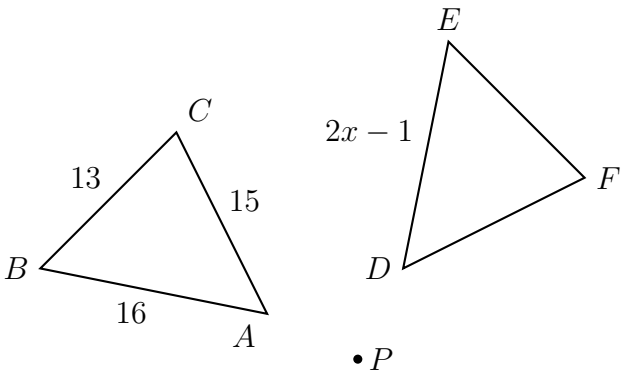
5.10 Do Now: Composition of two transformations

1. After a dilation with center $(0, 0)$, the image of $\overline{MN}$ is $\overline{M'N'}$. If $MN = 4.5$ and $M'N' = 18$, find the scale factor of this dilation.

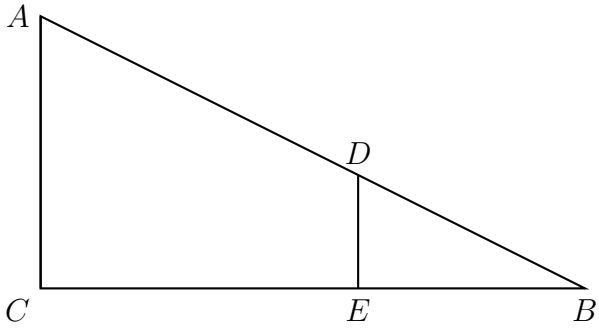
2. In the diagram below, $\triangle ABC$ with sides of 13, 15, and 16, is mapped onto $\triangle DEF$ after a clockwise rotation of 90° about point P.

   If $DE = 2x - 1$, what is the value of x?



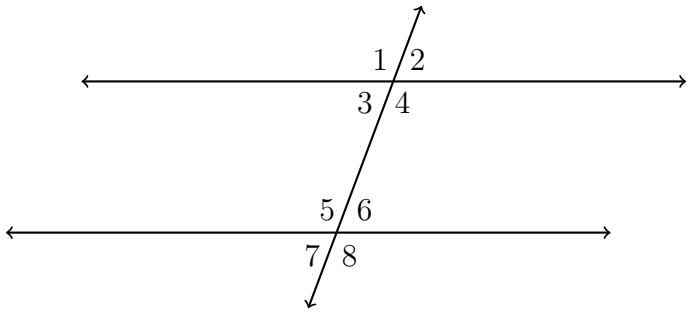
3. In right triangle ABC shown below, point D is on $\overline{AB}$ and point E is on $\overline{BC}$ such that $\triangle ABC \sim \triangle DBE$.

   If $AB = 15$, $BC = 12$, and $EC = 7$, what is the length of $\overline{BD}$?



4. Line segment $A'B'$, having a length of 12.8 cm, is the image of $\overline{AB}$ after a dilation of $\frac{1}{2}$ centered at the origin. What is the length of $\overline{AB}$?

5. Given two parallel lines and a transversal, as shown below.



(a) State the angle corresponding with $\angle 6$.

(b) What theorem would justify $m\angle 5 + m\angle 6 = 180°$? _____

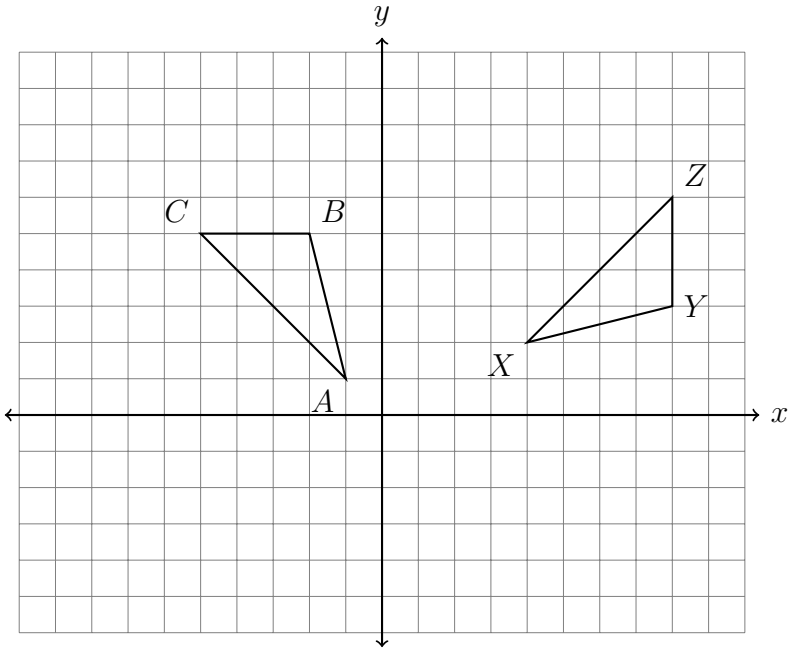
(c) What theorem would justify $m\angle 7 = m\angle 2$? _____

(d) Given $m\angle 3 = 73°$ and $m\angle 5 = (3x - 1)°$. Find x.

6. A translation maps $D(2,4) \rightarrow D'(-3,4)$. What is the image of $E(5,-5)$ under the same translation?

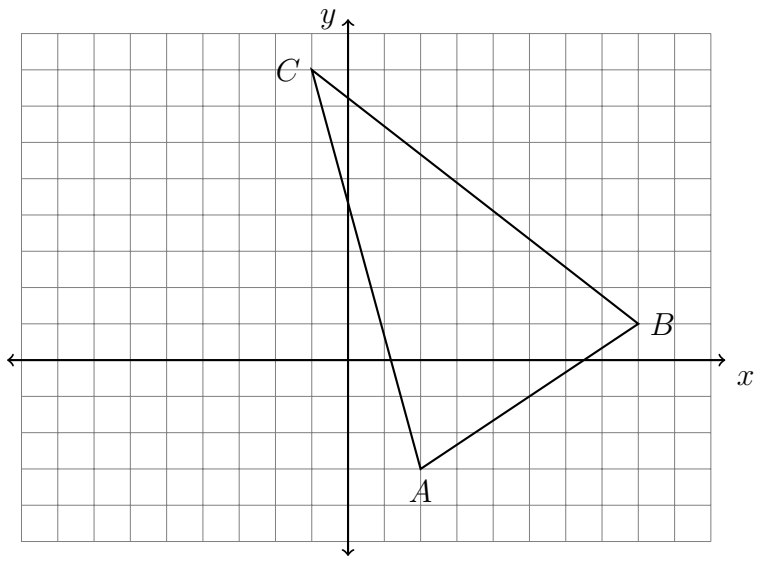
7. The image of triangle ABC after a rotation is $\triangle A'B'C'$. Is the area of the triangle greater, smaller, or the same after the transformation? Justify your answer.

8. The triangle ABC, shown below, undergoes two rigid motions carrying it onto triangle XYZ. State the two isometric transformations. (be specific)



9. Triangle $\triangle ABC$ is graphed on the set of axes below. The vertices of $\triangle ABC$ have the coordinates $A(2, -3)$, $B(8, 1)$, and $C(-1, 8)$.

   Reflect the triangle across the y-axis. Write down its coordinates in a table and plot and label it on the graph.



10. In $\triangle ABC$ shown below, side $\overline{AC}$ is extended to point D with $m\angle DAB = (6x - 16)^\circ$, $m\angle C = (x + 4)^\circ$, and $m\angle B = (4x + 3)^\circ$.

    What is $m\angle BAC$?