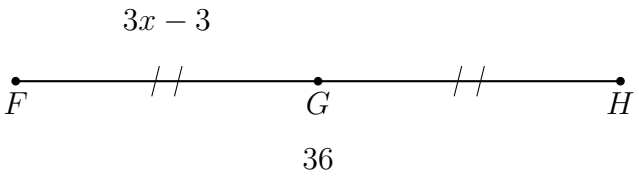
BECA/Huson/Geometry: Trigonometry
12 February 2025

First and last name:
Section:

5.5 Exam: Cumulative Review

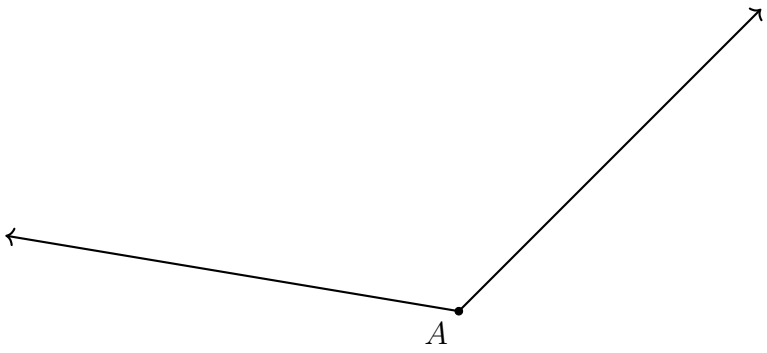
1. Point G bisects $\overline{FH}$, with $FG = 3x - 3$, $FH = 36$. Find x.



G.CO.12 Make and justify formal geometric constructions

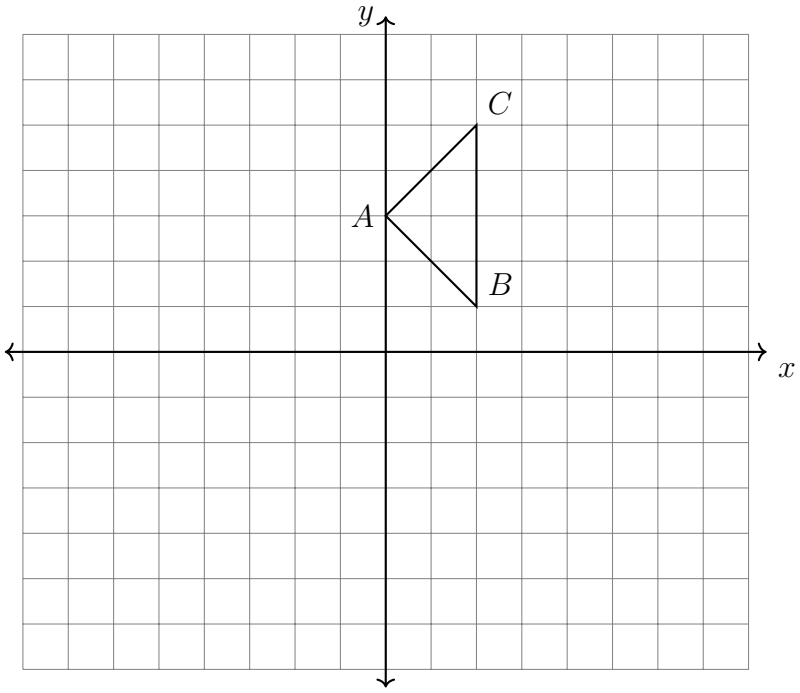
2. Construct an equilateral triangle with side $\overline{PQ}$.

3. Construct the angle bisector of $\angle A$.



G.CO.5 Transform a figure using translation, reflection, or rotation

4. Rotate $\triangle ABC$ 90° clockwise around the origin. Label the image $\triangle A'B'C'$.



5. A translation maps $P(-7,-2) \rightarrow P'(-9,2)$. What is the image of $Q(-1,-3)$ under the same translation?

6. The dilation mapping $x \rightarrow 2x$ and $y \rightarrow 2y$ is applied to $\triangle ABC$.

   (a) Write as coordinate pairs the vertices of the image, $\triangle A'B'C'$

   $A(-3,2) \rightarrow$

   $B(5,-2) \rightarrow$

   $C(6,0) \rightarrow$

   (b) Which triangle is larger, or are they the same size? Justify your answer.

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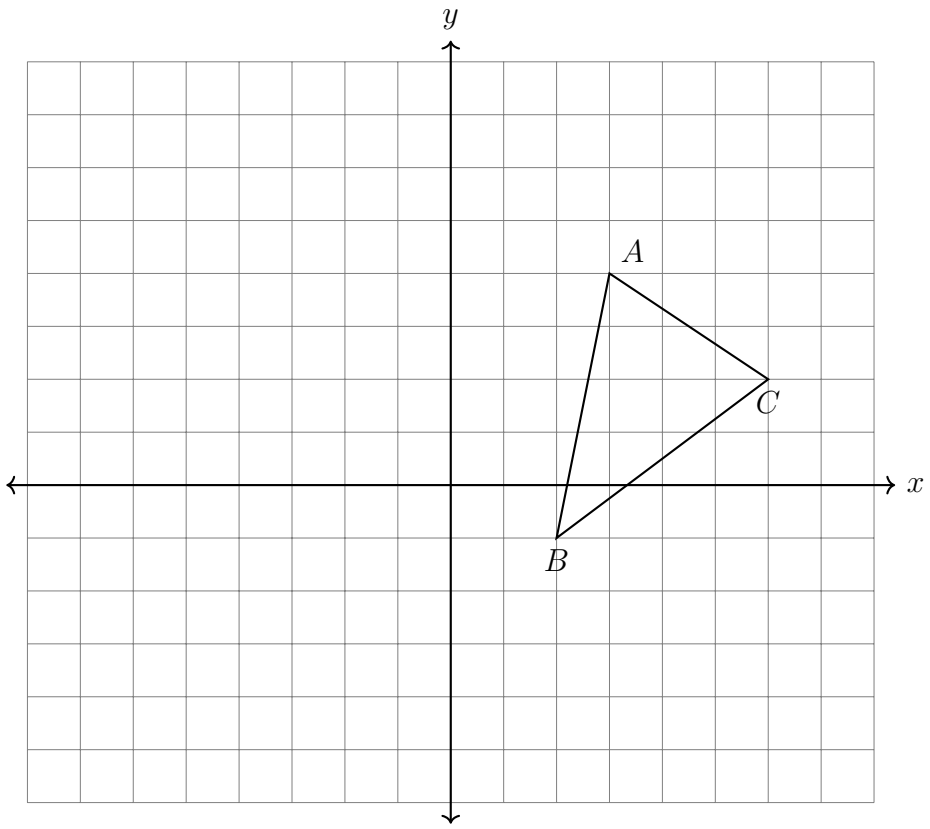
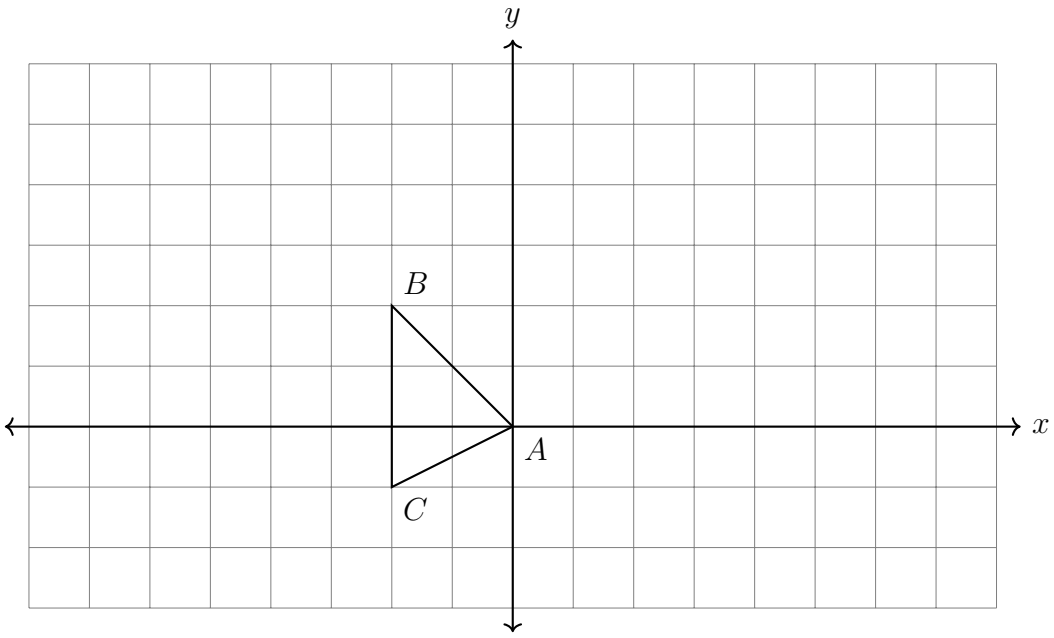
7. Apply a translation of up three and left five to $\triangle ABC$. Plot and label the image $\triangle A'B'C'$ on the axes below.



8. Dilate $\triangle ABC \to \triangle A'B'C'$ by a factor of $k = 3$ centered at the origin, $(x, y) \to (2x, 2y)$. Plot and label the image on the axes.



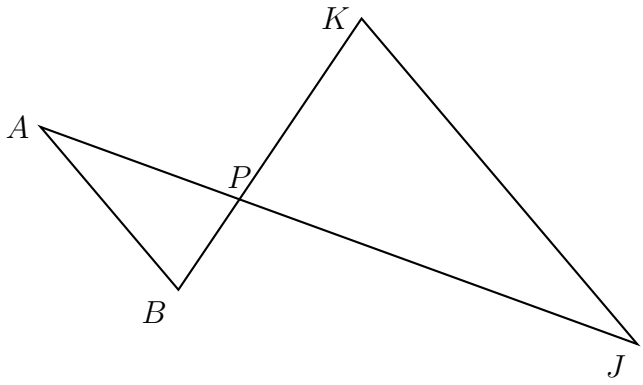
G.SRT.5 Use similarity criteria for triangles to solve problems

9. Given $\triangle ABC \sim \triangle DEF$, $m\angle B = 35°$, and $m\angle C = 100°$. Find $m\angle D$.

10. Similar triangles $\triangle ABP \sim \triangle JKP$ are shown with P the intersection of $\overline{AJ}$ and $\overline{BK}$.

    (a) What line is parallel to $\overline{AB}$?

    (b) If $AP = 10$, $BP = 6$, and $KP = 15$, what is the scale factor k?



11. A dilation maps $\triangle ABC \to \triangle ADE$. Given $AB = 12$, $AC = 15$, $BC = 10$, $CE = 15$.

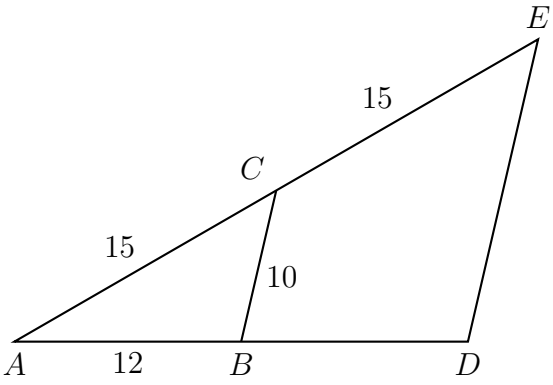
    Find the scale factor and side lengths:

    $k =$

    $DE =$

    $AD =$

    $BD =$



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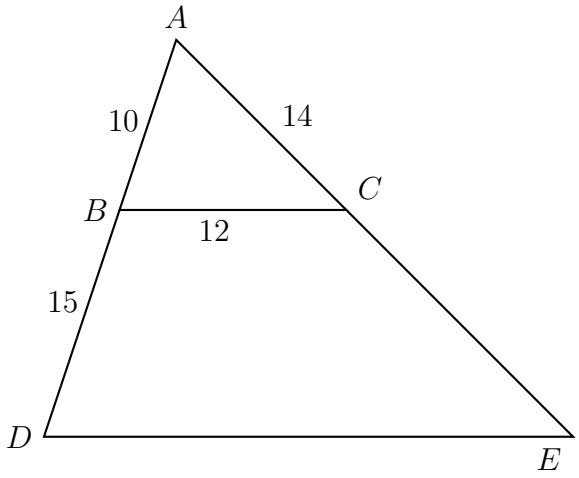
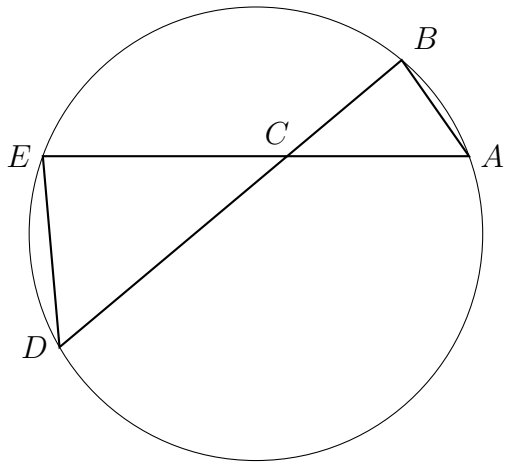
12. Triangle ADE is drawn with $\overline{BC} \parallel \overline{DE}$, as shown. Given $AB = 10$, $BC = 12$, $AC = 14$, and $BD = 15$.



(a) Find DE.

(b) Find AE.

13. In the diagram below, the chords $\overline{AE}$ and $\overline{BD}$ intersect at C, with $\triangle ABC \sim \triangle DEC$.



(a) $m\angle E = 80°$ and $m\angle ECD = 40°$.
Find $m\angle B$.

(b) $AC = 12$, $CD = 30$, and $CE = 24$.
Find BC.

G.SRT.C.8 Use trigonometry to solve problems with right triangles

14. As shown, right $\triangle ABC$ has $AC = 8, BC = 15, AB = 17$, m$\angle C = 90°$.

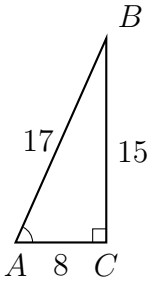
    Express each trigonometric ratio as a fraction.

    (a) $\sin A =$

    (b) $\cos A =$

    (c) $\tan A =$

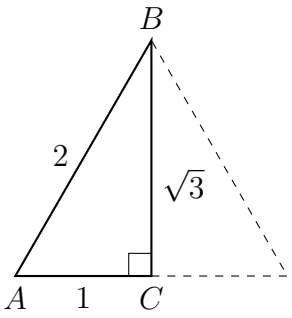
    (d) Find the angle measure of $\angle A$ rounded to the *nearest whole degree*.



15. Right $\triangle ABC$ has base $AC = 1$, height $BC = \sqrt{3}$, and hypotenuse $AB = 2$ as marked. (A reflection $\triangle ABC$ of is also shown.)

    (a) Write down the angle measure of $\angle A$.

    (b) Write down $\sin A$.



16. A sailor observes the top of a lighthouse with an angle of elevation of 4°. She knows the lighthouse is 100 feet tall. Determine and state the distance x between the sailor and the lighthouse, to the *nearest foot*.