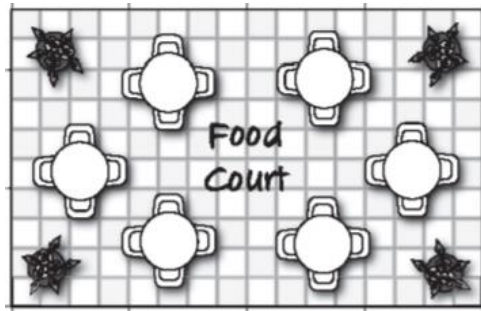Name_____   Date _____

Mr. Tallman

Lesson #31 – Scale Drawings and Scale Factor

The diagram below shows a food court at a shopping mall. Each centimeter in the diagram represents 40 meters in real life measurement.

Part A) Find the length and width of the drawing of the food court (in cm). Round your measurements to the nearest whole centimeter.

Length: _____ cm   Width: _____ cm

Part B) Each centimeter in the diagram represents 40 meters in real life. Using that information and your measurements from part A, find the actual length and width of the food court. Explain how you got your measurements on the lines below.

Actual Length: _____ m   Actual Width: _____ cm

_____

_____

Part C) Find the following ratios and simplify them to unit rates:

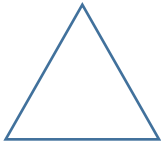$\dfrac{drawing\ length}{actual\ length} =$ $\dfrac{drawing\ width}{actual\ width} =$

What do you notice? Are the lengths and widths proportional to each other? How do you know?

_____

Key Terms:

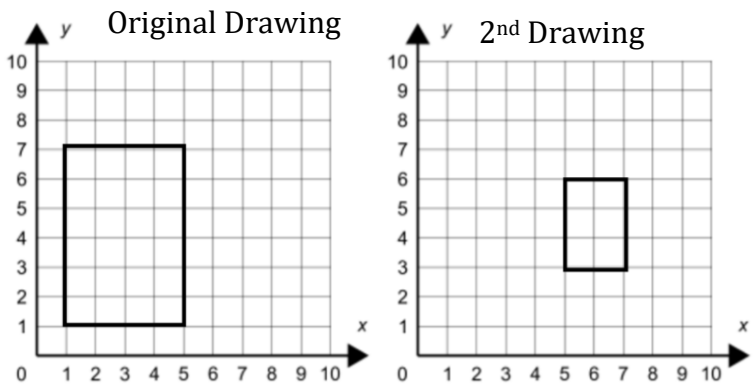- Scale Drawing: _____

- Reduction: _____

- Enlargement: _____

SCALE DRAWINGS ARE ALWAYS PROPORTIONAL TO EACHOTHER

Example 1) Is the second drawing below a scale drawing of the original?
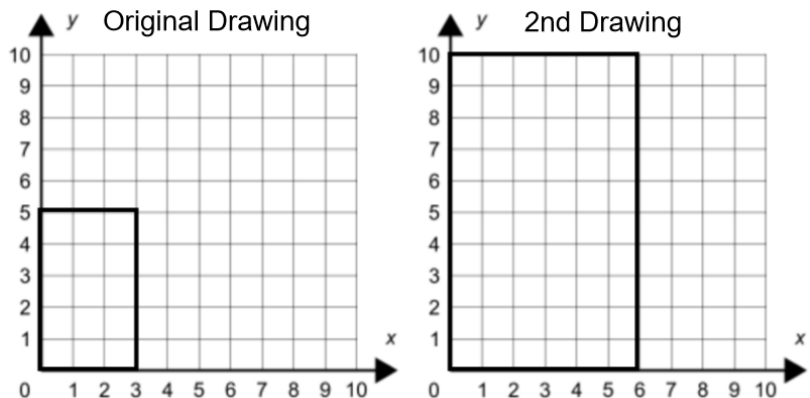
Step 1: Is there a constant of proportionality?

If so, what is it?

Step 2: Is the second image a scale drawing

of the first? Explain why or why not.

_____

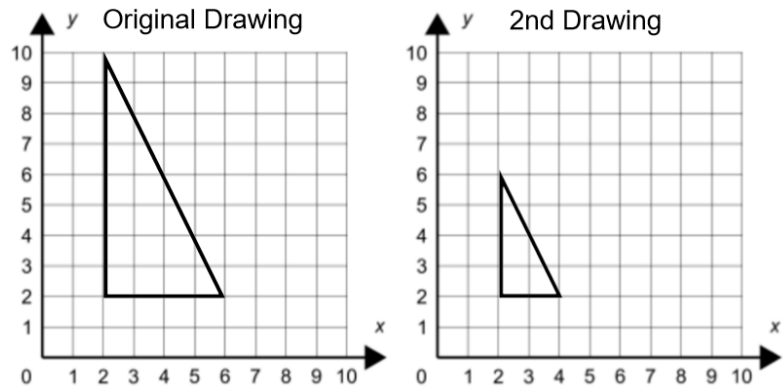Example 2) Is the second drawing a scale drawing of the original? Show all work and explain.

Example 3) Use the two drawings below to answer the following questions:

A) Is there a constant of proportionality?

If so, what is it? Show all work.

B) Is the second image a scale drawing of the

original image? Explain why or why not.

_____

C) Is the second image a reduction or an enlargement? Explain your answer using what you know about the constant of proportionality (scale factor).

_____

Example 4) Use the dimensions below to find the scale factor.

Actual Picture

|------------- 2 cm ----------|

Scale Drawing

|---------------------- 8 cm -------------------|
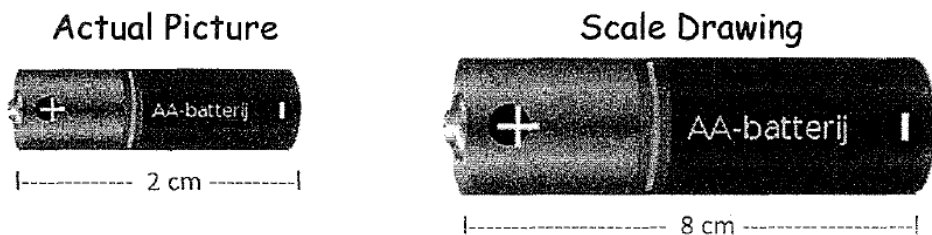
Is the scale drawing a reduction or enlargement of the actual picture? Explain.

_____

Example 5) What is the scale factor using the scale drawings and measurements below?

Actual Picture   Scale Drawing

36 cm

12 cm
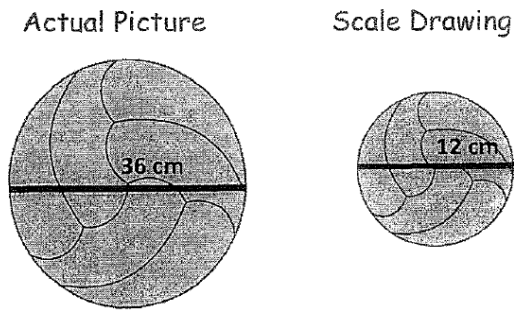
Determine if the scale drawing is a reduction or an enlargement. Explain.

_____

Challenge Problems

1) A scale drawing of a tree is $6\frac{3}{4}$ inches tall. The scale factor is $\frac{1}{20}$. Find the actual height of the tree. (HINT: Before doing any calculations, predict if the scale drawing is an enlargement or a reduction).

2) A scooter is 3 feet long. If a scale model of the scooter is made with a scale factor of 4, how long is the scale model of the scooter?

3) Determine the missing side of the following figures.

A

3

5

B   30°   C

4

D

12

X

E   30°   F

16

15 m

3 m

25 m

x m