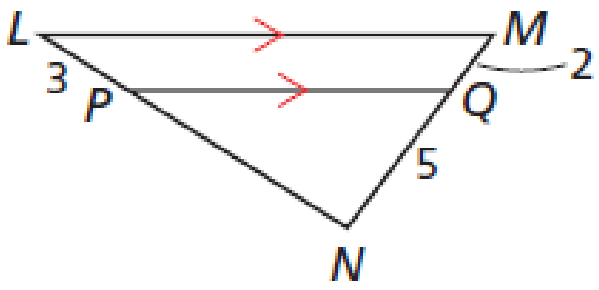
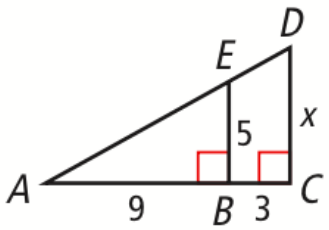
1. Find length PN.



2.

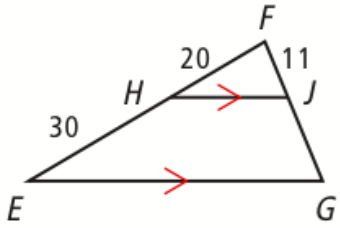
Explain why $\triangle ABE \sim \triangle ACD$, and then find CD.



3.

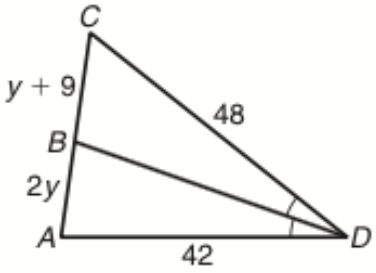
Find the length of each segment.

$\overline{JG}$



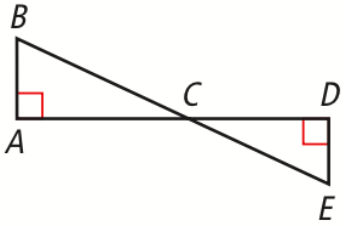
4.

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



5.

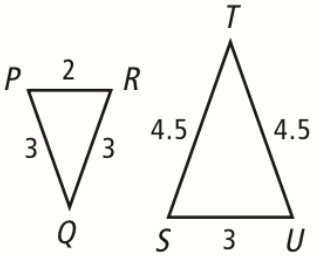
Explain why the triangles are similar and write a similarity statement.



6.

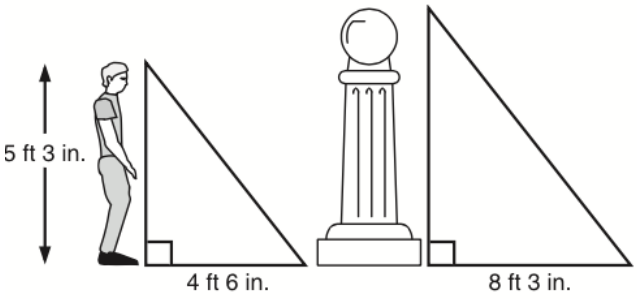
Verify that the triangles are similar.

$\triangle PQR$ and $\triangle STU$



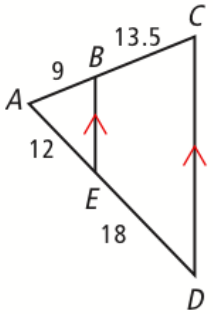
7.

A student is standing next to a sculpture. The figure shows the shadows that they cast. What is the height of the sculpture?



8.

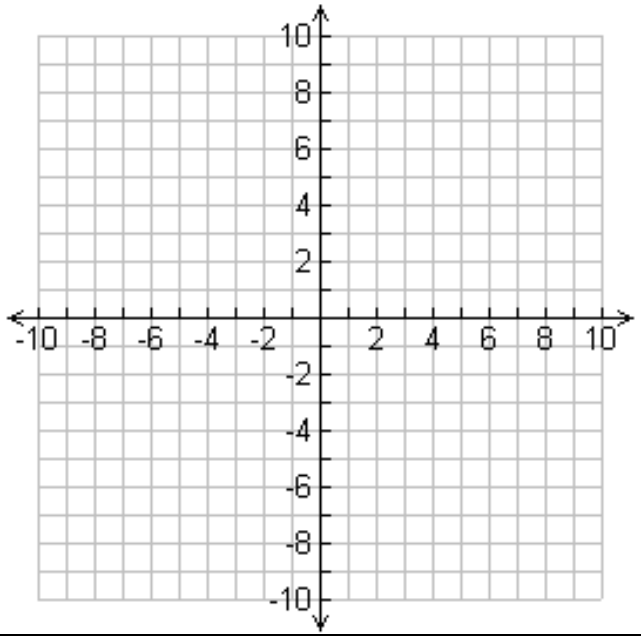
Verify that $\overline{BE}$ and $\overline{CD}$ are parallel.



9. Apply the dilation to polygon A(–6, –9), B(–3, –1), C(0, –9).

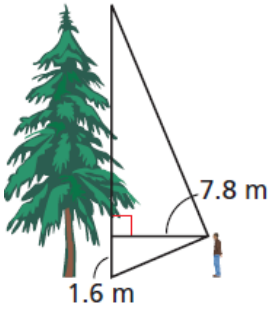
$$(x, y) \rightarrow \left(\frac{4}{3}x, \frac{4}{3}y\right)$$

What is the point of dilation?
What is the scale factor?



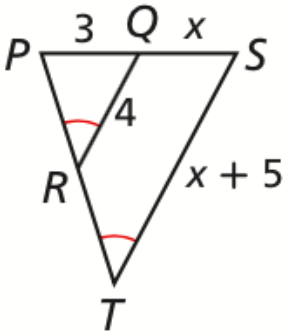
10.

To estimate the height of a Douglas fir, Jan positions herself so that her lines of sight to the top and bottom of the tree form a 90° angle. Her eyes are about 1.6 m above the ground, and she is standing 7.8 m from the tree. What is the height of the tree to the nearest meter?



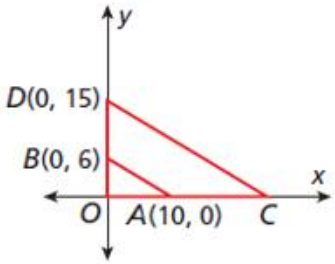
11.

Find the value of *x*.



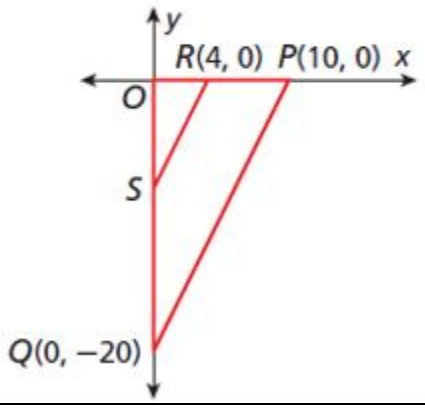
12.

Given that $\triangle AOB \sim \triangle COD$, find the coordinates of C and the scale factor.



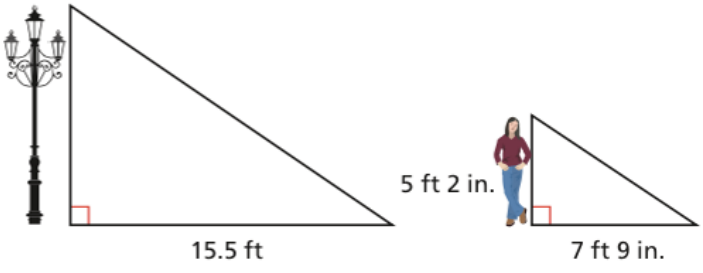
13.

Given that $\triangle ROS \sim \triangle POQ$, find the coordinates of S and the scale factor.



14.

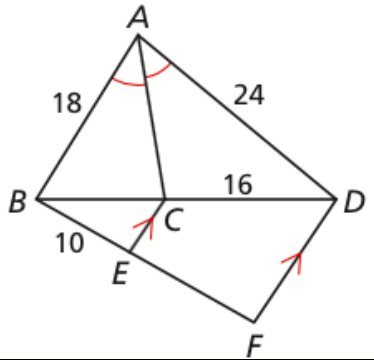
Measurement Jenny is 5 ft 2 in. tall. To find the height of a light pole, she measured her shadow and the pole's shadow. What is the height of the pole?



15.

Find the length of each segment.

$\overline{EF}$



16. Use a compass to dilate a scalene Δ with a scale factor of k = ½.

Use a compass to dilate a triangle with a scale factor of k = –2.

17. Determine whether the polygons with the given vertices are similar. Support your answer by describing a transformation.

$A(3, 0), B(3, 6), C(9, 6)$

$X(4, 0), Y(4, -8), Z(12, -8)$

18. Determine whether the polygons with the given vertices are similar. Support your answer by describing a transformation.

$L(-10, 5), M(-5, 0), N(0, 0), O(5, 5)$

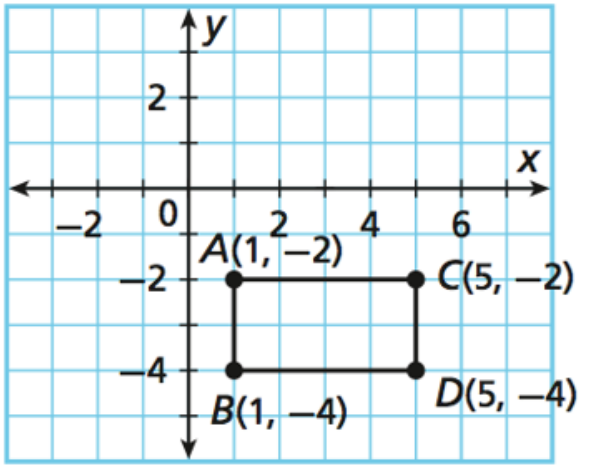
$D(4, 2), E(2, 0), F(0, 0), G(-2, 2)$

19. Apply the dilation to the figure.

Where is the point of dilation?

$D: (x, y) \rightarrow (0.5x, 0.5y)$

$A(1, -2), B(1, -4), C(5, -2)\ D(5, -4)$



20. Find the length of YW and WZ.