DILATIONS CREATE SIMILAR FIGURES.

BIG IDEA #3

BIG IDEA #4

IN SIMILAR FIGURES (DILATIONS) , CORRESPONDING ANGLES ARE CONGRUENT AND CORRESPONDING SIDES ARE PROPORTIONAL.

DILATIONS PRODUCE SIMILAR FIGURES

Dilation – a transformation that produces an image that is the **same shape**, but a **different size**.

Enlargement – a dilation that creates a **larger image**.

Reduction – a dilation that creates a **smaller image**.

WHAT IS A SCALE FACTOR?

Scale Factor (k) – the ratio of any two corresponding sides of similar figures

*Scale Factor = $\frac{\text{Image Length}}{\text{Pre-Image Length}} = \frac{\text{NEW}}{\text{OLD}}$

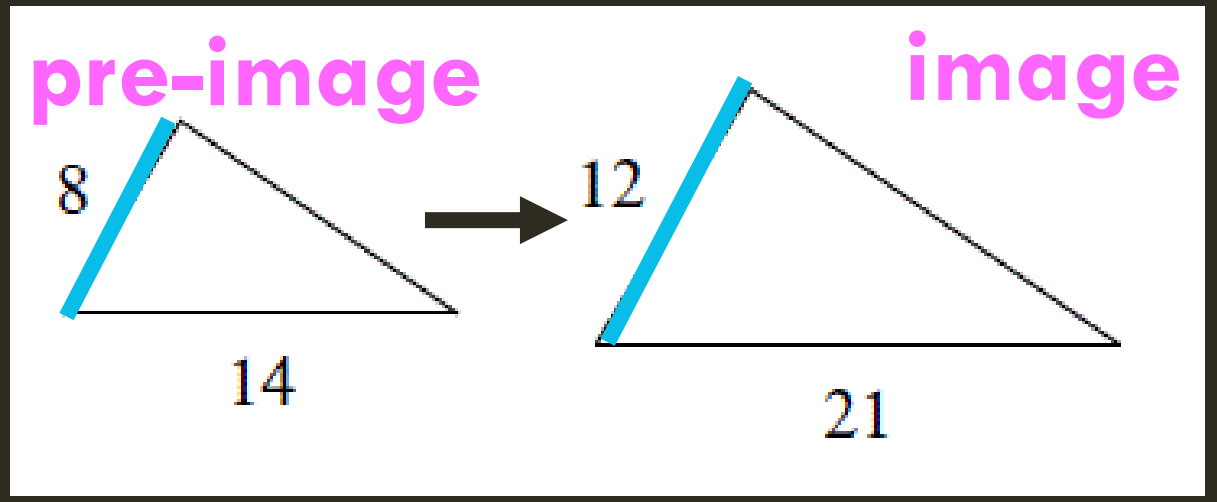
Enlargement – the scale factor is greater than 1.

Reduction – the scale factor is less than 1.

GUIDED PRACTICE

Is this dilation an enlargement or reduction? What is the scale factor?

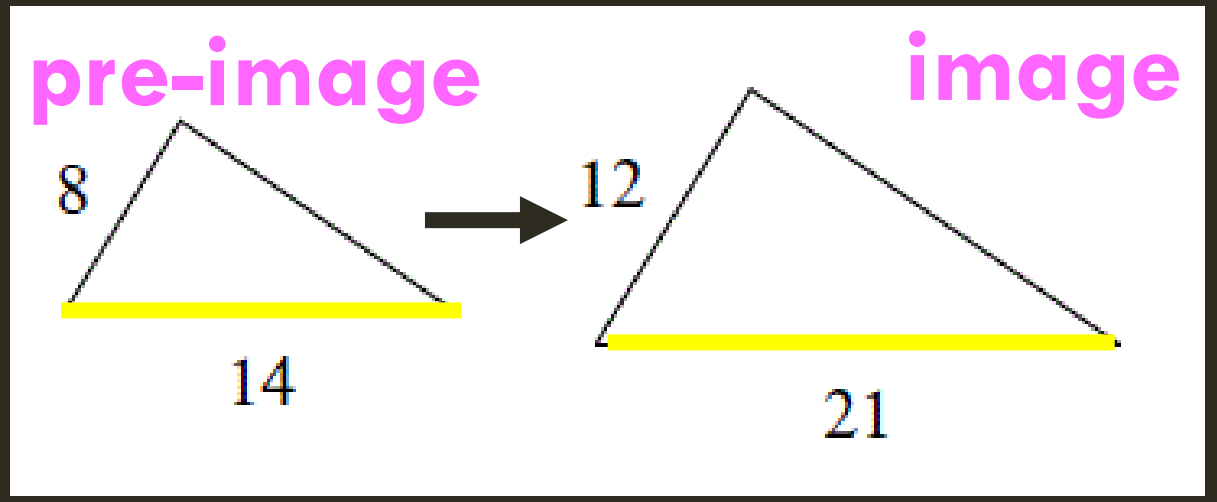
$$k = \frac{image}{pre-image}$$



Enlargement

$$k = \frac{image}{pre-image} = \frac{12}{8} = \frac{3}{2} \text{ or } 1.5$$

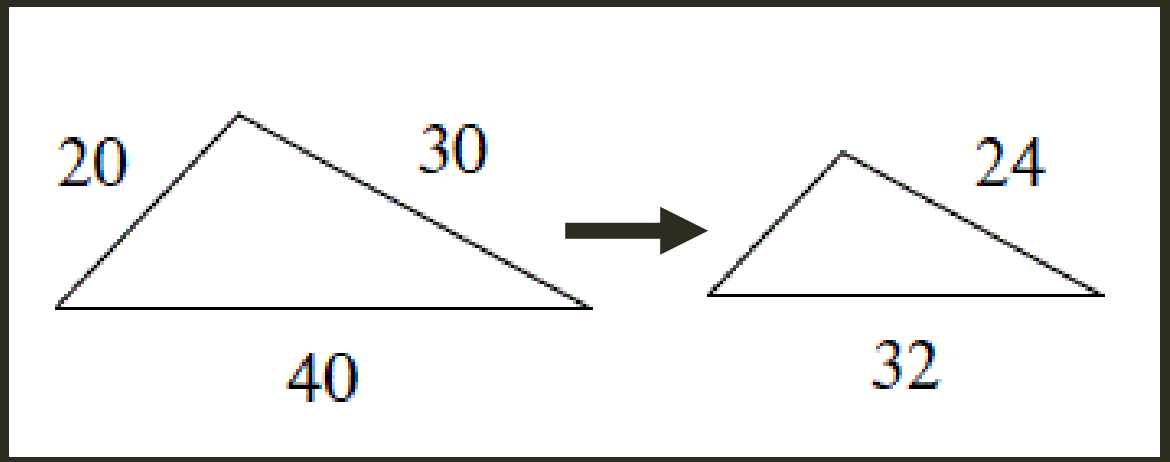
OR

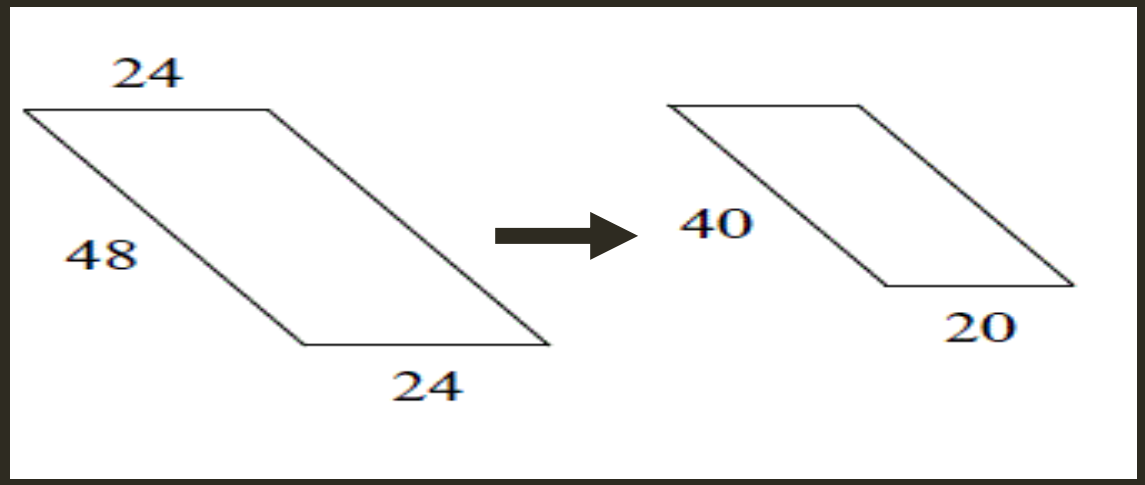


$$k = \frac{image}{pre-image} \quad \frac{21}{14} = \frac{3}{2} \text{ or } 1.5$$

GUIDED PRACTICE

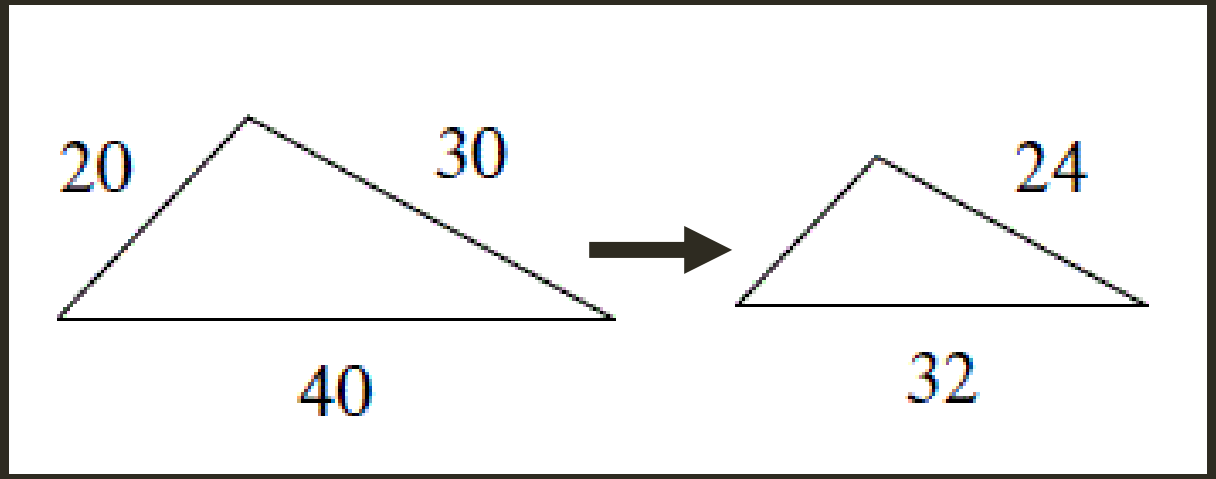
Is each dilation an enlargement or reduction? What is the scale factor?





GUIDED PRACTICE

Is the dilation an enlargement or reduction? What is the scale factor?

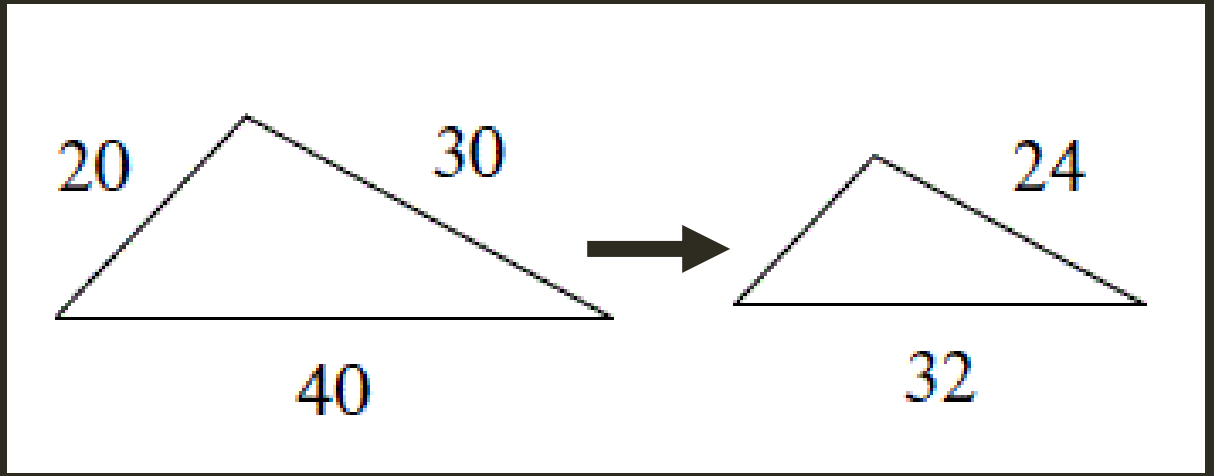


Reduction

$$k = \frac{image}{pre-image} = \frac{24}{30} = \frac{4}{5} \text{ or } 0.8$$

GUIDED PRACTICE

Is the figure an enlargement or reduction? What is the scale factor?

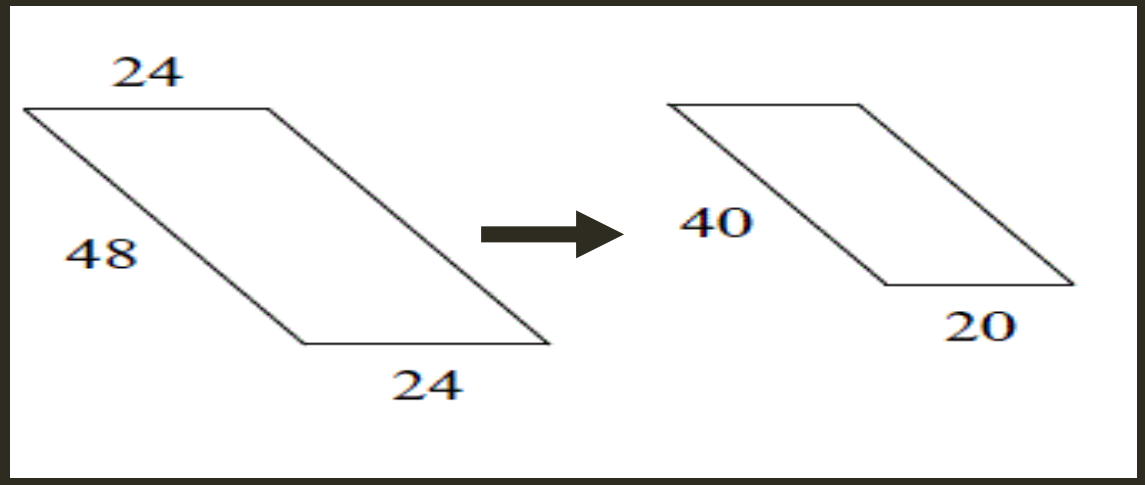


Reduction

$$k = \frac{32}{40} = \frac{4}{5} \text{ or } 0.8$$

GUIDED PRACTICE

Is the figure an enlargement or reduction? What is the scale factor?

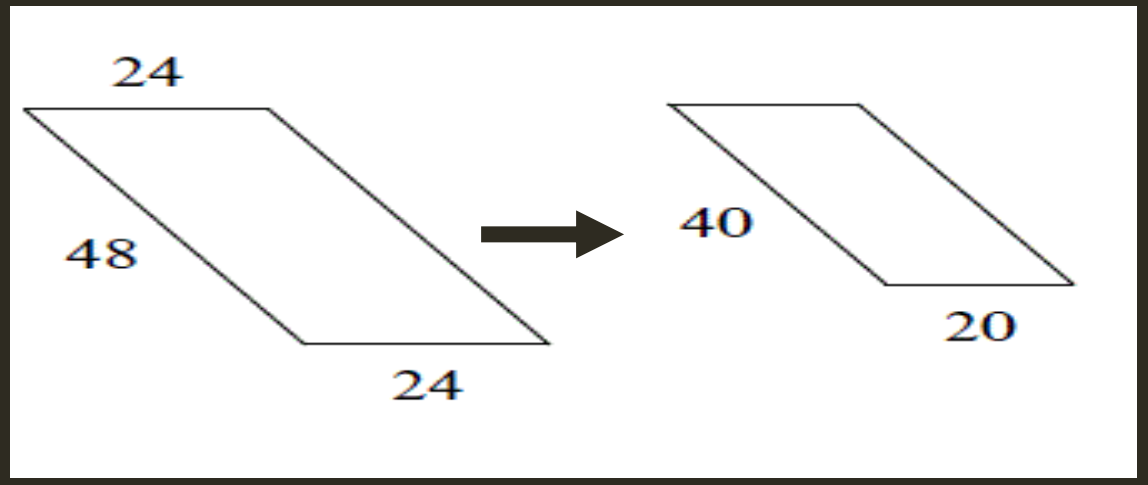


Reduction

$$k = \frac{image}{pre-image} = \frac{40}{48} = \frac{5}{6} \text{ or } 0.8$$

GUIDED PRACTICE

Is the figure an enlargement or reduction? What is the scale factor?



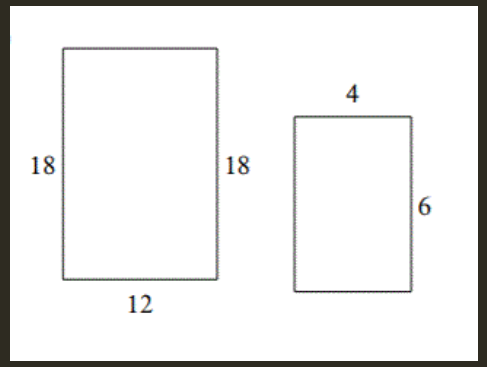
Reduction

$$k = \frac{20}{24} = \frac{5}{6} \text{ or } 0.8$$

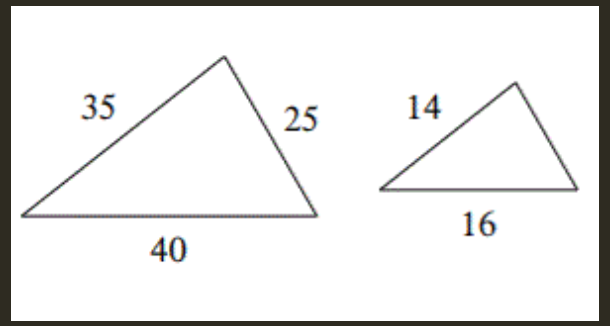
ON YOUR OWN

Identify the scale factor of the following: ***(The pre-image is first)***

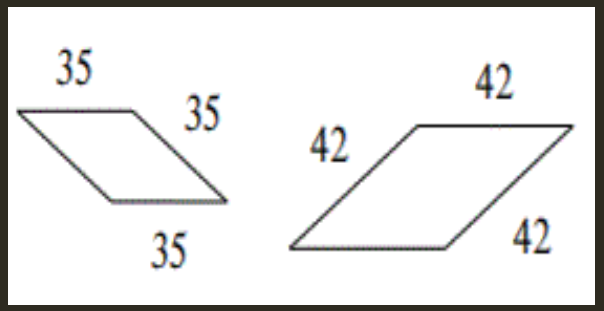
1.



2.

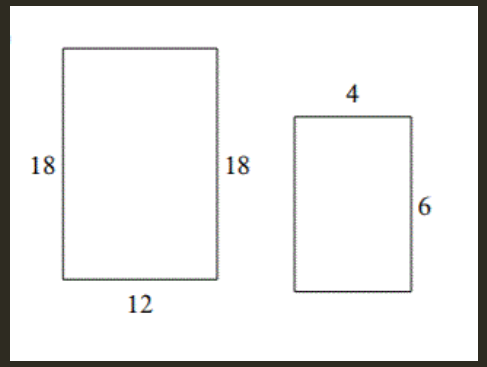


3.

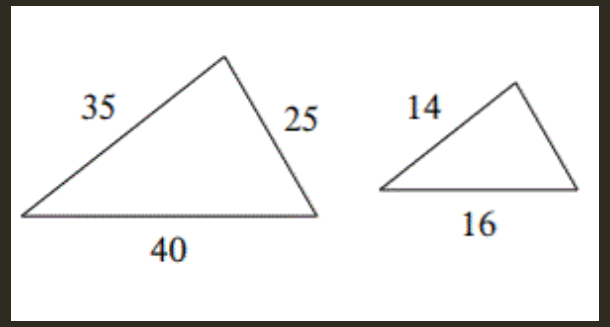


MORE PRACTICE

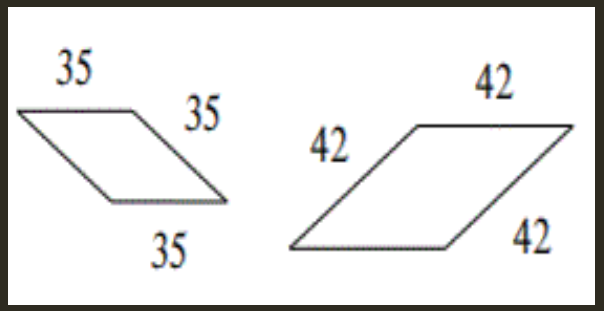
Identify the scale factor of the following: ***(The pre-image is first)***

1. 

Reduction; k =1/3 or 0.33

2. 

Reduction; k = 2/5 or 0.4

3. 

Enlargement; k = 6/5 or 1.2

How do you determine if two figures are similar?

How do I determine if two figures are dilations (similar)?

By comparing their angle measures. Correspond - ing angle measures are the same in dilations.

By comparing their scale factors. The scale factors for all corresponding sides are the same in a dilation