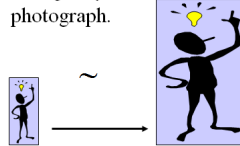


### Similar Figures

**Enlargements**


• When you have a photograph enlarged, you make a similar photograph.



Scale factor greater than 1

**Reductions**

• A photograph can also be shrunk to produce a slide.



Scale factor less than 1

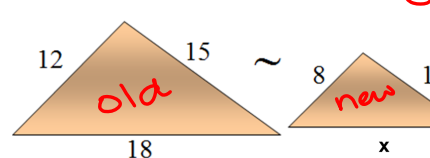
### Similar Figures

1. Corresponding Angles are congruent
2. Corresponding sides are proportional

\*\*\*Figures look the same but are different sizes

Similarity Statement  
 $\triangle ABC \sim \triangle DEF$   
↑ similar

### Solve for x



$\frac{N}{O} = \frac{N}{O}$

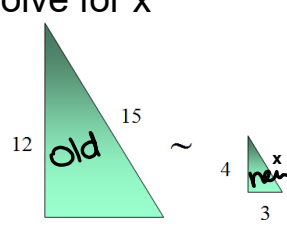
~~$\frac{x}{18} = \frac{8}{12}$~~

$12x = 144$

$\frac{12}{12} = \frac{12}{12}$

$x = 12$

### Solve for x



$\frac{\text{New}}{\text{old}} = \frac{\text{new}}{\text{old}}$

~~$\frac{x}{15} = \frac{3}{9}$~~

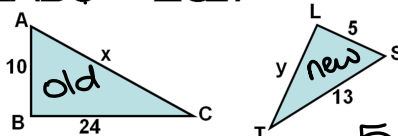
$9x = 45$

$\frac{9}{9} = \frac{45}{9}$

$x = 5$

### Solve for x and y

$\triangle ABC \sim \triangle SLT$



$\frac{10}{y} = \frac{24}{5}$

$10 \cdot 5 = 24y$

$50 = 24y$

$\frac{50}{24} = \frac{24y}{24}$

$y = 2\frac{1}{6}$


$\frac{10}{13} = \frac{x}{5}$

$10 \cdot 5 = 13x$

$50 = 13x$

$\frac{50}{13} = \frac{13x}{13}$

$x = 3\frac{8}{13}$

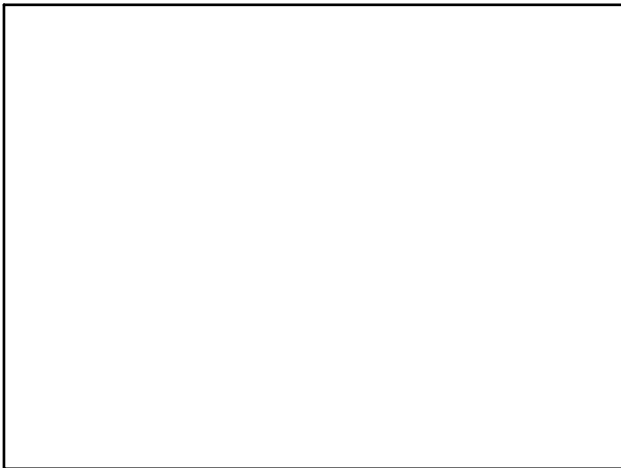


① 5	⑥ 36	*⑪ 30	⑰ 9
② 3	⑦ 110	⑫ 12	⑱ 12
③ 2	⑧ 100	*⑬ 12	⑲ 16
④ 10	⑨ 40	*⑭ 63	⑳ 56
⑤ 7	⑩ 8	⑮ 77	*⑳ 43
		⑯ 5	㉑ 14
		*㉒ 23	㉒ 23
		*㉓ 13	

$$\frac{4}{x} = \frac{11}{44}$$

$$\frac{176}{11} = \frac{11x}{11}$$

$$x = 16$$



### Dilation

(another word for comparing similar figures)

A transformation that changes the size of a figure but not its shape.

$\longrightarrow$

$\longrightarrow$

**Scale Factor** – the ratio of a new image to its original image

$$scale\ factor = \frac{new}{original}$$

- The ratio of corresponding sides

**Scale Factor**

*k* is used to represent the scale factor.

- When scale factor is greater than 1, the shape gets bigger (enlargement).
- When scale factor is less than 1, but greater than 0, the shape gets smaller (reduction).

**SCALE FACTOR.**  $k = \frac{\text{new}}{\text{old}}$

$\frac{6}{2} = \frac{3}{1} = \textcircled{3}$   
 $\frac{5}{10} = \frac{1}{2} \cdot \frac{7}{14} = \frac{1}{2}$   
 $\frac{3}{6} = \frac{1}{2}$

Find the scale factor and solve for x

$\frac{x}{39} = \frac{11}{33}$   
 $\frac{33x}{33} = \frac{429}{33}$   
 $k = \frac{\text{new}}{\text{old}} = \frac{8}{24} = \frac{1}{3}$   $x = 13$

Jan 20-3:13 PM

Find the scale factor and solve for x

$\frac{x}{12} = \frac{6}{18}$   
 $\frac{18x}{18} = \frac{72}{18}$   
 $x = 4$   
 $k = \frac{\text{new}}{\text{old}} = \frac{6}{18} = \frac{1}{3}$

Find the coordinates of the dilation image for the given scale factor, k.

Example 1:  
 $G(0, -2), H(1, 3), \text{ and } I(4, 1); k = 2$

**All you do is multiply k to (x, y).**

$G'(0, -4)$      $I'(8, 2)$   
 $H'(2, 6)$

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Find the coordinates of the dilation image for the given scale factor, k.

Example 2  
 $L(8, -8), N(0, 16), \text{ and } M(4, 5); k = 1/4$

**All you do is multiply k to (x, y).**

$L'(2, -2)$      $M'(1, \frac{5}{4})$   
 $N'(0, 4)$

What is the scale factor from ABCD to A'B'C'D'?

$k = \frac{\text{new}}{\text{old}}$   
 $A(0, 8) = \frac{4}{8}$   
 $A'(0, 4) = \frac{1}{2}$

