

Lesson 16: Relating Scale Drawings to Ratios and Rates

Classwork

Intro Activity: Can You Guess the Image?

1.



2.



Example 1

For the following problems, (a) is the actual picture and (b) is the scale drawing. Is the scale drawing an enlargement or a reduction of the actual picture?

1. a.



b.

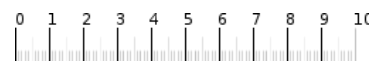


[Type here]

2. a.



b.

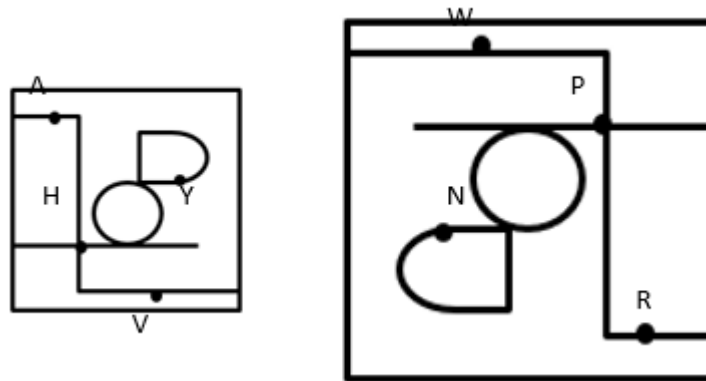


Key Idea:

Scale Drawing: a reduced or enlarged two-dimensional drawing of an original two-dimensional drawing.

Example 2

Derek's family took a day trip to a modern public garden. Derek looked at his map of the park that was a reduction of the map located at the garden entrance. The dots represent the placement of rare plants. The diagram below is the top-view as Derek held his map while looking at the posted map.

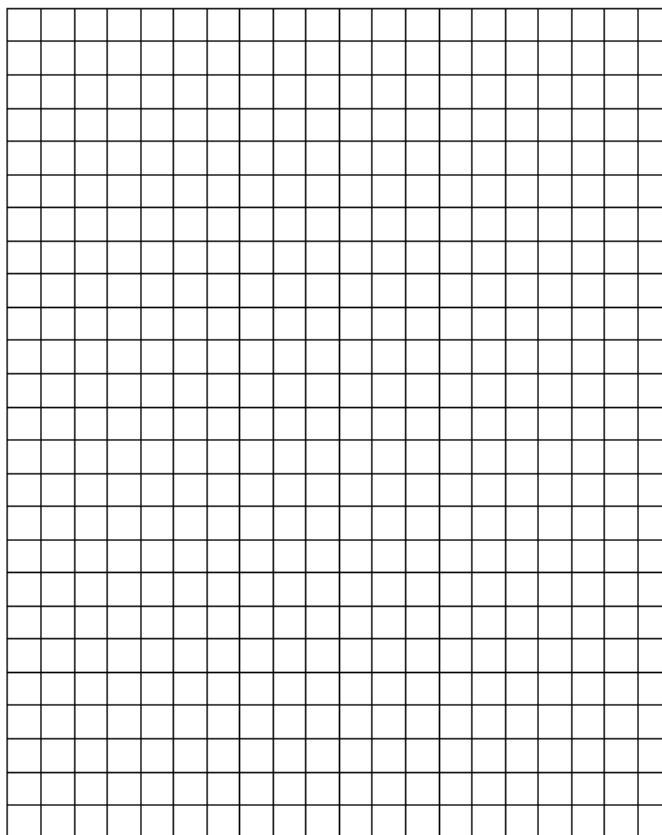
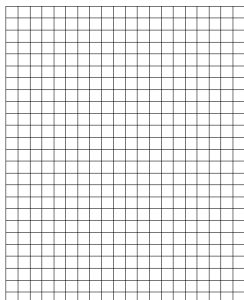
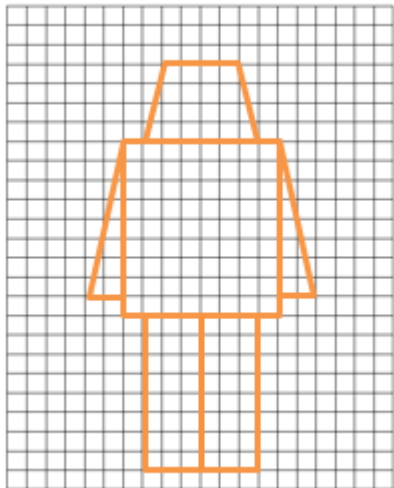


What are the corresponding points of the scale drawings of the maps?

Point A to _____ Point V to _____ Point H to _____ Point Y to _____

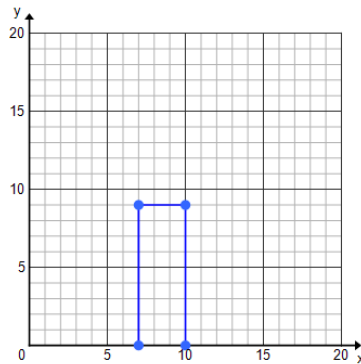
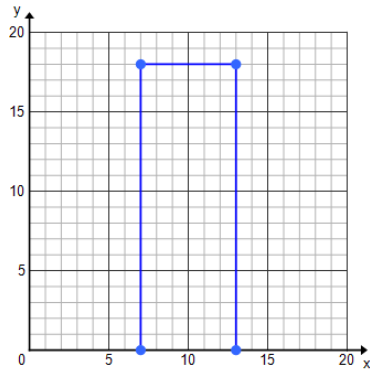
Exercise 1

Create scale drawings of your own modern nesting robots using the grids provided.



Example 3

Celeste drew an outline of a building for a diagram she was making and then drew a second one mimicking her original drawing. State the coordinates of the vertices and fill in the table.

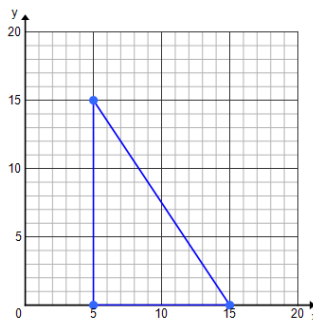
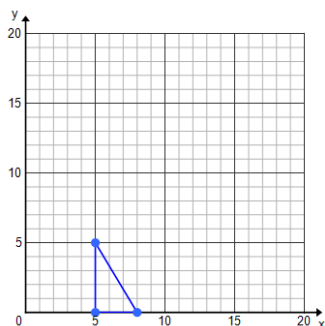


	Height	Length
Original Drawing		
Second Drawing		

Notes:

Exercise 2

Luca drew and cut out small right triangle for a mosaic piece he was creating for art class. His mother really took a liking and asked if he could create a larger one for their living room and Luca made a second template for his triangle pieces.



Lengths of the original image		
Lengths of the second image		

- Does a constant of proportionality exist? If so, what is it? If not, explain.
- Is Luca's enlarged mosaic a scale drawing of the first image? Explain why or why not.

Lesson Summary:

Scale Drawing: A drawing in which all lengths between points or figures in the drawing are reduced or enlarged proportional to the lengths in the actual picture. A constant of proportionality exists between corresponding lengths of the two images.

Reduction: The lengths in the scale drawing are smaller than those in the actual object or picture.

Enlargement/Magnification: The lengths in the scale drawing are larger than those in the actual object or picture.

One-to-one Correspondence: Each point in one figure corresponds to one and only one point in the second figure.

Problem Set

For Problems 1–3, identify if it the scale drawing is a reduction or enlargement of the actual picture.

1. _____

a. Actual Picture

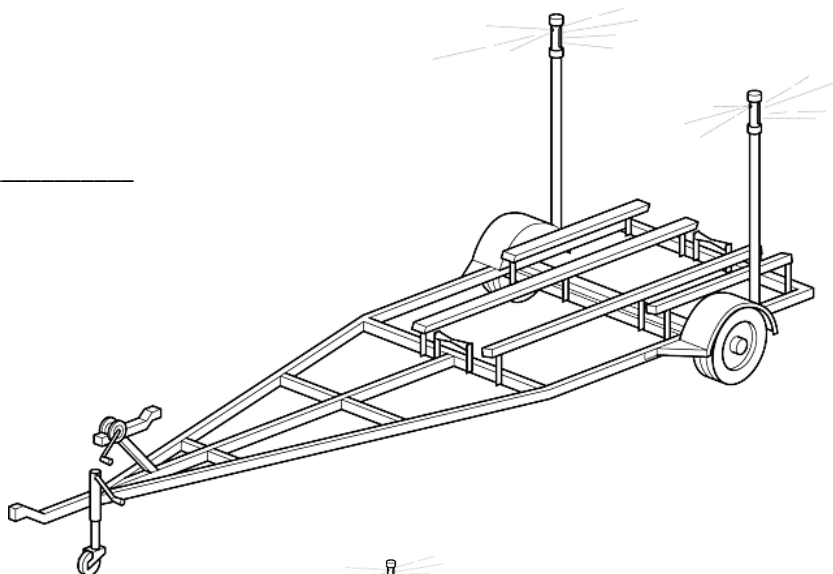


b. Scale Drawing

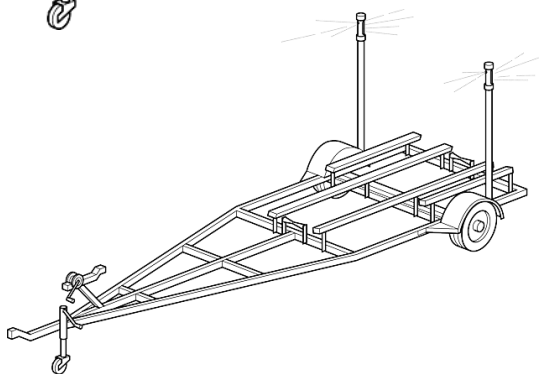


2. _____

a. Actual Picture



b. Scale Drawing

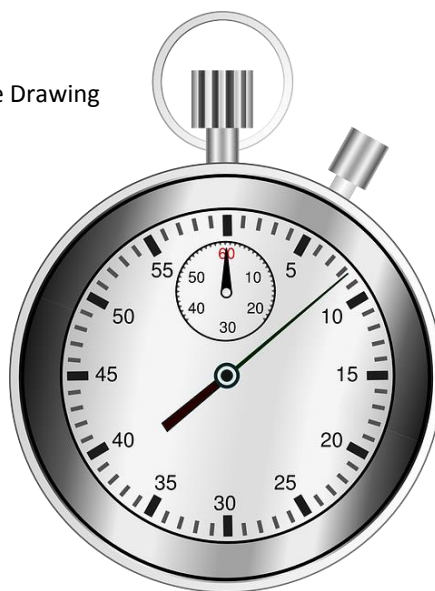


3. _____

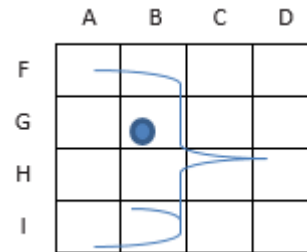
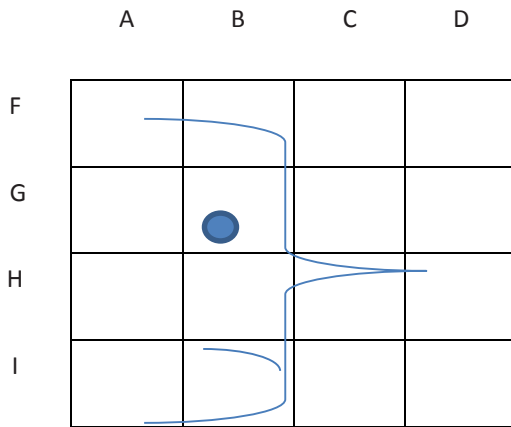
a. Actual Picture



b. Scale Drawing



4. Using the grid and the abstract picture of a face, answer the following questions:



- a. On the grid, where is the eye?
 - b. What is located in DH?
 - c. In what part of the square BI is the chin located?
5. Use the graph provided to decide if the rectangular cakes are scale drawings of each other.

Cake 1: (5,3), (5,5), (11,3), (11, 5)

Cake 2: (1,6), (1, 12),(13,12), (13, 6)

How do you know?

