"I know what we're going to do today."

Agenda:

1)   Bell Ringer: finish quiz

2)   Ratios and Proportions Lesson 10: scale drawings

      EQ: What is a scale drawing? How is a scale similar to a unit rate?

3)   Homework: Lesson 10 (pgs 83-85, 88)

Sep 15-10:44 PM

Lesson 10: Relating Scale Drawings to Ratios and Rates

Dec 6-1:21 PM

Dec 6-1:21 PM
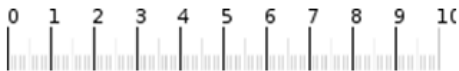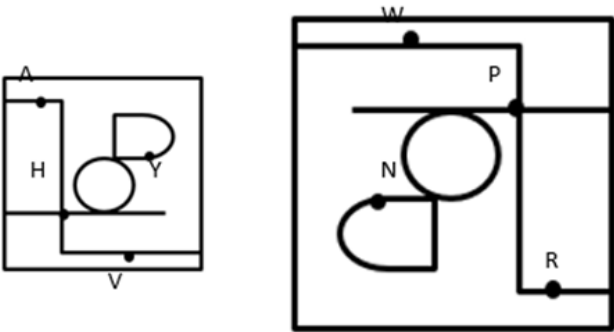

Dec 6-1:21 PM

Key Idea:

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

Dec 6-1:21 PM

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 ___R___   Point V to ___W___   Point H to ___P___   Point Y to ___N___

Dec 6-1:21 PM

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

Dec 6-1:21 PM

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	18	6
Second Drawing	9	3

Notes:

$$Scale = \frac{1}{2}$$
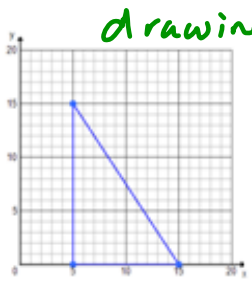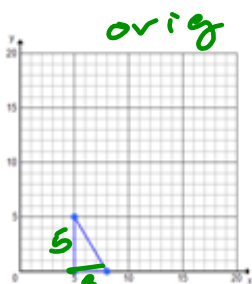(unit Rate)

$$9 \div 18 = \frac{1}{2}$$
$$3 \div 6 = \frac{1}{2}$$

Dec 6-1:21 PM

4

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.

orig   *drawing*

Lengths of the original image	3	5
Lengths of the second image	10	15

$$10 \div 3 = 3\frac{1}{3} \qquad 15 \div 5 = 3$$

a. Does a constant of proportionality exist? If so, what is it? If not, explain.

No

b. Is Luca's enlarged mosaic a scale drawing of the first image? Explain why or why not.

Not a scale drawing
not proportional

Dec 6-1:22 PM

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.

Dec 6-1:22 PM

Homework

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

1.   ___enlargement___   _____

    a. Actual Picture   b. Scale Drawing
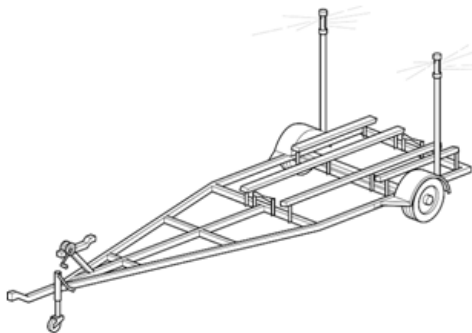
Dec 6-1:22 PM
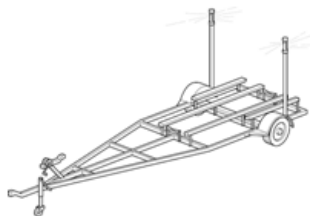
2.
  _____
  a.   Actual Picture
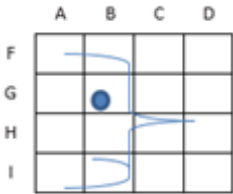
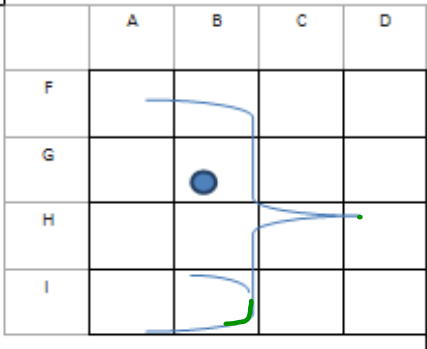 b.   Scale Drawing

Dec 6-1:22 PM

3. _____   _____

    a. Actual Picture   b. Scale Drawing

Dec 6-1:22 PM

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?
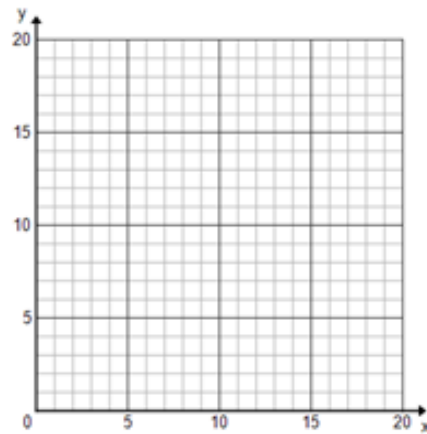
c. In what part of the square BI is the chin located?

Dec 6-1:22 PM

7

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?

Dec 6-1:22 PM

Key Idea:

The **scale factor can** be calculated from the ratio of any length in the scale drawing to its corresponding length in the actual picture. The scale factor corresponds to the unit rate and the constant of proportionality.

Scaling by factors *greater than* 1 enlarge the segment and scaling by factors *less than 1* reduce the segment.

Dec 6-1:23 PM

Example 1

Use a Scale Factor of 3 to create a scale drawing of the picture below.

Picture of the Flag of Columbia:

2.5

measure and multiply dimensions by 3

$4 \times 3 = 12$ cm
$2.5 \times 3 = 7.5$

Exercise 1

Scale Factor= _____ 1/2 _____

Picture of the Flag of Columbia:

Sketch and notes:

measure and multiply by 1/2

Dec 6-1:23 PM

Example 2

Your family recently had a family portrait taken. Your aunt asked you to take a picture of the portrait using your cell phone and send it to her. If the original portrait is 3 feet by 3 feet and the scale factor is $\frac{1}{18}$, draw the scale drawing that would be the size of the portrait on your phone.

Sketch and notes: remember to look at units

- what is 1/18 of 3 feet?

-should you remain in ft or convert to inches?

Dec 6-1:23 PM

Exercise 2

John is building his daughter doll house that is a miniature model of their house. The front of their house has a circular window with a diameter of 5 feet. If the scale factor for the model house is 1/30, make a sketch of the circular doll house window.
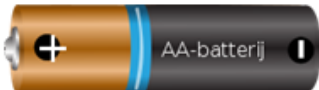
Dec 6-1:23 PM

Homework

1. Giovanni went to Los Angeles, California for the summer to visit his cousins. He used a map of bus routes to get from the airport to the nearest bus station from his cousin's house. The distance from the airport to the bus station is 56 km. On his map, the distance was 4 cm. What is the scale factor?

2. Nicole is running for school president and her best friend designed her campaign poster which measured 3 feet by 2 feet. Nicole liked the poster so much she reproduced the artwork on rectangular buttons measuring 2 inches by $1\frac{1}{3}$ inches. What is the scale factor?

Dec 6-1:23 PM

Scale Factor: _____

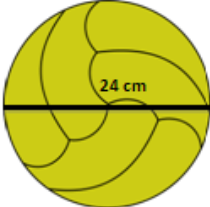<u>Actual Picture</u>   <u>Scale Drawing</u>

4.   Find the scale factor using the given scale drawings and measurements below.

Scale Factor: _____

<u>Actual Picture</u>   <u>Scale Drawing</u>

Dec 6-1:23 PM

Nov 14-2:46 PM