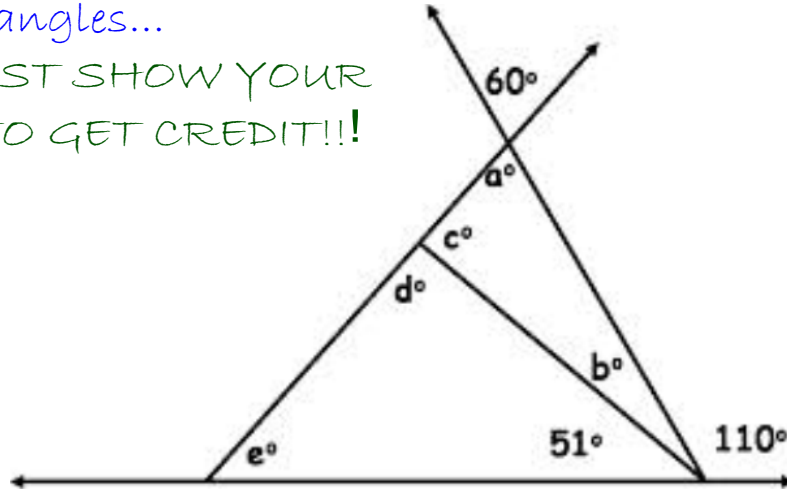


Welcome! Please get your ISN and have a seat!

FIRST, complete the google form  
warmup...

THEN, for bonus points, find the  
missing angles...

YOU MUST SHOW YOUR  
WORK TO GET CREDIT!!!



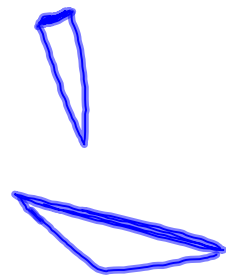
Oct 13-1:24 PM

### TOC 47-48 Triangle Inequalities

#### Theorems

The longest side of a  
 $\Delta$  is always opposite  
the largest angle.

The shortest side of a  
 $\Delta$  is always opposite  
the smallest angle.



Oct 13-1:25 PM

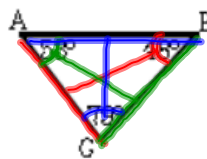
## TOC 47-48 Triangle Inequalities

List the sides and the angles in order from smallest to largest.

$\angle B$   
 $\downarrow$   
 $\overline{AC}$

$\angle A$   
 $\downarrow$   
 $\overline{CB}$

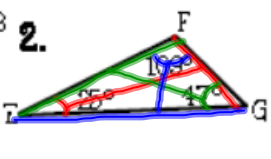
$\angle C$  1  
 $\downarrow$   
 $\overline{AB}$



$\angle E$   
 $\downarrow$   
 $\overline{FG}$

$\angle G$   
 $\downarrow$   
 $\overline{EF}$

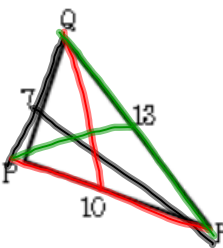
$\angle F$   
 $\downarrow$   
 $\overline{EG}$



$\overline{PQ}$   
 $\downarrow$   
 $\angle R$

$\overline{PR}$   
 $\downarrow$   
 $\angle Q$

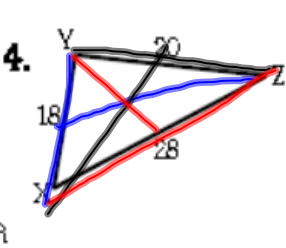
$\overline{QR}$   
 $\downarrow$  8  
 $\angle P$



$\overline{XY}$   
 $\downarrow$   
 $\angle Z$

$\overline{YZ}$   
 $\downarrow$   
 $\angle X$

$\overline{XZ}$   
 $\downarrow$   
 $\angle Y$



Oct 13-1:26 PM

## TOC 47-48 Triangle Inequalities

Triangle Inequality Theorem  
 The sum of any 2 sides  
 of a  $\Delta$  must be greater  
 than the 3<sup>rd</sup> side.

Nov 8-3:00 PM

## TOC 47-48 Triangle Inequalities

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

*\* always add the smallest 2 sides.*

5. 6, 7, 8

$$\begin{array}{l} \checkmark \\ 13 > 8 \\ \text{Yes!} \end{array}$$

6. 2, 8, 11

$$\begin{array}{l} \checkmark \\ 10 > 11 \\ \text{NO!} \end{array}$$

$$\begin{array}{l} x > 3^{\text{rd}} \\ \text{Yes!} \end{array} \quad \begin{array}{l} x < 3^{\text{rd}} \\ \text{NO!} \end{array}$$

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

$$\boxed{5 < x < 19}$$

7. 5cm, 9cm

$$\begin{array}{l} 9 - 5 = 4 \\ 9 + 5 = 14 \end{array}$$

$$\boxed{4 < x < 14}$$

8. 7in., 12in.

$$\begin{array}{l} 12 - 7 = 5 \\ 12 + 7 = 19 \end{array}$$

Nov 8-3:00 PM

9.



$$\boxed{2 < x < 12}$$

Smallest

$$\begin{array}{l} 16 - 10 = 6 \\ 6 = 2x + 2 \\ -2 \quad \downarrow -2 \\ \hline 4 = 2x \\ \boxed{x = 2} \end{array}$$

Largest

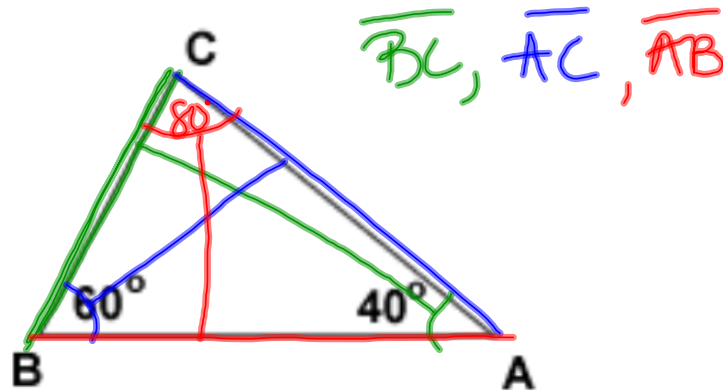
$$\begin{array}{l} 16 + 10 = 26 \\ 26 = 2x + 2 \\ -2 \quad \downarrow -2 \\ \hline 24 = 2x \\ \boxed{x = 12} \end{array}$$

Nov 9-9:39 AM

Ex 1 (pg 47)

Order the sides of triangle ABC from least to greatest.

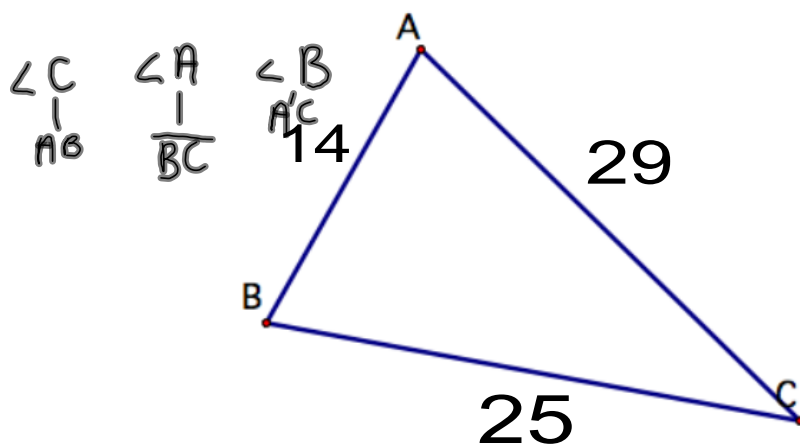
$$180 - 100 = 80$$



Oct 13-1:27 PM

Ex 2 (pg 47)

Order the angles of triangle ABC from least to greatest.



Oct 13-1:27 PM

Ex 3 (pg 47)

Can these side lengths create a triangle?

a) 3, 4, 5

✓  
yes

b) 3, 5, 11

~~yes~~  
NO

c) 14, 8, 10

yes

Oct 13-1:27 PM

Ex 4 (pg 47)

Write the possible range for the third side.

a) 5, 12

$12 + 5 = 17$   
 $12 - 5 = 7$   
 $7 < x < 17$

b) 1, 9

$9 + 1 = 10$   
 $9 - 1 = 8$   
 $8 < x < 10$

Oct 13-1:28 PM

# Homework pg 253 a-d

**Lesson Practice**

a. Order the side lengths in  $\triangle DEF$  from least to greatest.  
(Ex 1)

b. Order the measures of the angles in  $\triangle PQR$  from least to greatest.  
(Ex 1)

c. Show that in the triangle, the measure of the exterior angle at vertex  $Z$  is greater than the angle measure at vertex  $X$  or at vertex  $Y$ .  
(Ex 2)

d. Find the range of values for  $x$  in the given triangle.  
(Ex 3)

67%

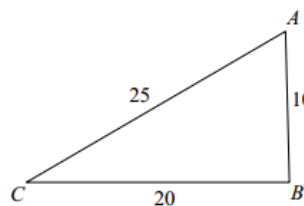
Oct 13-1:29 PM

Welcome! Please get your ISN and warmup book and have a seat!

1. If two sides of a triangle are 4 and 7, what is the smallest length possible for the third side?

2. For the triangle in number 1, what is the largest length possible for the third side?

3. Put the angles in order from greatest to least.



Oct 13-1:29 PM

**State if the three numbers can be the measures of the sides of a triangle.**

1) 7, 5, 4

2) 3, 6, 2

**Two sides of a triangle have the following measures. Find the range of possible measures for the third side.**

3) 9, 5

4) 5, 8

Oct 13-1:30 PM

## Homework

Determine if it is possible to form a triangle with the given side lengths. If not, explain why not.

5. 3 in., 4 in., 8 in.

6. 2 mm, 2 mm, 8 mm

7. 12 ft, 18 ft., 16 ft

8. 7 yd, 8 yd, 9 yd

9. 3 cm, 6 cm, 9 cm

10. 15 in., 12 in., 2 in.

11. 18 m, 20 m, 40 m

12. 5 ft, 5 ft, 10 ft

13. 7 mm, 5 mm, 14 mm

Determine the least possible measure of the third side of a triangle with the given side lengths if the missing measure is a whole number.

14. 12 m, 15 m

15. 8 in., 10 in.

16. 6 cm, 6 cm

17. 22 ft, 18 ft

18. 30 mm, 28 mm

19. 4 yd, 5 yd

20. 20 cm, 14 cm

21. 9 m, 12 m

22. 13 ft, 11 ft

$$\square \leq x \leq \square$$

Oct 13-1:30 PM

Nov 8-3:02 PM