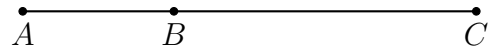


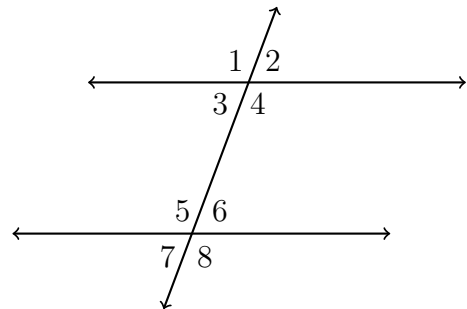
27 November 2019

**6.3 Classwork: Due at end of class****Do Not Solve!****Model the situation with an equation in terms of  $x$ .**

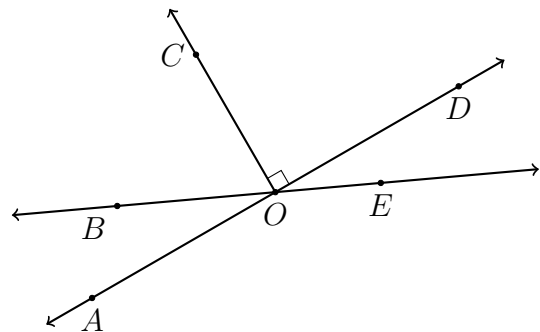
1. Given  $\overline{ABC}$ , with  $AB = 2x - 1$ ,  $BC = 3x + 3$ , and  $AC = 17$ . Find  $x$ .



2. Given  $m\angle 3 = x + 30$  and  $m\angle 5 = 4x - 20$ . Find  $x$ .



3. In the diagram below  $m\angle AOB = 6x + 5$  and  $m\angle COB = 8x + 15$ . Find  $x$ .

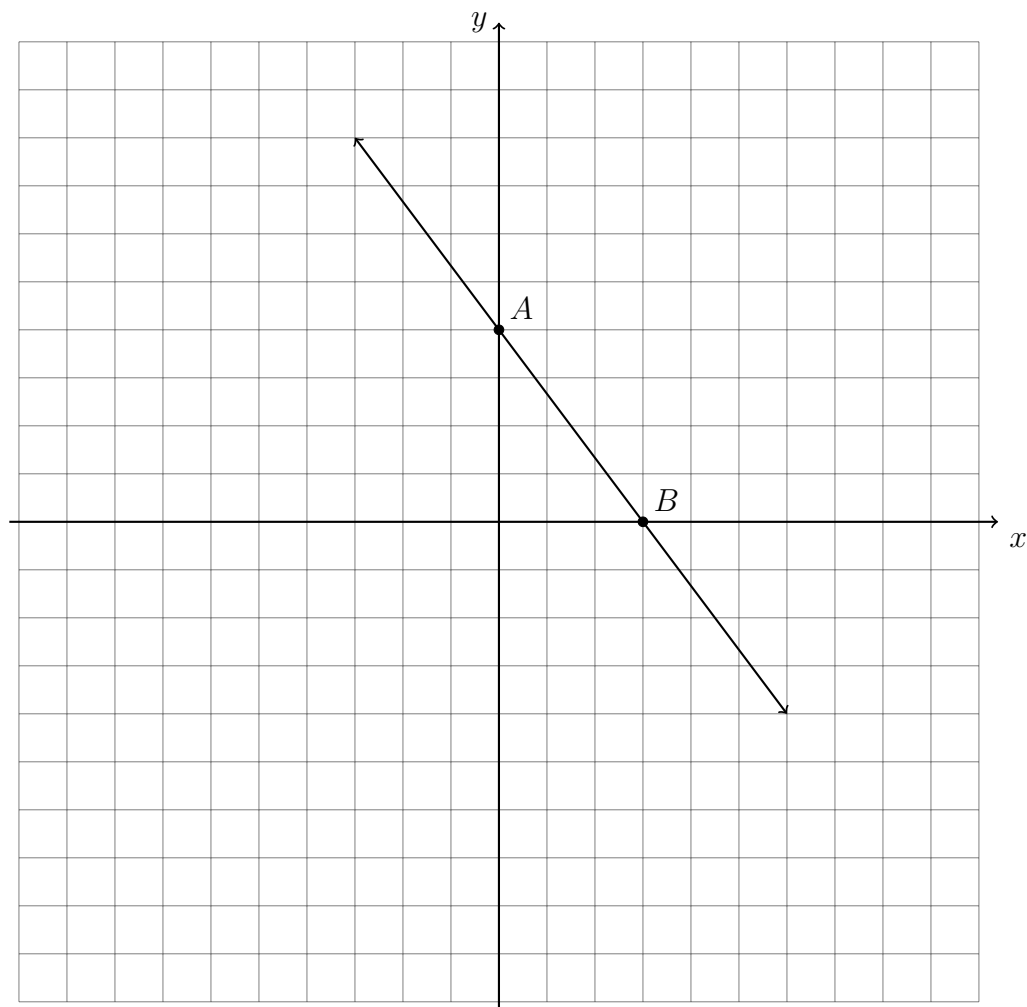


4. The point  $K$  is the midpoint of  $\overline{JL}$ ,  $JK = 3x + 15$ , and  $JL = 9x + 9$ . Find  $x$ .



5. On the graph below,  $\overleftrightarrow{AB}$  is shown with  $A(0, 4)$ ,  $B(3, 0)$ . A dilation of  $k = 2$  centered at the origin maps  $\overleftrightarrow{AB} \rightarrow \overleftrightarrow{A'B'}$ .

Draw  $\overleftrightarrow{A'B'}$  on the graph, labeling  $A'$  and  $B'$ .

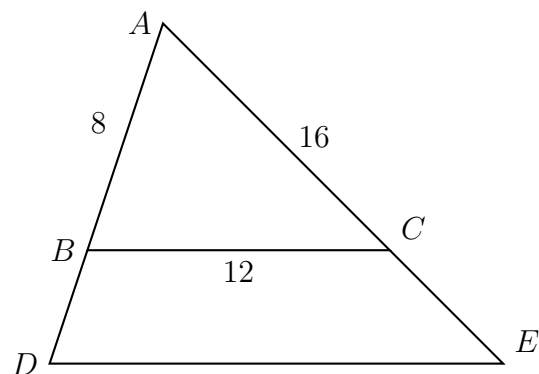


(a) Write down the equation  $\overleftrightarrow{AB}$

(b) Write down the equation  $\overleftrightarrow{A'B'}$

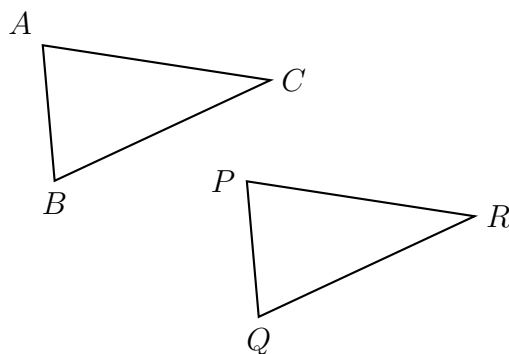
6. Triangle  $ABC$  is dilated with a scale factor of  $k = 1.25$  centered at  $A$ , yielding  $\triangle ADE$ , as shown. Given  $AB = 8$ ,  $BC = 12$ , and  $AC = 16$ .

Find  $AD$ ,  $DE$ , and  $CE$ .



7. Find the image of  $P(3, 1)$  after the translation  $(x, y) \rightarrow (x - 1, y + 12)$ .

8. A translation maps triangle  $ABC$  onto triangle  $PQR$ .



Write each corresponding object.

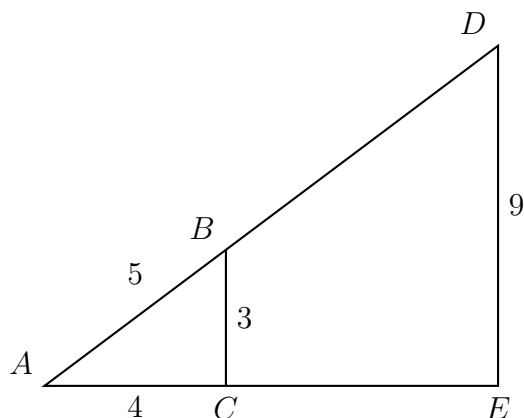
(a)  $B \rightarrow$  \_\_\_\_\_

(b)  $\angle C \cong$  \_\_\_\_\_

(c)  $\overline{AC} \cong$  \_\_\_\_\_

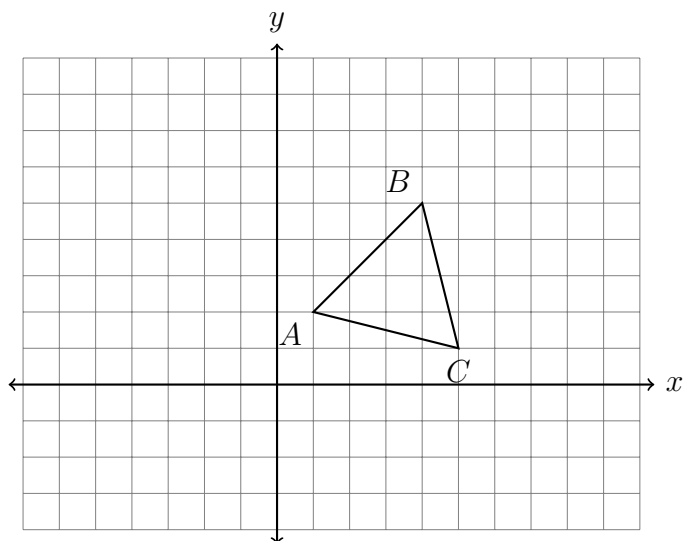
(d) \_\_\_\_\_  $\cong \overline{QR}$

9. A dilation centered at  $A$  maps  $\triangle ABC \rightarrow \triangle ADE$ . Given the sides of the preimage,  $AC = 4$ ,  $BC = 3$ ,  $AB = 5$ , and of  $DE = 9$  find the scale factor  $k$  and the lengths  $AD$  and  $AE$ .



10. Given  $\triangle ABC \sim \triangle DEF$ .  $m\angle A = 40^\circ$  and  $m\angle E = 35^\circ$ . Find the measure of  $\angle C$ .  
(*hint: the order of corresponding letters match*)

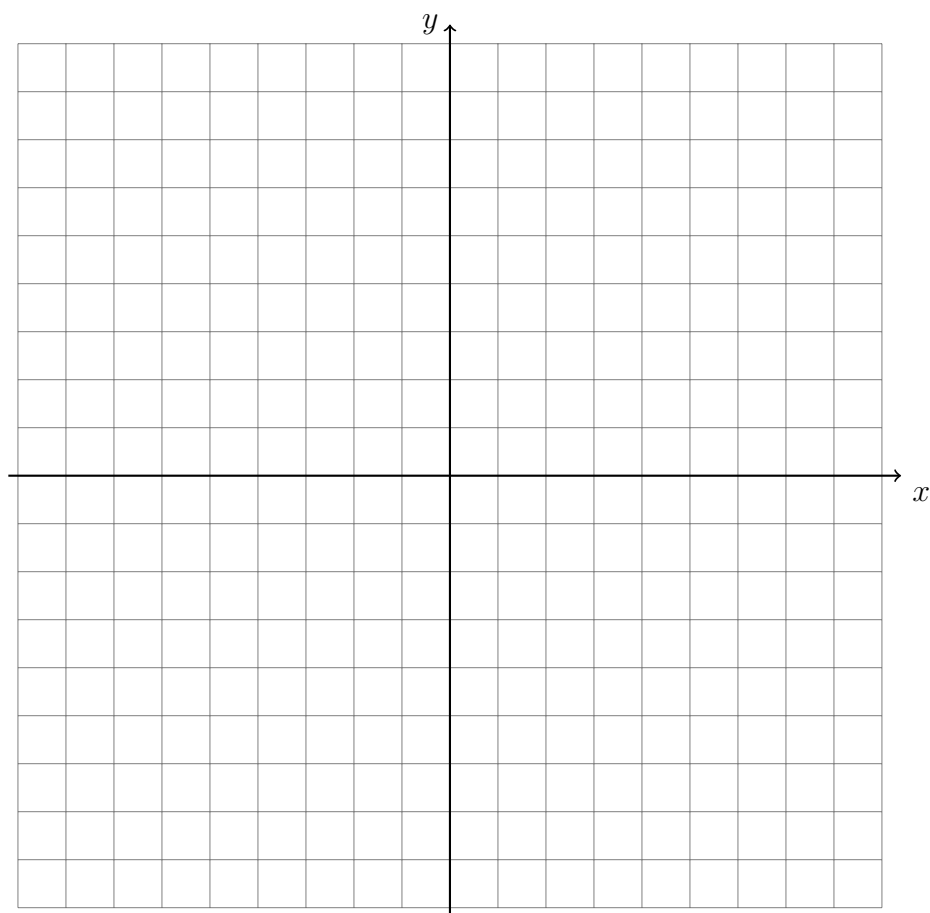
11. Translate  $\triangle ABC$  by  $(x, y) \rightarrow (x - 4, y + 2)$ . Make a table of the coordinates and plot and label the image on the axes.



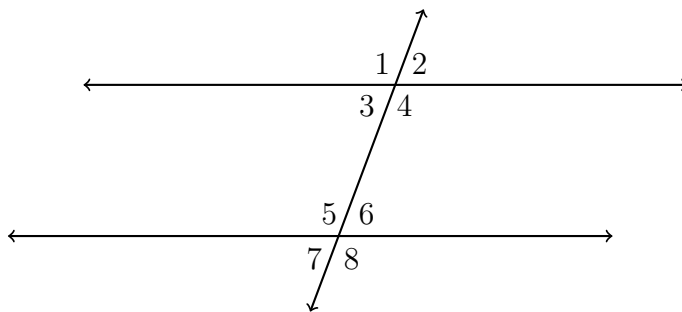
12. Solve for  $y$ , then graph and label, marking the intersection as an ordered pair.

$$x + 2y = 4$$

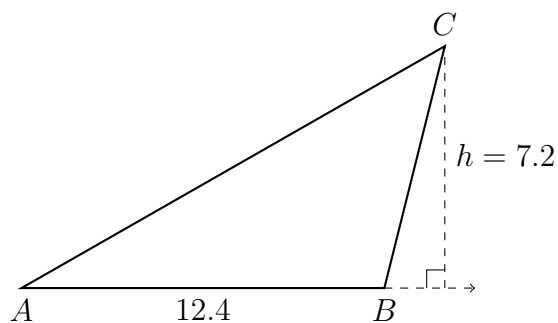
$$\frac{1}{2}x - y = 4$$



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



- (a) State the angle corresponding with  $\angle 1$ .
- (b) What theorem would justify  $m\angle 4 + m\angle 6 = 180^\circ$ ? \_\_\_\_\_
- (c) What theorem would justify  $\angle 3 \cong \angle 6$ ? \_\_\_\_\_
- (d) Given  $m\angle 1 = 108^\circ$  and  $m\angle 8 = (4x - 16)^\circ$ . Find  $x$ .
14. The side  $\overline{AB}$  of triangle  $ABC$  is extended and an altitude to the vertex  $C$  is drawn, as shown below. The triangle's height is  $h = 7.2$  and its base measures  $AB = 12.4$ . Find the area of the triangle.

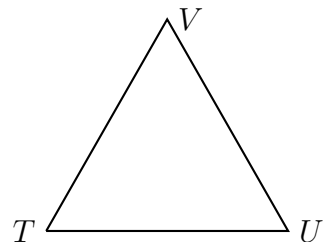


**Do Not Solve! Make a drawing on the right, an equation to the left, and circle where it states what to find.**

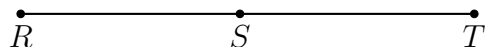
15. The point  $Q$  is the midpoint of  $\overline{PR}$ ,  $PQ = 11$ , and  $QR = 2x + 1$ . Find  $x$ .
16. Given  $\overline{PQR}$ , with  $PQ = 3x - 7$ ,  $QR = x + 3$ , and  $PR = 12$ . Find  $x$ .
17. Given that  $Q$  bisects  $\overline{PR}$ .  $PQ = 2x - 5$ ,  $PR = 42$ . Find  $x$ .
18. The points  $P$ ,  $Q$ , and  $R$  are collinear, with  $PQ = x + 4$  and  $PR = 27$ .  $\overline{QR}$  is twice the length of  $\overline{PQ}$ . Find  $x$ .

19. Given isosceles  $\triangle TUV$  with  $\overline{TU} \cong \overline{UV}$  and  $m\angle U = 50$ . Mark the triangle in the diagram and find  $m\angle U$  and  $m\angle V$ .

(the diagram is not to scale)



20. The points  $R$ ,  $S$ , and  $T$  are collinear, with  $RS = 4x - 8$ ,  $ST = 21$ , and  $RT = 6x - 1$ . Mark the diagram and find  $RT$ .



21. A translation maps  $X(2, -7) \rightarrow X'(3, 5)$ .

(a) What translation was applied (be specific)?

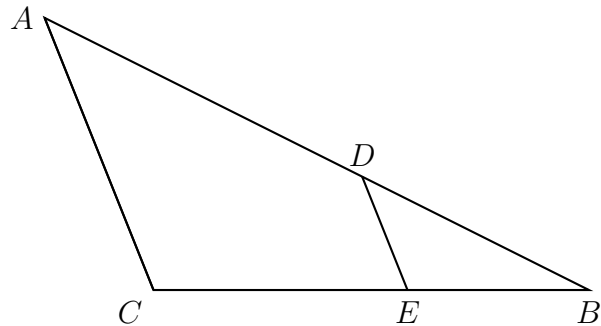
(b) What is the image of  $Y(1, 3)$  under the same translation?



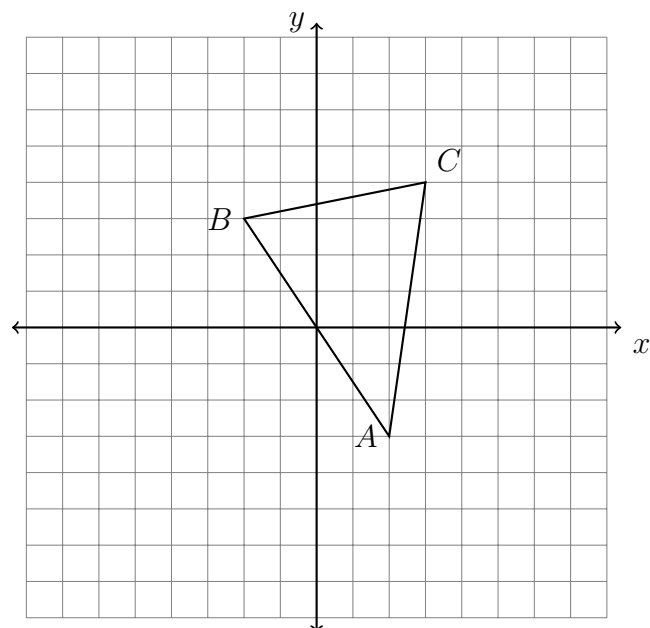
22. Given  $\triangle ABC$  point  $D$  on  $\overline{AB}$  and point  $E$  on  $\overline{BC}$  such that  $\triangle ABC \sim \triangle DBE$ .

Given  $AB = 15$ ,  $BC = 10$ , and  $AD = 9$ . Mark the lengths on the triangle, showing  $DB$  as well.

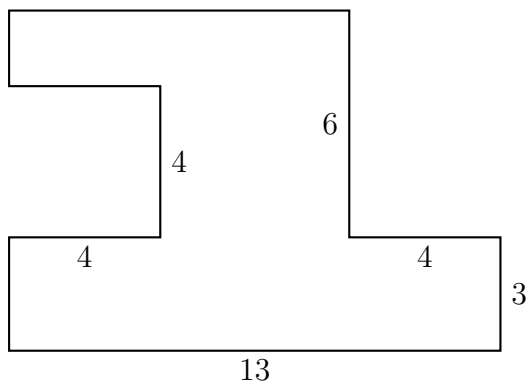
Find the length of  $\overline{BE}$ .



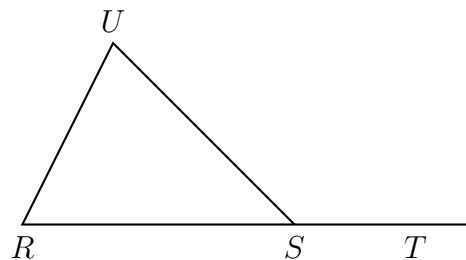
23.  $\triangle ABC$  is shown with vertices  $A(2, -3)$ ,  $B(-2, 3)$ , and  $C(3, 4)$ . Translate the triangle to the left three units and up two units. Write down its coordinates in a table and plot and label it on the graph.



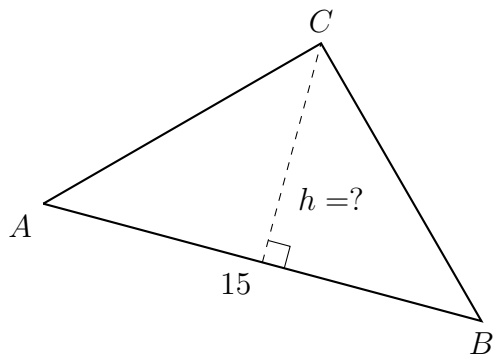
24. The shape shown below is composed of straight lines and right angles, with some lengths as marked. Find the area of the figure. (the figure is not drawn to scale)



25. Given isosceles  $\triangle RSU$  with  $\overline{US} \cong \overline{RS}$ . If  $m\angle UST = 150$  find  $m\angle U$ .



26. One side of the  $\triangle ABC$  has a length  $AB = 15$ . The triangle's area is  $71\frac{1}{4}$ . Find the length of the altitude  $h$  of the triangle.



27. The point  $K$  is the midpoint of  $\overline{JL}$ ,  $JK = 3x + 11$ , and  $JL = 9x + 1$ . Mark the line on the right and find  $JK$ .

