

Show all your work. Box or circle your final answer when an answer line is not provided. When appropriate, write your answers in simplest radical form, as a simplified improper fraction, AND as a decimal rounded to the nearest hundredths place. REMEMBER UNITS!

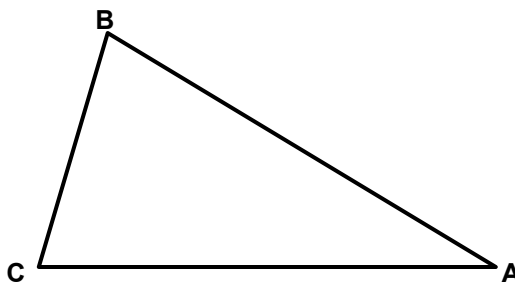
MOD 9

1. The centroid of a triangle is a point where the _____ intersect.
 - A) medians
 - B) perpendicular bisectors
 - C) angle bisectors
 - D) midpoints

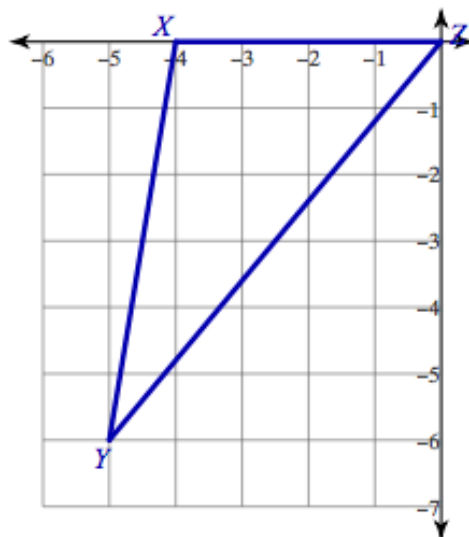
2. The circumcenter of a triangle is a point where the _____ intersect.
 - A) medians
 - B) perpendicular bisectors
 - C) angle bisectors
 - D) midpoints

3. The incenter of a triangle is a point where the _____ intersect.
 - A) medians
 - B) perpendicular bisectors
 - C) angle bisectors
 - D) midpoints

4. Construct the circumcenter for $\triangle ABC$.



5. In the grid to the right, draw a median of $\triangle XYZ$ from X and label the intersection with the opposite side R. Then answer the questions below.



- a. What is the area of $\triangle XYR$? $\triangle XZR$? $\triangle XYZ$?

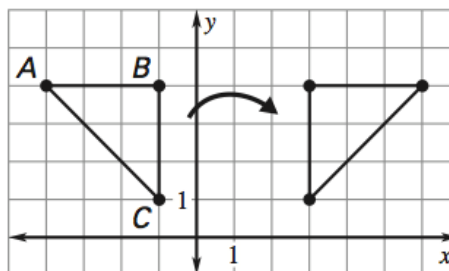
- b. Draw another median in the triangle and determine the coordinates of the centroid.

Centroid: (_____, _____)

MOD 10

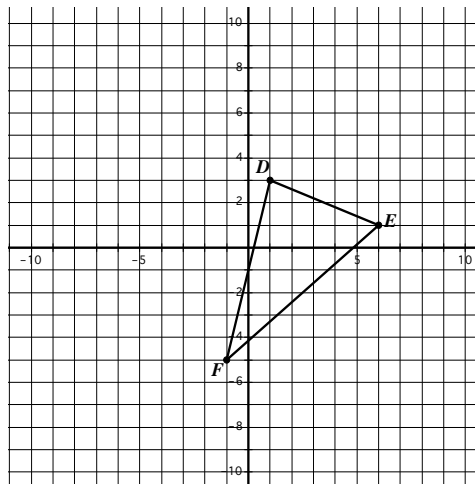
6. Name the type of transformation and the coordinates corresponding to Point A'.

- A) Reflection over $x = 0$; (3, 4)
- B) Rotation about (1,0); (6, 4)
- C) Reflection over $x = 1$; (6, 4)
- D) Translation right 10 units; (6, 4)



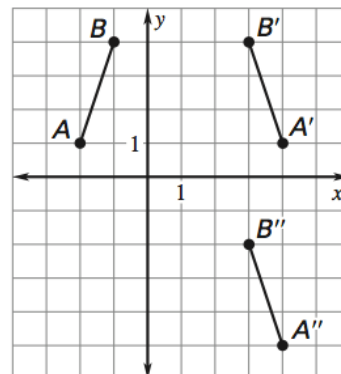
7. Triangle DEF is rotated 90° counter clockwise about the origin. Identify the correct coordinates of the image. (Choose all that apply).

- A) D' (-3, 1)
- B) F' (-5, 1)
- C) E' (-1, 6)
- D) D' (1, 3)



8. Which composition of rigid motion transformations was used to obtain A''B'' in the diagram below? (Choose all that apply).

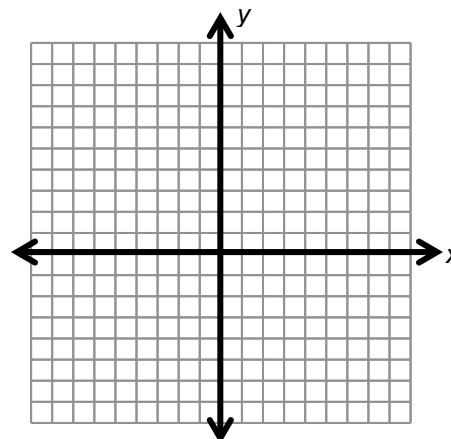
- A) Reflection over x-axis, then a vertical translation
- B) Reflection over $x = 1$, then a vertical translation
- C) Reflection over $y = 1$, then a horizontal translation
- D) Vertical translation, then a reflection over $x = 1$.



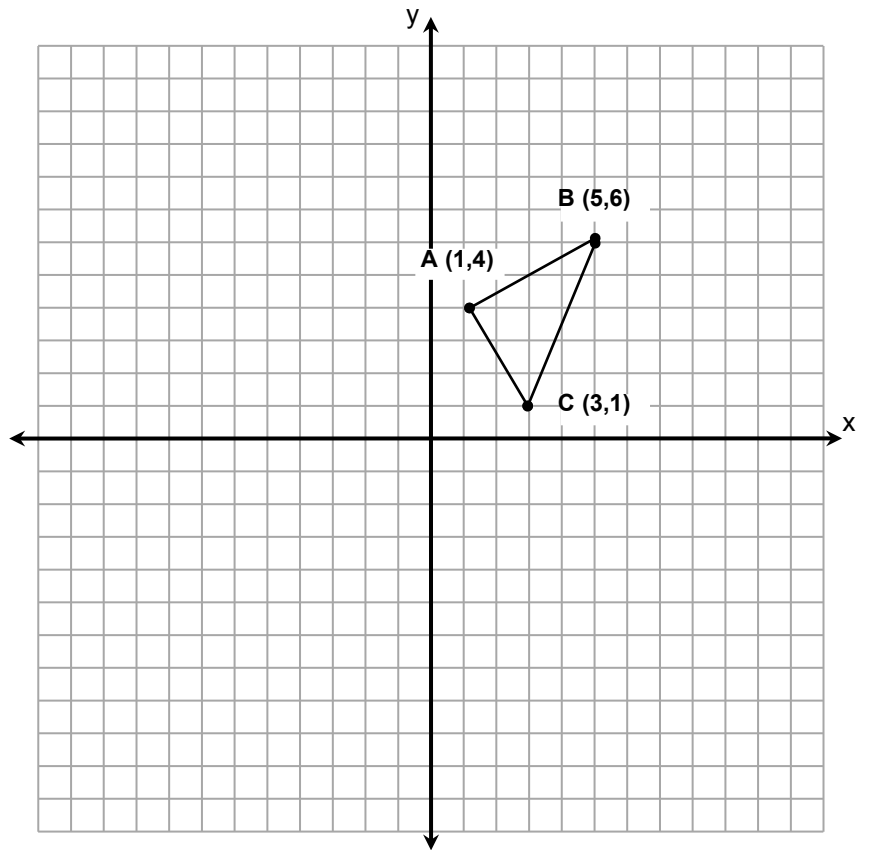
9. Using the composition below, what are the coordinates of the image of \overline{CD} if C(-2, 3) and D(3, 4)? If needed, use the grid to the right.

Rotate 90° clockwise about the origin, then reflect over $x = 1$

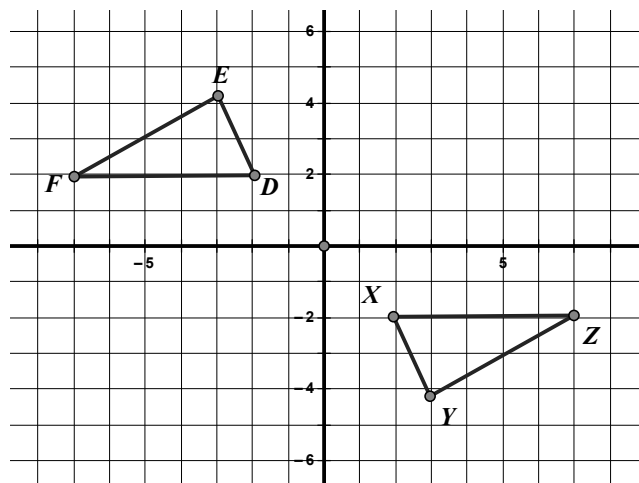
- A) C'(1, 2), D'(2, 3)
- B) C'(-5, -2), D'(-6, 3)
- C) C'(-1, 2), D'(-2, -3)
- D) C'(-1, 2), D'(2, 3)



10. In the coordinate plane below,
- Draw and label $\triangle A'B'C'$, which is a reflection of $\triangle ABC$ over $x = -3$.
 - Draw and label $\triangle DIG$, which is a translation of $\triangle ABC$ $T(x, y) = (x + 6, y + 2)$, followed by a 90° counterclockwise rotation about the origin.



11. Define 2 different rigid motion transformations that could be performed to show $\triangle DEF \cong \triangle XYZ$.



MOD 11

12. Translate rectangle CDEF such that $T(x, y) = (x - 2, y + 1)$, then dilate about point C', using a scale factor of 3 to create rectangle LMNO such that $CDEF \sim LMNO$.

a. Determine the perimeter of CDEF and LMNO.

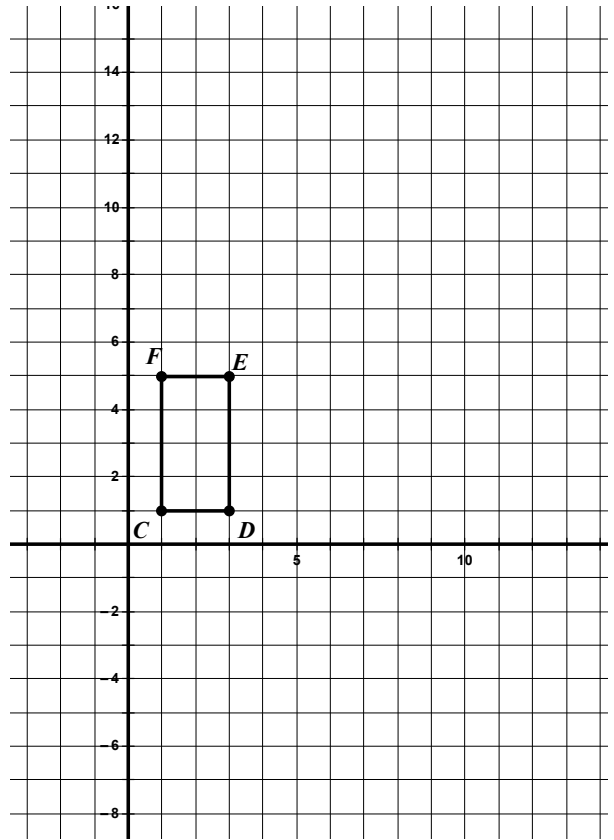
$P_{CDEF} =$

$P_{LMNO} =$

b. Determine the area of CDEF and LMNO.

$A_{CDEF} =$

$A_{LMNO} =$



c. Draw the similarity transformation described above in the grid to the right.

MOD 12

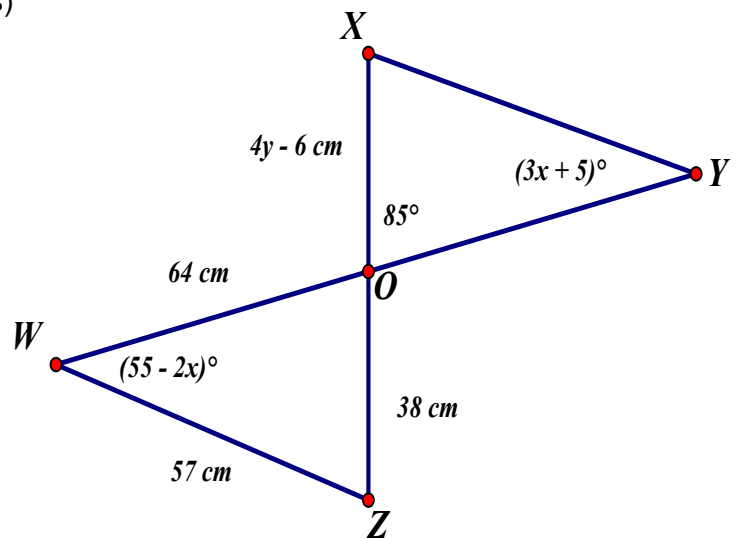
13. $\triangle XOY \cong \triangle ZOW$. Find each of the following. (7 pts)

a. $x =$ _____

b. $y =$ _____

c. $XY =$ _____

d. $m\angle OWZ =$ _____



14. $\triangle TJM \cong \triangle PHS$

a. $\angle P \cong$ _____

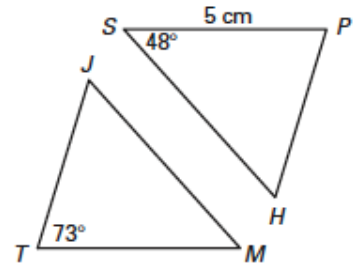
b. $m\angle J =$ _____

c. $MT =$ _____

d. $\overline{JT} \cong$ _____

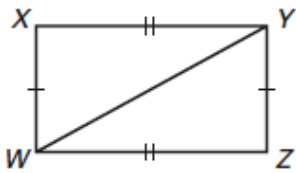
e. $m\angle P =$ _____

f. $\triangle HPS \cong$ _____

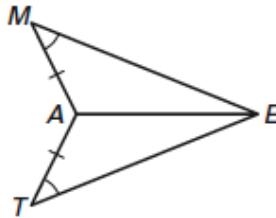


Decide whether enough information is given to prove that the triangles are congruent. If there is enough information, state the congruence postulate you would use.

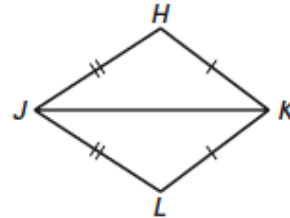
15. $\triangle XYW, \triangle ZWY$



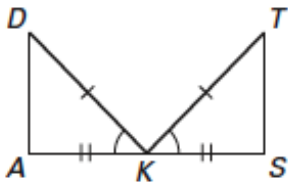
16. $\triangle MAE, \triangle TAE$



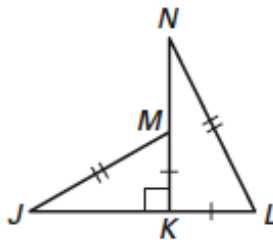
17. $\triangle KHJ, \triangle JLK$



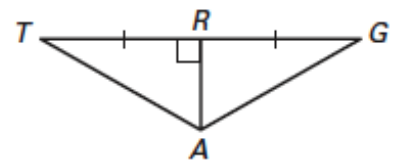
18. $\triangle DKA, \triangle TKS$



19. $\triangle JKM, \triangle NKL$



20. $\triangle TRA, \triangle ARG$

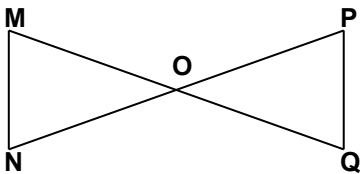


In 21 – 22, write a two-column proof.

21. **Given:** O is midpoint of \overline{MQ}

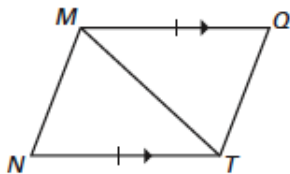
O is midpoint of \overline{NP}

Prove: $\triangle MON \cong \triangle QOP$



	What statements can we make that must be true?	How do we know those statements must be true?
Part I	• •	• •
Part II	• • •	• • •
Part III	•	•

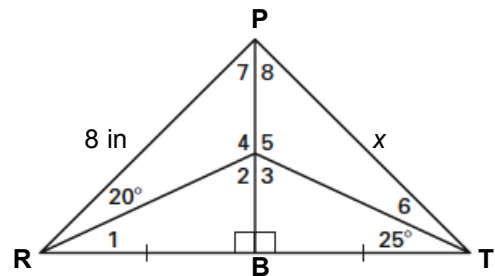
22. Given: $\overline{MQ} \cong \overline{NT}$
 $\overline{MQ} \parallel \overline{NT}$
 Prove: $\overline{MN} \cong \overline{TQ}$



	What statements can we make that must be true?	How do we know those statements must be true?
Part I	• •	• •
Part II	• • •	• • •
Part III	•	•

23. \overline{PB} is the perpendicular bisector of \overline{RT} . Find the measure of the numbered angles and value of the variables.

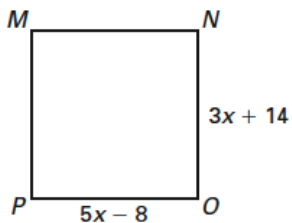
$m\angle 1 =$ _____ $m\angle 2 =$ _____ $m\angle 3 =$ _____
 $m\angle 4 =$ _____ $m\angle 5 =$ _____ $m\angle 6 =$ _____
 $m\angle 7 =$ _____ $m\angle 8 =$ _____ $x =$ _____



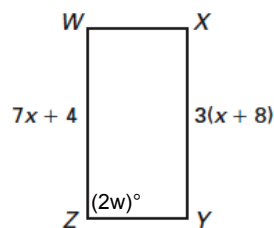
MOD 13

Find the value of the variable(s). Then, find the lengths of the sides and/or the measure of the angles.

24. $MNOP$ is a square.

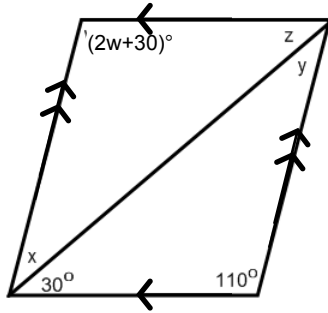


25. $WXYZ$ is a rectangle.



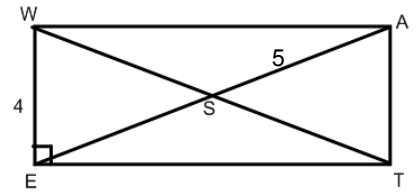
26. Find the indicated variable(s) or side length.

- a)
 $w =$ _____
 $x =$ _____
 $y =$ _____
 $z =$ _____



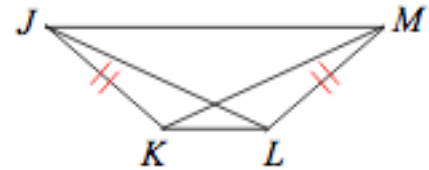
b) Parallelogram WATE

$WT =$ _____



c) In isosceles trapezoid JKLM, $ML = 3x + 1$ and $JK = 2x + 7$.

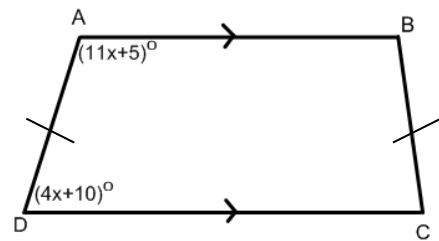
$MK =$ _____



27. Find the measure of angle A & D.

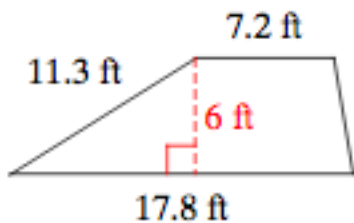
$m\angle A =$ _____

$m\angle D =$ _____

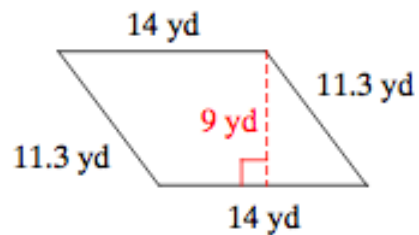


Find the area of the trapezoid and parallelogram.

28.



29.



30. WXYZ is a quadrilateral. Which information would allow you to conclude that WXYZ is a parallelogram?

Hint: Draw diagrams to help you. (Choose all that apply.)

A) $\overline{WX} \cong \overline{ZY}$ & $\overline{WZ} \cong \overline{XY}$

B) $\angle W \cong \angle Y$ & $\angle X \cong \angle Z$

C) $\overline{WX} \parallel \overline{ZY}$ & $\overline{WZ} \cong \overline{XY}$

D) $\overline{WZ} \parallel \overline{XY}$ & $\overline{WX} \parallel \overline{ZY}$

E) $\overline{WZ} \cong \overline{XY}$ & $\overline{WZ} \parallel \overline{XY}$