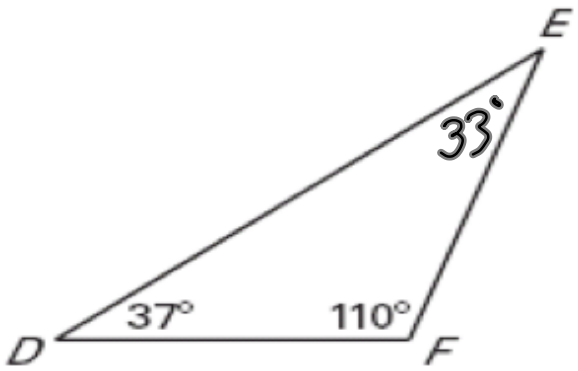
$AB + BC > AC$ $AC + BC > AB$ $AB + AC > BC$

Relate Side Length and Angle Measure

List the sides and angles in order from least to greatest.

$\angle E, \angle D, \angle F$

$\overline{DF}, \overline{FE}, \overline{DE}$



Applying the Δ Inequality Thm.

Is it possible to construct a triangle with the given side lengths? If not, explain why not.

11, 16, 32

$11+16 > 32$ ✗

$11+16=27$

No!

6, 10, 15

$6+10 > 15$ ✓

$6+10=16$

$6+15 > 10$ ✓

$6+15=21$

$10+15 > 6$ ✓

$10+15=25$

Yes!

Find Possible Side Lengths

Describe the possible lengths of the third side of the triangle given the lengths of the other two sides.

12 cm, 17 cm, x cm

$12 + 17 > x$

$29 > x$

$x < 29$ cm

$x + 12 > 17$

$x > 5$ cm

$5 < x < 29$

3 yd, 5 ft

9 ft, 5 ft, x ft

PULL

$9 + 5 > x$

$14 > x$

$x < 14$

When missing a side:

1. Assume it's the largest s

small #+ big #>x

2. Assume it's the smallest

x+small #>big #

$x + 5 > 9$

$x > 4$

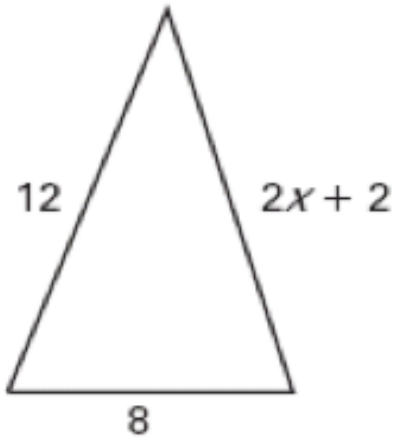
$4 < x < 14$

Using Δ Inequality Algebraically

Describe the possible values of *x*.

PULL

8, 12, 2x + 2



1. $8+12 > 2x+2$

$20 > 2x+2$

$\frac{18}{2} > \frac{2x}{2}$

$9 > x$

$x < 9$

2. $2x+2+8 > 12$

$2x+10 > 12$

$\frac{2x}{2} > \frac{2}{2}$

$x > 1$

$1 < x < 9$

Homework Assignment

Worksheet 5.5B