Name_____ Date _____ Class _____

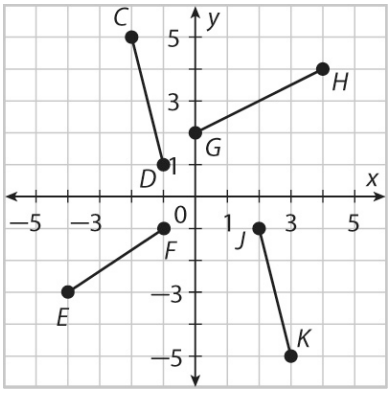
EXAM G.A

Geometry A: Final Exam Review

Modules 1 - 10

Section 1.1 – Segment Lengths & Midpoints

Use the distance formula to determine whether each pair of segments have the same length. $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$



1. $\overline{CD}$ and $\overline{EF}$

2. $\overline{GH}$ and $\overline{JK}$

Determine the coordinates of the midpoint for each segment. $M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

3. $\overline{PQ}$ has endpoints $P(5, -3)$ and $Q(2, 4)$.

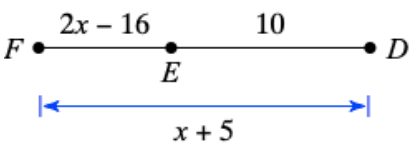
Midpoint: _____

4. $\overline{RS}$ has endpoints $R(-2, 3)$ and $S(-8, -2)$.

Midpoint: _____

Use the Segment Addition Postulate to solve for x.

5.

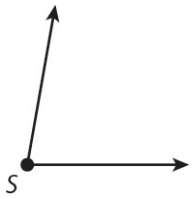


Name _____ Date _____ Class _____

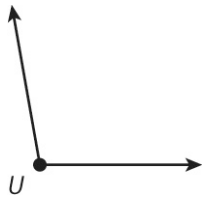
Section 1.2 – Angle Measures & Bisectors

Draw the bisector of each angle.

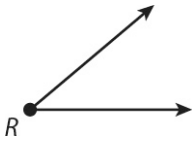
1.



2.

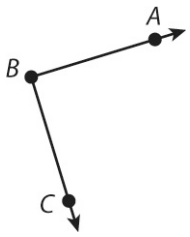


3.



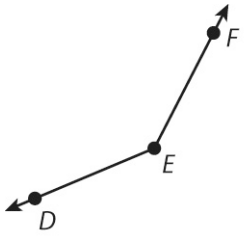
Determine the measure of each angle.

4.



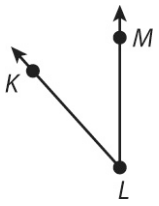
m∠*ABC* = _____

5.



m∠*DEF* = _____

6.

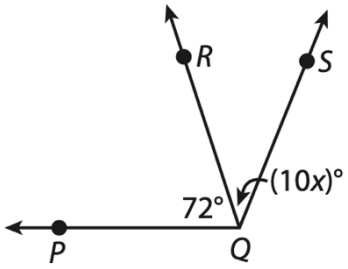


m∠*KLM* = _____

Use the angle addition postulate to help find the measure of each angle

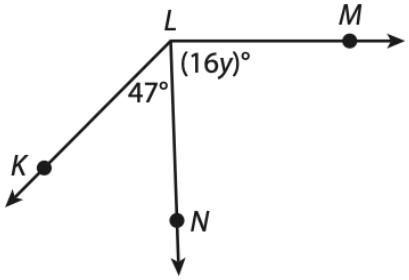
7. $m\angle PQS = 112°$

Find the value of x and $m\angle RQS$



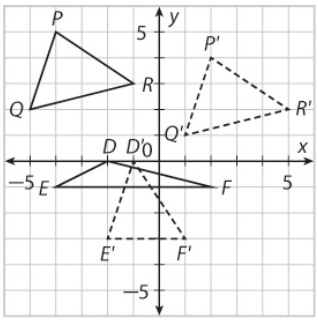
8. $m\angle KLM = 135°$.

Find the value of y and $m\angle MLN$



Name _____ Date _____ Class _____

Section 1.3 – Transformations



1. Write the coordinate points of ΔP'Q'R'

   $P(-4, 5) \rightarrow P'(\_\_\_\_\_, \_\_\_\_\_)$

   $Q(-5, 2) \rightarrow Q'(\_\_\_\_\_, \_\_\_\_\_)$

   $R(-1, 3) \rightarrow R'(\_\_\_\_\_, \_\_\_\_\_)$

2. Write the coordinate notation of the transformation of $\triangle PQR$.

   $(x, y) \rightarrow$ (_____, _____)

Name the transformation described by the given rule.

3. $(x, y) \rightarrow (-x, y)$

   _____

4. $(6, 2) \rightarrow (-6, -2)$

   _____

5. $(5, 8) \rightarrow (8, -5)$

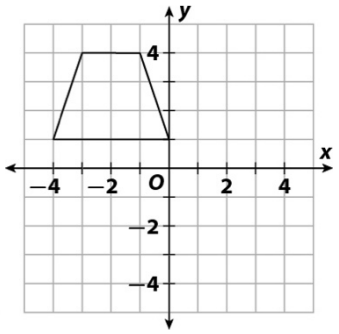
   _____

6. $(x, y) \rightarrow (x + 9, y + 2)$

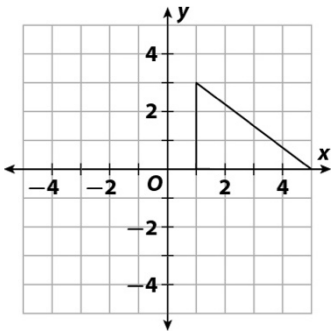
   _____

Draw the image of each figure under the given transformation.

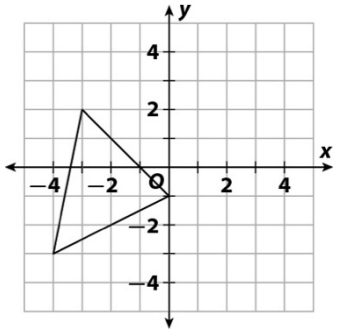
7. $(x, y) \rightarrow (x + 4, y - 5)$



8. A 180° rotation around the origin



9. A reflection across the *y*-axis



Name _____ Date _____ Class _____

Section 1.4 – Reasoning & Proof

Fill in the blank with the correct conclusion about each situation.

1. Through any two points, there is _____

2. Through any three noncollinear points, there is _____

3. If two points lie in a plane, then the line containing those points _____

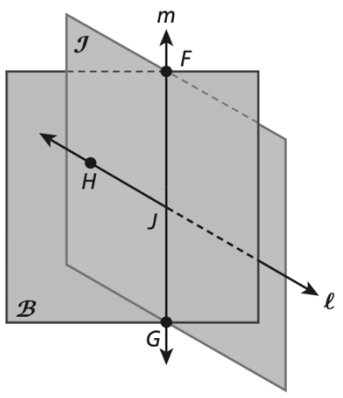
   _____

4. If two lines intersect, then they intersect _____

5. If two planes intersect, then they intersect _____

Use the figure to name each of the results described.

6.

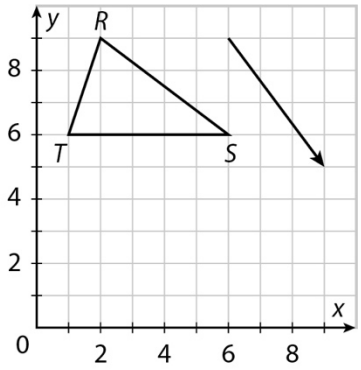


Description	Example from the figure
the line of intersection of two planes	
the point of intersection of two lines	
three coplanar points	
three collinear points	

Name _____ Date _____ Class _____

Section 2.1 – Translations

Use the figure below to answer Problems 1–3.



1. Triangle *RST* is translated along vector $\vec{v}$ to create the image *R'S'T'.* What are the coordinates of the vertices of the image?

   *R'*_____

   *S'*_____

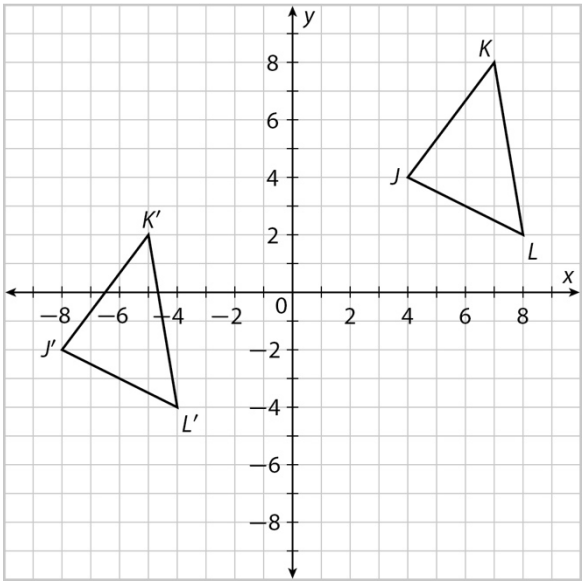
   *T'*_____

2. Write the coordinate notation for the translation of $\triangle RST$ to $\triangle R'S'T'$?

   (x, y) → (_____ , _____)

3. Name vector $\vec{v}$ using component form. $\langle$____, ____$\rangle$

Use the figure below to answer Problems 4–5.



4. Triangle *J'K'L'* is the image of $\triangle JKL$ under a translation. Draw the translation vector $\vec{v}$ from a point to its image in $\triangle J'K'L'$. Write the vector in component form. $\langle$____, ____$\rangle$

5. Triangle *J'K'L'* is also the image of $\triangle DEF$ under a translation along a vector $\langle -6, 4 \rangle$. Find the coordinates of points *D, E,* and *F,* and draw $\triangle DEF$.

   D _____

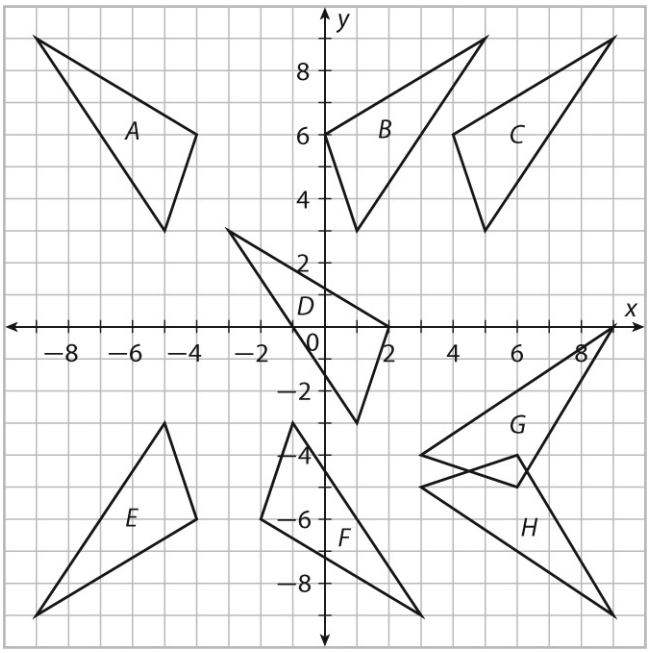
   E _____

   F _____

Name_____ Date _____ Class _____

Section 2.2 – Reflections

Study the figures on the grid and answer the questions.

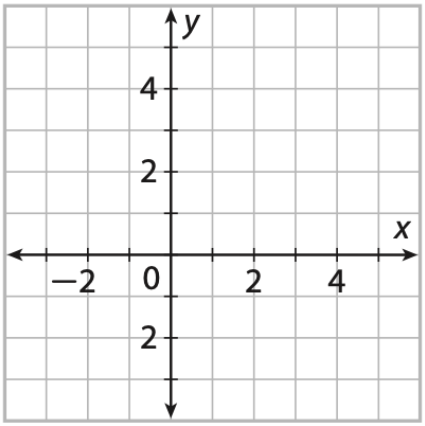


1. Which figure is the reflection of figure *A* over the *y*-axis? _____
2. Which two figures have $x = -3$ as their line of reflection? _____ and _____
3. Which figure is the reflection of figure *A* over the line $y = x$? _____
4. What is the equation of the line of reflection for figures *G* and *H*?

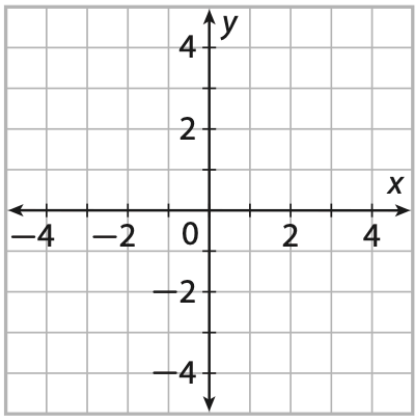
   y = _____
5. Which figures are **not** reflections of figure *A*? Name all. _____

Reflect the figure over the given line of reflection

6. $M(1, 2), N(1, 4), P(3, 3)$; y-axis



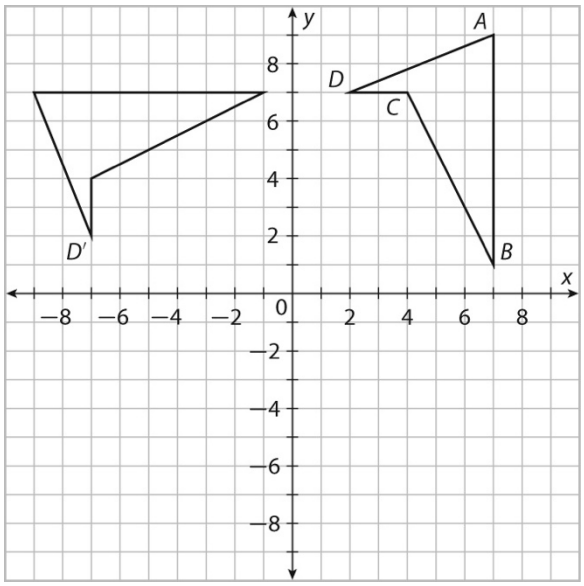
7. $S(3, 4), T(3, 1), U(-2, 1), V(-2, 4)$; x-axis



Name _____ Date _____ Class _____

Section 2.3 – Rotations

Follow the directions for Problems 1–2 to analyze rotations.



1. How many degrees was figure *ABCD* rotated to A'B'C'D'?

   _____ degrees counterclockwise

2. Write the coordinate notation rule

   (x, y) → (_____ , _____)

3. Find the coordinates of points on *ABCD* and corresponding points on its image. Label *A′, B′,* and *C′.*

   A(_____, _____) *A′*(_____, _____)

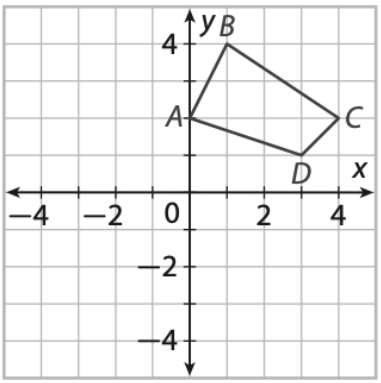
   B(_____, _____) *B′*(_____, _____)

   C(_____, _____) *C′*(_____, _____)

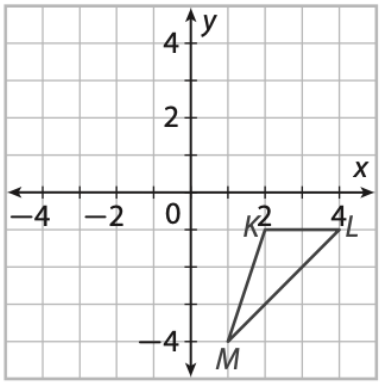
   D(_____, _____) *D′*(_____, _____)

Draw the image of the figure under the given rotation (counterclockwise).

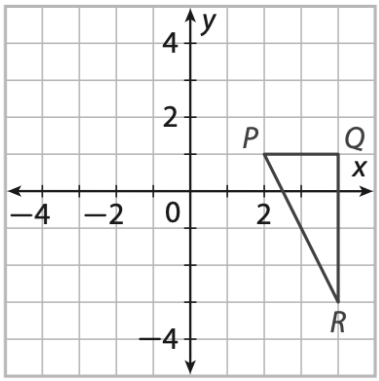
4. Quadrilateral *ABCD*; 270°



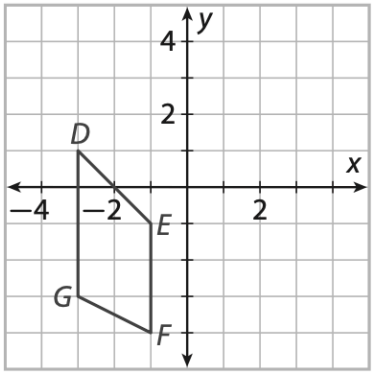
5. △*KLM*; 180°



6. △*PQR*; 90°



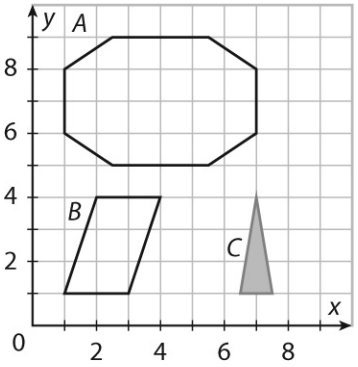
7. Quadrilateral *DEFG*; 270°



Name _____ Date _____ Class _____

Section 2.4 – Symmetry (Lines & Rotational)

Use the figures on the grid to answer Problems 1–3.



1. What are the equations of the lines of symmetry for figure *A*?

   x = _____ and y = _____

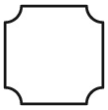
2. Does figure *B* have line symmetry, rotational symmetry, or both?

   _____

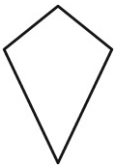
3. Does figure *C* have line symmetry, rotational symmetry, or both?

   _____

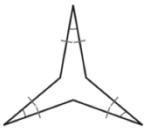
Tell whether each figure appears to have line symmetry, rotational symmetry, both, or neither. If line symmetry, tell how many lines of symmetry. If rotational symmetry, give the angle of rotational symmetry.

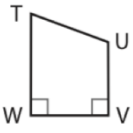
4.  _____ _____

5.  _____ _____

6.  _____ _____

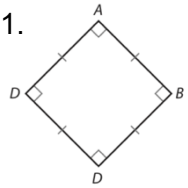
7.  _____ _____

8.  _____ _____

9. 

_____ _____

10.  _____ _____

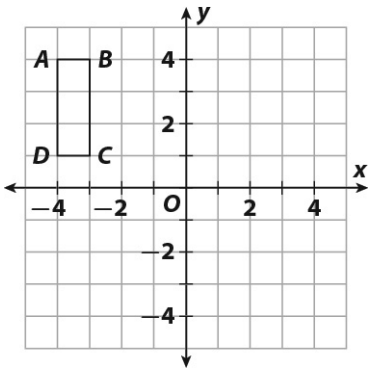
11. 

_____ _____

Name _____ Date _____ Class _____

Section 3.1 – Sequence of Transformations

1. **Rectangle *ABCD* is reflected across the *y*-axis, rotated 90° clockwise, and translated along the vector $\langle -6, 2 \rangle$. Plot each transformation.**



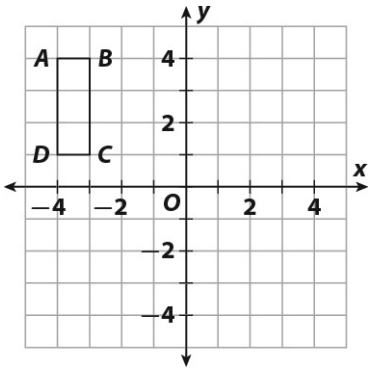
A (,) → A′ (,) → A″ (,) → A‴ (,)

B (,) → B′ (,) → B″ (,) → B‴ (,)

C (,) → C′ (,) → C″ (,) → C‴ (,)

D (,) → D′ (,) → D″ (,) → D‴ (,)

2. **Rectangle *ABCD* is translated along the vector $\langle 2, -1 \rangle$, rotated 180°, and reflected across the x-axis. Plot each transformation.**



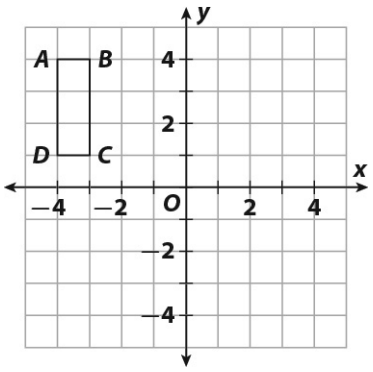
A (,) → A′ (,) → A″ (,) → A‴ (,)

B (,) → B′ (,) → B″ (,) → B‴ (,)

C (,) → C′ (,) → C″ (,) → C‴ (,)

D (,) → D′ (,) → D″ (,) → D‴ (,)

3. **Rectangle *ABCD* is rotated 90° counterclockwise, reflected across the y-axis, and translated along the vector $\langle 0, 6 \rangle$. Plot each transformation.**



A (,) → A′ (,) → A″ (,) → A‴ (,)

B (,) → B′ (,) → B″ (,) → B‴ (,)

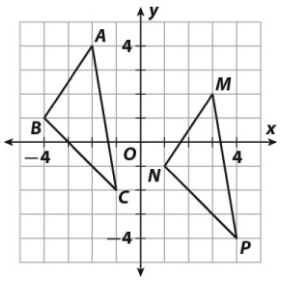
C (,) → C′ (,) → C″ (,) → C‴ (,)

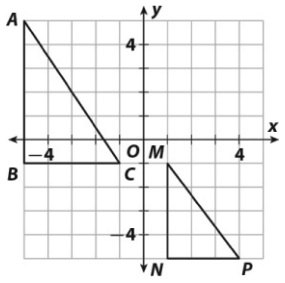
D (,) → D′ (,) → D″ (,) → D‴ (,)

Name _____ Date _____ Class _____

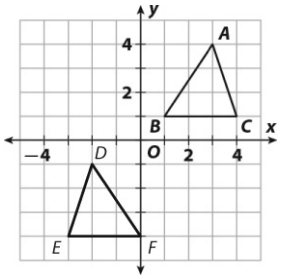
Section 3.2 – Proving Figures Congruent

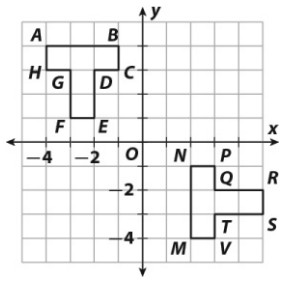
Determine whether $\triangle ABC$ and $\triangle MNP$ are congruent. If they are, specify a sequence of rigid motions that maps one figure onto the other.

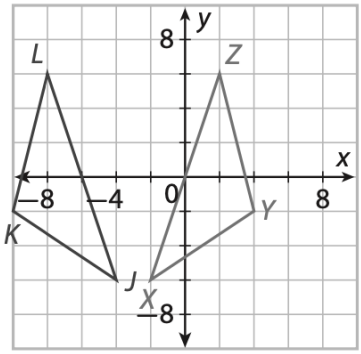
1. 

2. 

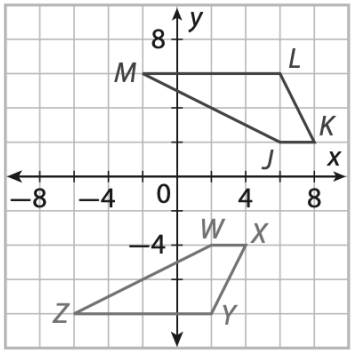
For each pair of congruent figures, specify a sequence of rigid motions that maps one figure onto the other.

3. 

4. 

5. 

6. $JKLM \cong WXYZ$



Name _____ Date _____ Class _____

Section 3.3 – Corresponding Parts of Congruent Figures

List all of the pairs of congruent angles and sides of the figures.

1. $\triangle KLM \cong \triangle GHI$

$\angle K \cong$ _____ KL $\cong$ _____

$\angle L \cong$ _____ LM $\cong$ _____

$\angle M \cong$ _____ KM $\cong$ _____

2. Rhombus *WXYZ* $\cong$ rhombus *DEFG*

$\angle W \cong$ _____ _____ $\cong$ DE

_____ $\cong \angle E$ XY $\cong$ _____

_____ $\cong \angle F$ _____ $\cong$ FG

$\angle Z \cong$ _____ WZ $\cong$ _____

Quadrilateral *ABCD* $\cong$ quadrilateral *EFGH*. Find the value of the indicated variable. Use the diagrams provided below.

3. Find the value of *w*.

_____

4. Find the value of *x*.

_____

5. Find the value of *y*.

_____

6. Find the value of *z*.

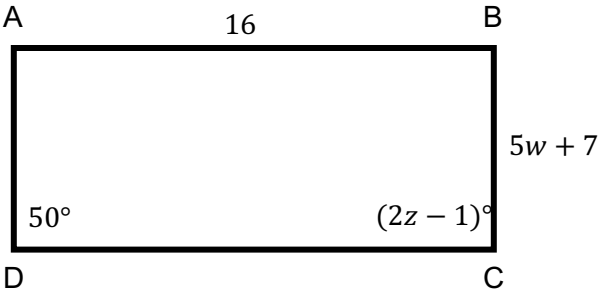
_____

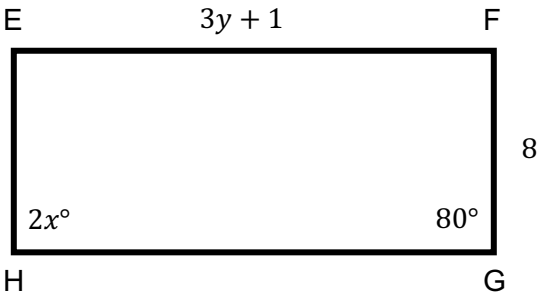
7. What is the length of EF.

_____

8. What is the measure of $\angle C$.

_____





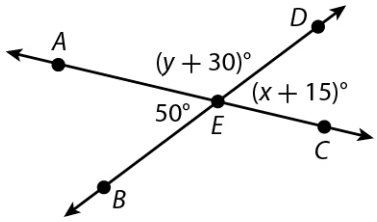
Name _____ Date _____ Class _____

Section 4.1 – Angles Formed by Intersecting Lines

1. The sum of the angle measures for a linear pair is: _____

2. Vertical angles are: _____

Use the figures for Problems 3–8.



3. supplement of $\angle AEB$ = _____

4. complement of $\angle AEB$ = _____

5. x = _____

6. y = _____

7. m$\angle DEC$ = _____

8. m$\angle AED$ = _____

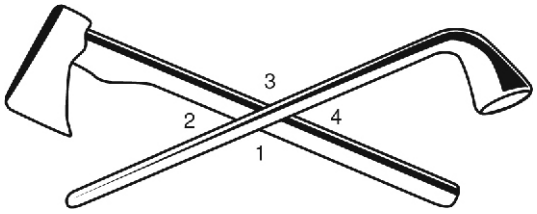
9. $\angle DEF$ and $\angle FEG$ are complementary. m$\angle DEF = (3x - 4)°$, and m$\angle FEG = (5x + 6)°$.

   x = _____ ∠DEF = _____ ∠FEG =_____

10. $\angle DEF$ and $\angle FEG$ are supplementary. m$\angle DEF = (9x + 1)°$, and m$\angle FEG = (8x + 9)°$.

    x = _____ ∠DEF = _____ ∠FEG =_____

Use the figure for Problems 11 and 12.



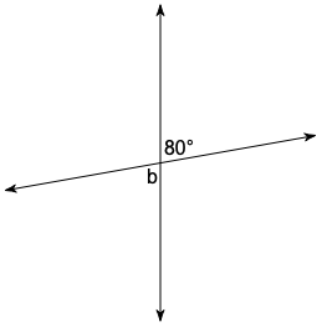
11. Name a pair of vertical angles.

    _____

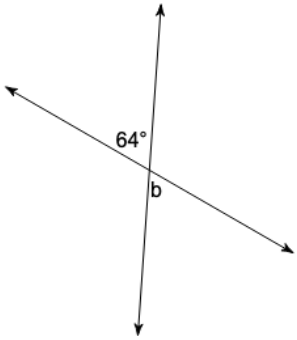
12. Name a linear pair of angles.

    _____

13. What is the value of b?



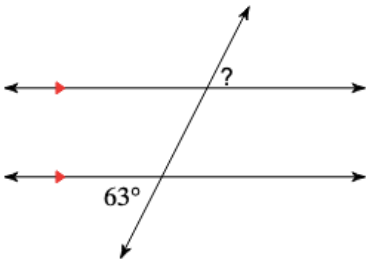
14. What is the value of b?



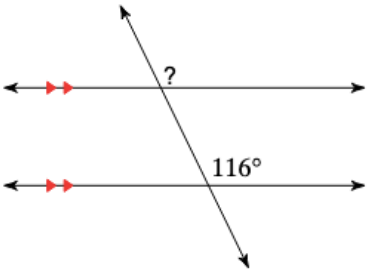
Name _____ Date _____ Class _____

Section 4.2 – Transversals & Parallel Lines

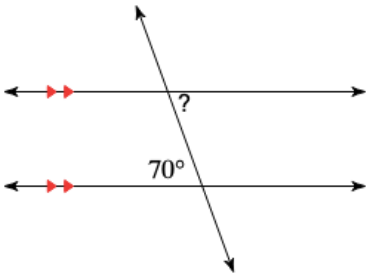
Find each angle measure and state the angle relationship (Alternate Interior, Alternate Exterior, Corresponding, Same Side Interior).



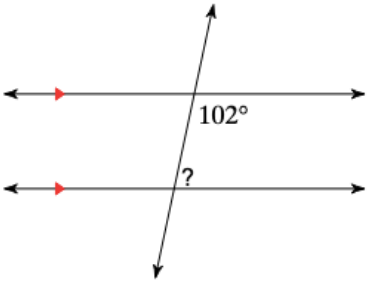
1. _____



2. _____

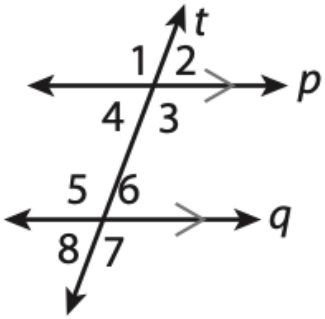


3. _____



4. _____

For questions 5 & 6, use the diagram below.



5. List all the angles congruent to ∠5: _____

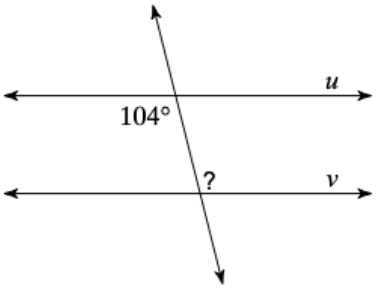
6. List all the angles congruent to ∠4: _____

Name_____ Date _____ Class _____

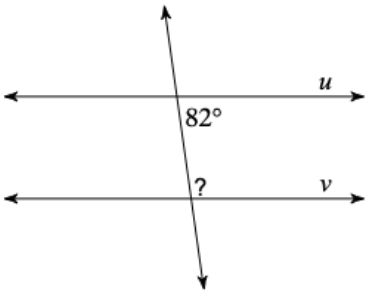
Section 4.3 – Proving Lines Parallel

Find the angle measure that makes the lines parallel. State the converse that proves lines parallel.

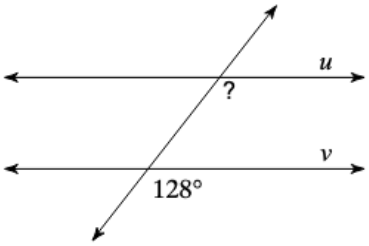
1.



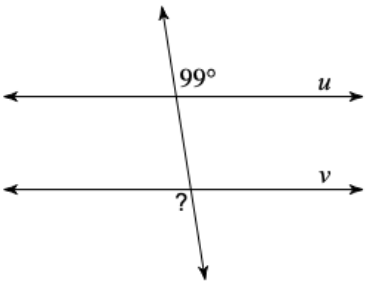
2.



3.

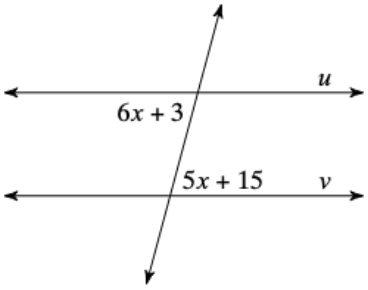


4.

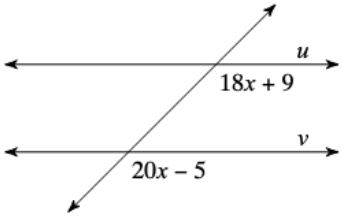


Find the value of x that makes the lines parallel. State the converse that proves the lines parallel.

5.



6.

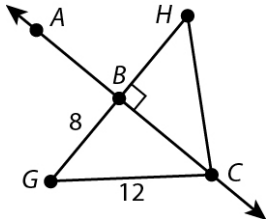


Name _____ Date _____ Class _____

Section 4.4 – Perpendicular Lines

For Problems 1–5, determine the unknown values.

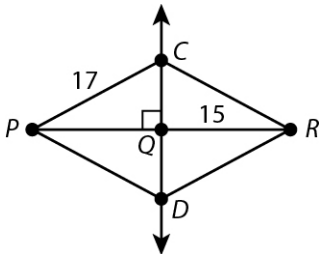
1. Given: $\overleftrightarrow{AC}$ is the perpendicular bisector of $\overline{GH}$.



$GH =$ _____

$CH =$ _____

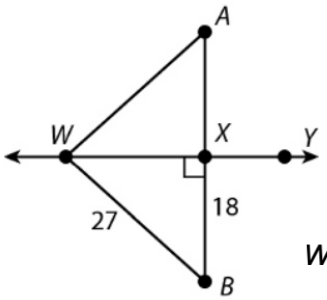
2. Given: $\overleftrightarrow{CD}$ is the perpendicular bisector of $\overline{PR}$.



$CR =$ _____

$PQ =$ _____

3. Given: $\overleftrightarrow{WY}$ is the perpendicular bisector of $\overline{AB}$.

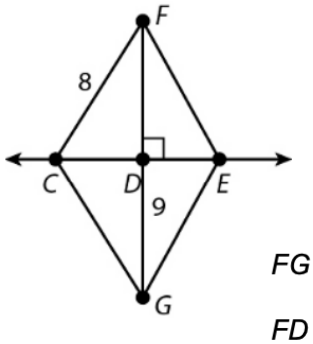


$WA =$ _____

$AX =$ _____

$AB =$ _____

4. Given: $\overleftrightarrow{CE}$ is the perpendicular bisector of $\overline{FG}$.



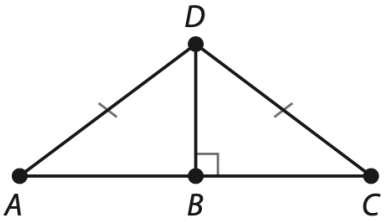
$FG =$ _____

$FD =$ _____

$CG =$ _____

Use the Converse of the Perpendicular Bisector Theorem and the Pythagorean Theorem.

5. $\overline{AD}$ is 10 inches long. $\overline{BD}$ is 6 inches long. Find the length of $\overline{AC}$.



Name _____ Date _____ Class _____

Section 4.5 – Equations of Parallel & Perpendicular Lines

POINT–SLOPE FORM: $y - y_1 = m(x - x_1)$

\Write an equation parallel to the given line through the given point.

1. parallel to $y = 9x + 4$
   through (2, 7)

2. parallel to $y = 4x - 6$
   through (6, –3)

3. parallel to $y = \frac{2}{3}x + 6$
   through (–3, 6)

4. parallel to $y = -\frac{1}{4}x - 12$
   through (12, 10)

Write an equation perpendicular to the given line through the given point.

5. perpendicular to $y = \frac{1}{4}x + 3$
   through (4, 1)

6. perpendicular to $y = -\frac{1}{3}x - 6$
   through (–2, 8)

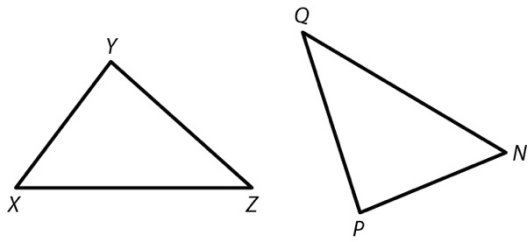
7. perpendicular to $y = -6x - 9$
   through (6, 10)

8. perpendicular to $y = 5x + 14$
   through (5, –3)

Name _____ Date _____ Class _____

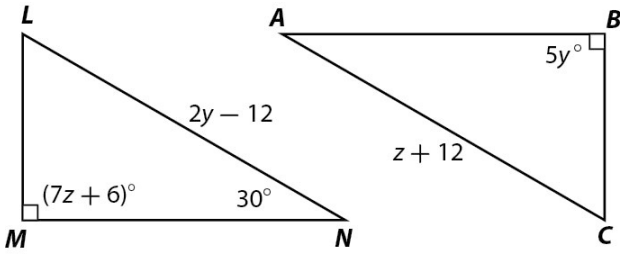
Section 5.1 – Exploring Triangle Congruency

$\triangle XYZ \cong \triangle NPQ$. Identify the congruent corresponding parts.



1. $\angle Z \cong$ _____
2. $\overline{YZ} \cong$ _____
3. $\angle P \cong$ _____
4. $\angle X \cong$ _____
5. $\overline{NQ} \cong$ _____
6. $\overline{PN} \cong$ _____

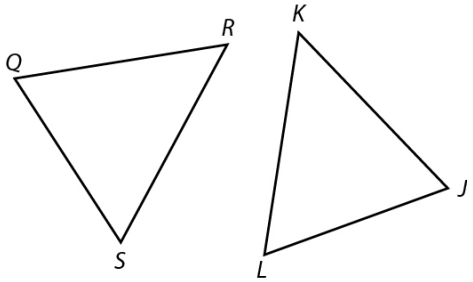
$\triangle LMN \cong \triangle CBA$. Find each value.



7. $z =$ _____
8. $y =$ _____
9. $m\angle L =$ _____
10. $LN =$ _____
11. $m\angle C =$ _____
12. $AC =$ _____

$\triangle QRS \cong \triangle JKL$.

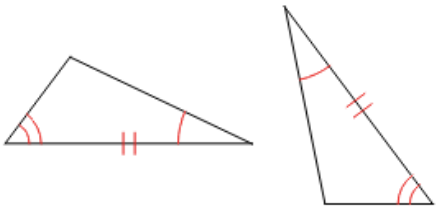
13. Mark all the congruent corresponding parts of the two triangles.

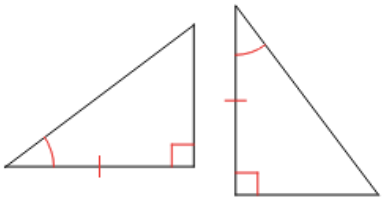


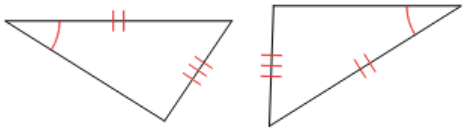
Name _____ Date _____ Class _____

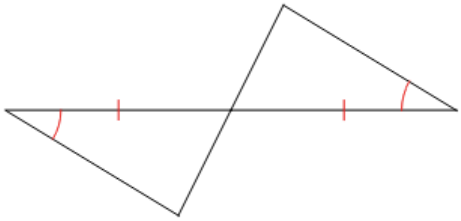
Section 5.2 – ASA Triangle Congruence

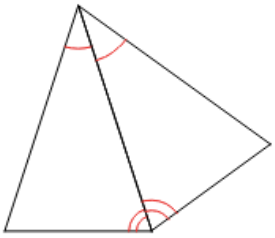
Are the two triangles congruent? If so, what statement proves them congruent. (ASA)

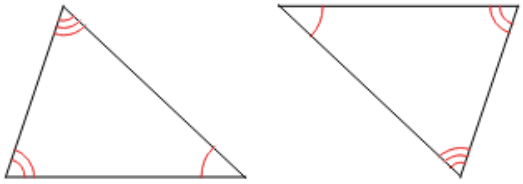
1. 

2. 

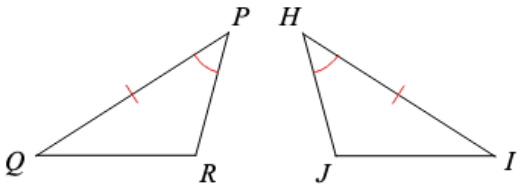
3. 

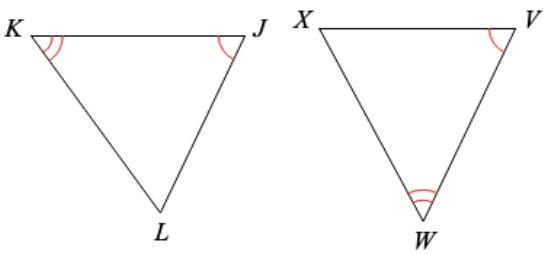
4. 

5. 

6. 

What additional information is needed to prove the two triangles congruent by ASA.

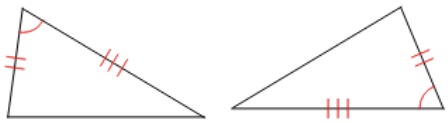
7. 

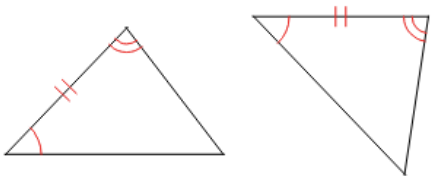
8. 

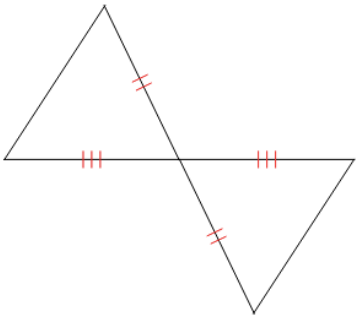
Name _____ Date _____ Class _____

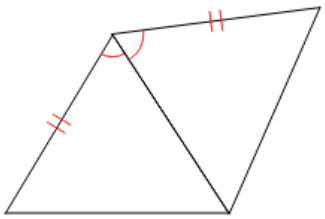
Section 5.3 – SAS Triangle Congruence

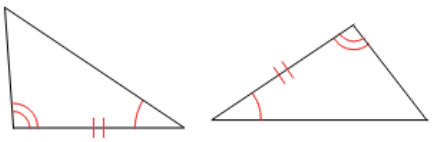
Are the two triangles congruent? If so, what statement proves them congruent. (ASA or SAS)

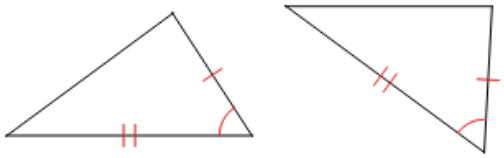
1. 

2. 

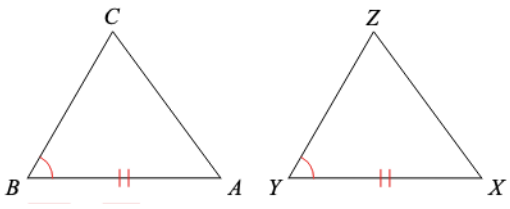
3. 

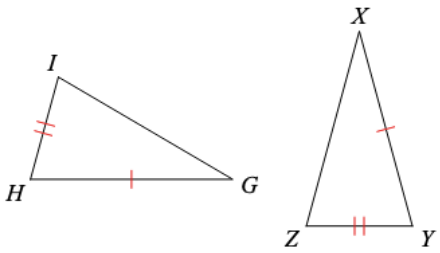
4. 

5. 

6. 

What additional information is needed to prove the two triangles congruent by SAS.

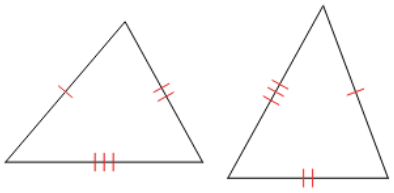
7. 

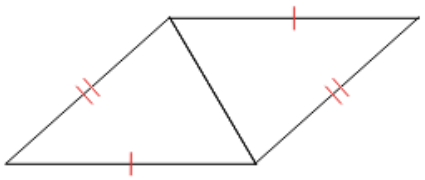
8. 

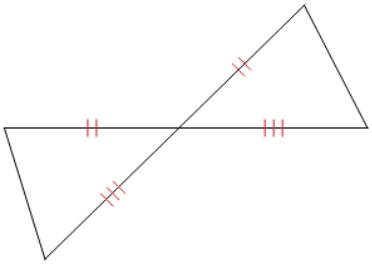
Name _____ Date _____ Class _____

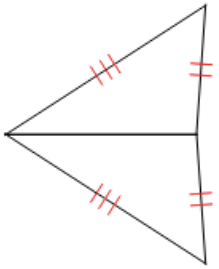
Section 5.4 – SSS Triangle Congruence

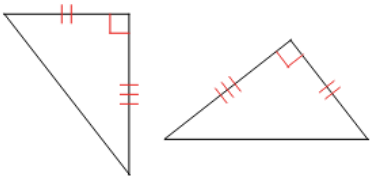
Are the two triangles congruent? If so, what statement proves them congruent. (ASA or SAS or SSS)

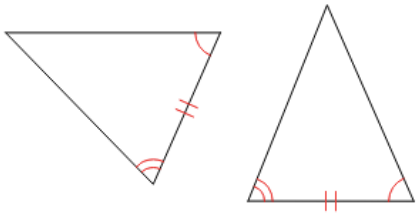
1. 

2. 

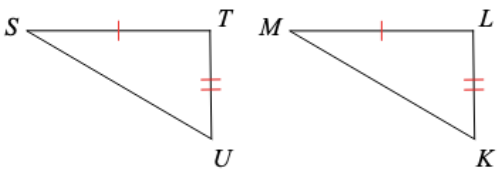
3. 

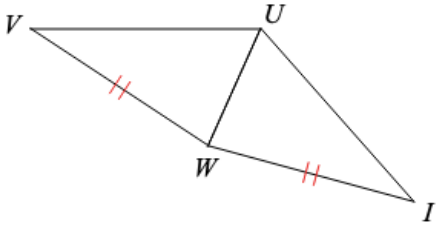
4. 

5. 

6. 

What additional information is needed to prove the two triangles congruent by SSS.

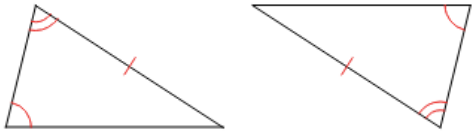
7. 

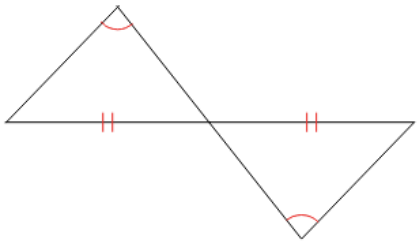
8. 

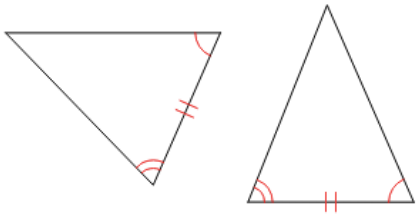
Name _____ Date _____ Class _____

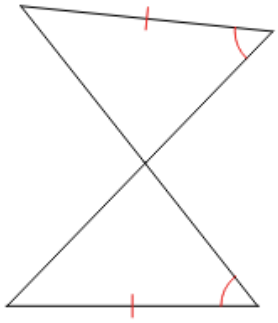
Section 6.2 – AAS Triangle Congruence

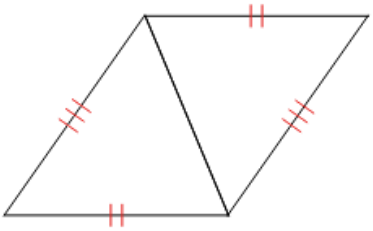
Are the two triangles congruent? If so, what statement proves them congruent. (ASA or SAS or SSS or AAS)

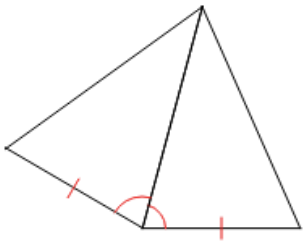
1. 

2. 

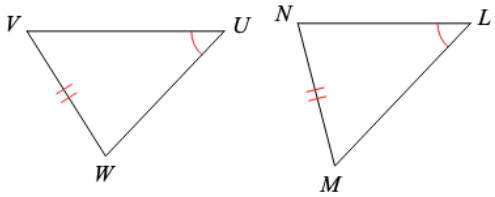
3. 

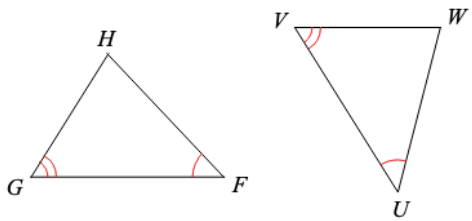
4. 

5. 

6. 

What additional information is needed to prove the two triangles congruent by AAS.

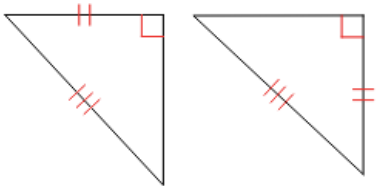
7. 

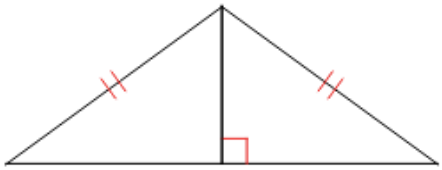
8. 

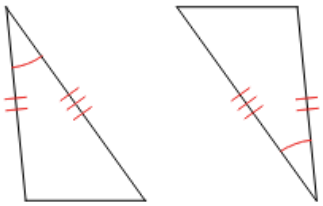
Name _____ Date _____ Class _____

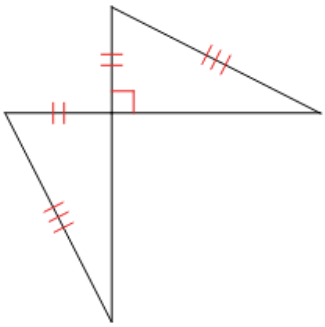
Section 6.3 – HL Triangle Congruence

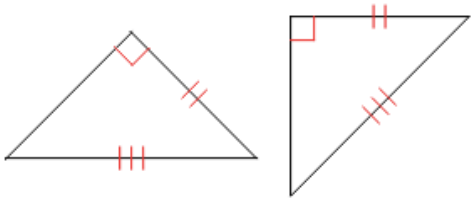
Are the two triangles congruent? If so, what statement proves them congruent. (ASA or SAS or SSS or AAS or HL)

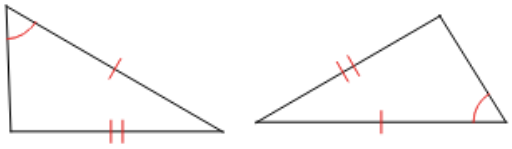
1. 

2. 

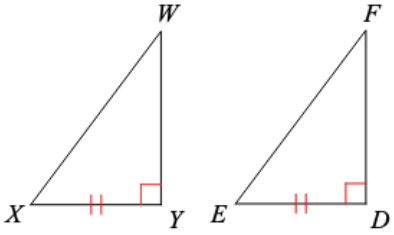
3. 

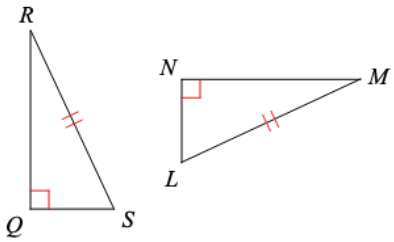
4. 

5. 

6. 

What additional information is needed to prove the two triangles congruent by HL.

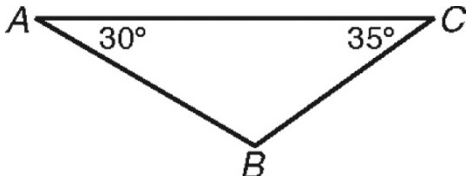
7. 

8. 

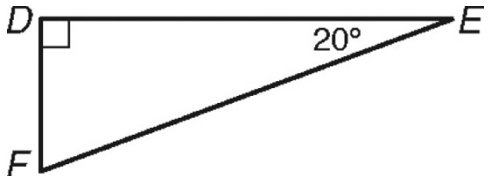
Name _____ Date _____ Class _____

Section 7.1 – Interior and Exterior Angles

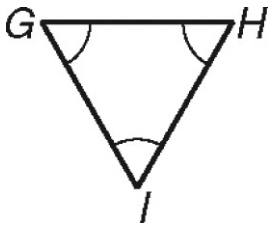
Find the measure of each angle.

1. 

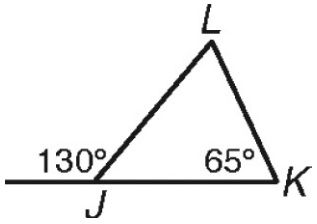
m∠*B* = _____°

2. 

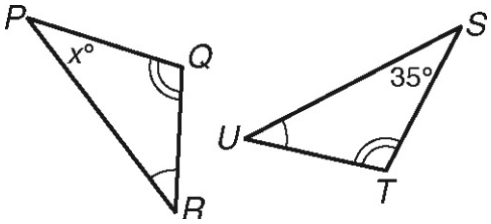
m∠*F* = _____°

3. 

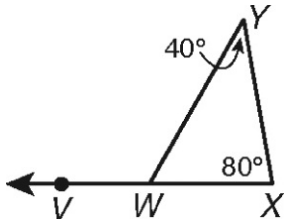
m∠*G* = _____°

4. 

m∠*L* = _____°

5. 

m∠*P* = _____°

6. 

m∠*VWY* = _____°

Use your knowledge of angle relationships to answer questions 7–11
Interior Angle Sum Theorem: (n – 2)180

7. The sum of the angle measures of a quadrilateral is _____°.

8. The sum of the angle measures of a heptagon is _____°.

9. The sum of the angle measures of a 13-gon is _____°.

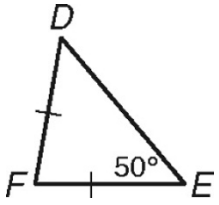
10. A polygon has an interior angle sum of 1260° The polygon has _____ sides.

11. A polygon has an interior angle sum of 720 ° The polygon has _____ sides

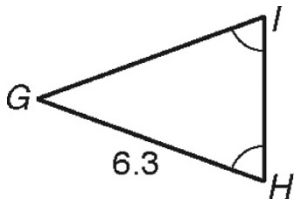
Name _____ Date _____ Class _____

Section 7.2 – Isosceles and Equilateral Triangles

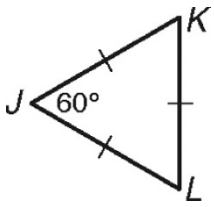
For Problems 1–6, find each value.

1. 

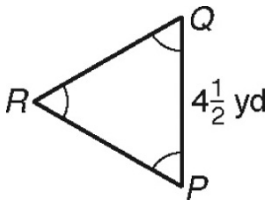
m∠D = _____°

2. 

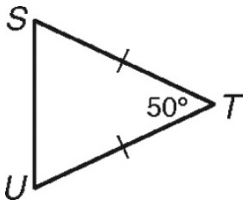
GI = _____

3. 

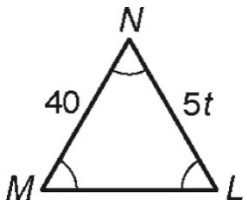
m∠L = _____°

4. 

RQ = _____

5. 

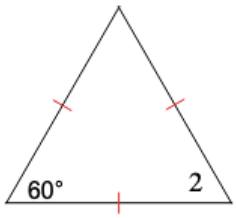
m∠U = _____°

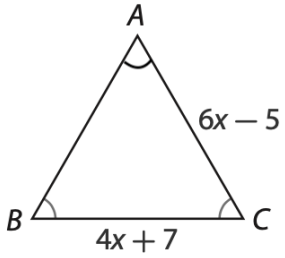
6. 

t = _____

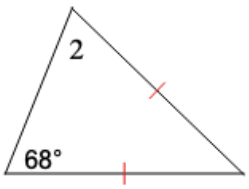
Find the value of x.

7. $m\angle 2 = 5x + 5$



8. 

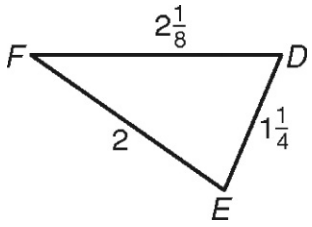
9. $m\angle 2 = 6x + 8$



Name _____ Date _____ Class _____

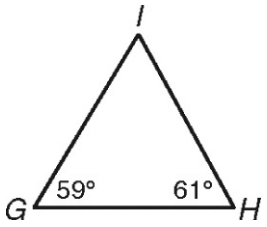
Section 7.3 – Triangle Inequalities

1. Write the angles of $\triangle DEF$ in order from **smallest to largest**.



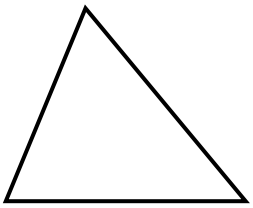
$\angle$ _____ $\angle$ _____ $\angle$ _____

2. Write the sides of $\triangle GHI$ in order from **longest to shortest**.



_____ _____ _____

3. The sides of triangle *XYZ* are given in order below from **longest to shortest**. Name the angles from largest to smallest. (Hint: Use the triangle to the right to help you solve)



$\overline{XZ}$ $\overline{ZY}$ $\overline{YX}$

$\angle$ _____ $\angle$ _____ $\angle$ _____

Use your knowledge of triangle inequalities to solve Problems 4–8.

4. Can three segments with lengths 8, 15, and 6 make a triangle? _____

5. Can three segments with lengths 3, 5, and 8 make a triangle? _____

6. Can three segments with lengths 7, 6, and 14 make a triangle? _____

6. Can three segments with lengths 7, 9, and 13 make a triangle? _____

7. A triangle has the side lengths of 7 and 13. What is the range of possible side lengths? _____ < x < _____

8. A triangle has the side lengths of 17 and 29. What is the range of possible side lengths? _____ < x < _____

Name _____ Date _____ Class _____

Section 8.4 – Midsegments of a Triangle

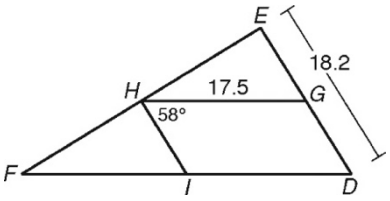
Use the figure for Problems 1–6. Find each measure.

1. *HI* _____

2. *DF* _____

3. *GE* _____

4. m∠*HIF* _____

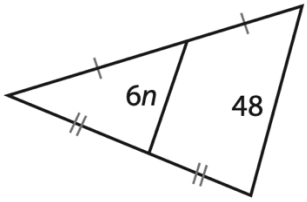


5. m∠*HGD* _____

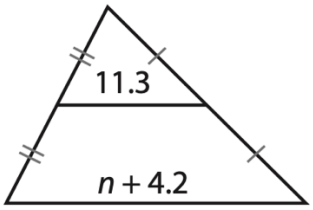
6. m∠*D* _____

For Problems 7–9, find the value of n.

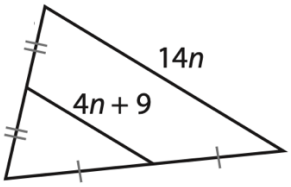
7.



8.

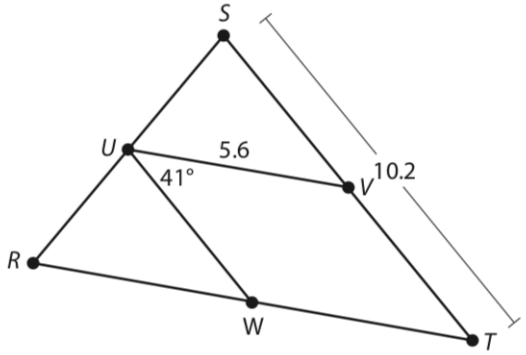


9.



n = _____ n = _____ n = _____

Find each measure for 10-12



10. **UW**

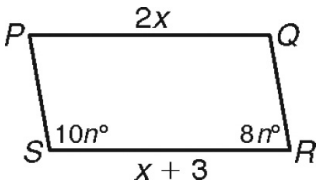
11. $\angle SVU$

12. **RT**

Name _____ Date _____ Class _____

Section 9.1 – Properties of Parallelograms

***PQRS* is a parallelogram. Find each measure.**

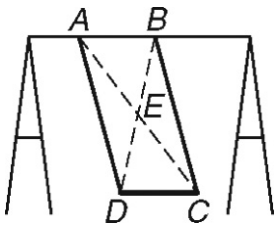


1. *RS* _____

2. m∠*S* _____

3. m∠*R* _____

The figure shows a swing blown to one side by a breeze. As long as the seat of the swing is parallel to the top bar, the swing makes a parallelogram. In ▱ *ABCD*, *DC* = 2 ft, *BE* = 4.5 ft, and m∠*BAD* = 75°. Find each measure.



4. *AB* _____

5. *ED* _____

6. *BD* _____

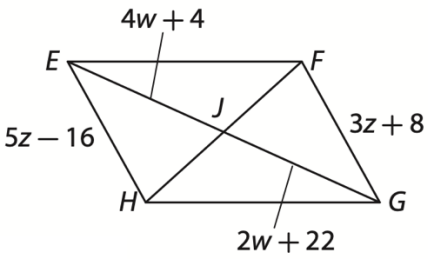
7. m∠*ABC* _____

8. m∠*BCD* _____

9. m∠*ADC* _____

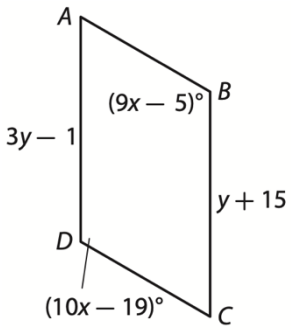
Find the value of each variable.

10.



w = _____ z = _____

11.



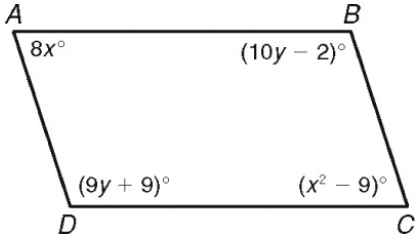
x = _____ y = _____

Name _____ Date _____ Class _____

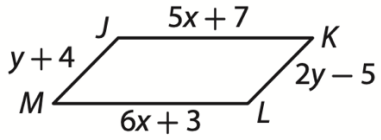
Section 9.2 – Conditions for Parallelograms

Determine whether each figure is a parallelogram for the given values of the variables. Explain your answers.

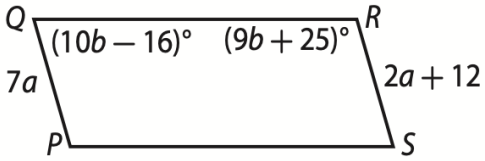
1. $x = 9$ and $y = 11$



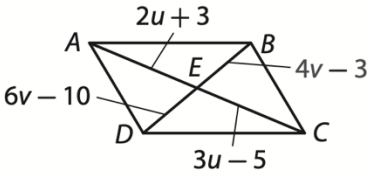
2. $x = 4$ and $y = 9$



3. $a = 2.4$ and $b = 9$



4. $u = 8$ and $v = 3.5$



5. What are the conditions (5) for a quadrilateral to be a parallelogram.

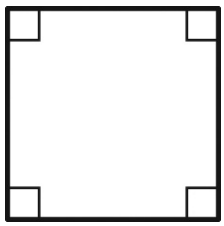
_____

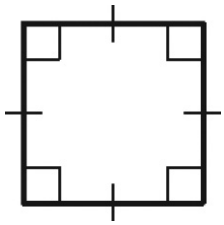
_____

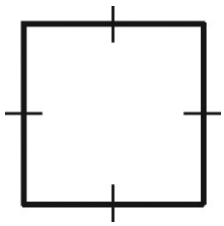
Name _____ Date _____ Class _____

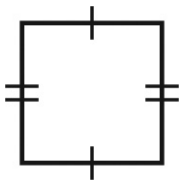
Section 9.3 – Properties of Rectangles, Rhombuses, and Squares

Tell whether each figure is a parallelogram, rectangle, rhombus, or square based on the information given. Use the most specific name possible.

1. 

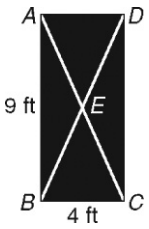
2. 

3. 

4. 

_____ _____ _____ _____

A modern artist's sculpture has rectangular faces. The face shown here is 9 feet long and 4 feet wide. Find each measure in simplest radical form. (*Hint:* Use the Pythagorean Theorem.)



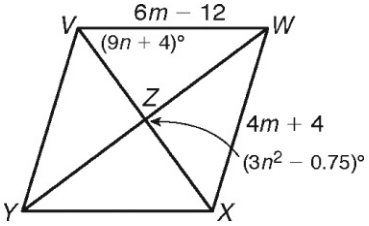
5. $DC =$ _____

6. $AD =$ _____

7. $DB =$ _____

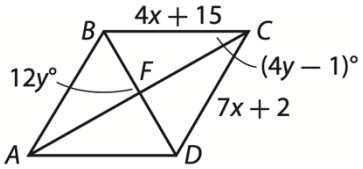
8. $AE =$ _____

***VWXY* is a rhombus. Find the value of the variable.**



9.) m = _____ n = _____

***ABCD* is a rhombus. Find each measure.**



10.) x = _____ y = _____

Name _____ Date _____ Class _____

Section 9.4 – Conditions of Rectangles, Rhombuses, and Squares

1. What are the conditions (2) for a parallelogram to be a rectangle.

_____

_____

2. What are the conditions (3) for a parallelogram to be a rhombus.

_____

_____

Fill in the blanks to complete each theorem.

4. If one pair of consecutive sides of a parallelogram are congruent, then the parallelogram is a _____.

5. If the diagonals of a parallelogram are _____, then the parallelogram is a rhombus.

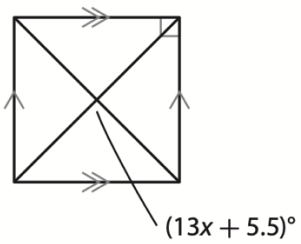
6. If the _____ of a parallelogram are congruent, then the parallelogram is a rectangle.

7. If one diagonal of a parallelogram bisects a pair of opposite angles, then the parallelogram is a _____.

8. If one angle of a parallelogram is a right angle, then the parallelogram is a _____.

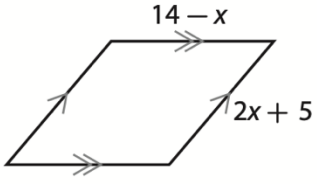
Find the value of x that makes each parallelogram the given type.

9. square



x = _____

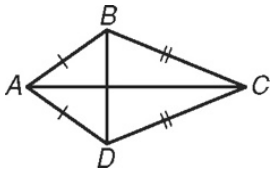
10. rhombus



x = _____

Name _____ Date _____ Class _____

Section 9.5 – Properties & Conditions for Kites and Trapezoids



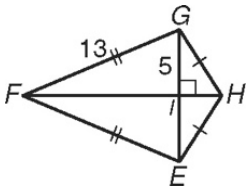
In kite *ABCD*, m∠*BAC* = 35° and m∠*BCD* = 44°.

1. m∠*ABD* _____

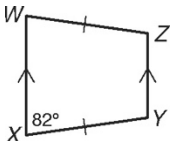
2. m∠*DCA* _____

3. m∠*ABC* _____

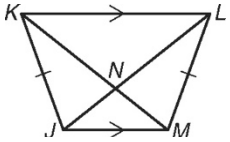
4. Find FI _____



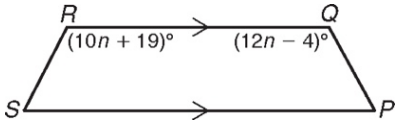
5. Find m∠*Z*.



6. *KM* = 7.5 and *NM* = 2.6. Find *LN*.

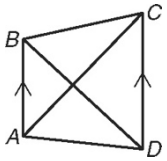


7. Find the value of *n* so that *PQRS* is isosceles.



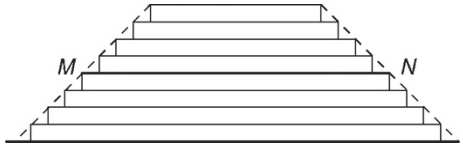
_____

9. *BD* = 7*a* − 0.5 and *AC* = 5*a* + 2.3. Find the value of *a* so that *ABCD* is isosceles.



_____

A ziggurat is a stepped, flat-topped pyramid that was used as a temple by ancient peoples of Mesopotamia.



11. The bottom is 27.3 meters long, and the top is 11.6 meters long. Find *MN*. MN is the midsegment of the trapezoid.

_____

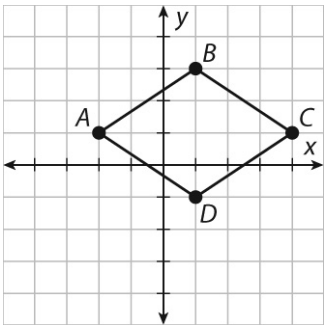
Name _____ Date _____ Class _____

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Section 10.1 – Slopes and Parallel Lines

Prove that *ABCD* is a parallelogram.

1. *ABCD* is a parallelogram if AB || _____ and AD || _____.



2. Names the coordinates of *A, B, C,* and *D*.

   A _____ *B* _____ *C* _____ *D* _____

3. Find the slope of $\overline{AB}$. _____

4. Find the slope of $\overline{BC}$. _____

5. Find the slope of $\overline{CD}$. _____

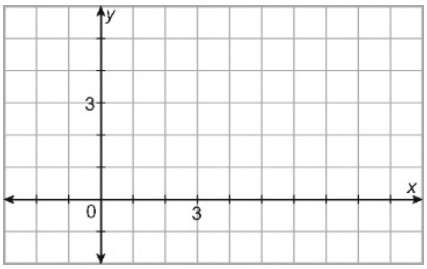
6. Find the slope of $\overline{DA}$. _____

7. Do you have enough information to prove that *ABCD* is a parallelogram? Why or why not?

   _____

Find the missing coordinate point that forms a parallelogram. Three vertices of ▱ *GHIJ* are *G*(0, 0), *H*(2, 3), and *J*(6, 1). Use the grid to the right to complete Problems 8–13.

Plot vertices *G*, *H*, and *J* on the coordinate plane.



8. Find the rise (difference in the *y*-coordinates) from *G* to *H*. _____

9. Find the run (difference in the *x*-coordinates) from *G* to *H*. _____

10. Using your answers from Problems 8 and 9, add the rise to the *y*-coordinate of vertex *J* and add the run to the *x*-coordinate of vertex *J*.

    The coordinates of vertex *I* are (_____, _____).

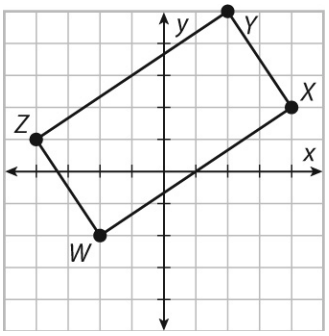
11. Plot vertex *I*. Connect the points to draw ▱ *GHIJ*.

Name _____ Date _____ Class _____

Section 10.2 – Slope and Perpendicular Lines

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Prove that $\square WXYZ$ is a rectangle.



1. Name the coordinates of *W*, *X*, *Y*, and *Z*.

   W _____ *X* _____ *Y* _____ *Z* _____

2. Calculate the slopes of each side of the parallelogram.

   $\overline{WX}$ = _____ $\overline{XY}$ = _____

   $\overline{YZ}$ = _____ $\overline{ZW}$ = _____

3. Find the products of the slopes of these segments:

   $\overline{WX}$ and $\overline{XY}$ = _____ $\overline{XY}$ and $\overline{YZ}$ = _____

   $\overline{YZ}$ and $\overline{ZW}$ = _____ $\overline{ZW}$ and $\overline{WX}$ = _____

4. Is *WXYZ* a rectangle? Why or why not?

   _____

Figure *WXYZ* has as its vertices the points *W*(2, 7), *X*(5, 6), *Y*(5, –4), and *Z*(–1, –2).

Find each slope.

6. $\overline{WX}$ $\overline{XY}$ $\overline{YZ}$ $\overline{ZW}$

   _____ _____ _____ _____

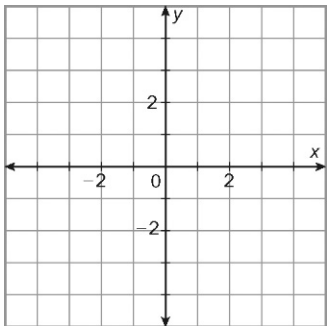
7. Is Figure *WXYZ* a rectangle? Explain your reasoning.

   _____

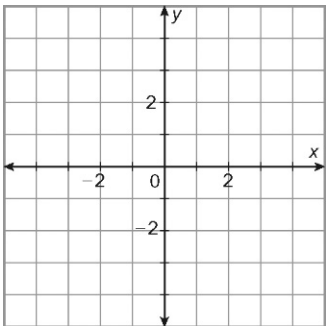
Section 10.5 – Area in the Coordinate Plane

Find the area of the polygon to the nearest tenth.

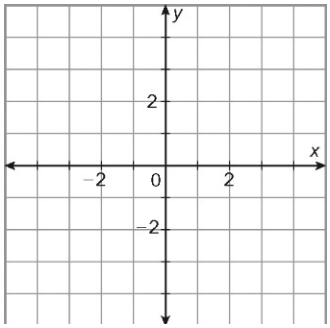
1. $E(-4, 1)$, $F(-2, 3)$, $G(-2, -4)$



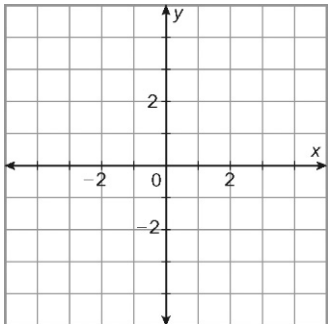
2. $T(-2, 2)$, $U(3, 2)$, $V(1, -1)$, $W(-4, -1)$



3. $A(-2, 3)$, $B(3, 1)$, $C(-2, -1)$, $D(-3, 1)$

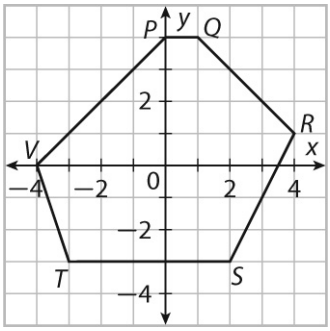


4. $P(-1, -3)$, $Q(5, -3)$, $R(5, 1)$, $S(3, 3)$, T$(-1, 1)$



Find the area of each composite figure to the nearest tenth.

5. Subtraction



6. Addition