Name: _____ Due Date: _____ Score: __/4

In-Class Workbook

Geometry: Angles, Triangle, Triangle Classification

Unit 8: Workbook Part 1

How do geometric models describe spatial relationships?

Why are angles a fundamental building block?

Standard	Description
7.G.A.2	Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
7.G.B.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

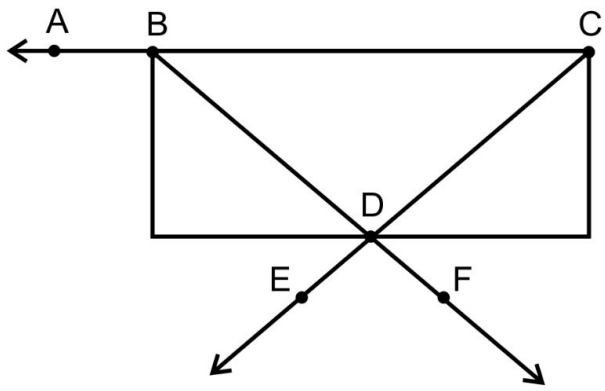
Lesson	I can…
8.1 & 8.2	solve for unknown **angles** in word problems and in diagrams involving complementary, supplementary, vertical, and adjacent angles.
8.3	solve for unknown angles in word problems and in diagrams involving ALL learned angle facts.
8.4	explore the properties of triangles.
8.5 & 8.6	explore how changes in arrangement and measurement affect a triangle, creating a list of conditions that determine a **unique triangle.**
8.7	apply what I've learned about about **angles** AND **unique triangles** to novel scenarios.

Packet Completion Rubric				
4	**3**	**2**	**1**	**0**
Workbook demonstrates significant effort. Student utilizes notes to help extend their thinking, writing questions, comments or reactions to the content.	Workbook demonstrates some effort. Student takes notes but could further understanding by questioning and interacting with the material.	Workbook shows little effort. Student takes notes sporadically, and could benefit from greater consistency with the material.	Workbook shows little to no effort. Student does not take notes and must demonstrate future interaction with the material to aid understanding.	Workbook is entirely incomplete or not turned in.

Grading Breakdown: 3.5 - 4 = A 3 - 3.4 = B 2.5 - 2.9 = C 2 - 2.4 = D 0 - 1.9 = F

Use our class website too! www.7mathscience.weebly.com

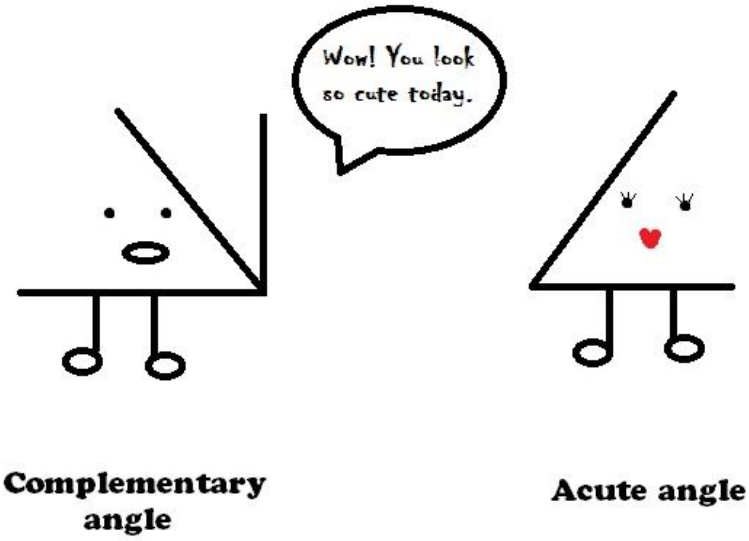
Unit 8: Angles, Triangle, Triangle Classification	Lesson 8.1

Lesson 8.1 DO-NOW	**In the figure to the right.** 1. Place an X in ∠CBD? 2. Place a ❤️ in ∠EDF? 3. Place a 😃 in ∠BDC? 4. Highlight line ABC **HINT: ∠ means angle*	
Homework Reminder	This is where you will shade in the box if you turned in your homework. There is no homework due today! :) ***"Excellence is not an art. It is the habit of practice." - Aristotle***	
Check-In	How are you doing today? What is the most common shape?	

Angle Basics- Take video notes!

A Few Words About Labeling…		
Points	**Line Segments**	**Angles**
We write this as…	*We write this as…*	*We write this as…*

Angles and Degrees - Take video notes!	



Complementary angle

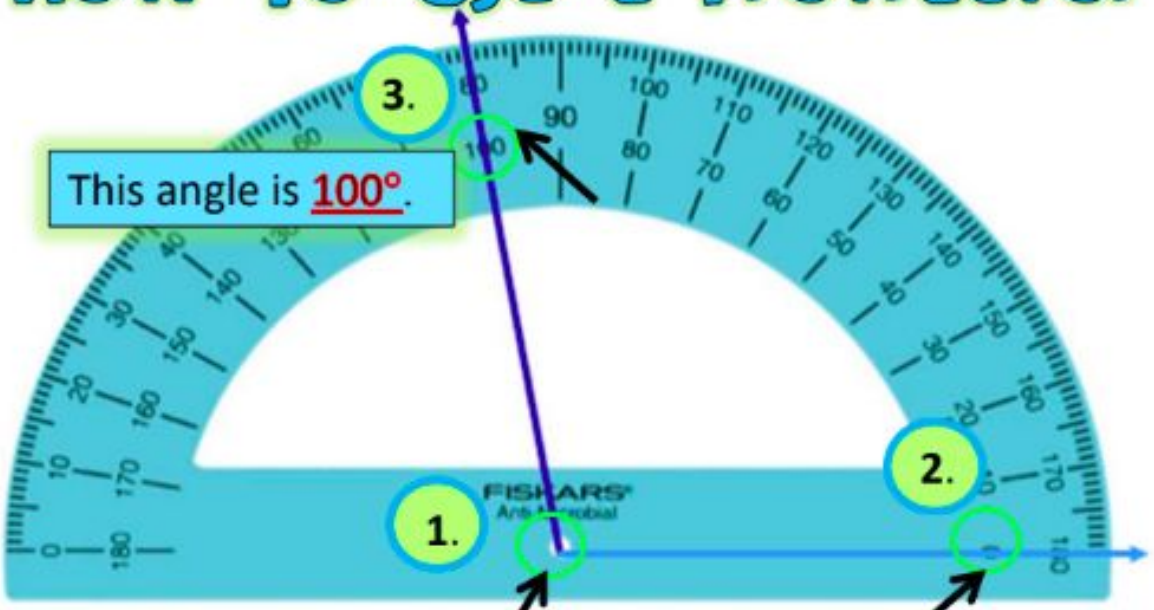
Acute angle

Review Reminder:

An ACUTE angle has a measure of less than 90 degrees.

An OBTUSE has a measure of more than 90 degrees.

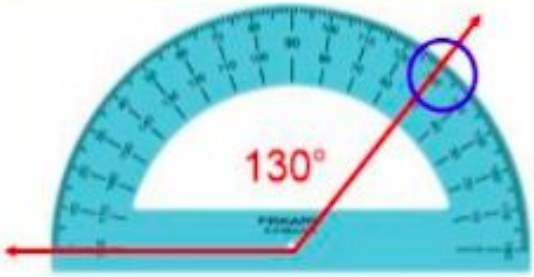
How To Use a Protractor



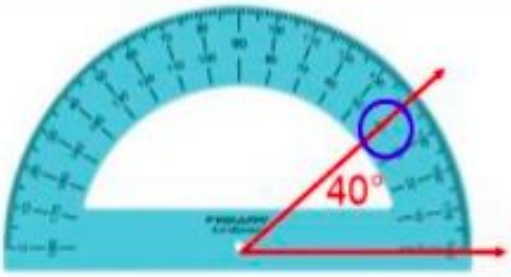
1. Place the center point of the protractor on the **vertex** of the angle.

2. Line up the **0 on the bottom line of the protractor** with the bottom ray of the angle.

3. To find the angle measure, **look at the number the second ray passes through**.



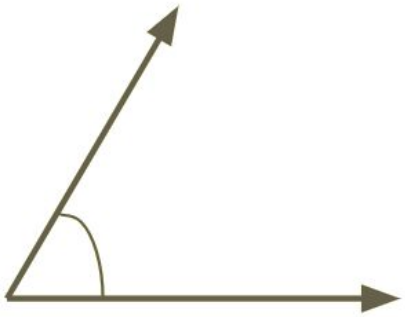
To measure angles opening from the **left**, use the **TOP** set of numbers.

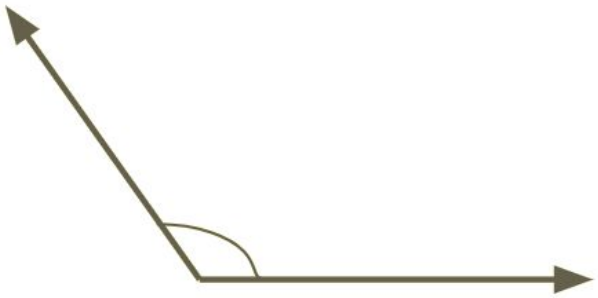


To measure angles opening from the **right**, use the **Bottom** set of numbers.

Measuring an Angle

Using your protractor, find the angle measure of the following two angles:





Compare your answer to your neighbor's. Did you get the same answer? Respond to the bold question on the screen that fits your response.

_____

_____

_____

When working with angles, can we <u>assume</u> we know the measure of an angle?

We can _____ assume we know an angle measure.

However, sometimes we can _____ that we know the measure of an unknown angle.

Facts to help you <u>PROVE</u> measures of an unknown angle

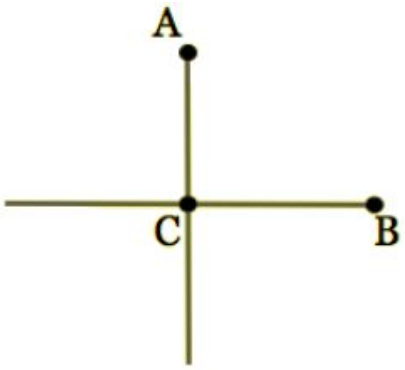
Object & Degrees	Finding the Number of Degrees
POINT **_____ Degrees**	Draw a point. How many degrees are there around a point? (Draw an image)
STRAIGHT LINE **_____ Degrees**	Draw a point. Draw a <u>straight line</u> through the point. If there are 360 degrees around a point, how many degrees are around each side of a line? Why? (Draw an image)

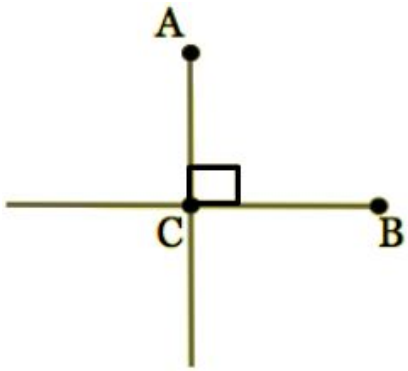
RIGHT ANGLE **_____ Degrees**	Draw a point. Draw a straight line through the point. Draw a straight line perpendicular to the first line. If there are 180 degrees around a line, how many degrees are there in a right angle? Why? (Draw an image) Do you know the measures of the other three angles in the image? (Fill them in)

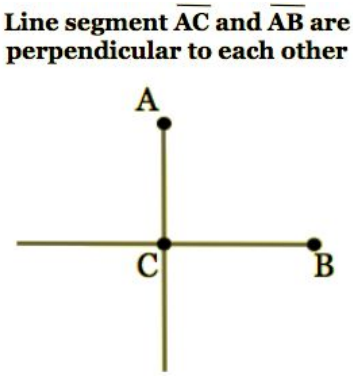
Don't Fall For a Trap!

Remember, we can never **assume** that we know the measure of an angle. However, we can **prove** that we know the measure of an angle with the info we are given.

For $\angle ACB$ below, which images' angles do we **know for certain** are 90 degrees? Circle your answer or answers.

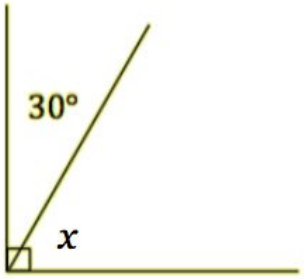


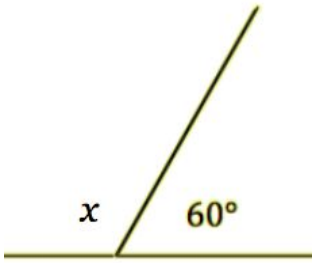




Solving For Unknown Angles

Find the measure of the unknown angles. Write an equation to solve. *All lines are straight lines.*





Given the information, find the measure of each angle.

∠**r** = ____

∠**s** = ____

∠**t** = ____

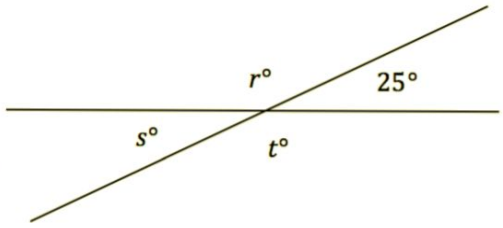
Then, find the measure of:

r + s = _____

Does this make sense? Why? →

r + s + t + 25 = _____

Does this make sense? Why? →



_____

_____

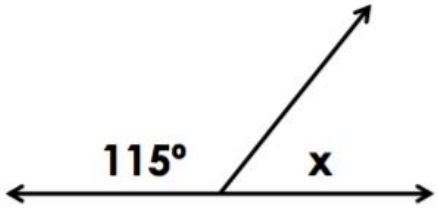
_____

_____

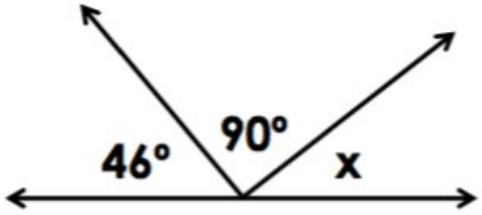
Guided Practice

Directions: For each problem, find the measure of the unknown angle or angles. ***All lines that appear to be straight lines are straight lines.***

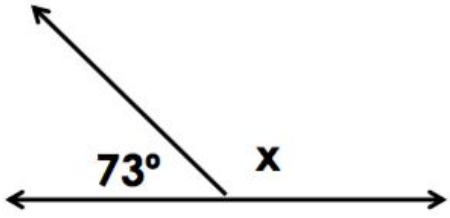
1. ∠x = _____



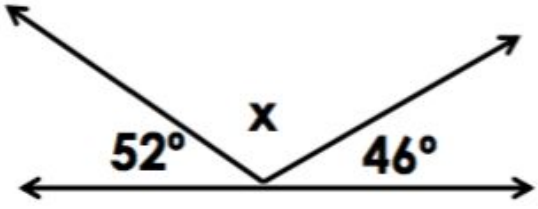
2. ∠x = _____



3. ∠x = _____

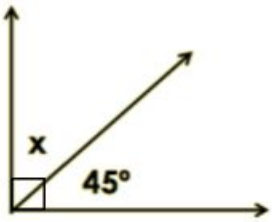


4. ∠x = _____

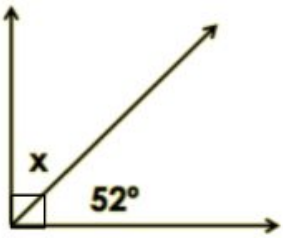


Guided Practice (CONTINUED FROM PREVIOUS PAGE)

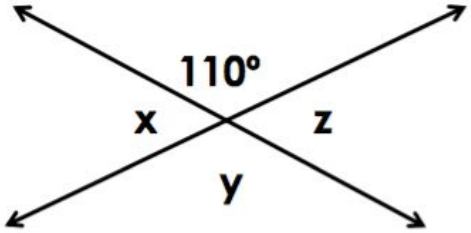
5. ∠x = _____



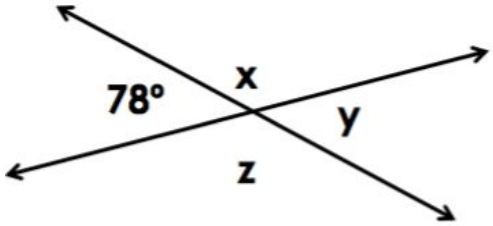
6. ∠x = _____



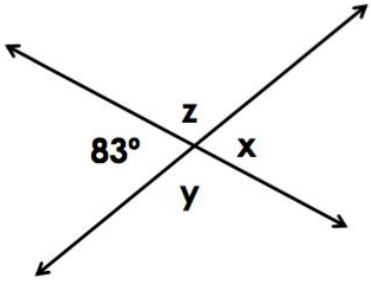
7. ∠x = _____ ∠y = _____ ∠z = _____



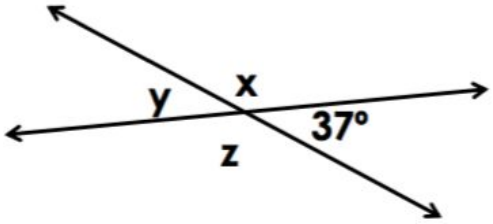
8. ∠x = _____ ∠y = _____ ∠z = _____



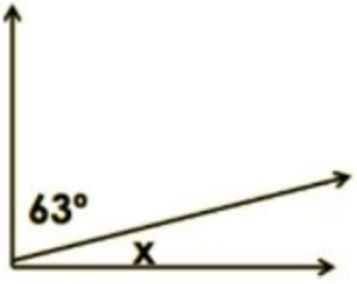
9. ∠x = _____ ∠y = _____ ∠z = _____



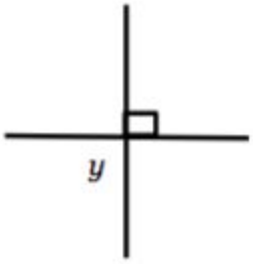
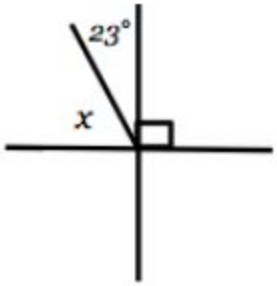
10. ∠x = _____ ∠y = _____ ∠z = _____



11. In the following diagram, you have been given the measure of an angle and an unknown angle to find. **Have you been given enough information to find the value of the unknown angle? Explain why or why not.**



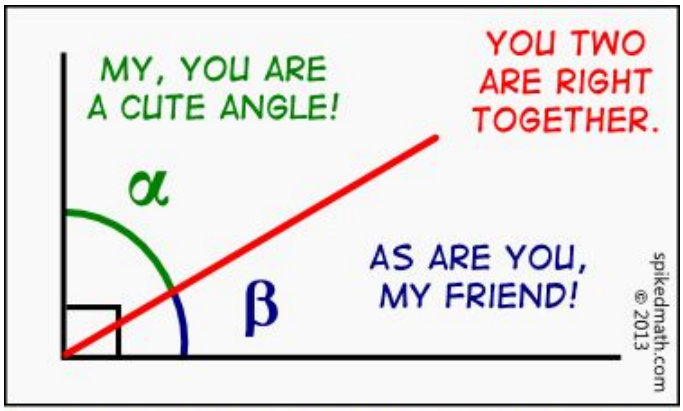
Unit 8: Angles, Triangle, Triangle Classification	Lesson 8.2

Lesson 8.2 DO-NOW	1. Fill in the following blanks: There are ____ degrees around a **point.** There are ____ degrees in a **line.** There are ____ degrees in a **right angle.** 2. Find the measure of angle ***y***, if possible. *All lines that appear straight are straight.* 3. Find the measure of angle ***x***, if possible. *All lines that appear straight are straight.*	 
Homework Reminder	This is where you will shade in the box if you turned in your homework. Lesson 8.1 homework is due today! :) ***"Excellence is not an art. It is the habit of practice." - Aristotle***	
Check-In	How are you doing today? What is your favorite shape?	

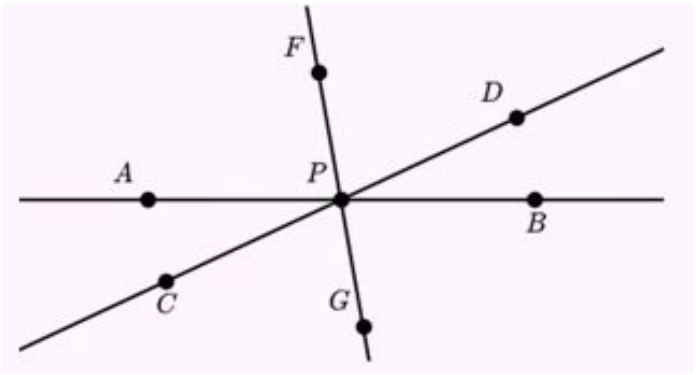
Defining Types of Angles		
Angle Name	**Definition**	**Example**

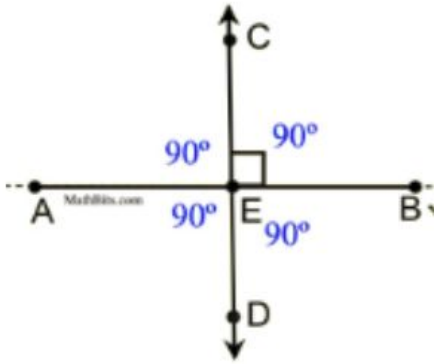
Supplementary and Complementary angles do NOT have to be adjacent.
They can be two separate angles with degrees that add up to be 180- supplementary or 90- complementary.

Tip for remembering the difference between <u>complementary</u> and <u>supplementary</u> angles: **_____ *someone is always the _____ thing to do :)***		
Vertical Angles always have the _____ measure! Think of them as mirroring each other!		



Identifying Types of Angles





∠FPA and ∠GPB are _____ angles

∠APF and ∠FPB are _____ angles

∠FPD and ∠DPB are _____ angles

∠APC and ∠DPB are _____ angles

∠CEB and ∠BED are _____ angles

∠CEB and ∠AED are _____ angles

∠AED and ∠AEC are _____ angles

∠CEA and ∠DEB are _____ angles

Drawing Angles

Can you draw the following angles with the given criteria?

Draw two supplementary angles.
If one angle has a measure of 35°,
find the measure of the other angle.

Draw two complementary angles.
If one angle has a measure of 15°,
find the measure of the other angle.

Draw two adjacent angles that are also supplementary angles.
If one angle has a measure of 20°,
find the measure of the other angle.

Draw two vertical angles.
If one angle has a measure of 33°,
find the measure of the other *three* angles.

Solving for Unknown Angles

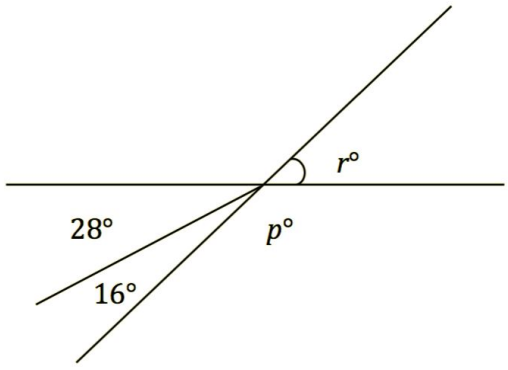
Remember, we can never **assume** that we know the measure of an angle. However, we can **prove** that we know the measure of an angle with the info we are given.

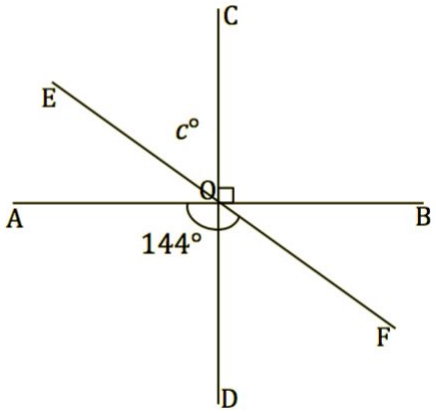
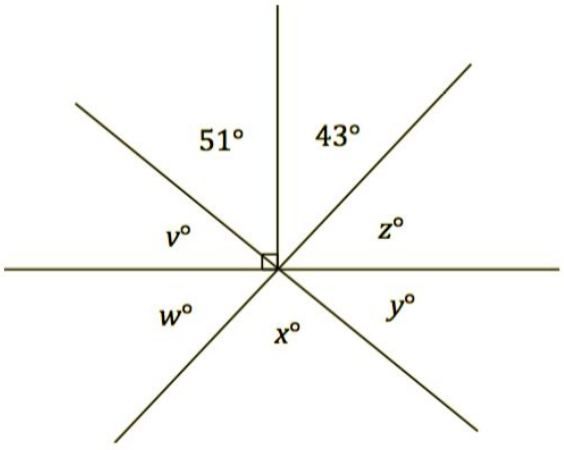
Find the measure of:

$\angle r$ = _____

$\angle p$ = _____

All the lines in the figure below are straight lines.



Find the measure of: $\angle c$ = _____	**All the lines in the figure below are straight lines.** 
Find the measure of: $\angle v$ = _____ $\angle w$ = _____ $\angle x$ = _____ $\angle y$ = _____ $\angle z$ = _____	**All the lines in the figure below are straight lines.** 

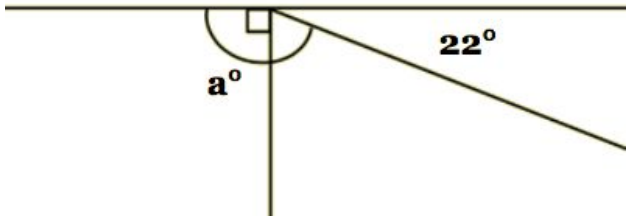
Guided Practice - Riddle Me This!

Directions: Solve the "mystery angle" problems in your packet to reveal the answer to the following clue. Write the **angle letter** on the line above its **degree measurement**.

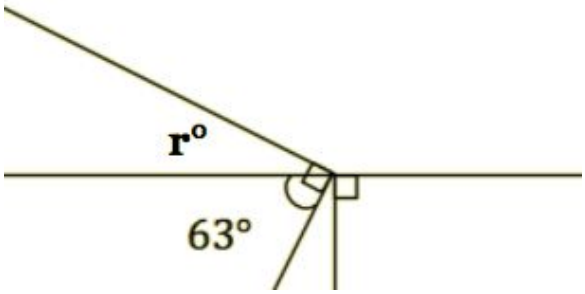
"What did the acorn say when it grew up?"

_____	_____	_____	!	_____	’	_____	_____	_____	_____	_____	!
46	52	52		47		71	158	35	27	11	11

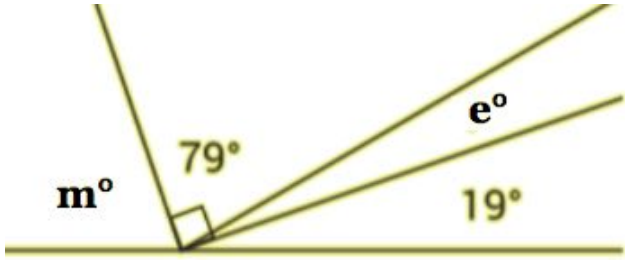
1. ∠a = _____



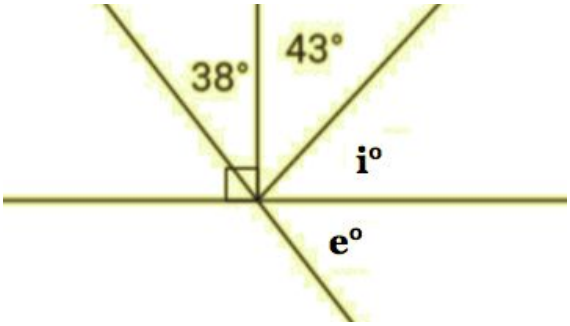
2. ∠r = _____



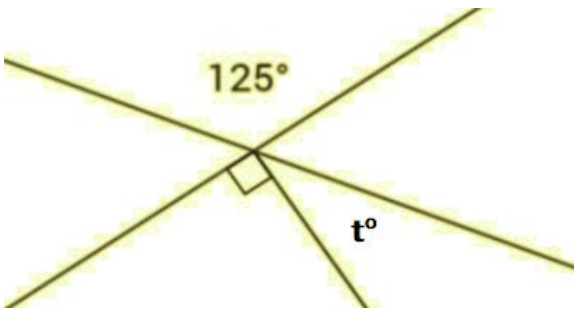
3. ∠m = _____ ∠e = _____



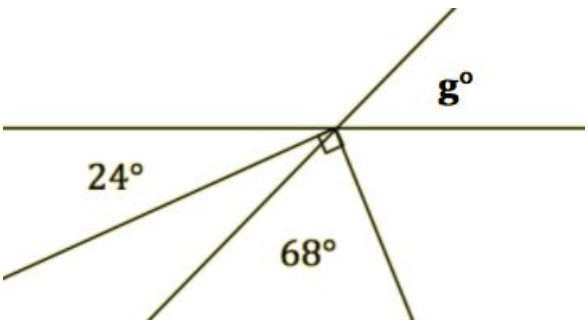
4. ∠i = _____ ∠e = _____



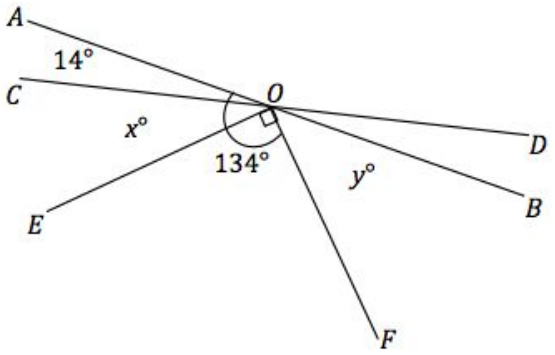
5. ∠t = _____



6. ∠g = _____



Unit 8: Angles, Triangle, Triangle Classification	Lesson 8.3

Lesson 8.3 DO-NOW	Two lines meet at a point that is also a vertex of an angle; the measurement of $\angle AOF$ is **134°**. Set up and solve an equation to find the values of x and y. Are your answers reasonable? How do you know? **To solve for x…** **To solve for y…**	
Homework Reminder	This is where you will shade in the box if you turned in your homework. Lesson 8.2 homework is due today! :) ***"Excellence is not an art. It is the habit of practice." - Aristotle***	
Check-In	How are you doing today? What is an example of an angle in the real world?	

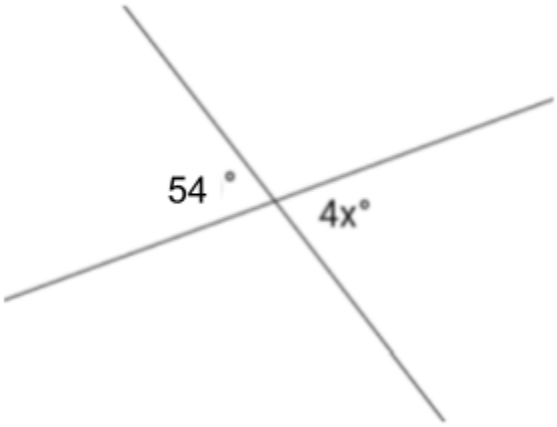
Solving For Unknown Angles Using All Angle Facts

Identify one angle relationship seen in the diagram.

_____

_____

Set up and solve an equation to find the value of x.

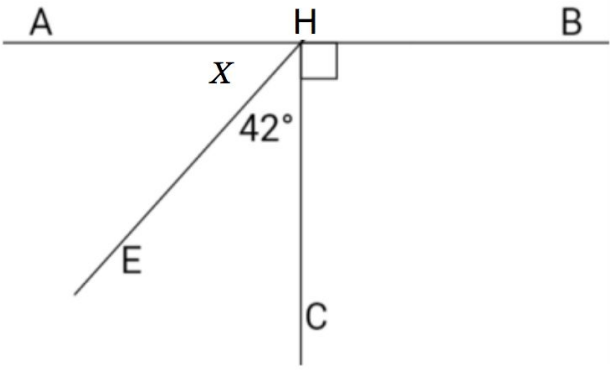


Find the measurement of both sets of vertical angles.

Identify one angle relationship seen in the diagram.

_____

_____



Set up and solve an equation to find the value of x.

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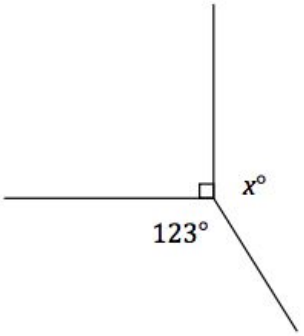


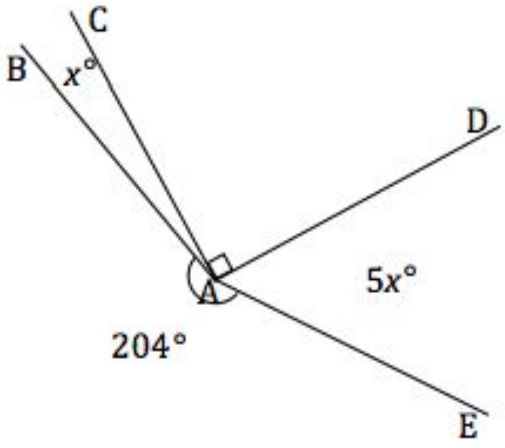
Five rays meet at a common endpoint. In a complete sentence, describe the relevant angle relationships in the diagram.

_____

_____

_____

_____

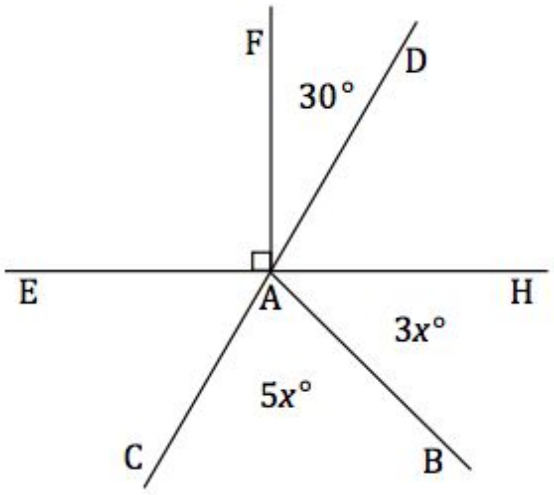


Set up and solve an equation to find the value of x. Find the measurements of $\angle BAC$ and $\angle DAE$.

Two lines meet at a point that is also the endpoint of two rays. In complete sentences, describe two angle relationships observed in the diagram.

1. _____
   _____
   _____
   _____

2. _____
   _____
   _____
   _____



Set up and solve an equation to find the value of x. Find the measurements of $\angle BAC$ and $\angle BAH$.

I "CAN" Game

Directions To Play!

- Pull one card from the can/bag and solve it.
- If you get the problem correct, keep the card. If you get the problem wrong, the other player can steal the card by trying to answer it correctly.
- If you pull an "I Can" card, add it to your pile as a bonus card and pull another card.
- The player with the most cards at the end, WINS!

Number	Answer	Number	Answer	Number	Answer

Total Number of Cards: _____

Extra Work Space:

Unit 8: Angles, Triangle, Triangle Classification	Lesson 8.4

Lesson

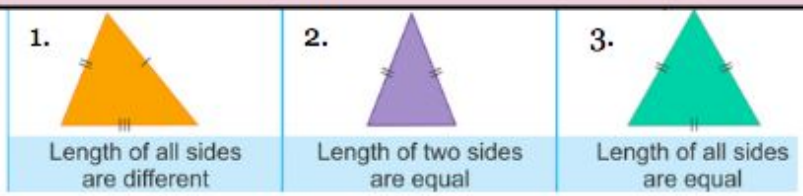
8.4

DO-NOW

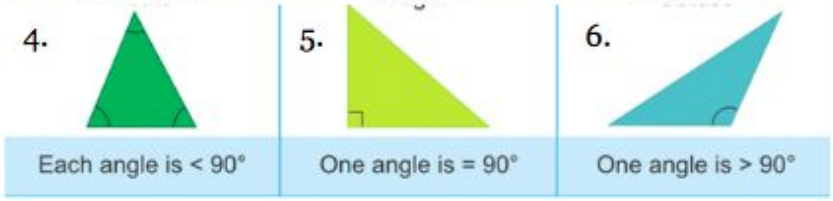
Directions: Name the type of triangle using the word bank below.

Scalene	Equilateral	Isosceles
Right	Obtuse	Acute

Triangle shape (based on sides)



Triangle shape (based on angle)



Homework Reminder	This is where you will shade in the box if you turned in your homework. Lesson 8.3 homework is due today! :) ***"Excellence is not an art. It is the habit of practice." - Aristotle***
Check-In	How are you doing today? What is your favorite thing to do on Oahu?

Video Notes:

Foldable Activity!
Refer to the foldable for triangle properties!

Guided Practice- Matchmaker

Directions: Using the task cards, match each triangle to its proper angle classification and side classification. Record in the table below.

Triangle	Classify by Side	Classify by Angle

Guided Practice Con't.

DIRECTIONS: Find your way through the maze by choosing the classification that matches each triangle. Color each triangle and arrow to mark your path. ***WARNING: There are lots of paths to get to the end, but only one is correct.***