

# Test review on Stretching and Shrinking

1. The dimensions of six rectangles are given below.

Rectangle	Width	Height
A	6	8
B	$9\frac{1}{3}$	$11\frac{2}{3}$
C	16	20
D	24	32
E	10	12.5
F	14	35

- a. Sort the rectangles into sets of similar rectangles. Tell which rectangles are in each set.

The three groups are

A and D

B, C and E

F

- b. Explain how you decided which rectangles were similar.

You can divide the large sides by the small sides or vice versa, and those that have the same ratios are the same

A)  $8 / 6 = 1\frac{1}{3}$

B)  $11\frac{2}{3} / 9\frac{1}{3} = 1\frac{1}{4}$

C)  $20 / 16 = 1\frac{1}{4}$

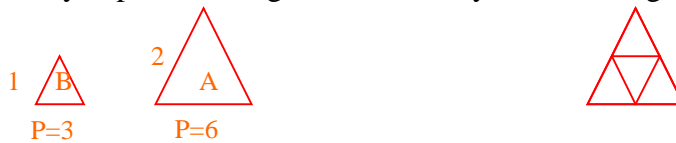
D)  $32 / 24 = 1\frac{1}{3}$

E)  $12.5 / 10 = 1\frac{1}{4}$

F)  $35 / 14 = 2\frac{1}{2}$

1. Triangles A and B are similar. The side lengths of triangle A are two times the side length of triangle B. In a and b **illustrate** your answer by making a drawing.

- a. How many copies of triangle B will exactly fit into triangle A? 4



- b. How many times greater is the perimeter of triangle A than the perimeter of triangle B? 2

2. Carmen is using a photo enlargement machine. She has a 4x5 in. photo she wants to enlarge. The machine will enlarge in four sizes. 5x7, 7x10, 12x15, and 16x24. When Carmen tries to enlarge her photo to a couple of the sizes, the photo is not exactly similar-that is, some parts of the photo are cut off.

- a. If Carmen wants an enlargement that is similar to her original, what size(s) could she choose for the machine to make? Explain your answer.

12x15

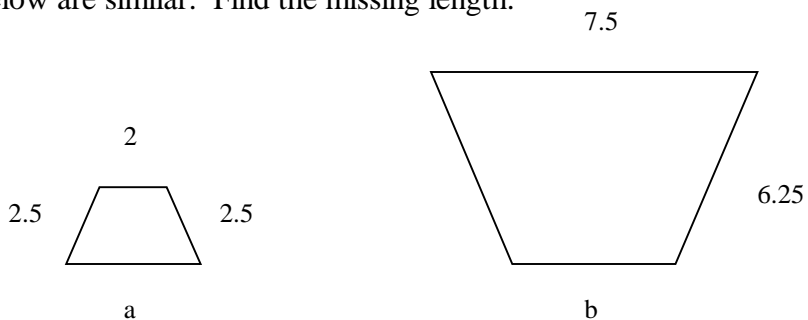
$5 / 4 = 1.25$	$7 / 5 = 1.4$	$15 / 12 = 1.25$
	$10 / 7 = 1.43$	$24 / 16 = 1.5$

4			
5	.40	.40	.40
	.40	.40	.40
	.40	.40	.40

- b. The cost of photos and their enlargements are based on the amount of photographic paper used. Carmen paid \$.40 for her 4x5 photo. How much would the enlarged photo(s) cost for the size(s) you gave in part a?

The cost of the photo would be \$3.60. The scale factor is 3 so the area is 9 ( $3^2$ ) times more.  $9 \times \$0.40 = \$3.60$

4. The two figures below are similar. Find the missing length.

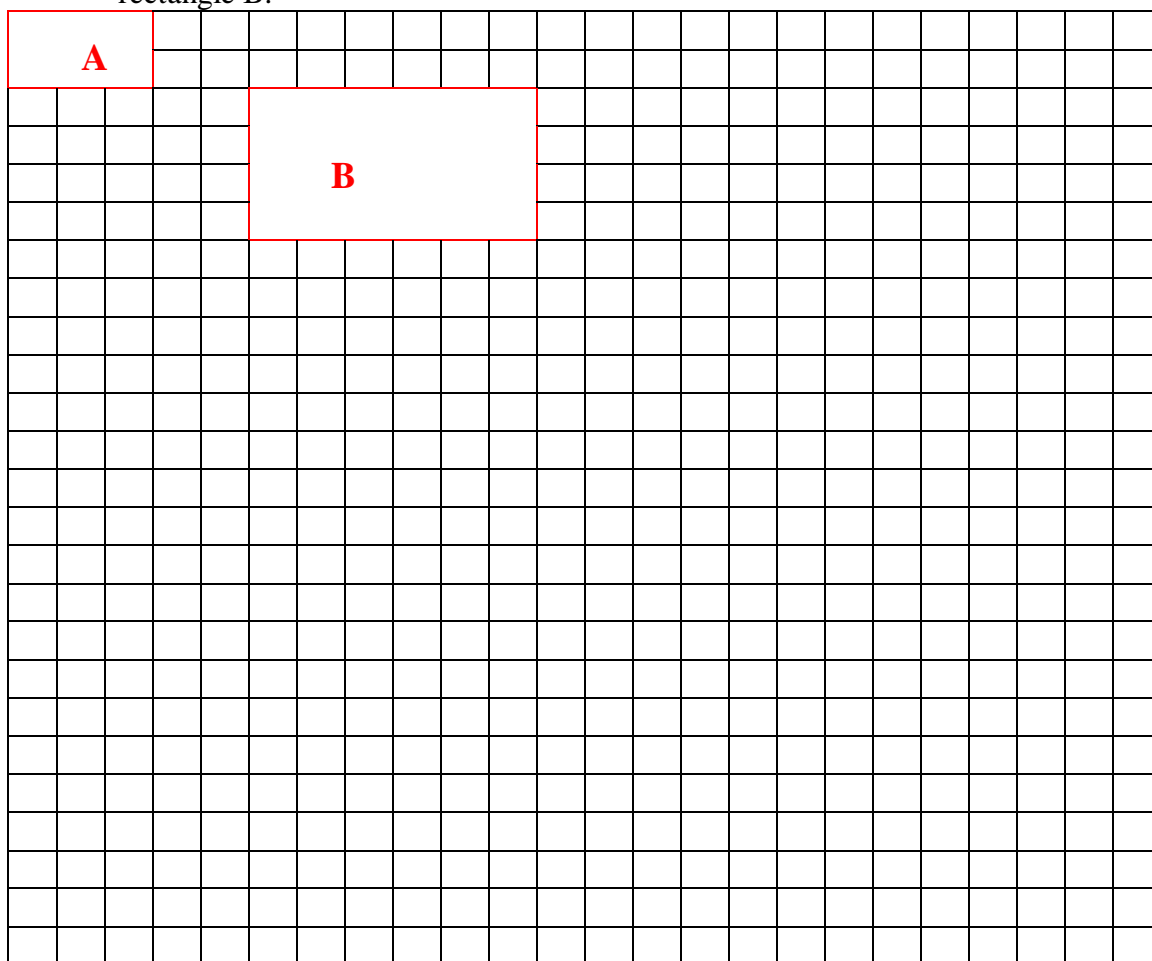


$a = \underline{3}$

$b = \underline{5}$

The scale factor from the small one to the big one is 2.5. You can get this by dividing corresponding sides 6.25 divided by 2.5 and getting 2.5. That means everything on the large trapezoid is 2.5 times larger and to move from the large to the small you can divide by 2.5.

5. Draw two similar rectangles on the grid below. Label your small rectangle A and your large rectangle B.



b. How do you know your rectangles are similar?

They have the same angles

They have the same shape

There is a scale factor to get from one to the other (or all lengths are multiplied by the same number)

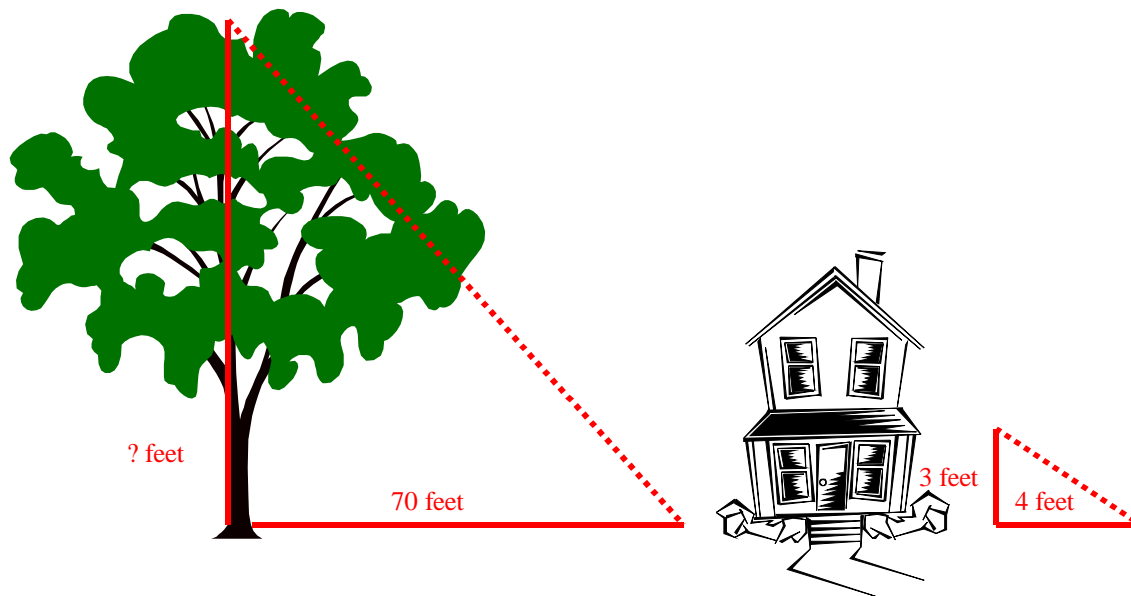
c. What is the scale factor from rectangle A to rectangle B?

2 (All the lengths are twice as long)

d. How does the area of rectangle A compare to rectangle B?

The area is 4 times larger. If the scale factor is 2 you take the scale factor squared ( $2^2$ ) and you get 4.

6. Mr. Dick's neighbor wants to cut down a dead tree that is in his yard. Mr. Dick is worried that when the tree is cut, it will fall on his house, which is 58 feet from the tree. His neighbor decided to measure the height of the tree by using its shadow. The tree's shadow measured 70 feet. Mr. Dick put a yardstick next to the tree and the yardstick cast a shadow of 4 feet.



a. How tall is the tree?

52.5 feet

$$\frac{4}{3} = \frac{70}{?}$$

Cross multiply and divide  $3 \times 70 / 4 = 52.5$

b. Will the tree hit Mr. Dick's house if it falls the wrong way? Explain.

No, the tree is 52.5 feet tall and it is 58 feet from Mr. Dick's house so it could not fall and hit his house.