Name: Key Date: _____ Period: _____

Stretching and Shrinking Unit Test Review

Standards

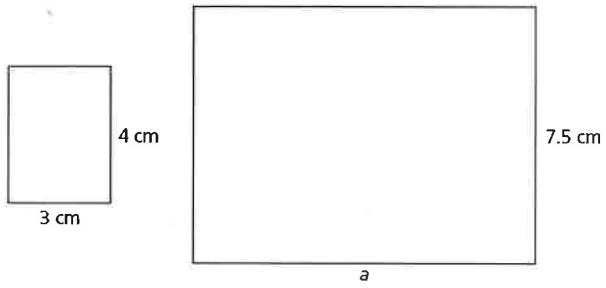
7.G.1: Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing.

7.G.1: Reproduce a scale drawing at a different scale.

7.G.6: Solve real-world and mathematical problems involving area of two-dimensional objects composed of triangles, quadrilaterals, and other polygons.

1. Below are several pairs of similar figures. In each, find the missing measurement(s). Show your thinking!!!

a.

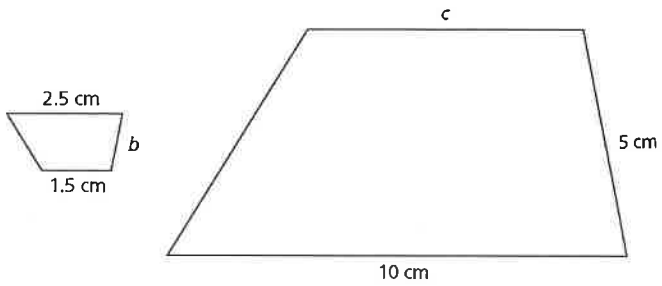


3 cm corresponds to 7.5 cm and we're stretching, so SF = 7.5 ÷ 3 = 2.5.

4 cm corresponds to a, so

a = 4 • 2.5 = **10 cm**

b.



10 cm corresponds to 2.5 cm.

stretching SF = 10 ÷ 2.5 = 4

1.5 cm corresponds to c,

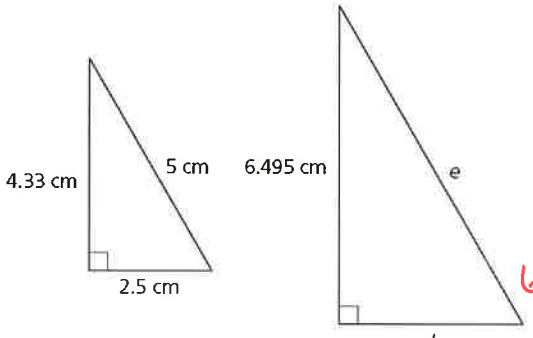
so c = 1.5 • 4 = **6 cm**

shrinking SF = 2.5 ÷ 10 = 0.25

5 cm corresponds to b,

so b = 5 • 0.25 = **1.25 cm**

c.

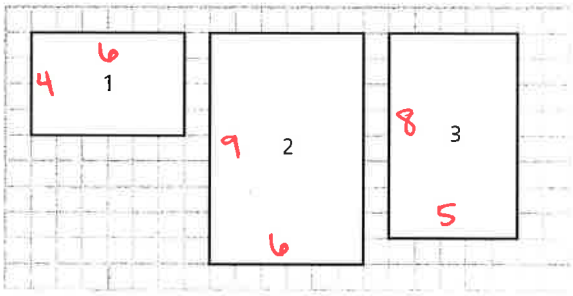


6.495 cm corresponds to 4.33 cm and we're stretching, so SF = 6.495 ÷ 4.33 = 1.5.

2.5 cm corresponds to d, so d = 2.5 • 1.5 = **3.75 cm**

5 cm corresponds to e, so e = 5 • 1.5 = **7.5 cm**

2. Which rectangles below are similar? Explain why.



SF = 6 ÷ 4 = 1.5 SF = 8 ÷ 6 = $\frac{4}{3}$

SF = 9 ÷ 6 = 1.5 SF = 5 ÷ 4 = 1.25

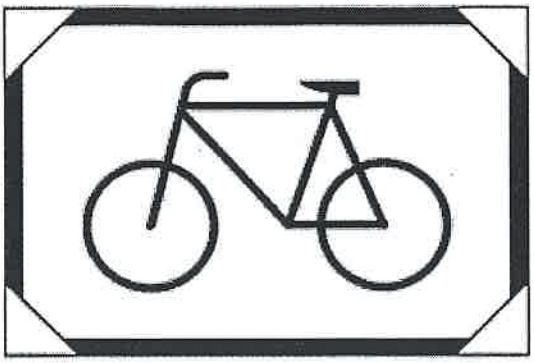
Rectangles 1 and 2 are similar because the scale factor is the same between the corresponding sides, and the corresponding angles are equal.

The coach took a digital photo of the new cycling team bike. She sent a 4 cm-by-6 cm photo to each team member. Suppose you want to make a 2 cm-by-3 cm copy of the original photo.

Original

$P = 2(4+6) = 20$ cm

$A = 4 \cdot 6 = 24$ cm^2



smaller copy

$P = 2(2+3) = 10$ cm

$A = 2 \cdot 3 = 6$ cm^2

3. How will the angles in the original photo compare to the corresponding angles in the smaller photo?

The corresponding angles are congruent (equal).

4. How will the perimeter of the original photo compare to that of the smaller photo? Provide a numerical justification as a part of your answer.

The perimeter of the original will be two times the perimeter of the copy (20 cm vs. 10 cm)

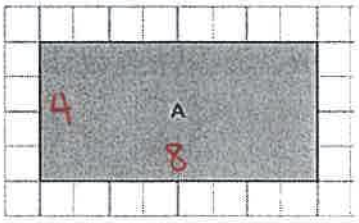
5. How will the area of the original photo compare to that of the smaller photo? Provide a numerical justification as a part of your answer.

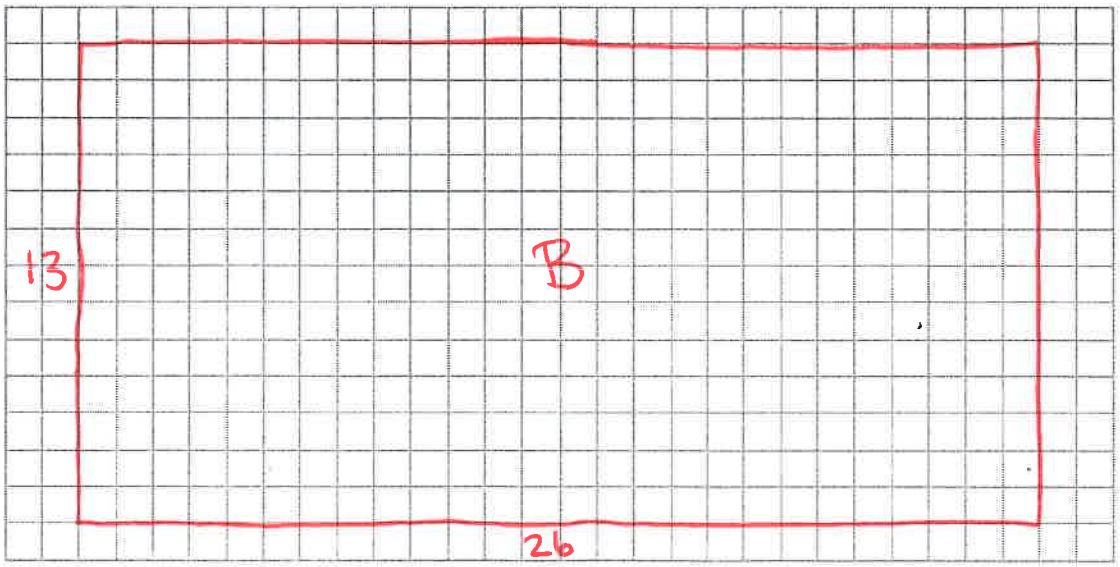
The area of the original will be four times the area of the copy (24 cm^2 vs. 6 cm^2)

6. **Rectangle A is sketched at right. Rectangle B is similar to Rectangle A. The scale factor from A to B is 3.25. Draw and label rectangle B on the grid below.**

$4 \cdot 3.25 = 13$

$8 \cdot 3.25 = 26$





7. **A figure has a perimeter of 40 ft and an area of 51 ft^2. A similar figure is created using a scale factor of 1.5.**

a. What is the <u>perimeter</u> of the new figure? Show your work.

$40 \cdot 1.5 = 60$ ft

b. What is the <u>area</u> of the new figure? Show your work.

$51 \cdot 1.5^2 = 114.75$ ft^2

8. **A figure has a perimeter of 315 yd and an area of 235 yd^2. A similar figure is created using a scale factor of 0.4.**

a. What is the <u>perimeter</u> of the new figure? Show your work.

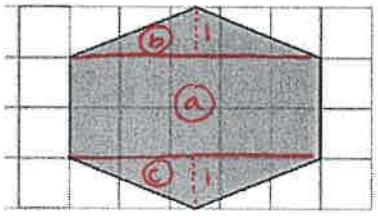
$315 \cdot 0.4 = 126$ yd

b. What is the <u>area</u> of the new figure? Show your work.

$235 \cdot 0.4^2 = 37.6$ yd^2

9. **Find the area of the figures below by using the formulas for rectangles and triangles. Show ALL work.**

a.

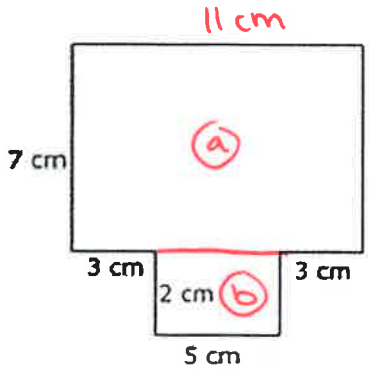


(a) $2 \cdot 5 = 10$

(b) and (c) $\frac{5 \cdot 1}{2} = 2.5$

$A = 10 + 2.5 + 2.5 =$ 15 units^2

b.



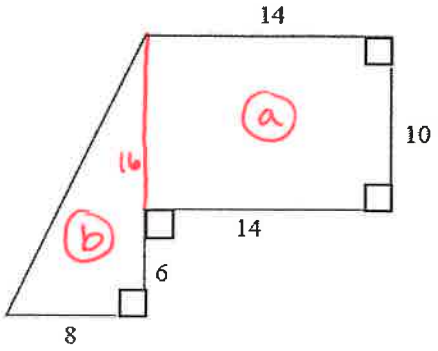
(a) $11 \cdot 7 = 77$

(b) $2 \cdot 5 = 10$

$A = 77 + 10$

$=$ 87 cm^2

c.

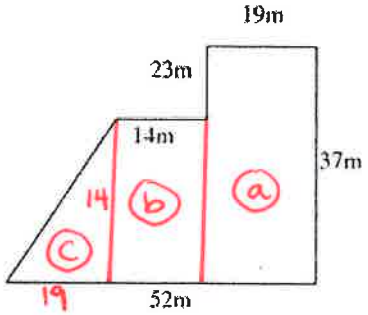


(a) $10 \cdot 14 = 140$

(b) $\frac{8 \cdot 16}{2} = 64$

$A = 140 + 64 =$ 204 units^2

d.



(a) $19 \cdot 37 = 703$

(b) $14 \cdot 14 = 196$

(c) $\frac{14 \cdot 19}{2} = 133$

$A = 703 + 196 + 133$

$=$ 1032 m^2