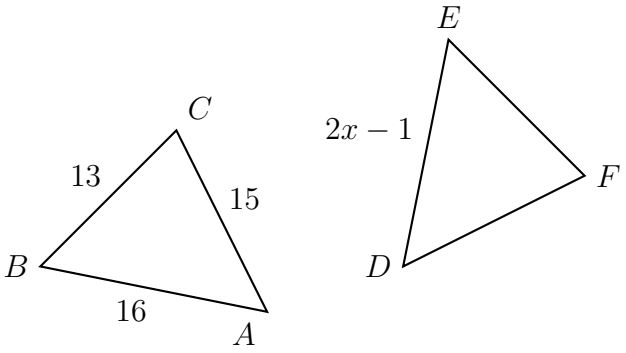
5.10b Do Now: Composition of two transformations

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.

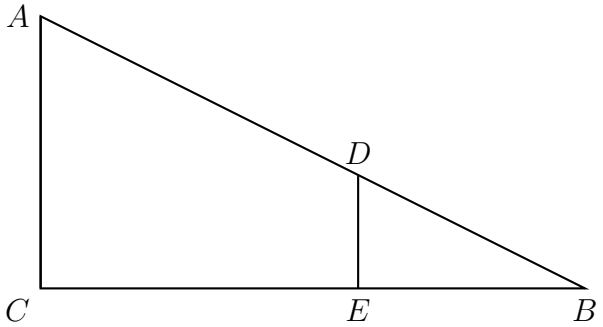
2. In the diagram below, $\triangle ABC$ with sides of 13, 15, and 16, is mapped onto $\triangle DEF$ by a rigid motion.

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



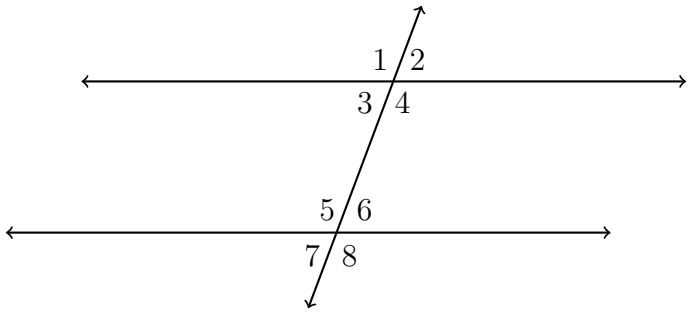
3. In right triangle ABC shown below, point D is on $\overline{AB}$ and point E is on $\overline{BC}$ such that $\triangle ABC \sim \triangle DBE$.

   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) Why does $m\angle 5 + m\angle 6 = 180°$? (justify) _____

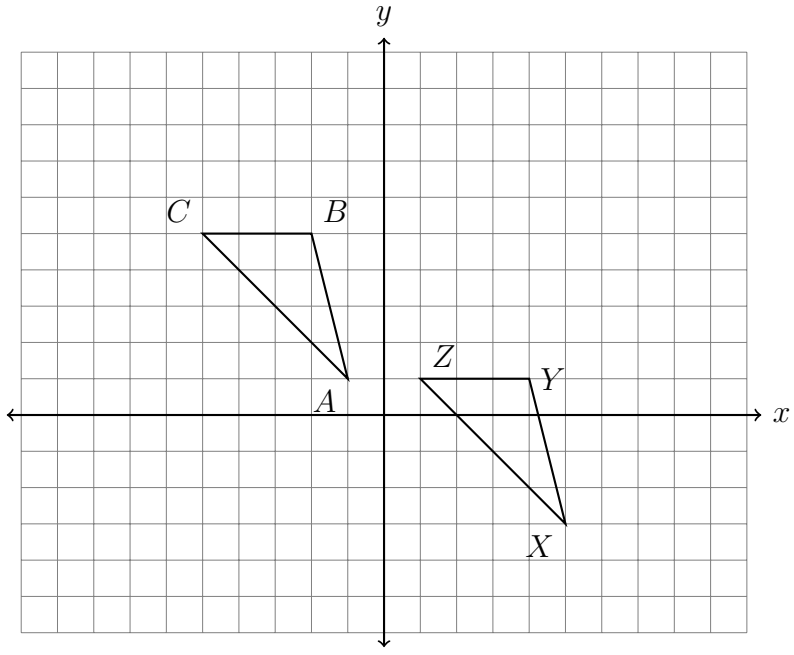
(c) Why does $m\angle 7 = m\angle 2$? (justify) _____

(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?

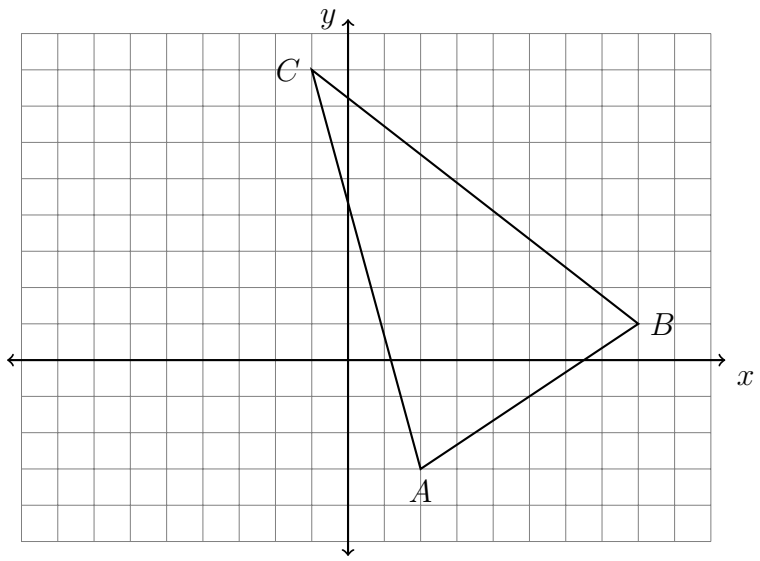
7. The image of triangle ABC after a translation is $\triangle A'B'C'$. Is the area of the triangle greater, smaller, or the same after the translation? Justify your answer.

8. The triangle ABC, shown below, undergoes a rigid motion carrying it onto triangle XYZ. State the transformation. (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 $C(-1, 8)$.

   Translate the triangle three units to the left and down one unit. 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 $m\angle DAB = 122°$, $m\angle C = (x + 4)°$, and $m\angle B = (4x + 3)°$.

    What is $m\angle BAC$?