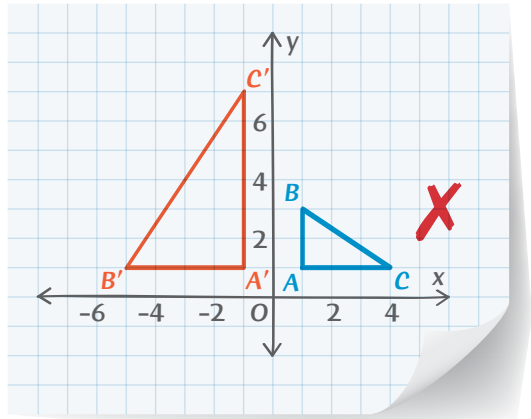


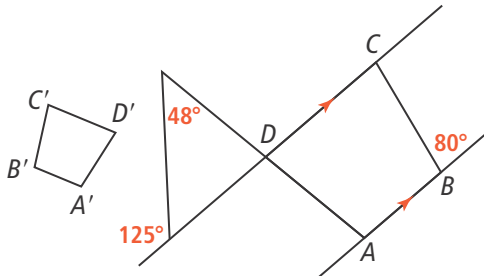


UNDERSTAND

9. **Construct Arguments** Is it possible to use only translations and dilations to map one circle to another? Explain.
10. **Error Analysis** Keegan was asked to graph $(r_{90^\circ} \circ D_2)(\triangle ABC)$. Explain Keegan's error.



11. **Mathematical Connections** In the diagram, $ABCD \sim A'B'C'D'$. What are the angle measures of $A'B'C'D'$?



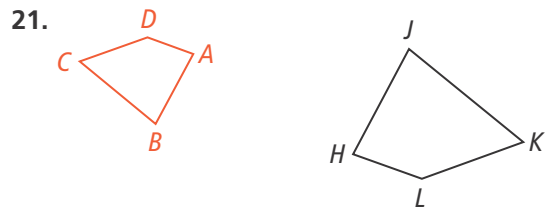
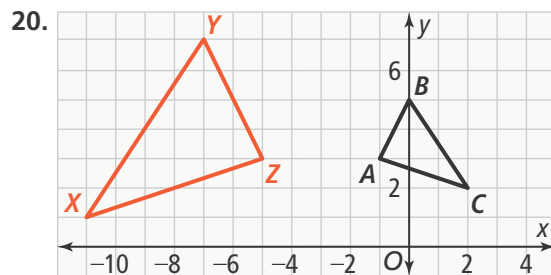
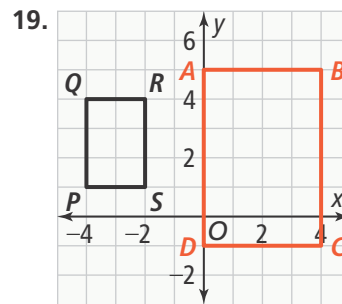
12. **Construct Arguments** Are all squares similar? Use transformations to explain.
13. **Generalize** Show whether a composition of a dilation and a translation can be performed in either order and result in the same image. (Hint: Test whether the equation $(D_k \circ T_{(a, b)})(x, y) = (T_{(a, b)} \circ D_k)(x, y)$ is true.)
14. **Higher Order Thinking** Given isosceles triangle ABC with $\overline{AB} \cong \overline{BC}$. Point D is the midpoint of \overline{AB} , E is the midpoint of \overline{BC} , and F is the midpoint of \overline{CA} . Use a similarity transformation and triangle congruence to show that $\triangle ABC \sim \triangle FEC$.

PRACTICE

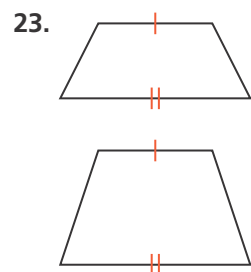
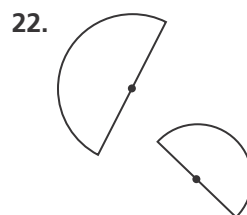
What are the vertices of each image? SEE EXAMPLE 1

15. $(T_{(5, -4)} \circ D_{1.5})(\triangle XYZ)$ for $X(6, -2)$, $Y(4, 1)$, $Z(-2, 3)$
16. $(R_{x\text{-axis}} \circ D_{0.5})(LMNP)$ for $L(2, 4)$, $M(4, 4)$, $N(4, -4)$, $P(2, -4)$
17. $(R_{y\text{-axis}} \circ D_2 \circ r_{270^\circ})(\triangle PQR)$ for $P(1, 3)$, $Q(-4, 2)$, $R(0, 5)$
18. $(D_{0.25} \circ R_{x\text{-axis}})(ABCD)$ for $A(2, 6)$, $B(0, 0)$, $C(-5, 8)$, $D(-2, 10)$

For each black pre-image and red image describe the similarity transformation, and write a similarity statement. SEE EXAMPLES 2 AND 3

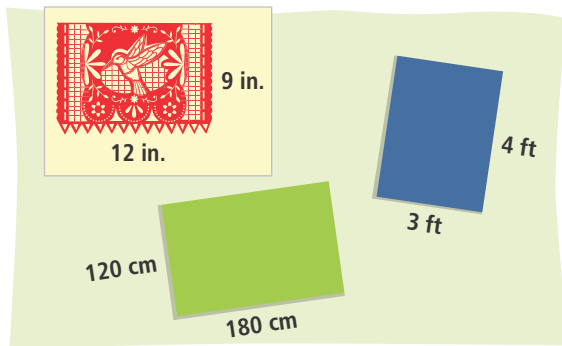


Do the figures appear to be similar? Explain. SEE EXAMPLE 4

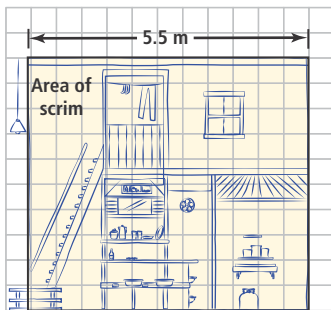


APPLY

24. Reason Can Ahmed use the larger sheets of paper shown to make paper cutouts similar to his original hummingbird cutout? If not, how can he trim the sheets of paper so he can use them? Justify your answer.

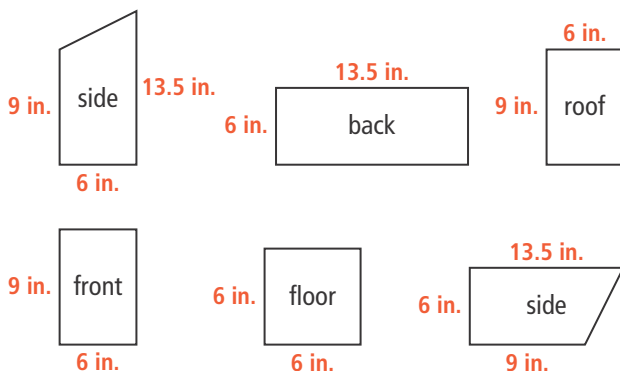


25. Make Sense and Persevere Rachel makes a sketch for a stage set design on a grid. She plans to have a gauze fabric called a scrim drop down from a beam that is 5.5 m wide. Assuming that her sketch is similar to the actual set, how much scrim is needed? Explain.



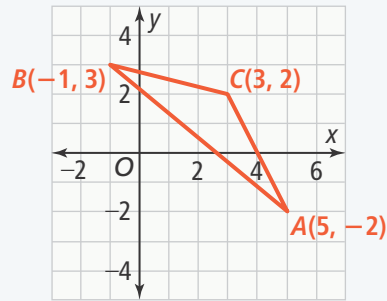
26. Look for Relationships Juanita wants to make a dollhouse following the pattern shown but with a reduced size so that the floor has an area of 25 in.². Make a sketch showing the dimensions of the pieces for the smaller dollhouse.

Dollhouse Pattern



ASSESSMENT PRACTICE

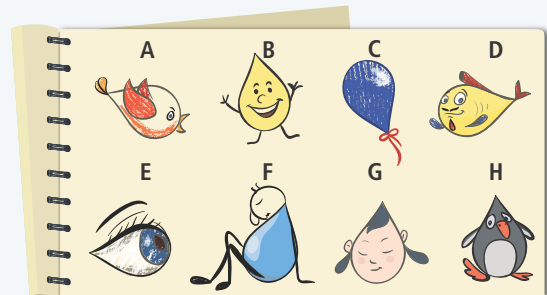
27. Graph the image of $(T_{\langle 1, -3 \rangle} \circ D_2)(\triangle ABC)$.



28. SAT/ACT What are the coordinates of $(D_4 \circ R_{x\text{-axis}})(8, 2)$?

- (A) $(-32, 8)$
- (B) $(32, 8)$
- (C) $(-32, -8)$
- (D) $(32, -8)$

29. Performance Task Lourdes makes sketches for her graphic novel using a repeating similar shape as a motif.



Part A On a separate sheet of paper, draw a small simple figure. Label it A.

Part B Use transformations, including similarity transformations, to create at least five images that are similar to figure A. Label the images B, C, D, E, and F.

Part C Is it possible to select any two of your figures and find a similarity transformation that maps one to the other? Explain.