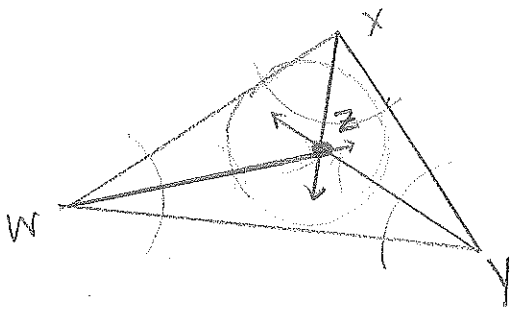
Geometry
Semester Review C
Part 1

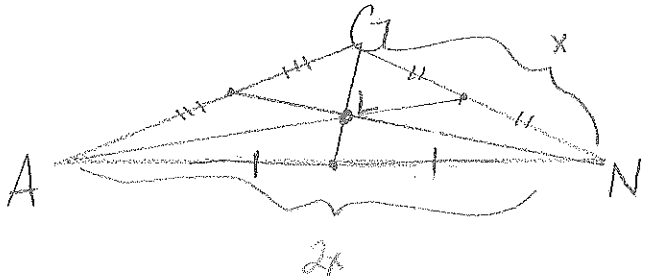
Name KEY

1.3 **CONSTRUCT**, mark, and label the incenter Z of ΔWXY. Include the inscribed circle.



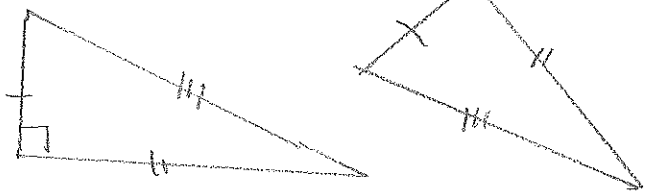
2.3 **SKETCH**, mark, and label the figure described.

"Obtuse Scalene ΔANG with $AN = 2 \cdot NG$, and centroid L."

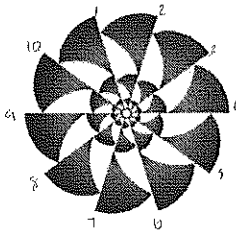


3.2 Draw 2 counterexamples to show the statement is false.

"Every triangle is isosceles."



4.2 Describe all the symmetries of the figure.



Line symmetry? NO

If yes, how many lines? 0

Rotational symmetry? yes

If yes, angle of rotation?

$\frac{360}{10} = 36°$

5.5 In ΔABC, $A(-12, 8)$, $B(-8, 0)$, and $C(1, 5)$. Graph $\Delta A''''B''''C''''$ after the composition of transformations are completed in order.

Reflection: Over the y-axis $(-x, y)$

$A'(12, 8)$ $B'(8, 0)$ $C'(-1, 5)$

$(-x, -y)$ **Rotation about the origin: 180° counter-clockwise**

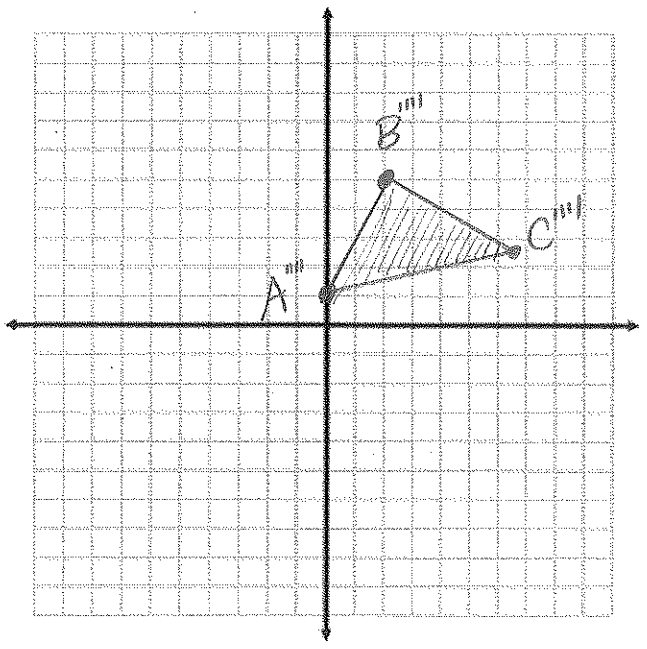
$A''(-12, -8)$ $B''(-8, 0)$ $C''(1, -5)$

Dilation: $(a, b) \rightarrow (\frac{1}{2}a, \frac{1}{2}b)$

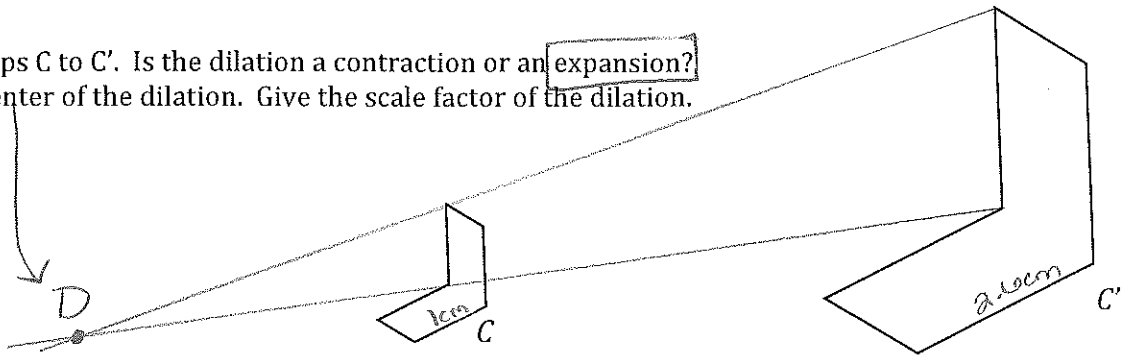
$A'''(-6, -4)$ $B'''(-4, 0)$ $C'''(\frac{1}{2}, -2.5)$

Translation (slide): $\langle 6, 5 \rangle$

$A''''(0, 1)$ $B''''(2, 5)$ $C''''(6.5, 2.5)$



6.3 A dilation maps C to C'. Is the dilation a contraction or an expansion?
Find D, the center of the dilation. Give the scale factor of the dilation.



$K = \frac{\text{image}}{\text{pre}} = \frac{2.6}{1} = \boxed{2.6}$

7.2 Use the figure to find the missing ~~coordinates~~ midpoints (B, D, and F).
Then find the slopes of $\overline{BD}$ and $\overline{AE}$.

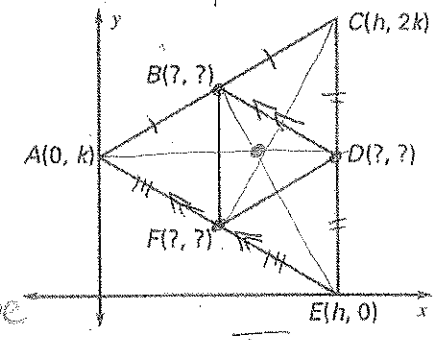
$B\left(\frac{0+h}{2}, \frac{k+2k}{2}\right) = \left(\frac{h}{2}, \frac{3k}{2}\right)$

$D\left(\frac{h+h}{2}, \frac{2k+0}{2}\right) = (h, k)$

$F\left(\frac{h}{2}, \frac{k}{2}\right)$

Slope $\overline{BD} = \boxed{\frac{-k}{h}}$

* Talk about Medians (centroid)



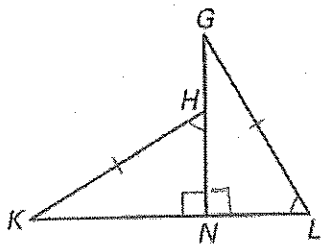
Find the slope of $\overline{AE}$ then slope of $\overline{BD}$ same (Thm 5.1 Midsegment Thm)

Slope $\overline{AE} = \frac{k-0}{0-h} = \frac{k}{-h} = \boxed{\frac{-k}{h}}$

8.5 Complete the two-column proof.

Given: $\overline{KH} \cong \overline{GL}$, $\overline{KL} \perp \overline{NG}$, $\angle NHK \cong \angle NLG$

Prove: $\angle G \cong \angle K$



Statement	Reason
1. $\overline{KH} \cong \overline{GL}$	1. Given
2. $\overline{KL} \perp \overline{NG}$	2. Given
3. $\angle NHK \cong \angle NLG$	3. Given
4. $\angle GNL$ is a rt. $\angle$	4. Def. of $\perp$
5. $\angle KNH$ is a rt $\angle$	5. Def of $\perp$
6. $\angle GNL \cong \angle KNH$	6. All Rt $\angle$s $\cong$
7. $\triangle KNH \cong \triangle GNL$	7. AAS
8. $\angle G \cong \angle K$	8. CPCTC