BECA/Huson/Geometry: Trigonometry   First and last name:
28 January 2025   Section:

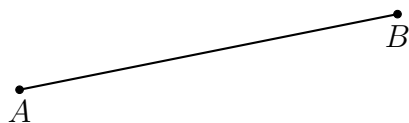## 4.13 PreTest: Cumulative review

1. Given $\overline{DEF}$, $DE = 17\frac{1}{4}$, and $EF = 6$. Find DF.

D ———————————————— E ——— F
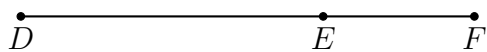
2. Point G bisects $\overline{FH}$, with $FG = 6x - 8$, $GH = 10$. Find x.

$6x - 8$ 10

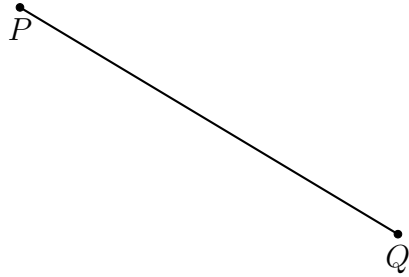F ———————//——————— G ——————//——————— H
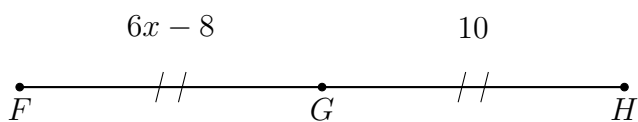
3. Construct an equilateral triangle with one side $\overline{AB}$.
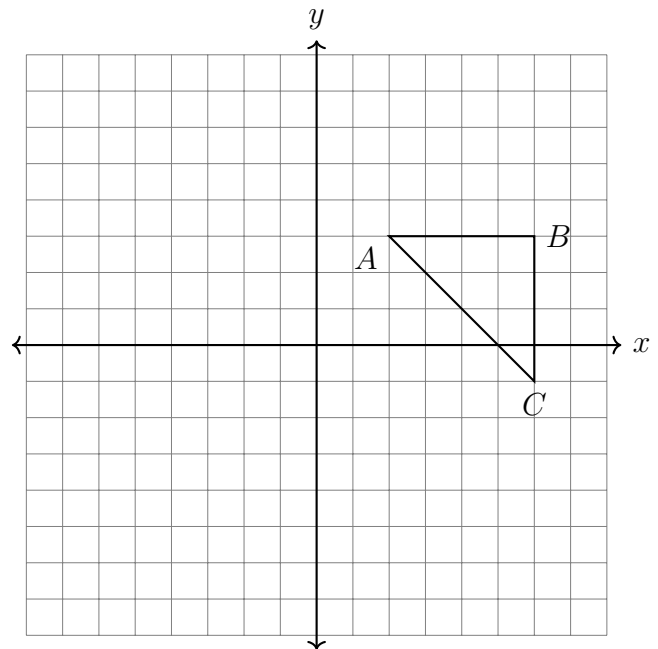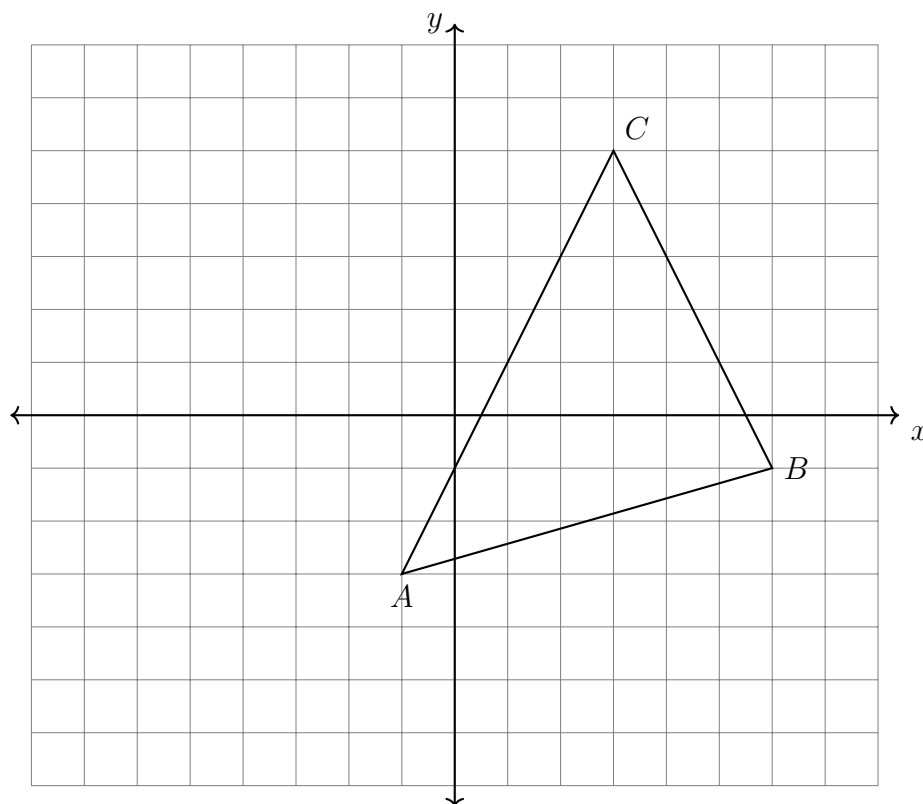
B

A

4. Construct a perpendicular bisector of $\overline{PQ}$.

P

Q

5. Apply a clockwise rotation of $90°$ centered at the origin to $\triangle ABC$. Plot and label the image on the axes below.

6. Reflect $\triangle ABC$ across the y-axis. Label the image $\triangle A'B'C'$ on the graph.

7. A translation is applied to $\triangle ABC$ moving it to the right 2 and down 5.

   (a) Write as coordinate pairs the vertices of the image, $\triangle A'B'C'$
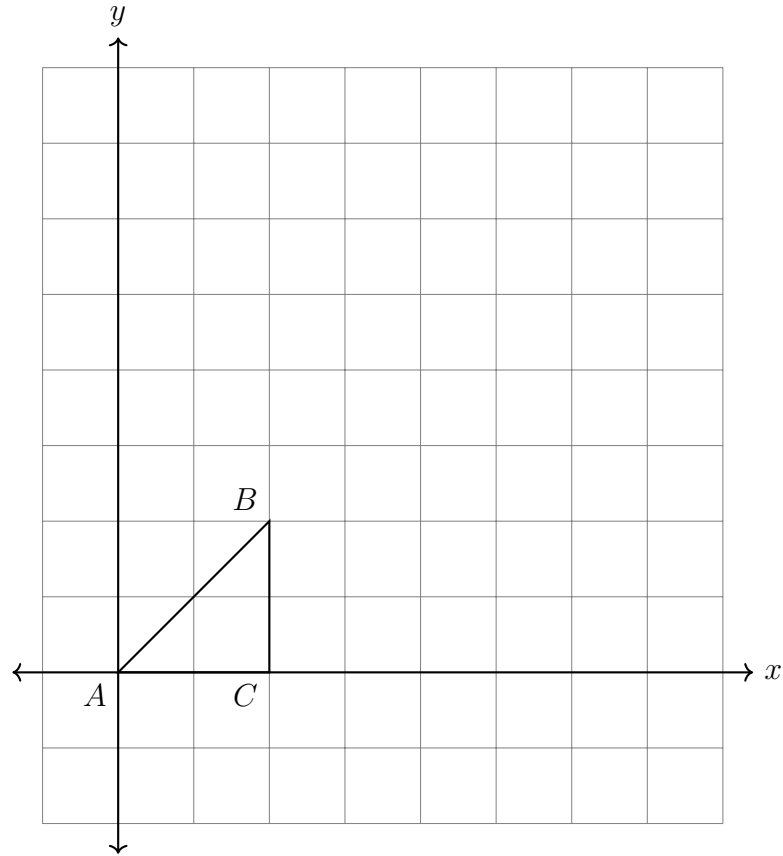
   $A(3,1) \rightarrow$

   $B(-1,-3) \rightarrow$

   $C(-2,7) \rightarrow$

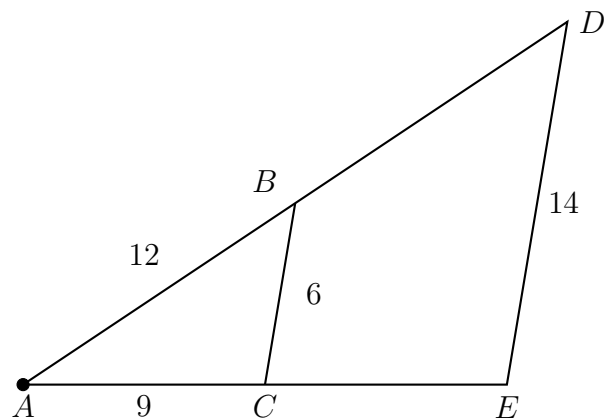   (b) Which triangle is larger, or are they the same size? Justify your answer.

8. A translation maps $D(-2,3) \rightarrow D'(5,1)$. What is the image of $E(-1,2)$ under the same translation?

9. Dilate $\triangle ABC \rightarrow \triangle A'B'C'$ by a factor of $k = 2.5$ centered at the origin, $(x, y) \rightarrow (2.5x, 2.5y)$. Plot and label the image on the axes.


10. A dilation centered at A with scale factor $k = 2\frac{1}{3}$ maps $\triangle ABC \rightarrow \triangle ADE$. Given the lengths $AC = 9$, $BC = 6$, $AB = 12$, and $DE = 14$.

How long are AD and AE?

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11. Given $\triangle ABC \sim \triangle DEF$, $m\angle A = 35°$, and $m\angle F = 105°$. Find $m\angle C$.

12. What is the transformation mapping parallelogram $BECA \rightarrow B'E'C'A'$, as shown in the diagram. (hint: Dilations must specify the center and scale factor.)
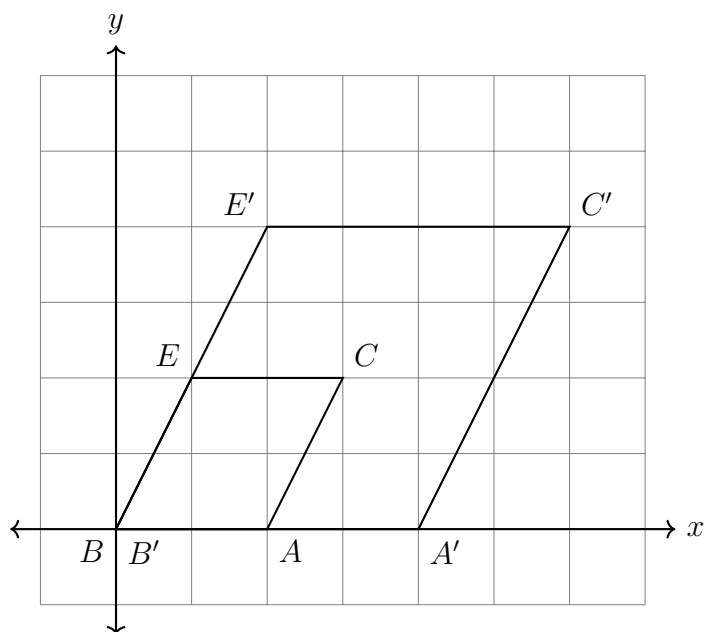
13. A dilation maps $\triangle ABC \rightarrow \triangle ADE$. Given $AB = 9$, $AC = 11.1$, $BC = 6$, $DE = 14$.
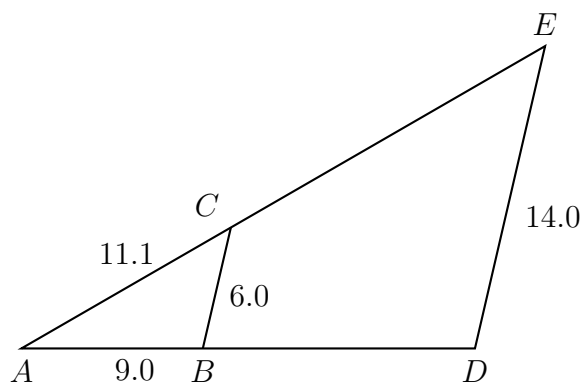
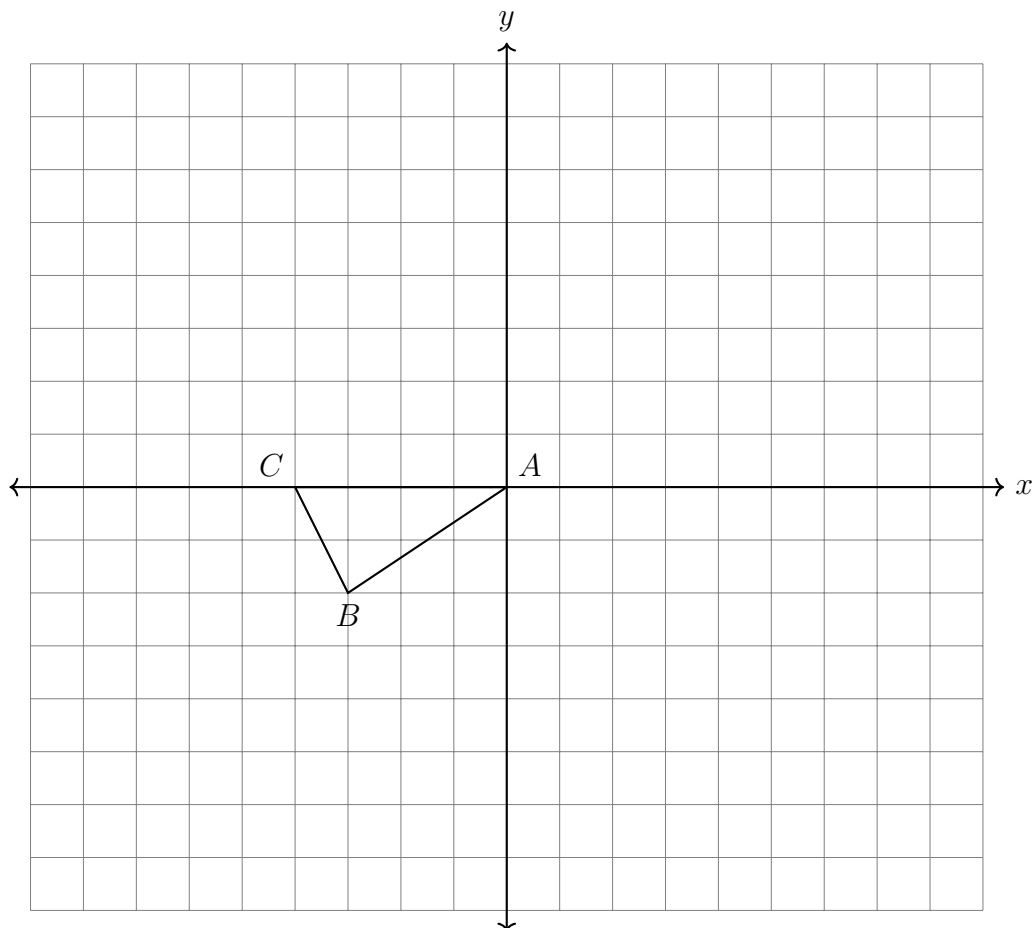Find the scale factor and side lengths:
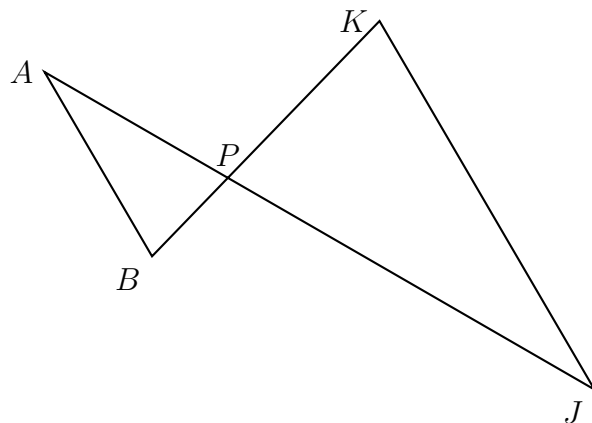
$k =$

$AD =$

$AE =$

$BD =$

14. Reflect $\triangle ABC$ across the x-axis. Then, dilate $\triangle A'B'C'$ by a factor of k $= 2$ centered at the origin to produce $\triangle A''B''C''$. Plot and label the two triangles in the graph below.

15. Two triangles are shown with P the intersection of $\overline{AJ}$ and $\overline{BK}$.

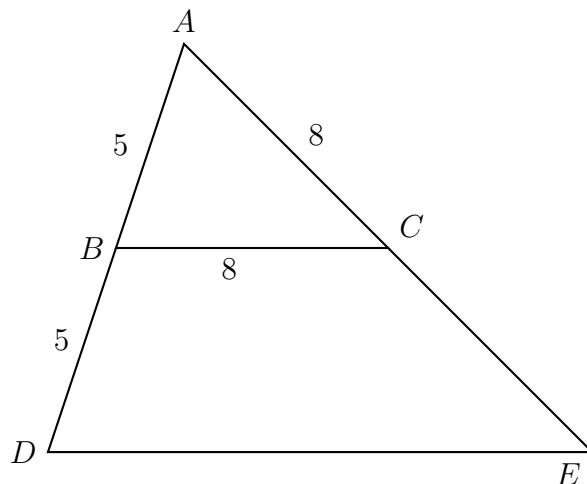   (a) Justify $\angle APB \cong \angle JPK$.

   (b) What angle must be congruent to $\angle B$ to prove $\triangle ABP \sim \triangle JKP$ by *angle-angle similarity*?
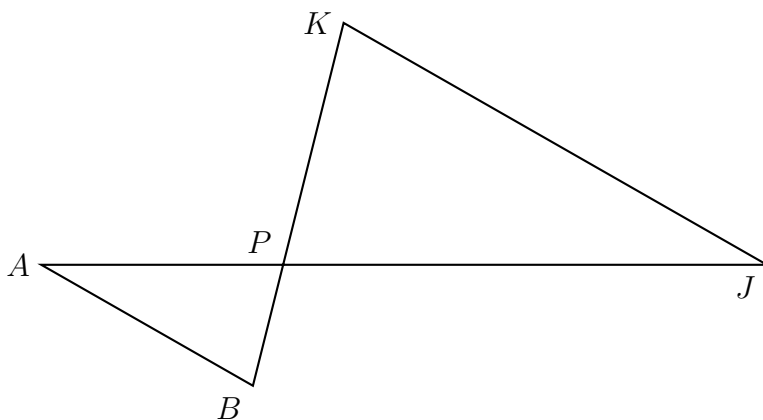
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16. Triangle ADE is drawn with $\overline{BC} \parallel \overline{DE}$, as shown. Given $AB = 5$, $BC = 8$, $AC = 8$, and $BD = 5$. $m\angle A = 72°$.
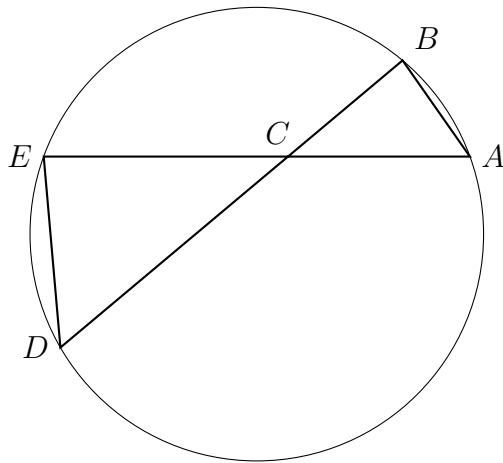
   (a) Find DE.

   (b) Find m$\angle ABC$ and m$\angle E$.

17. Given $\triangle ABP \sim \triangle JKP$ as shown below. $AB = 10$, $AP = 9.0$, $PK = 12.5$, and $JK = 25$. Find JP and BP.

18. In the diagram below, the chords $\overline{AE}$ and $\overline{BD}$ intersect at C, with $\triangle ABC \sim \triangle DEC$, $BC = 4$, $AC = 5$, and $BD = 11.5$. Determine the length of $\overline{CE}$.

19. In the diagram below $\triangle ABC \sim \triangle DEF$, $DE = x+4$, $AB = 12$, $AC = 21$, $DF = 2x+4$. Solve for x.