

6th Grade CCA Unit #7: Geometry- Constructions and Scale Drawings

Unit #7: Geometry: Constructions and Scale Drawings

Resources: Big Ideas Chapter 7

Common Core Standards: 7.G.1; 7.G.2; 7.G.5

Number	Learning Targets	Common Core Standard	Resources
1	I can identify and find angle measurements of adjacent and vertical angles.	7.G.5	7.1
2	I can identify and find angles measures of complementary and supplementary angles.	7.G.5	7.2
3	I can construct triangles given angle measures or side lengths.	7.G.2	7.3
4	I can find missing angles in quadrilaterals and construct them.	7.G.2	7.4
5	I can use scale drawings to find scale factors, perimeters and areas.	7.G.1	7.5

My Practice:

Number	Pre-test:	Exit slip scores	Day #2 Homework	Extra Targeted Practice	Post-test:
1	_____/6				_____/6
2	_____/3				_____/7
3	_____/7				_____/8
4	_____/4				_____/7
5	_____/8				_____/11

My Final Pretest Score: _____ /28

My Final Pretest Percent _____ %

My Final Posttest Score: _____ /42

My Final Posttest Percent: _____ %

Between the Pre and Post test scores, I increased by _____ % !!

Unit 7: Constructions and Scale Drawings Extended Homework

This homework is designed to expand your thinking and practice mathematical explanations.

You need to show an attempt on every problem as well as an explanation of your thinking.

You may use a calculator when applicable.

7.2 Complementary and Supplementary Angles Extended Homework

Complete #25 and #27 (pg. 281) from the online textbook from section 7.2

25.)	27.)
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7.1 Adjacent and Vertical Angles Extended Homework

Complete #25 and #26 (pg. 275) from the online textbook from section 7.1

25.)	26.)
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7.3 Triangles Extended Homework

Complete #20 and #27 (pg. 287) from the online textbook from section 7.3

20.)	27.)
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7.4 Quadrilaterals Extended Homework

Complete #24 and #26 (pg. 297) from the online textbook from section 7.4

24.)	26.)
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7.5 Scale Drawings Extended Homework

Complete #30 and #31 (pg. 305) from the online textbook from section 7.5

30.)	31.)
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7.2 Complimentary and Supplementary Angles Student Notes

POD: Solve.

1.) $3x + 6 = 18$

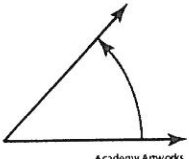
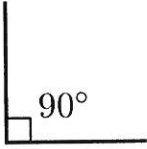
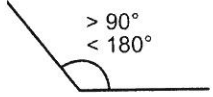
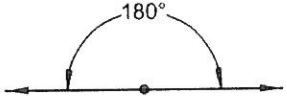
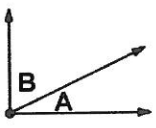
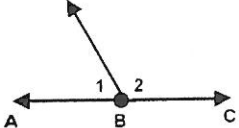
$x = 4$

2.) $3x + 2x + 10 = 90$

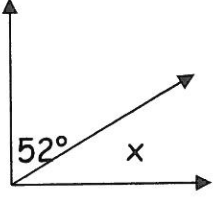
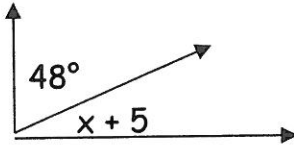
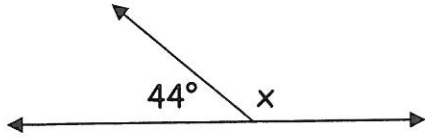
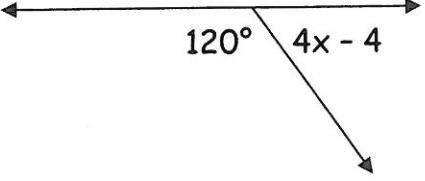
$x = 16$

Objective: Students will be able to classify complimentary and supplementary angles.
Students will also be able to find a missing measure of an angle.

Vocabulary:


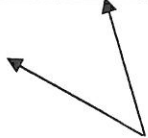
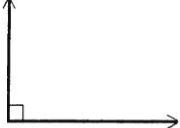

<p>Acute Angle: an angle with a measure between 0° and 90°</p>  <p style="text-align: center; font-size: small;">Academy Artworks</p>	<p>Right Angle: an angle with a measure of exactly 90°</p> 	<p>Obtuse Angle: an angle with a measure between 90° and 180°</p>  <p style="text-align: center; font-size: small;">Obtuse Angle</p>	<p>Straight Angle: an angle with a measure of exactly 180°</p> 
<p>Complementary Angles: 2 angles whose sum (+) of their measures equal 90°</p> 	<p>Supplementary Angles: 2 angles whose sum (+) of their measures equals 180°</p> 		

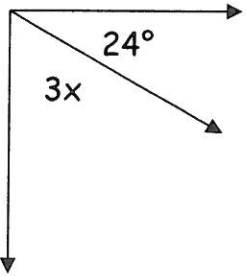
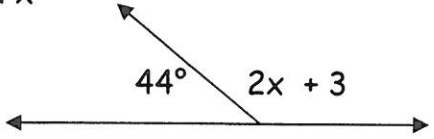
Find the missing angle.

<p>1.)</p> 	<p>2.)</p> 
<p>3.)</p> 	<p>4.)</p> 

7.2 Complementary and Supplementary Angles Homework Day 1

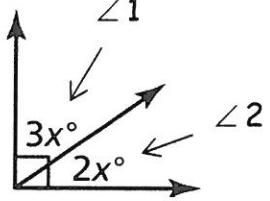
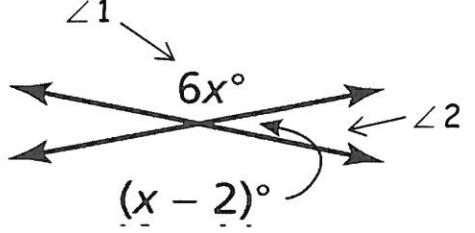
Classify the angles.

<p>1.)</p> 	<p>2.)</p> 	<p>3.)</p> 	<p>4.)</p> 
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<p>5.) Find x</p> 	<p>6.) Find x</p> 
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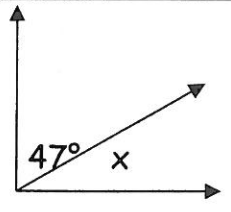
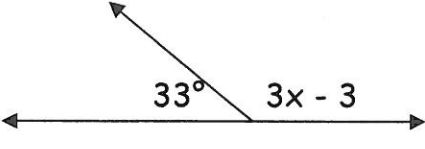
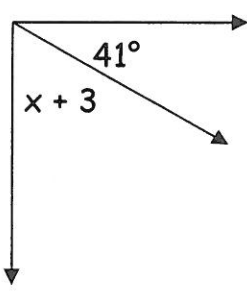
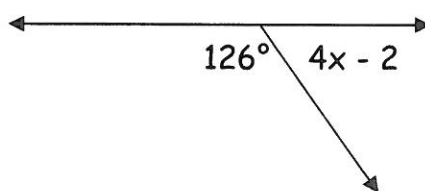
7.) The measure of $m\angle B$ is 41° . $\angle C$ is its supplement and its angle = $(3x - 2)^\circ$
Find x

Find x and each missing angle.

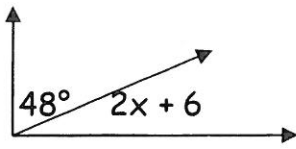
<p>8.)</p> 	<p>9.)</p> 
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7.2 Complementary and Supplementary Angles Homework Day 2

Directions: Find the value for x in each problem. Show all of your work.

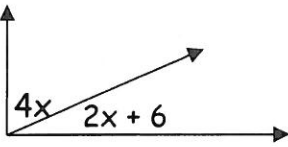
<p>1.)</p> 	<p>2.) The measure of $m\angle B$ is 62°. $\angle C$ is its supplement and its angle = $(2x + 4)^\circ$ Find x</p>
<p>3.)</p> 	<p>4.) The measure of $m\angle B$ is 32°. $\angle C$ is its complement and its angle = $(2x)^\circ$ Find x</p>
<p>5.)</p> 	<p>6.)</p> 

7.)

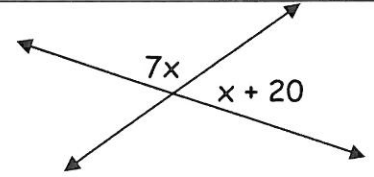


8.) The measure of $m\angle B$ is 12° . $\angle C$ is its supplement and its angle = $(8x + 4)^\circ$. Find x

9.)



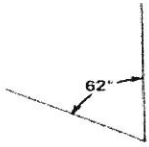
10.)



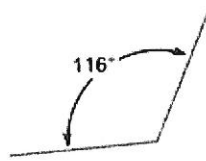
7.1 Adjacent and Vertical Angles Student Notes

POD

Identify the angles as acute, right, or obtuse



1) _____



2) _____

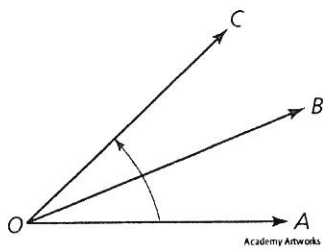
Objective:

Students will identify adjacent and vertical angles. Students will find missing measures in angles.

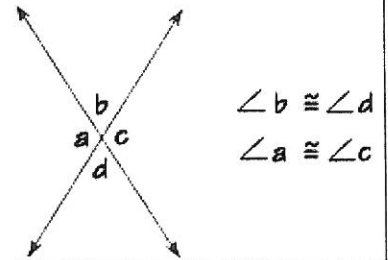
Essential Question: What can you conclude about the angles formed by two intersecting lines?

Vocabulary:

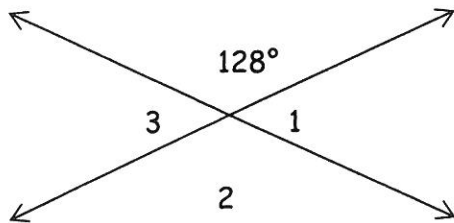
Adjacent Angles: angles that share a side



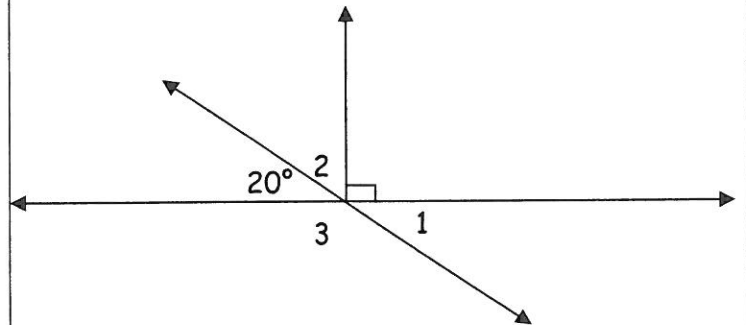
Vertical Angles: angles formed by two intersecting lines and are opposite. Vertical angles are congruent.



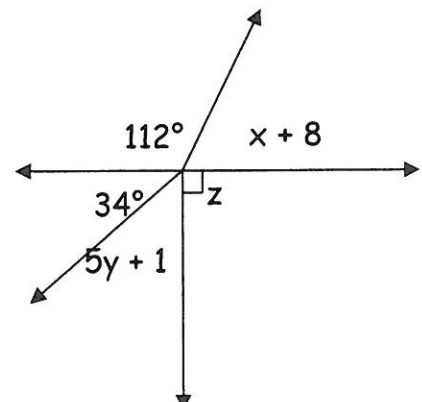
1.) Find the measure of $\angle 1$, $\angle 2$, and $\angle 3$.



2.) Find the measure of $\angle 1$, $\angle 2$, and $\angle 3$.

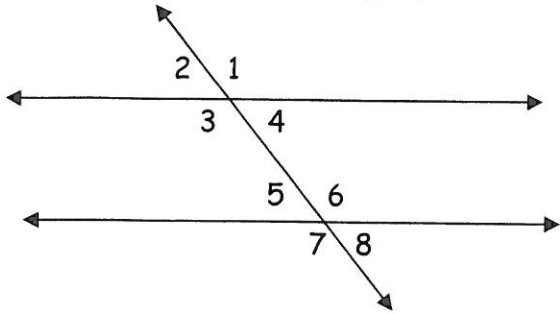


3.) Find the value of x , y , and z .



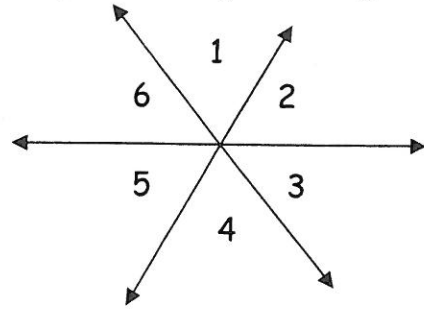
7.1 Adjacent and Vertical Angles Homework Day 1

1.) Name three vertical angle pairs



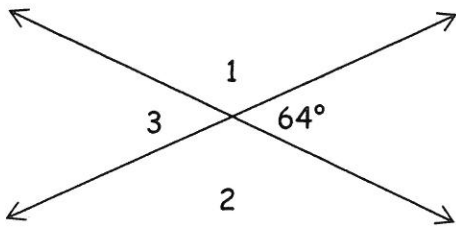
Vertical angles:

2.) Name 4 pairs of adjacent angles.

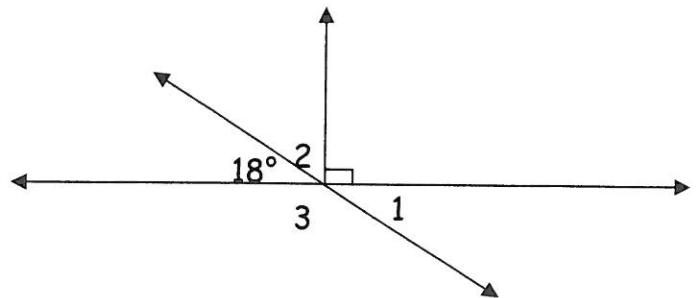


Adjacent Angles:

3.) Find the measure of $\angle 1$, $\angle 2$, and $\angle 3$.



4.) Find the measure of $\angle 1$, $\angle 2$, and $\angle 3$



5.) Give a way to remember the difference between complimentary and supplementary angles.

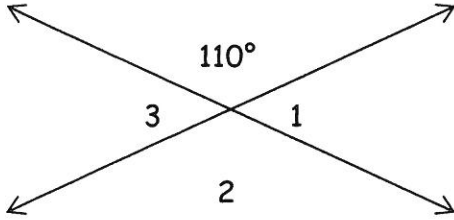
6.) Draw a pair of adjacent angles with the given description.

- a. Both angles are obtuse.
- b. The sum of the angle measures is 180° .
- c. The sum of the angles measures is 60° .

Name: _____

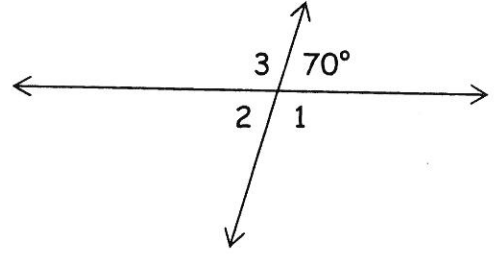
7.1 Adjacent and Vertical Angles Homework Day 2

1.) Find the measure of $\angle 1$, $\angle 2$, and $\angle 3$.



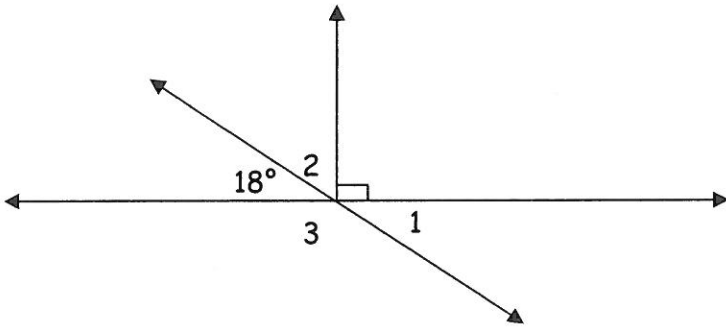
$\angle 1 =$ _____ $\angle 2 =$ _____ $\angle 3 =$ _____

2.) Find the measure of $\angle 1$, $\angle 2$, and $\angle 3$.



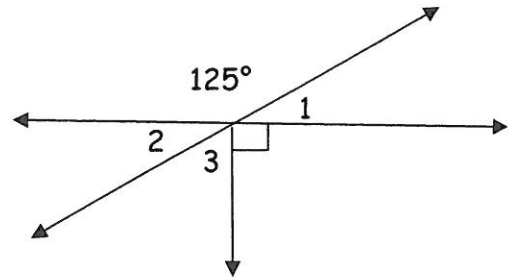
$\angle 1 =$ _____ $\angle 2 =$ _____ $\angle 3 =$ _____

3.) Find the measure of $\angle 1$, $\angle 2$, and $\angle 3$.



$\angle 1 =$ _____ $\angle 2 =$ _____ $\angle 3 =$ _____

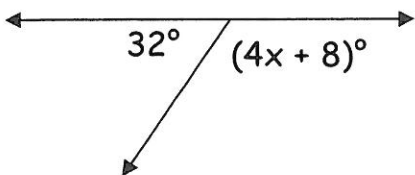
4.) Find the measure of $\angle 1$, $\angle 2$, and $\angle 3$.



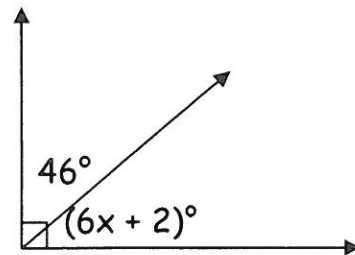
$\angle 1 =$ _____ $\angle 2 =$ _____ $\angle 3 =$ _____

Solve for x.

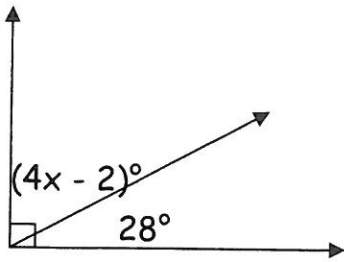
5.)



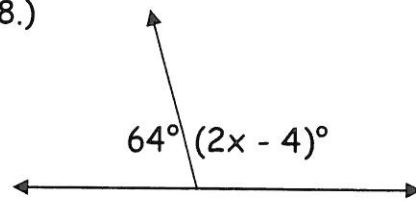
6.)



7.)



8.)



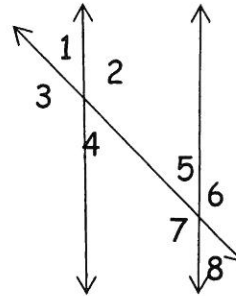
9.) Name a pair of...

a.) vertical angles

b.) adjacent angles

c.) supplementary angles

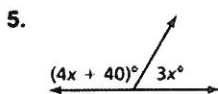
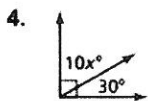
d.) congruent angles



7.3 Triangles Student Notes

POD

Tell whether the angles are *complementary* or *supplementary*. Then find the value of x .

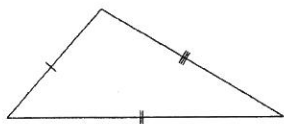


Objective: Students will classify triangles and find missing measures within a triangle.

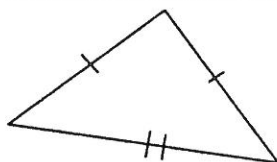
Essential Question: How can you construct triangles?

Vocabulary:

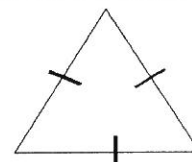
Classifying Triangles by Sides



Scalene Triangle
No congruent sides

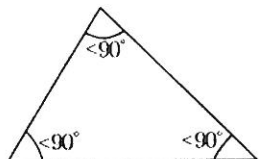


Isosceles Triangle
2 congruent sides

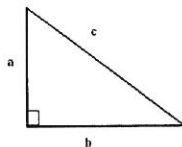


Equilateral Triangle
3 congruent sides

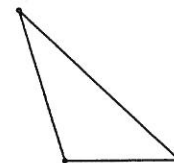
Classifying Triangles by Angles



Acute Triangle
3 acute angles



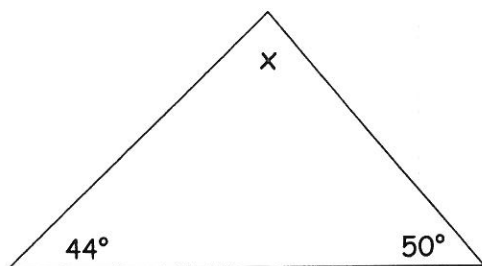
Right Triangle
1 right angle



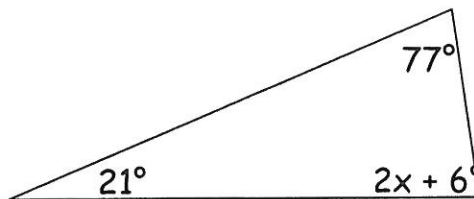
Obtuse Triangle
1 obtuse angle

Find the value of the missing variable in each triangle.

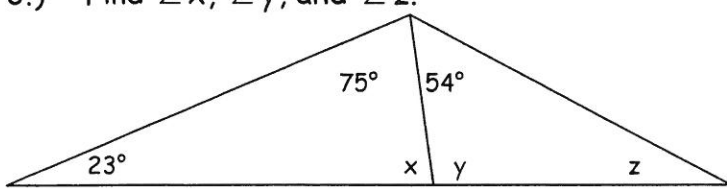
1.)



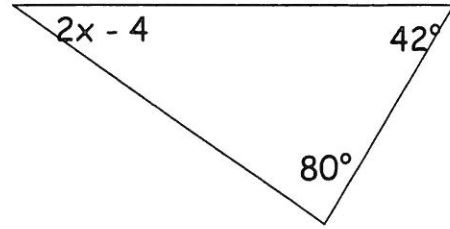
2.)



3.) Find $\angle x$, $\angle y$, and $\angle z$.



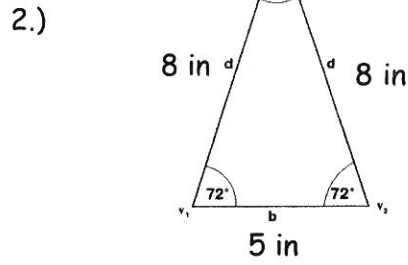
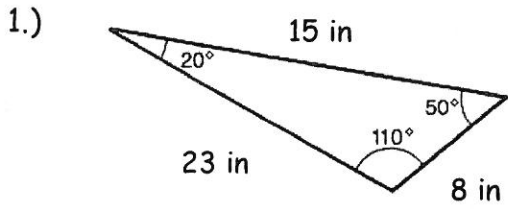
4.)



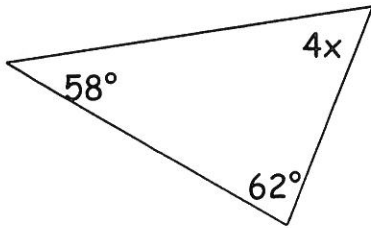
7.3 Triangles Homework Day #1

Examples:

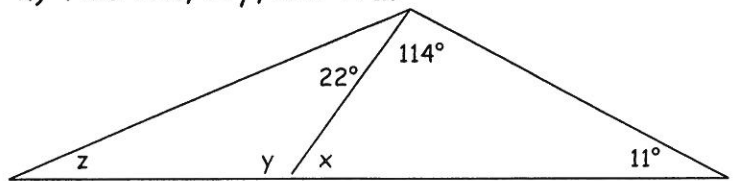
Classify the triangle by its sides and angles.



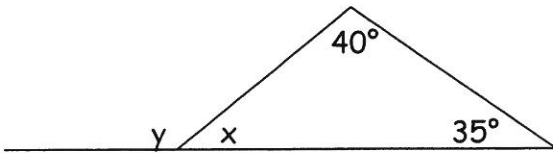
3.) Find x .



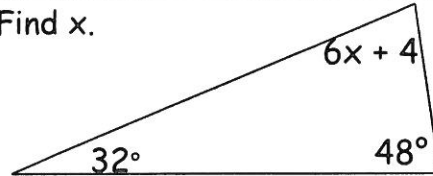
4.) Find $\angle x$, $\angle y$, and $\angle z$.



5.) Find x and y .

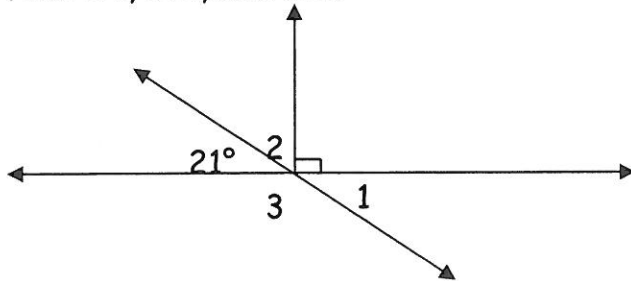


6.) Find x .

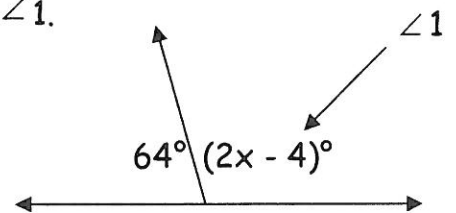


Review:

7.) Find $\angle 1$, $\angle 2$, and $\angle 3$.



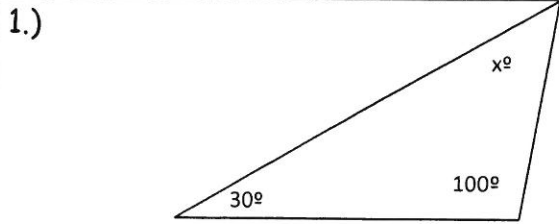
8.) Find x and $\angle 1$.



Name: _____

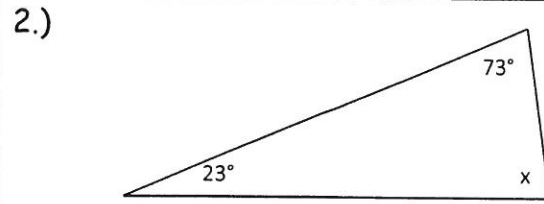
7.3 Triangles Homework Day #2

Write an equation, then find the value of x .



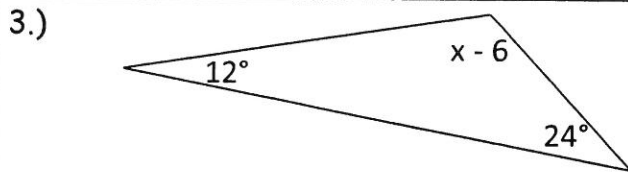
Equation:

$x =$



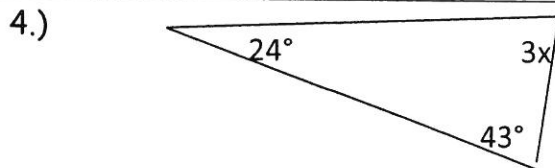
Equation:

$x =$



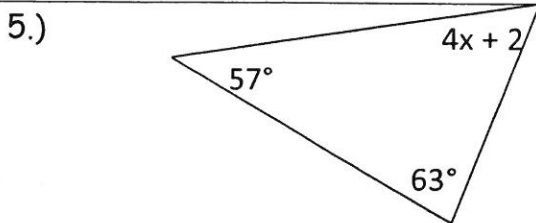
Equation:

$x =$



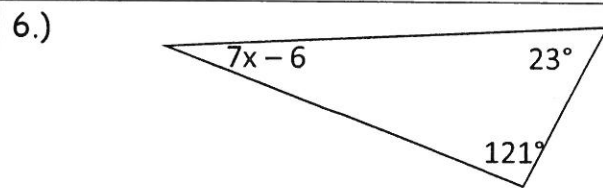
Equation:

$x =$



Equation:

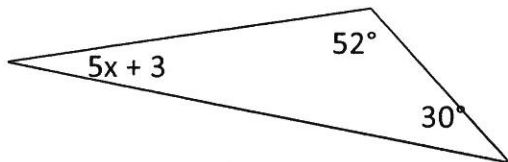
$x =$



Equation:

$x =$

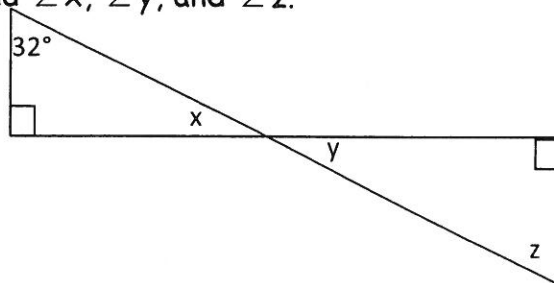
7.)



Equation:

x =

8.) Find $\angle x$, $\angle y$, and $\angle z$.

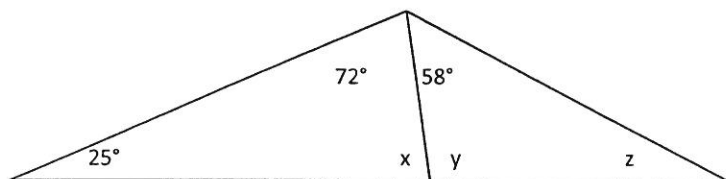


x =

y =

z =

9.) Find $\angle x$, $\angle y$, and $\angle z$.

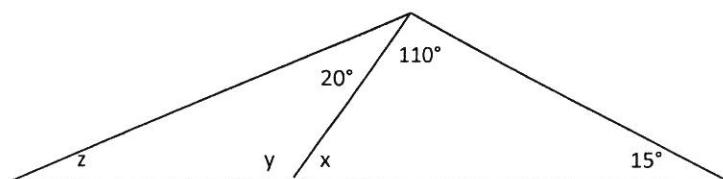


x =

y =

z =

10.) Find $\angle x$, $\angle y$, and $\angle z$.



x =

y =

z =

7.4 Quadrilaterals STUDENT Notes

POD Find the missing angle

- 1) A triangle has an angle which measures 30° and another which measures 50° . What is the third angle measurement? _____

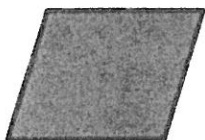
Essential Question: How can you classify quadrilaterals?

Objective: Students will learn how to identify and classify quadrilaterals

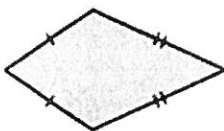
Classifying Quadrilaterals



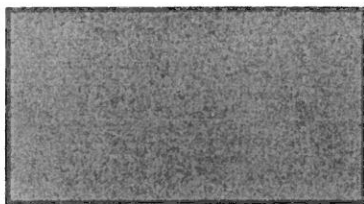
Trapezoid: quadrilateral with exactly _____ of parallel sides



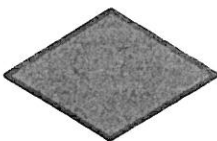
Parallelogram: quadrilateral with opposite sides that are _____
AND _____



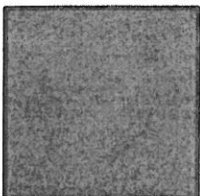
Kite: quadrilateral with _____ pairs of congruent adjacent sides and opposite sides that are _____ congruent



Rectangle: parallelogram with _____ with opposite sides that are parallel and congruent



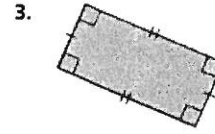
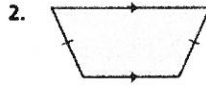
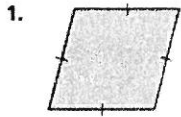
Rhombus: parallelogram with four _____ sides



Square: a parallelogram with four _____ sides and four _____ angles. Opposite sides are also parallel and congruent

● On Your Own

Classify the quadrilateral.



1) _____ 2) _____ 3) _____

Copy and complete using always, sometimes, or never.

4. A square is _____ a rhombus.
5. A parallelogram is _____ a rectangle.
6. A kite is _____ a square.
7. A trapezoid is _____ a square.

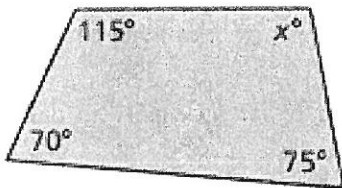
Finding an Angle Measure of a Quadrilateral

The sum of the angle measures of a quadrilateral is 360°

How to find the value of a missing angle in a quadrilateral

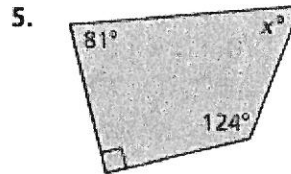
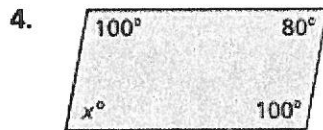
- 1) Write an equation
- 2) Combine like terms
- 3) Subtraction Property of Equality (subtract from 360)
- 4) Simplify

$$\begin{aligned} 115 + 70 + 75 + x &= 360 \\ 260 + x &= 360 \\ \underline{-260} \quad \underline{-260} & \\ X &= 100^\circ \end{aligned}$$



● On Your Own

Find the value of x .



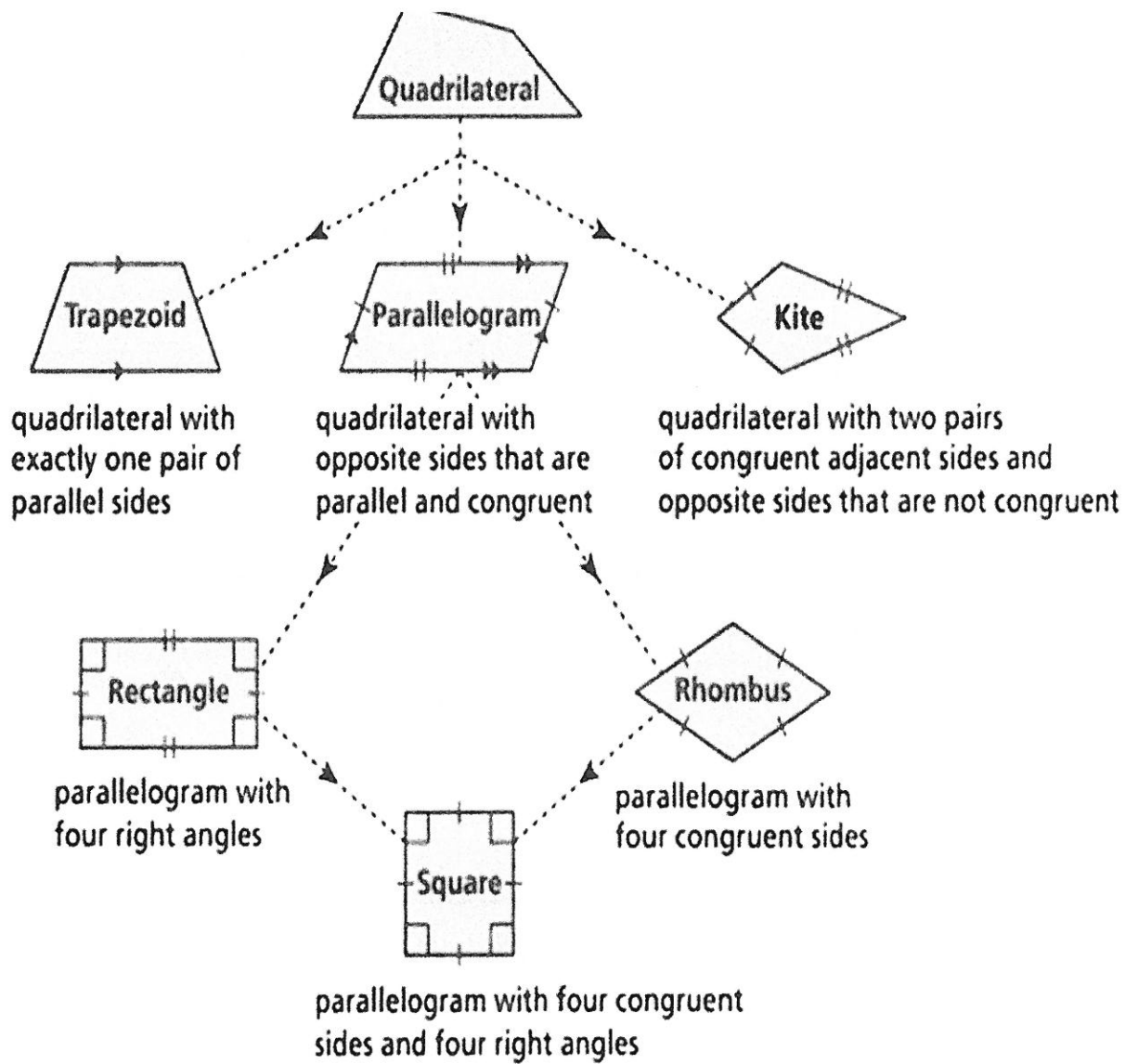
Write the equation first and then solve for x

Write the equation first, then solve for x

Reading



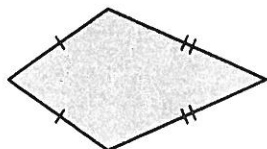
Red arrows indicate parallel sides.



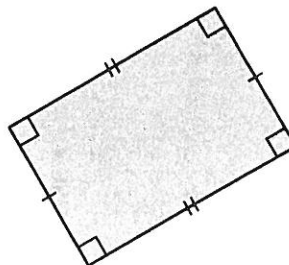
7.4 Quadrilaterals Day #1 Homework

Classify the quadrilateral.

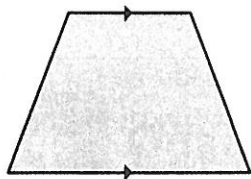
1.



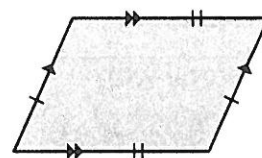
2.



3.

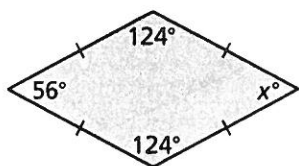


4.

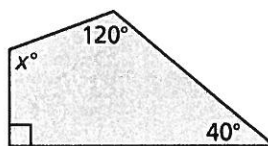


Find the value of x .

5.



6.



Equation:

Solve:

Equation:

Solve:

Copy and complete using *always*, *sometimes*, or *never*.

7. A square is ? a rhombus.

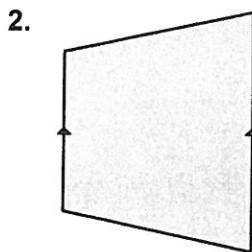
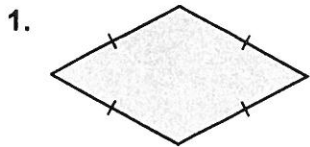
8. A parallelogram is ? a rectangle.

10. A trapezoid is ? a square.

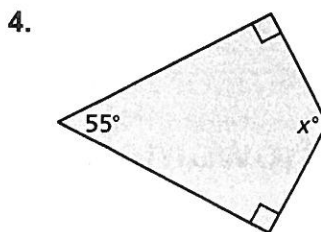
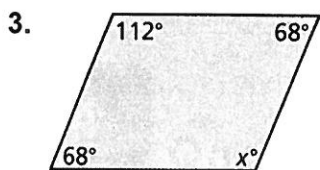
7.4

Quadrilaterals Day #2 Homework

Classify the quadrilateral.



Find the value of x .



Equation:

Solve:

Equation:

Solve:

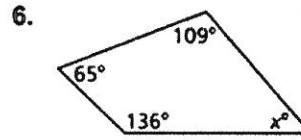
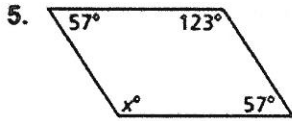
Copy and complete using *always*, *sometimes*, or *never*.

5. A rectangle is ? a square.
6. A rhombus is ? a parallelogram.
8. A parallelogram is ? a rhombus.
9. Determine whether the statement is *true* or *false*. Explain your reasoning. You may use diagrams to explain your reasoning.
 - a. A rectangle that is 30 inches long and 10 inches wide can be divided into two congruent squares.
 - b. A rectangle that is 30 inches long and 10 inches wide can be divided into three congruent squares.

7.5 Scale Drawings Student Notes

POD

Find the value of x .



Objective: Students will use scale drawings to find actual measurements. Students will find scale factors.

Essential Question: How can you enlarge or reduce a drawing proportionally?

Vocabulary:

- 1.) Scale Drawing - an enlarged or reduced drawing of an object that is similar to the actual object (examples include maps or floor plans)
- 2.) Scale - a ratio that compares a length in a drawing to the corresponding length in the actual object

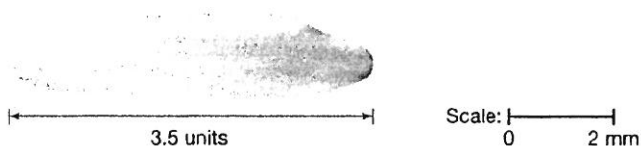
How to Solve Problems with Scale Drawings:

- 1.) Write the scale of the drawing as a ratio.
- 2.) Write another ratio that matches the same units as the first ratio.
- 3.) Solve the proportion using cross products.
- 4.) Label your answer with the appropriate units.

Example:

1.) Mrs. Hecker drew a map of the school gym. The gym was 60yd long. She used a scale of 2cm to 3yd. Find the length of her drawing.

2.) Sam's scale drawing of a piece of rice is shown below. What is the actual length of the piece of rice?



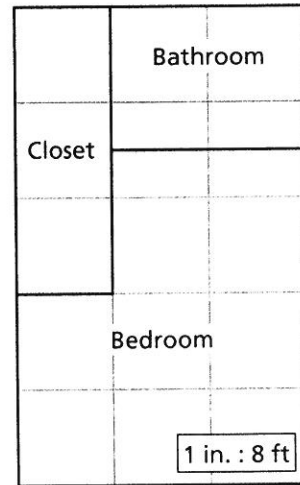
3.) Kyle's scale drawing of his bedroom 16 cm long and 12.5 cm wide. If each 4 cm on the scale drawing equals 3 ft, how big is Kyle's bedroom?

7.5 Scale Drawings Day #1 Homework

1. In the actual blueprint of the bedroom suite, each square has a side length of $\frac{1}{2}$ inch.

- a. What are the dimensions, **in feet**, (length and width) of the bedroom suite? _____
- b. What are the dimensions, **in feet**, (length and width) of the bathroom? _____
- c. What is the length of the longest wall in the bedroom, **in feet**? _____
- d. What is the ratio of the perimeter of the closet to the perimeter of the bathroom?

- e. What is the ratio of the area of the closet to the area of the bathroom? How can you explain this by looking at the squares in each? _____



Find the missing dimension. Use the scale factor 2 : 5.

- 2. Model: 10 km
Actual: ?
- 3. Model: 5 in.
Actual: ?
- 4. Model: ?
Actual: 24 ft
- 5. Model: ?
Actual: 32.5 m

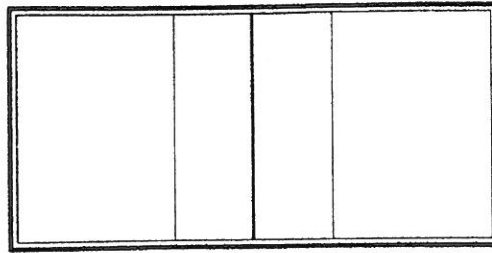
6. A scale factor is 1 : 8. Describe and correct the error in finding the model length that corresponds to 48 feet.

$\times \quad \frac{1}{8} = \frac{48 \text{ ft}}{x \text{ ft}}$
 $x = 384 \text{ ft}$

Name: _____ Units: _____ Date: _____

7.5 Scale Drawings Homework Day #2

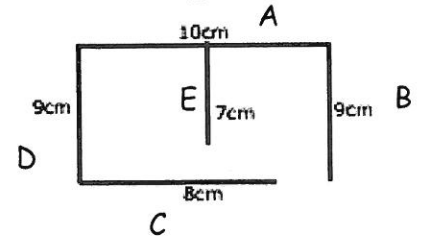
1.) Vanessa's scale drawing of a volleyball court, shown below, is 3 inches long and $1\frac{1}{2}$ inches wide. What is the size of the volleyball court in meters?



Scale: 1 inch = 6 meters

2.) Max makes a scale drawing of the distance between Salt Lake City and Arizona. The distance between Salt Lake City and Arizona is 21 cm. If each 7 cm on the scale drawing equals 250 kilometers, how far apart are Salt Lake City and Arizona?

3.) Abigail redecorates her house. A scale drawing of her house can be seen below. If each 6 cm on the scale drawing equals 12 ft, what are the actual dimensions of Abigail's house?



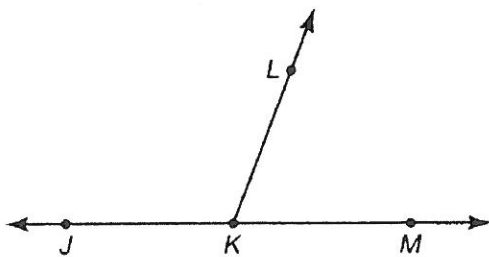
4.) Jordan made a wooden square box. All sides of the wooden box are 6cm. If he wants to increase the length of all sides by a scale factor of 1.6, what will be the perimeter and area of the new box?

5.) If the drawing shows 12 cm and the scale is 3 cm represents 19 mi., what is the actual length?

Review!! Angles!

6.)

In the diagram below, angles $\angle JKL$ and $\angle LKM$ are supplementary, $m\angle JKL = (2x + 4)^\circ$, and $m\angle LKM = (x + 26)^\circ$.

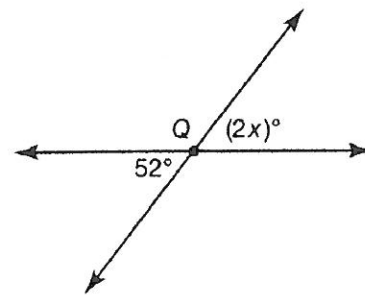


What is $m\angle JKL$?

- A. 48°
- B. 50°
- C. 104°
- D. 116°

7.)

In the diagram below, two lines intersect at point Q.



Which of the following equations can be used to solve for the value of x ?

- A. $2x = 52$
- B. $2x + 52 = 90$
- C. $2x + 52 = 180$
- D. $2x + 52 + 90 = 180$

Unit 7: Homework Geometry Answer Keys:

7.2 Homework Day 1

1.) obtuse	2.) acute	3.) right	4.) straight	5.) $x = 33$	6.) $x = 66.5$	7.) $x = 47$
8.) angle 2 = 36° and angle 3 = 54°				9.) angle 1 = 156° and angle 2 = 24°		

7.2 Homework Day 2

1.) 43	2.) 57	3.) 50	4.) 29	5.) 46	6.) 14	7.) 18	8.) 20.5	9.) 14	10.) 20
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7.1 Homework Day 1

1.) Vertical angles: 1 & 3, 2 & 4, 5 & 8, 6 & 7	2.) Adjacent Angles: 1 & 2, 2 & 3, 3 & 4, 4 & 5, 5 & 6, 6 & 1	
3.) $\angle 1 = 116^\circ$ $\angle 2 = 116^\circ$ $\angle 3 = 64^\circ$	4.) $\angle 1 = 18^\circ$ $\angle 2 = 72^\circ$ $\angle 3 = 162^\circ$	5.) Answers may vary
6.) Check pictures		

7.1 Homework Day 2

1.) $\angle 1 = 70^\circ$ $\angle 2 = 110^\circ$ $\angle 3 = 70^\circ$	2.) $\angle 1 = 110^\circ$ $\angle 2 = 70^\circ$ $\angle 3 = 110^\circ$	3.) $\angle 1 = 18^\circ$ $\angle 2 = 72^\circ$ $\angle 3 = 162^\circ$
4.) $\angle 1 = 55^\circ$ $\angle 2 = 55^\circ$ $\angle 3 = 35^\circ$	5.) $x = 35$	6.) $x = 7$
7.) $x = 16$		
8.) $x = 60$		
9.) Vertical: 1 & 4, 2 & 3, 5 & 8, 6 & 7 Adjacent: 1 & 2, 3 & 4, 5 & 6, 7 & 8 (etc...)		
Supplementary: 1 & 3, 2 & 4, 5 & 7, 6 & 8 (etc...) Congruent: 1, 4, 5, 8 = cong. 2, 3, 6, 7 = cong.		

7.3 Homework Day 1

1.) Obtuse scalene	2.) acute isosceles	3.) $x = 15^\circ$	4.) $x = 55^\circ, y = 125^\circ, z = 33^\circ$	5.) $y = 75^\circ; x = 105^\circ$
6.) $x = 16^\circ$	7.) 1 = $21^\circ; 2 = 69^\circ; 3 = 159^\circ$	8.) 12) $x = 60^\circ$ 1 = 116°		

7.3 Homework Day 2

1.) 50°	2.) 84°	3.) 150°	4.) 37.6°	5.) 14.5°	6.) 6°	7.) 19°	8.) $x = 58^\circ$ $y = 58^\circ$ $z = 32^\circ$
9.) $x = 83^\circ$ $y = 97^\circ$ $z = 25^\circ$			10.) $x = 55^\circ$ $y = 125^\circ$ $z = 35^\circ$				

7.4 Homework Day 1

1.) kite	2.) rectangle	3.) trapezoid	4.) Parallelogram	5.) 56°	6.) 110°	7.) always
8.) sometimes		9.) never		10.) never		

7.4 Homework Day 2

1.) rhombus	2.) trapezoid	3.) 112°	4.) 125°	5.) sometimes	6.) always	7.) never
8.) sometimes		9a.) false		9b.) true		

7.5 Homework Day 1

1a.) 12 ft by 20 ft	1b.) 8 ft by 6 ft	1c.) 14 ft	1d.) 8:7	1e.) 1:1	2.) 25 km	3.) 12.5 in
4.) 9.6 ft 5.) 13 m 6.) 48 is the actual length so it should be on the bottom. Correct answer = 6 ft						

7.5 Homework Day 2

1.) 18 m long by 9 m wide		2.) 750 km	3.) $A = 20$ ft $B/D = 18$ ft $C = 16$ ft $E = 14$ ft			
4.) $A = 57.6\text{cm}^2$ $P = 19.2\text{cm}$		5.) 76 mi	6.) C		7.) A	

