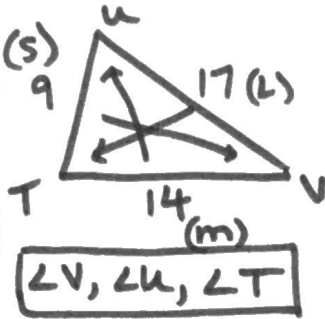


3.4 Triangle Intro Part II

Name: Key

Order the sides and angles of the triangle from least to greatest.

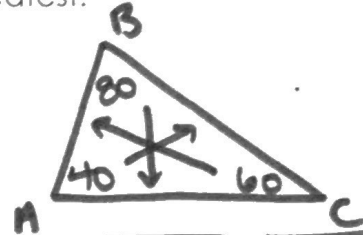
- 1) In $\triangle TUV$
 $UV = 17$ yd
 $TV = 14$ yd
 $TU = 9$ yd



$\overline{TU}, \overline{TV}, \overline{UV}$

$\angle V, \angle U, \angle T$

- 2) In $\triangle ABC$
 $m\angle A = 40^\circ$
 $m\angle B = 80^\circ$
 $m\angle C = 60^\circ$



$\angle A, \angle C, \angle B$

$\overline{BC}, \overline{AB}, \overline{AC}$

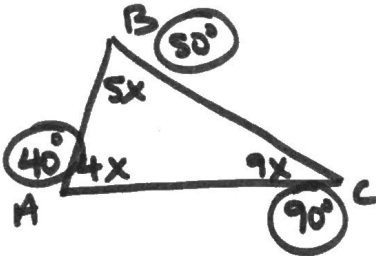
Step 1: Draw a picture & label

Step 2: Draw arrows to opposite sides / angles

- **Remember: The smallest side is opposite the smallest angle & vice versa.
 The medium side is opposite the medium angle & vice versa.
 The largest side is opposite the largest angle & vice versa.

Classify the triangle by its angles:

- 3) $m\angle A = 4x$
 $m\angle B = 5x$
 $m\angle C = 9x$



How to do it:

- Step 1: Draw a picture & label
 Step 2: Set up eq. to solve for x
 Step 3: Plug x in to all 3 angles
 Step 4: Classify the triangle.

$$5x + 4x + 9x = 180$$

$$\frac{18x}{18} = \frac{180}{18}$$

$$x = 10$$

$\triangle ABC$ is a right \triangle .

Triangle Inequality Theorem: The sum of the two Smallest sides of a triangle has to be greater than the length of the longest.

Can you make a triangle using these numbers as the sides?

- 6) 5, 9, 15

$$5 + 9 = 14$$

$$14 > 15?$$

NO

- 7) 3, 3, 6

$$3 + 3 = 6$$

$$6 > 6?$$

NO

- 8) 5, 3, 7

$$5 + 3 = 8$$

$$8 > 7?$$

yes

To find the range of possible measures for the third side of a triangle:

It has to be less than the sum of the 2 sides and greater than the difference of the 2 sides.

Find the range of possible measures:

9) 5, 9

$$5+9=14$$

$$9-5=4$$

$$4 < x < 14$$

10) 12, 6

$$12+6=18$$

$$12-6=6$$

$$6 < x < 18$$

11) 4, 6

$$4+6=10$$

$$6-4=2$$

$$2 < x < 10$$

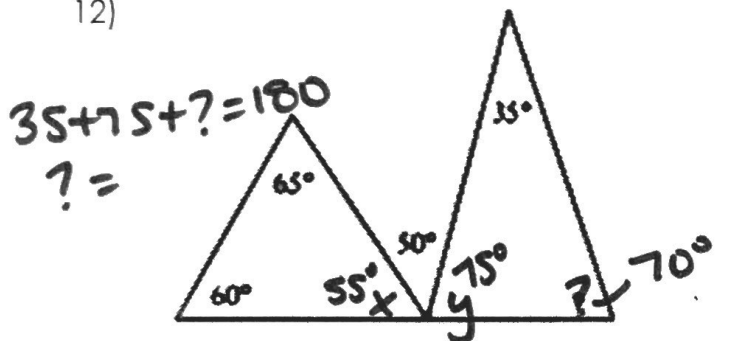
* make sure you subtract small side from big side

* must get a positive #.

Application/Practice Problems:

Find the missing angle measure:

12)



$$35+75+?=180$$

$$?=$$

$$60+65+x=180$$

$$125+x=180$$

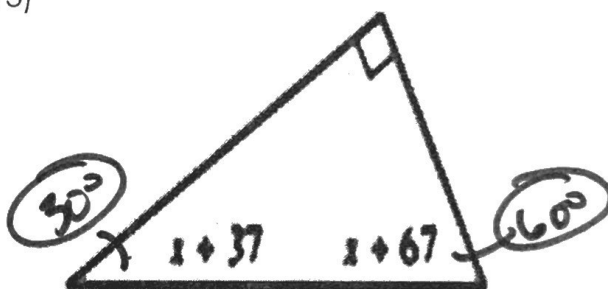
$$x=55$$

$$55+50+y=180$$

$$105+y=180$$

$$y=75$$

13)



$$x+37+x+67+90=180$$

$$2x+194=180$$

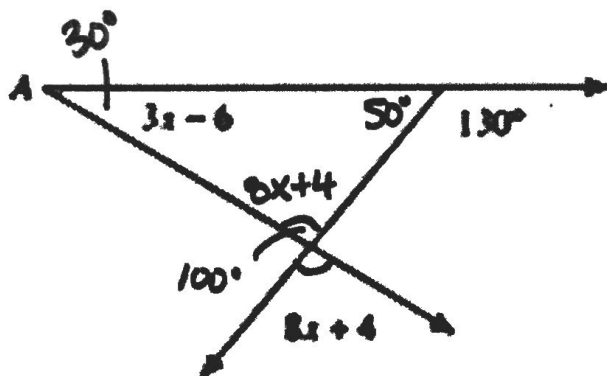
$$-194 \quad -194$$

$$2x=-14$$

$$x=-7$$

Solve for x and find all the measures of the triangle.

14)



$$3x-6+8x+4+50=180$$

$$11x+48=180$$

$$-48 \quad -48$$

$$11x=132$$

$$11 \quad 11$$

$$x=12$$