

# MIT3 TEST REVIEW: ANGLES AND TRIANGLES

KEY

1a: Use the provided figure to answer the following questions.

$\angle 3$  and  $\angle 1$  are supplementary angles or  $\angle 4$

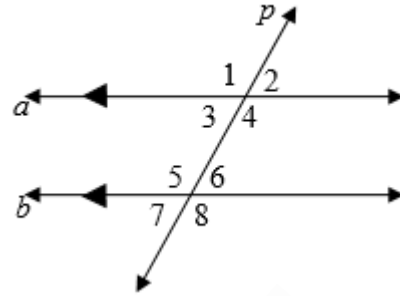
$\angle 7$  and  $\angle 6$  are vertical angles

$\angle 3$  and  $\angle 7$  are corresponding angles

$\angle 5$  and  $\angle 4$  are alternate interior angles

$\angle 1$  and  $\angle 8$  are alternate exterior angles

$\angle 4$  and  $\angle 6$  are same side interior angles



1b. Use the provided figure to answer the following questions

$\angle 2$  and  $\angle 6$  are alternate interior angles.

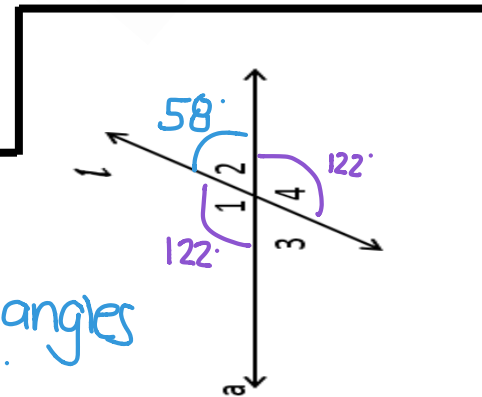
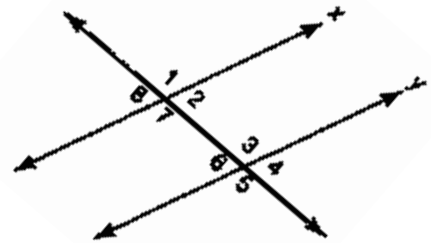
$\angle 8$  and  $\angle 6$  are corresponding angles.

$\angle 5$  and  $\angle 1$  are alternate exterior angles.

$\angle 6$  and  $\angle 4$  are vertical angles.

$\angle 2$  and  $\angle 7$  are supplementary angles. (linear pair)

$\angle 6$  and  $\angle 7$  are same side interior angles.



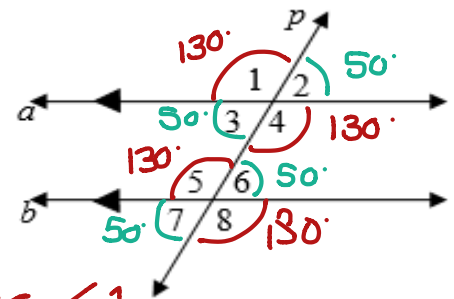
2. If  $m\angle 4 = 122^\circ$ , find the measure of angle 2. State the reason of how you knew this angle. (use appropriate vocabulary terms.)

$\angle 2$  &  $\angle 4$  are  
Supp  $\angle$ s.

$$180 - 122 = \boxed{58}$$

Supplementary angles  
add up to 180.

3. a. Fill in each of the missing angles on the provided figure given that  $\angle 1 = 130^\circ$ .



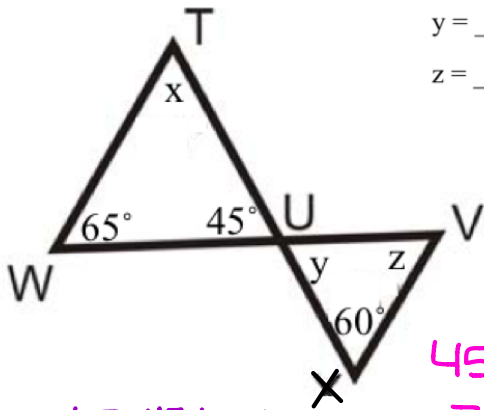
b. How did you know the measure of  $\angle 4$ ? (what angle...use appropriate vocabulary)

$m\angle 4 = 130^\circ$  because it is vertical to  $\angle 1$ .  
and vertical  $\angle$ s are congruent.

c. What is the relationship between  $\angle 1$  and  $\angle 2$ ?

$\angle 1$  &  $\angle 2$  are supplementary angles whose  
measures add up to 180.

4. Use the diagram below: Find the missing angles.



$$x = \underline{70}$$

$$y = \underline{45}$$

$$z = \underline{75}$$

$$65 + 45 + x = 180$$

$$x + 110 = 180$$

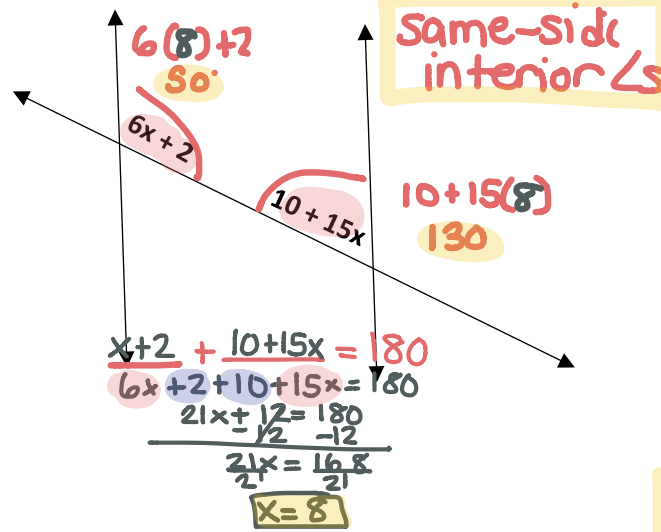
$$\boxed{x = 70}$$

$$45 + 60 + z = 180$$

$$z + 105 = 180$$

$$\boxed{z = 75}$$

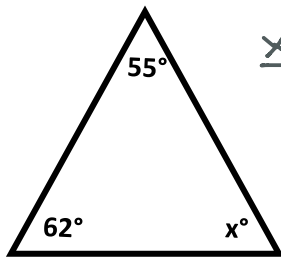
5.



Equation:  $6x + 2 + 10 + 15x = 180$

a.  $x = \underline{8}$  b. Missing angles =  $\underline{50}$  and  $\underline{130}$

6.



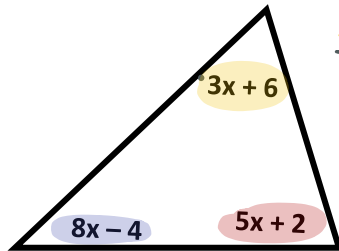
$$x + 55 + 62 = 180$$

$$x + 117 = 180$$

$$\begin{array}{r} x + 117 = 180 \\ -117 \quad -117 \\ \hline x = 63 \end{array}$$

a.  $x = \underline{63}$  Equation:  $x + 55 + 62 = 180$

7.



$$3x + 6 + 8x - 4 + 5x + 2 = 180$$

$$3x + 6 + 8x - 4 + 5x + 2 = 180$$

$$16x + 4 = 180$$

$$\begin{array}{r} 16x + 4 = 180 \\ -4 \quad -4 \\ \hline 16x = 176 \\ \frac{16x}{16} = \frac{176}{16} \\ \boxed{x = 11} \end{array}$$

$$3(11) + 6 = 39$$

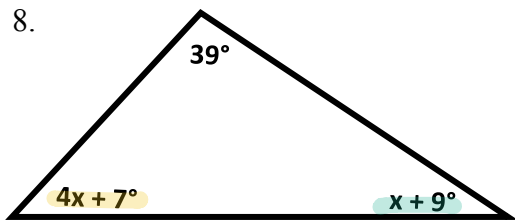
$$5(11) + 2 = 57$$

$$8(11) - 4 = 84$$

a. Missing angles =  $\underline{39}$ ,  $\underline{57}$ , and  $\underline{84}$

Equation:  $3x + 6 + 8x - 4 + 5x + 2 = 180$

8.



a.  $x = \underline{25}$  b. Missing angles =  $\underline{39}$ ,  $\underline{107}$ , and  $\underline{34}$

Equation:  $4x + 7 + x + 9 + 39 = 180$

$$4(25) + 7 = 107$$

$$25 + 9 = 34$$

$$4x + 7 + x + 9 + 39 = 180$$

$$\begin{array}{r} 5x + 55 = 180 \\ -55 \quad -55 \\ \hline 5x = 125 \\ \frac{5x}{5} = \frac{125}{5} \\ \boxed{x = 25} \end{array}$$

9.

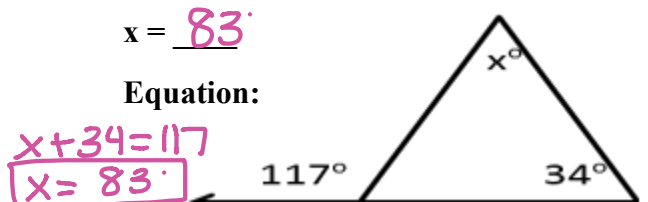


$$x = \underline{60}$$

Equation:

$$32 + 28 = x$$

10.

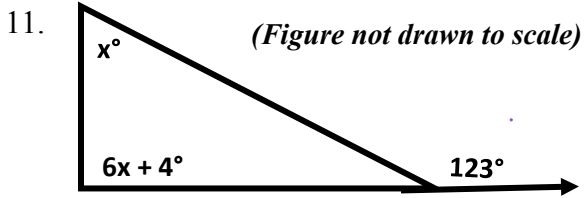


$$x = \underline{83}$$

Equation:

$$x + 34 = 117$$

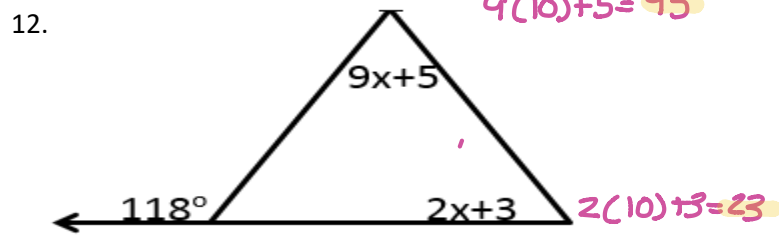
$$\boxed{x = 83}$$



$$\begin{aligned}
 x + 6x + 4 &= 123 \\
 7x + 4 &= 123 \\
 -4 &\quad -4 \\
 \hline
 7x &= 119 \\
 \frac{7x}{7} &= \frac{119}{7} \\
 x &= 17
 \end{aligned}$$

Equation:  $x + 6x + 4 = 123$

a.  $x = 17$  b. Missing angles =  $17$  and  $106$



$$\begin{aligned}
 9x + 5 + 2x + 3 &= 118 \\
 11x + 8 &= 118 \\
 11x &= 110 \\
 x &= 10
 \end{aligned}$$

Equation:  $9x + 5 + 2x + 3 = 118$

a.  $x = 10$  b. Missing angles =  $23$  and  $95$

12. Do the following angles give you a congruent measure or do they add up to 180°?

Alternate Interior: congruent

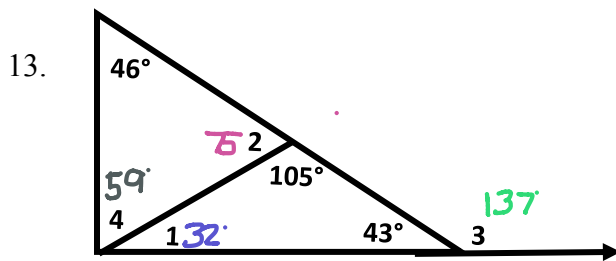
Supplementary: add up to 180

Corresponding: congruent

Vertical: congruent

Same Side Interior: add up to 180

Alternate Exterior: congruent



$m\angle 1 = 32^\circ$	$m\angle 2 = 75^\circ$	$m\angle 3 = 137^\circ$	$m\angle 4 = 59^\circ$
------------------------	------------------------	-------------------------	------------------------

$\triangle$  Sum Th

Supp  $\angle$ s

Ext.  $\angle$  Theorem

$\triangle$  Sum Theorem

$$x + 43 + 105 = 180$$

$$180 - 105 =$$

$$105 + 32 = x$$

$$x + 75 + 46 = 180$$

$$x + 148 = 180$$

$$75$$

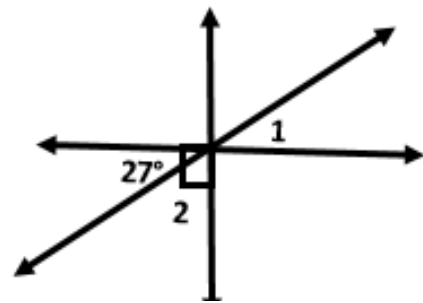
$$x = 137$$

$$x + 121 = 180$$

$$x = 32$$

$$x = 59$$

14.



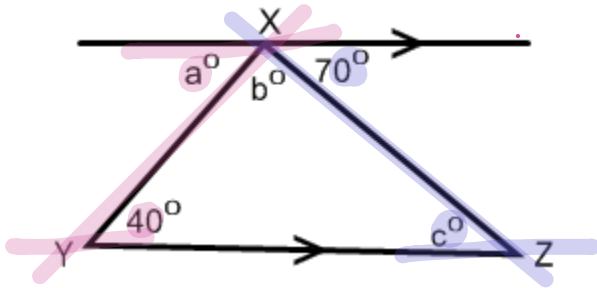
$$m\angle 1 = 27^\circ$$

$$m\angle 2 = 63^\circ$$

Vertical  $\angle$ s

$90 - 27 = 63^\circ$   
Complementary  $\angle$

15.



Use  
Alt. Interior  
∠s

$$m\angle a = 40^\circ$$

$$b + 70 + 40 = 180$$

$$b + 110 = 180$$

$$b = 70$$

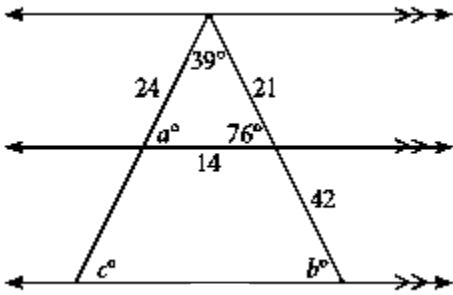
∆ Sum  
Theorem

$$m\angle b = 70^\circ$$

Use  
Alt. Interior  
∠s

$$m\angle c = 70^\circ$$

16.



$$a + 39 + 76 = 180$$

$$a + 115 = 180$$

$$a = 65$$

$$m\angle a = 65^\circ$$

$$m\angle b = 76^\circ$$

$$m\angle c = 65^\circ$$

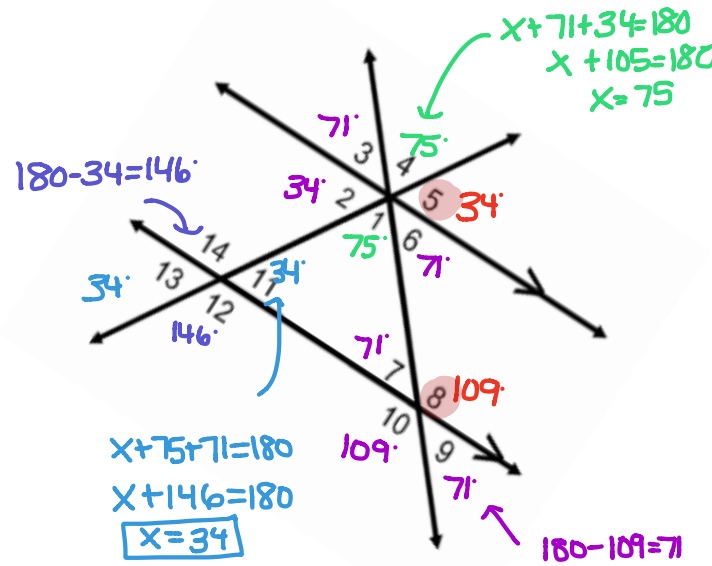
∆ Sum  
Theorem

Corresponding  
Angles

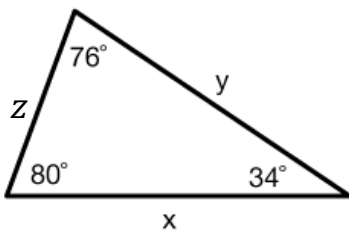
Corresponding  
angles

17. Find each of the missing angles given that

$$m\angle 5 = 34 \quad m\angle 8 = 109$$

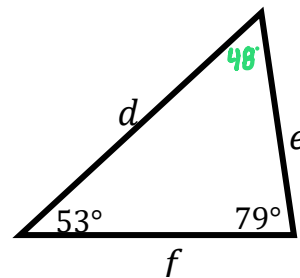


18. a. Write the side lengths in order from shortest to longest.



z, x, y

b. Order the sides from longest to shortest.



$$x + 53 + 79 = 180$$

$$x + 132 = 180$$

$$x = 48$$

d, e, f

19. Check the box that applies to each angle relationship when parallel lines are cut by a transversal.

	Alternate Interior	Same-Side Exterior	Corresponding	Same-Side Interior	Linear Pair	Vertical	Alternate Exterior
Congruent	X		X			X	X
Adds up to 180°		X		X	X		