

Unit 4: Scale Factors & Similarity

4.1 Enlargements & Reductions

Scale: Diagram: Actual D:A

Enlargements and reductions can be drawn using grid paper or scale factor.

Enlargement: an increase in the dimensions of an object (2D or 3D) by a constant multiplying factor (Scale factor), >1

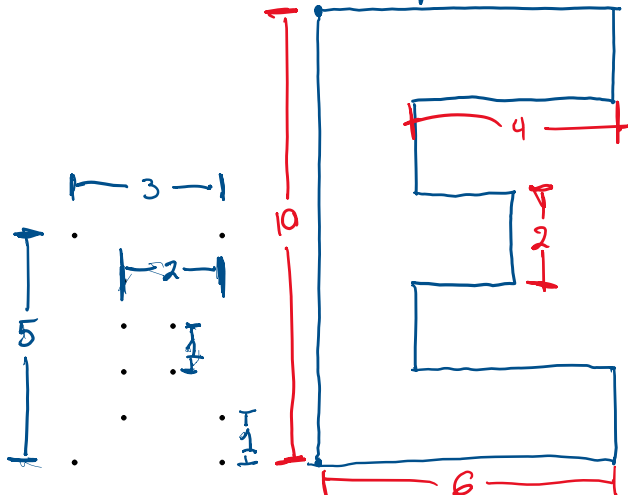
Reduction: a decrease in dimensions by a constant multiplying factor ($SF < 1$)

Scale Factor: the constant multiplier by which all dimensions are enlarged or reduced.

$$SF = \frac{D}{A}$$

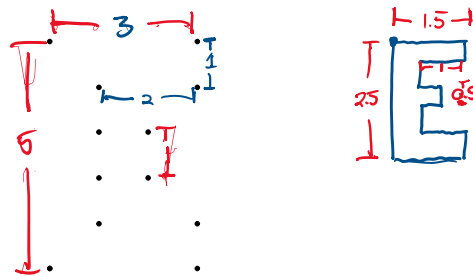
ex. Make the following letter twice as large:

Enlargement $SF = 2$



ex. Make the following letter half as large

Reduction $SF = \frac{1}{2}$



This is a(n) **enlargement/reduction/stretch**

This is a(n) **enlargement/reduction/stretch**

ex. Draw a picture with dimensions 3 times as large as this original:

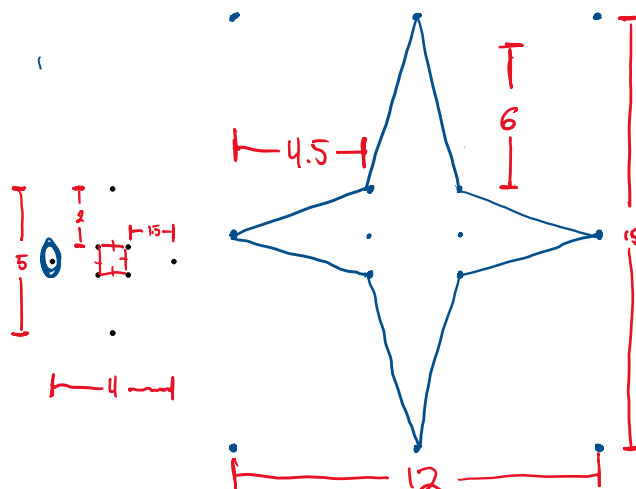
This is a(n):

Enlargement

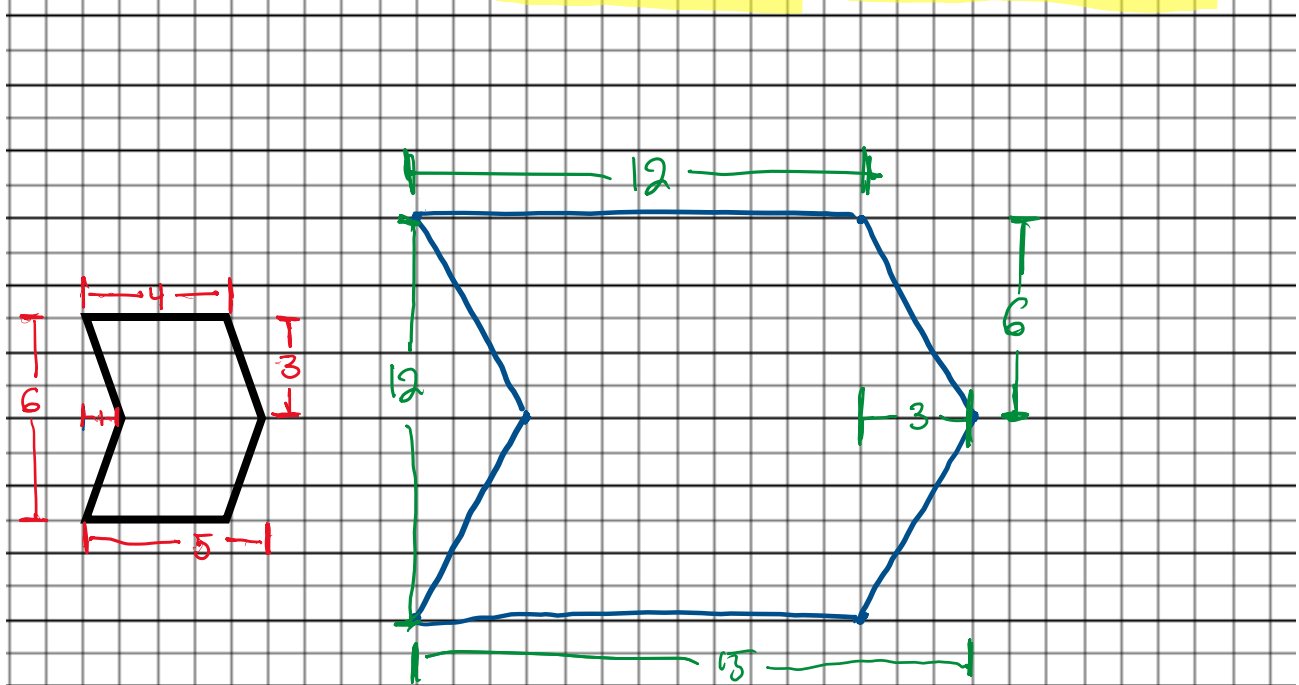
Reduction

Stretch

$$SF = 3$$



Ex. Draw this heart with dimensions 2 times larger than the height and 3 times larger than the width.



This is a(n) enlargement/reduction/stretch

Use the following vocabulary words to fill in the blanks below:

Constant – enlargement – reduction – scale factor – smaller – larger

A **scale factor** greater than 1 indicates a(n) enlargement, which results in an image that is the same shape but **proportionally** larger than the **original**.

A **scale factor** less than 1 indicates a(n) reduction, which results in an **image** that is the same shape but **proportionally** smaller than the **original**.

The scale factor is the constant amount by which all dimensions of an object are **enlarged** or **reduced** in a **scale drawing**.

Practice: Handout Assignment #s 4-7, 9, 11, 12