Name: _____
Hour: _____ Date: _____

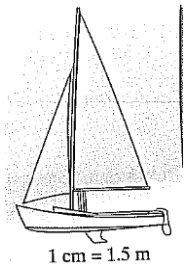
Scale Factors and Designing Cars

*For similar figures, **scale factor** is the common ratio between pairs of corresponding sides.*

The scale factor for Hot Wheels® Monster Jam® cars is 1:24. The scale factor for HO scale trains is 1:87.

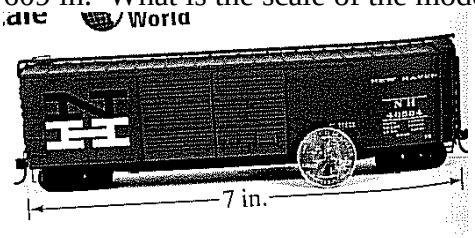
The scale factor is the number by which each dimension of the original object is multiplied to find the corresponding dimension of the model.

Example #1 Using a Scale Drawing: You have a scale drawing of a boat. The length of the boat on the drawing is 3 cm. What is the actual length of the boat?



Practice Problem: If the mast on the boat in Example 1 is about 10 cm tall on the drawing, about how tall is the mast on the actual boat?

Example #2 Finding the Scale: Refer to the model boxcar shown below. The actual length of the boxcar is 609 in. What is the scale of the model?



Practice Problem: The length of a room in an architectural drawing is 10 in. Its actual length is 15 ft. What is the scale of the drawing?

Designing Cars:

1. What types of mathematics was used in the video?

2. We are going to use toy cars and our mathematics to find the size of real cars.
   Measurements of your toy cars (in inches):

   Length: _____ Width: _____ Height: _____

3. How large should a real car be if our scale is 1:64 (inches)?

   Length: _____ Width: _____ Height: _____

4. Convert your values to feet:

   Length: _____ Width: _____ Height: _____

5. How could we check that our measurements are correct?

   Length: _____ Width: _____ Height: _____

Ratio: $\frac{toy}{real}$ Length: _____ Width: _____ Height: _____

6. Is the scale the same?

Proportion Set-up: (be sure to label it!)

$$\frac{drawing}{actual} = \frac{drawing}{actual}$$