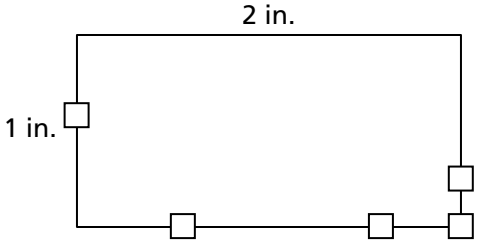
Name _____ Date _____ Class _____

Unit Test

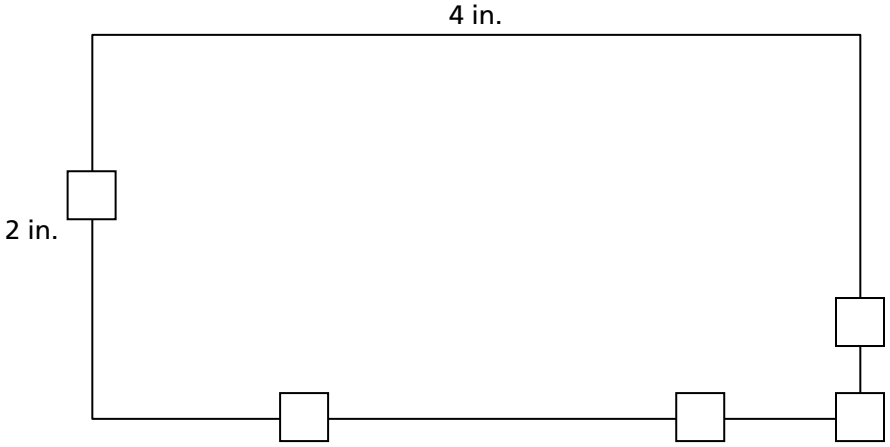
Stretching and Shrinking

Use the following diagrams of the floor plans for a tree house before and after reduction and enlargement by a copier to answer Exercises 1–8.

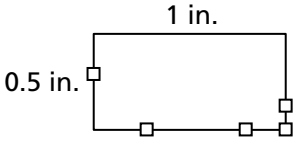
Original Tree House Floor Plan



Enlarged Tree House Floor Plan



Reduced Tree House Floor Plan



1. What is the scale factor from the original design to the enlarged design?

Unit Test *(continued)*

Stretching and Shrinking

2. Circle the answer that tells how the perimeter of the enlarged design compares to the perimeter of the original design.

F. The perimeter of the enlarged design is $\frac{1}{2}$ of the perimeter of the original.

G. The perimeter of the enlarged design is the same as the perimeter of the original.

H. The perimeter of the enlarged design is twice the perimeter of the original.

J. The perimeter of the enlarged design is four times the perimeter of the original.

Explain your answer.

3. Circle the answer that tells how the area of the enlarged design compares to the area of the original design.

A. The area of the enlarged design is $\frac{1}{2}$ of the area of the original.

B. The area of the enlarged design is the same as the area of the original.

C. The area of the enlarged design is twice the area of the original.

D. The area of the enlarged design is four times the area of the original.

Explain your answer.

4. What copier size factor was used to make the enlarged design from the original?

5. What is the scale factor from the original design to the reduced design?

Unit Test *(continued)*

Stretching and Shrinking

6. Circle the answer that tells how the perimeter of the reduced design compares to the perimeter of the original design.

F. The perimeter of the reduced design is $\frac{1}{2}$ of the perimeter of the original.

G. The perimeter of the reduced design is the same as the perimeter of the original.

H. The perimeter of the reduced design is $\frac{1}{4}$ of the perimeter of the original.

J. The perimeter of the reduced design is four times the perimeter of the original.

Explain your answer.

7. Circle the answer that tells how the area of the enlarged design compares to the area of the original design.

A. The area of the reduced design is $\frac{1}{2}$ of the area of the original.

B. The area of the reduced design is the same as the area of the original.

C. The area of the reduced design is $\frac{1}{4}$ of the area of the original.

D. The area of the reduced design is four times the area of the original.

Explain your answer.

8. What copier size factor was used to make the reduced design from the original?

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Unit Test *(continued)*

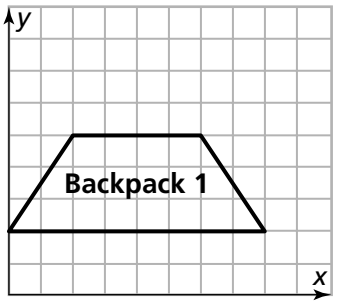
Stretching and Shrinking

9. The following table gives key coordinates for drawing a backpack for the Wumps. Backpack 1 is plotted on the grid.

a. Find coordinates for drawing the other backpacks.

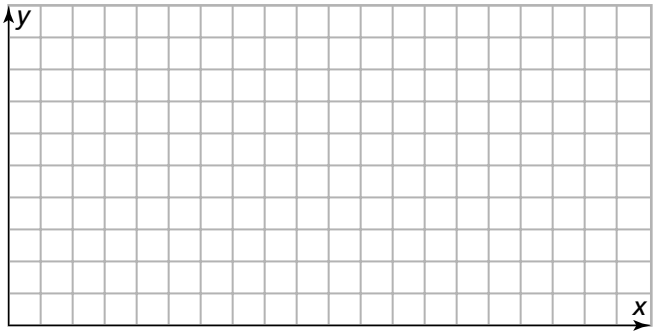
Wump Backpacks

Backpack 1	Backpack 2	Backpack 3	Backpack 4
(x, y)	$(2x, 2y)$	$(x + 8, y - 2)$	$(x, 2y)$
(0, 2)			
(8, 2)			
(6, 5)			
(2, 5)			
(0, 2)			

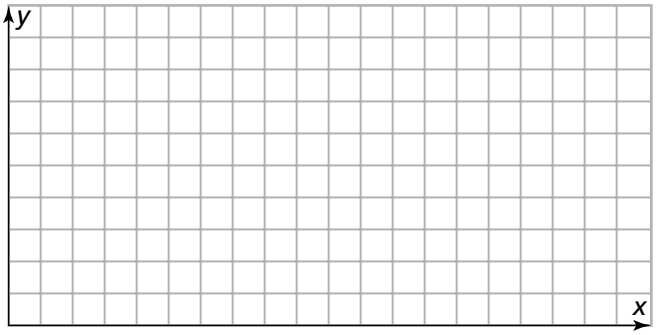


b. Plot Backpack 2, Backpack 3, and Backpack 4 on the following grids.

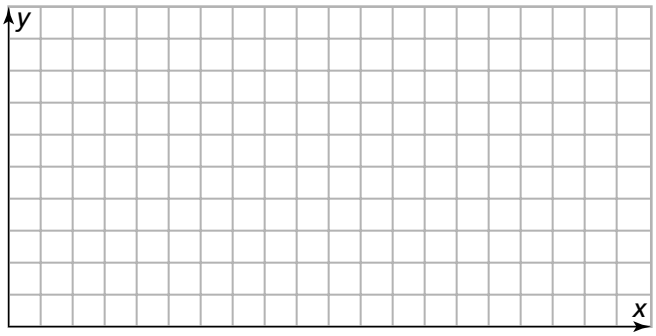
Grid for Backpack 2



Grid for Backpack 3

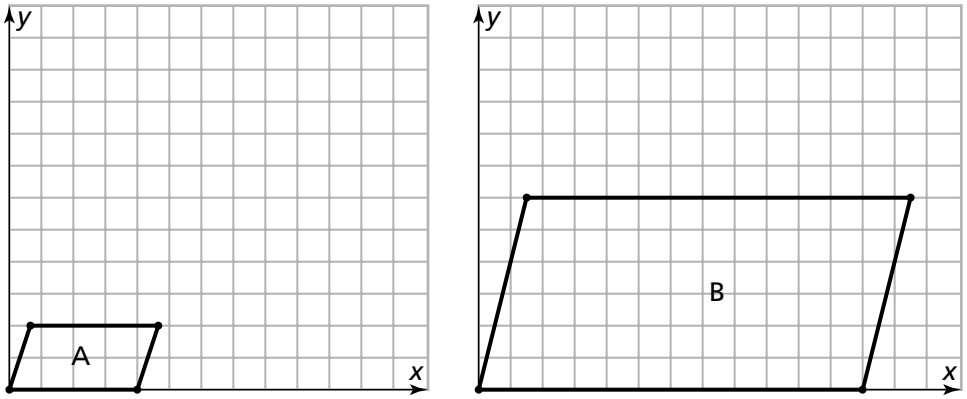


Grid for Backpack 4



c. Which backpacks are similar? Explain.

10. Use these two similar parallelograms to answer the questions below.



a. Write a rule that finds coordinates of any point on Parallelogram A from the corresponding point on Parallelogram B.

b. Write a rule that finds coordinates of any point on Parallelogram B from the corresponding point on Parallelogram A.

c. What is the scale factor that relates Parallelogram A to Parallelogram B?

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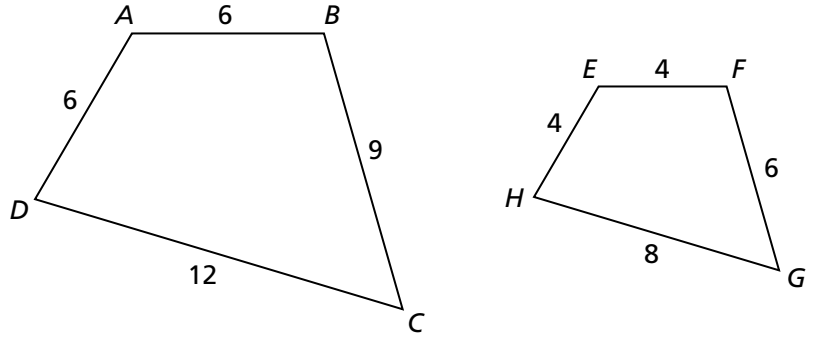
Unit Test *(continued)*

Stretching and Shrinking

11. Consider the two polygons below.



a. Does the diagram provide enough information to determine whether the two polygons are similar? If not, what additional information may you need?

b. Suppose the polygons are similar.

i. Write two ratios that compare corresponding sides of the similar polygons.

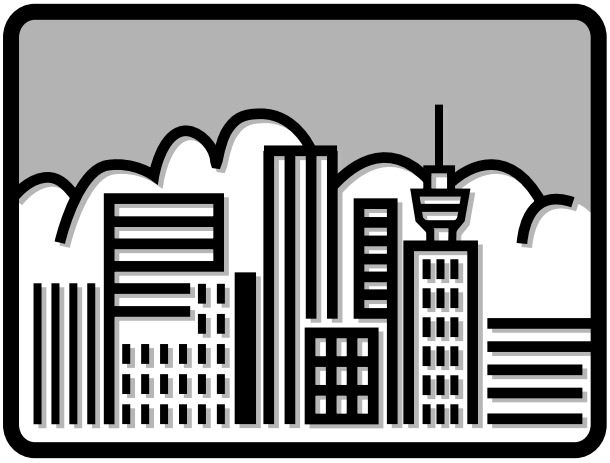
ii. Find the ratio of two adjacent sides in one polygon and the ratio for the corresponding adjacent side lengths in the other. How do the ratios compare?

iii. What scale factor relates the corresponding sides in the polygons above? Explain your answer.

Unit Test *(continued)*

Stretching and Shrinking

12. The following picture is in an 8 centimeter by 6 centimeter frame.

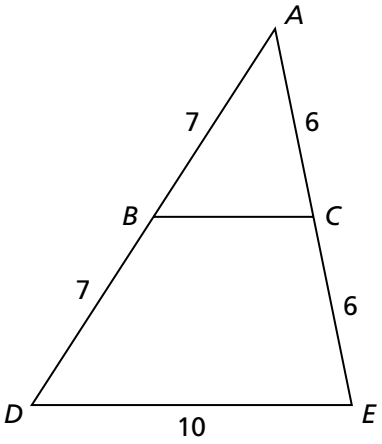


a. Can this frame be reduced to 6 centimeters by 4 centimeters without distorting the shape? Explain.

b. Can this frame be reduced to 4 centimeters by 3 centimeters without distorting the shape? Explain.

13. Consider the diagram below. BC is parallel to DE.

a. Name two similar triangles and state how you know they are similar.



b. What is the length of side AE?

c. What is the length of line segment BC?

Unit Test *(continued)*

14. Use the diagram below to determine the height of the flagpole.