Geometry Midterm Review Name_____ Date_____

1. If a coordinate (a, b) was translated left 2 and up 11, then reflected over y= x, then rotated 90 degrees clockwise, what would the coordinate notation for this sequence of transformations?

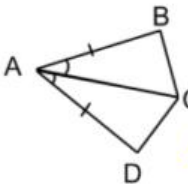
$(a,b) \to (a-2, b+11)$ Translation

$(a-2, b+11) \to (b+11, a-2)$ Reflection

$(b+11, a-2) \to (-a+2, b+11)$ Rotation

$(a,b) \to (-a+2, b+11)$

2. Prove the following triangles are congruent?



S	R
$\overline{AB} \cong \overline{AD}$	Given
$\angle BAC \cong \angle DAC$	Given
$\overline{AC} \cong \overline{AC}$	Reflexive Prop.
$\triangle ABC \cong \triangle ADC$	SAS

3. What are the steps for bisecting a line segment?

1. Begin with line segment $\overline{AB}$
2. Construct a circle with center A and with radius more than half the length of AB.
3. Construct a circle with center B congruent to the circle previously constructed
4. Call the intersections of the two circles P and Q
5. Construct $\overline{PQ}$

4. What are the steps for inscribing a square in a circle?

1. Construct a circle
2. Draw a diameter with a straightedge.
3. Construct a segment perpendicular to the diameter at the center of the circle
4. These two segments should cross the circle at four points
5. With a straightedge, connect these four points.

5. $\overline{IJ}$ is the midsegment of triangle HKG. Find the value of x, if $m\overline{IJ}$ = 3x-4 and $m\overline{KG}$=4x + 9. $\angle F \cong \angle H$

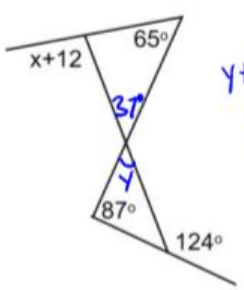
$2(3x-4) = 4x+9$

$6x-8 = 4x+9$

$2x = 17$

$x = 8.5$

6. Find the value of x, in the following image.



$y+87 = 124$

$y = 37$

$65+37 = x+12$

$112 = x+12$

$x = 100$

7. Define the following terms: rotation, reflection, and rigid motion.

Rotation: A transformation about point P, such that each point and its image are the same distance from P.

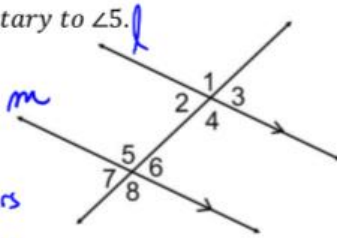
Reflection: A transformation across a line, called the line of reflection. Each point and its image are the same distance from the line.

Rigid motion: A transformation of the plane or space, which preserves distance and angles

8. $\Delta ABC \sim \Delta DEF$ If side lengths of ΔABC are 3 in, 4 in and 5 in. Give possible values for side lengths of ΔDEF.

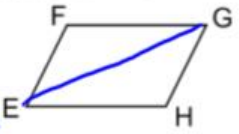
6 in, 8 in, 10 in
or
9 in, 12 in, 15 in
} Multiply by any Scale factor.

9. Prove that $\angle 2$ *is supplementary to* $\angle 5$.



Statement	Reason:
$l \parallel m$	Given
$\angle 2 \cong \angle 7$	Corr. $\angle$'s Post.
$\angle 7$ and $\angle 5$ are linear pairs	Def. of Linear Pairs
$\angle 7$ and $\angle 5$ supp.	Linear pairs conjecture
$m\angle 7 + m\angle 5 = 180$	Def of Supp.
$m\angle 2 = m\angle 7$	Def of $\cong$
$m\angle 2 + m\angle 5 = 180$	Substitution
$\angle 2$ and $\angle 5$ are supp.	Def. of Supplementary.

10. EFGH is a parallelogram, prove $\angle F \cong \angle H$ and $\angle E \cong \angle G$.



Statement	Reason
EFGH is a $\square$	Given
$\overline{FE} \cong \overline{HG}$	$\square \to$ opp. sides $\cong$
$\overline{FG} \cong \overline{HE}$	
$\overline{GE} \cong \overline{EG}$	Reflexive Property
$\triangle EFG \cong \triangle GHE$	SSS
$\angle F \cong \angle H$	CPCTC

11. If $\Delta QRS \cong \Delta TUV$ name three pairs of corresponding congruent parts.

$\overline{QR} \cong \overline{TU}$

$\angle QRS \cong \angle TUV$

$\overline{RS} \cong \overline{UV}$

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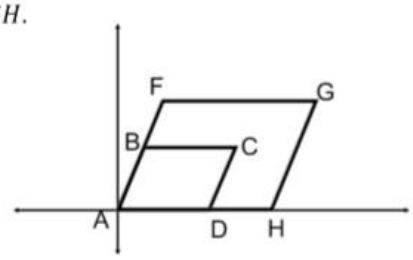
12. If $ABCD \sim AFGH$ and B(1,2), F(1.5,3), and G(9,3) what is the coordinate for point C and what is the scale factor of $ABCD$ to $AFGH$.

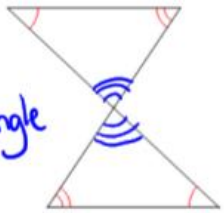
$k = \frac{1.5}{1} = 1.5$

$C = (6,2)$



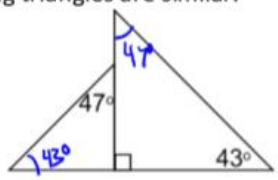
13. Do the following triangles have to be congruent? If so, how do you know?

No, AAA is not a way to prove triangle congruence.



14. Determine if the following triangles are similar. Explain how you know.

Similar by AA

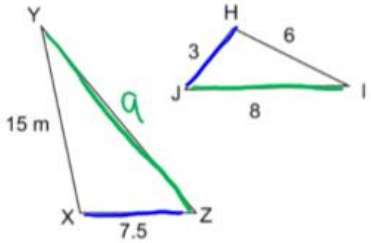


15. $\Delta XYZ \sim \Delta HIJ$ Find the length of $\overline{YZ}$.

$\frac{7.5}{3} = \frac{a}{8}$

$3a = 60$

$a = 20$



16. Given that $\overline{IJ}$ is parallel to $\overline{KG}$, find the value of x.

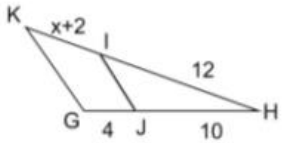
$\frac{12}{x+2} = \frac{10}{4}$

$10(x+2) = 48$

$10x + 20 = 48$

$10x = 28$

$x = 2.8$



17. QRST is a rectangle. Find the value of x, if $\overline{RU} = 4x - 3$ and $\overline{SQ} = 10x - 9$.

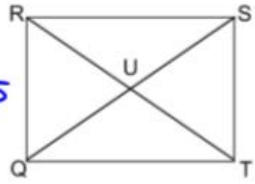
$2(4x-3) = 10x - 9$

$8x - 6 = 10x - 9$

$8x + 3 = 10x$

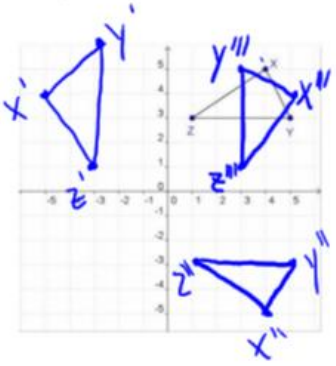
$3 = 2x$

$x = 1.5$



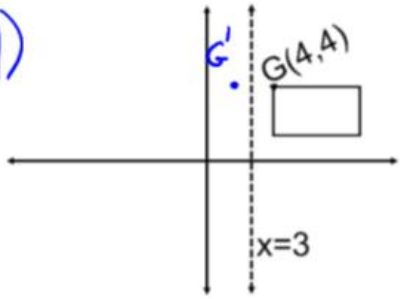
18. If ΔXYZ was rotated 90° CCW, reflected over the line y=x, then rotated 270° CW what quadrant would the final image be in?

Quadrant I

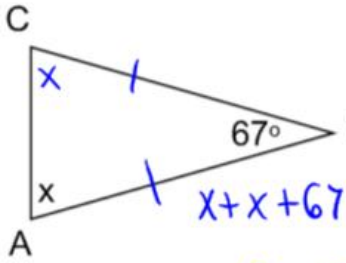


19. If the following image was reflected across the line x=3, what would the coordinate for G' be?

G'(2,4)



20. ΔABC is an isosceles triangle, what is the value of x?



$x + x + 67 = 180$

$2x + 67 = 180$

$\frac{2x}{2} = \frac{113}{2}$

$x = 56.5$