Stretching and Shrinking Practice Answers

Investigation 1 Additional Practice

1. **a.** Answers will vary. Possible answers: 6 by 8, 9 by 12, 4.5 by 6.
   b. Answers will vary. Possible answers: 1.5 by 2, 1 by 1.33.
   c. Answers will vary. Possible answer: 3 by 5.
2.

Angle
A
B
C
D
E

corresponds to

Angle
V
W
X
Y
Z

Side
AB
BC
CD
DE
EA

corresponds to

Side
VW
WX
XY
YZ
ZV

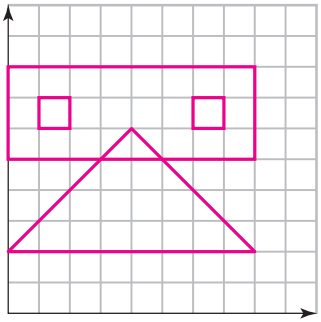
3. **a.** Check students' drawings; 4 copies
   b. This will be true for any two such squares. Two copies of the smaller square will fit side-by-side in the larger square. Two of these rows can fit vertically in the larger square, for a total of four squares.
4. **a.** The sides of the original quadrilateral measure 2 cm and 3 cm. The sides of the image measure 0.6 cm and 0.9 cm. 0.6 is 30% of 2 and 0.9 is 30% of 3. Carl entered 30% into the photocopier.
   b. Amy's image is a quadrilateral similar to the original, with side lengths 5 cm and 7.5 cm.
5. Angle A is corresponding to angle U. Angle C is congruent to angle W. Side DE corresponds to side XY.
6. $\frac{10}{16}, \frac{15}{24}, 0.625$
7. $92 \times 0.30 = 27.6$ or $0.30 \times 92 = 27.6$

Skill: Using Percent

1. 112	**2.** 84	**3.** 4.5
4. 28	**5.** 20	**6.** 40
7. 80	**8.** 4	**9.** 150

Investigation 2 Additional Practice

1. **a.** 9 copies will fit.
   b. This will be true for any two such rectangles. Three copies of the smaller rectangle will fit side by side in the larger rectangle. Three of these rows can fit vertically in the larger rectangle, for a total of nine rectangles.
2. The original figure is below:



   a. The angles would have the same measure.
   The sides of the image will be six times as long as the sides of the original.
   The image would be similar to the original, because angle measures are the same and all sides grew by a scale factor of 6.
   b. The image would be similar to the original, because angles have the same measure and the sides grew by the same scale factor of 3.
3. The scale factor from Zug to Mug is $\frac{1}{2}$. All of the side lengths of Mug are $\frac{1}{2}$ as long as the side lengths of Zug.
4. **a.** Wendy is correct. The side lengths of her new "Wump 8" are 4 times as long as the side lengths of Zug.

Copyright © Pearson Education, Inc., or its affiliates. All Rights Reserved.

b. The scale factor from Bug to Wendy's Wump 8 is $\frac{8}{3}$ or 2.67. Any side length of Wump 8 divided by the corresponding side length of Bug will give this scale factor.

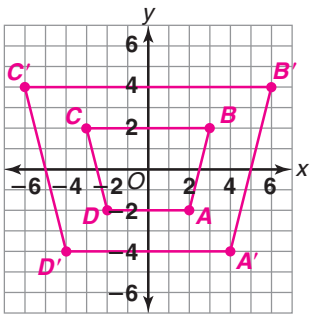
5. $(2, 0)$, $(-1, -4)$, $(-3, 0)$, and $(-1, 4)$

6. Similar figures: A, B
Not similar figures: C, D

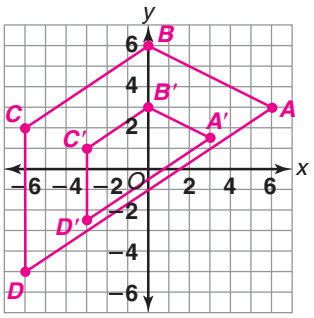
Skill: Similar Figures

1. no **2.** yes
3. yes **4.** a, f; b, h; c, g

5.



6.



7. $\frac{1}{3}$

Investigation 3 Additional Practice

1. a. There are only two answers possible: 4 by 6 and 2 by 3.

b. Four copies of the 4-by-6 triangle will fit in the original. Sixteen copies of the 2-by-3 triangle will fit in the original.

2. a. Yes, 9 of these smaller triangles can be put together to match the shape of the original triangle. Each smaller triangle is similar to the original because of the restriction that the triangles are isosceles, together with the fixed height and base.

b. No, copies of the smaller triangle cannot be put together to make the original because the scale factor from the smaller to the larger triangle is not a whole number. However, the smaller triangle is similar to the original because the scale factor is 1.5.

3. a. $x = 12$ cm **b.** $x = 3$ cm

4. a. The scale factor from A to B is 1.5 (or 150%).

b. The scale factor from A to B is 2 (or 200%).

c. The scale factor from A to B is 2.5 (or 250%).

5. a. There are 9 square feet in a square yard. Three square feet will fit side by side inside the square yard. Three such rows will fit vertically in the square yard for a total of 9 square feet.

b. Yes, all squares are similar.
The scale factor from a square foot to a square yard is 3. The scale factor from a square yard to a square foot is $\frac{1}{3}$.

c. The scale factor from a square inch to a square foot is 12.

d. There are 144 square inches in a square foot. Twelve square inches will fit side by side in a square foot. Twelve such rows will fit vertically in the square foot for a total of $12 \times 12 = 144$.

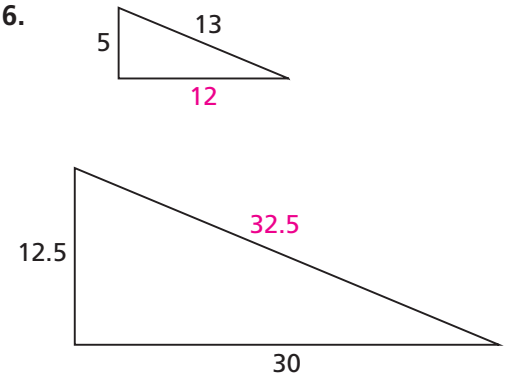
e. The scale factor from a square inch to a square yard is 36.

f. There are 1,296 square inches in a square yard. Thirty-six square inches will fit side by side in a square yard. Thirty-six such rows will fit vertically in the square yard for a total of $36 \times 36 = 1{,}296$.

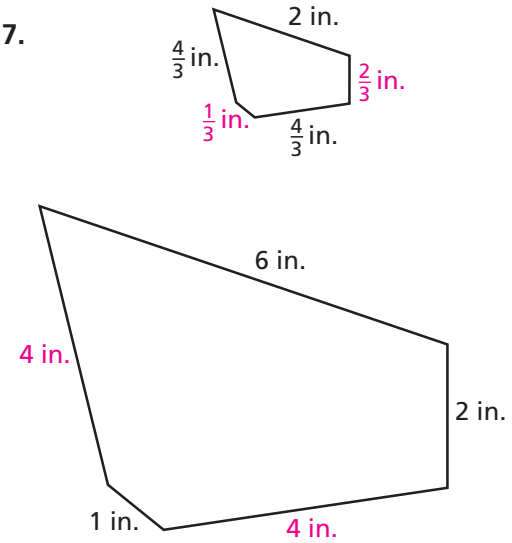
Copyright © Pearson Education, Inc., or its affiliates. All Rights Reserved.

Stretching and Shrinking Practice Answers

6.



7.



8. 2; 2

9. 16

Skill: Similar Polygons

1. 4

2. 12

3. $8\frac{4}{7}$

4. $x = 12; y = 13\frac{1}{3}$

5. 2.5

6. 10

Skill: Fractions, Decimals, and Percents

1–12. Two possible answers are given.

1. $\frac{6}{20}; \frac{9}{30}$

2. $\frac{14}{16}; \frac{21}{24}$

3. $\frac{10}{12}; \frac{15}{18}$

4. $\frac{6}{8}; \frac{9}{12}$

5. $\frac{3}{4}; \frac{6}{8}$

6. $\frac{2}{3}; \frac{4}{6}$

7. $\frac{1}{3}; \frac{3}{9}$

8. $\frac{1}{4}; \frac{2}{8}$

9. 0.6; 60%

10. 0.7; 70%

11. 0.52; 52%

12. 0.85; 85%

Investigation 4 Additional Practice

1. a. There are two possible answers. The first possibility is that Rachel was thinking about the scale factor from the larger triangle to the smaller triangle. The second possibility is that she was thinking about the ratio of the shorter given side of each triangle to the longer given side.

b. In this case, Rachel had to be thinking about the ratio of the longer given side to the shorter given side. Depending on students' answers to 1a, this could be the same or it could be different thinking.

2. a. $a = 10$ centimeters

b. $b = 1.25$ centimeters, $c = 6$ centimeters

c. $d = 3.75$ centimeters, $e = 7.5$ centimeters

3. a. $x = 4$ centimeters

b. $y = 24$ centimeters

4. 12 cm

5. ABCD is similar to EFGH. Side DC corresponds to side HG. The ratio of side AB to side AD is the same as the ratio of side EF to side EH.

6. corresponding; 6; 6; 2

Skill: Similarity and Ratios

1. yes; $ABCD \sim EFGH$

2. no

3. yes; $\triangle STU \sim \triangle VWX$

4. yes; $\triangle DEF \sim \triangle CAB$

5. yes; $GHIJ \sim KLMN$

6. no

7. $x = 4\frac{2}{3}; y = 8$

8. $x = 18; y = 24$

9. $x = 21; y = 24$

10. $x = 20; y = 9$

11. $x = 21\frac{3}{5}; y = 20$

Copyright © Pearson Education, Inc., or its affiliates. All Rights Reserved.