

Lesson Summary

Variations of Scale Drawings with different scale factors are scale drawings of an original scale drawing.

From a scale drawing at a different scale, the scale factor for the original scale drawing can be computed without information of the actual object, figure, or picture.

- For example, if *scale drawing one* has a scale factor of $\frac{1}{24}$ and *scale drawing two* has a scale factor of $\frac{1}{72}$, then the scale factor relating *scale drawing two* to *scale drawing one* is

$$\frac{1}{72} \text{ to } \frac{1}{24} = \frac{\frac{1}{72}}{\frac{1}{24}} = \frac{1}{72} \cdot \frac{24}{1} = \frac{1}{3}.$$

Scale drawing two has lengths that are $\frac{1}{3}$ the size of the lengths of *scale drawing one*.

Problem Set

- Jake reads the following problem: If the original scale factor for a scale drawing of a square swimming pool is $\frac{1}{90}$, and the length of the original drawing measured to be 8 inches, what is the length on the new scale drawing if the scale factor of the new scale drawing length to actual length is $\frac{1}{144}$?

He works out the problem:

$$8 \text{ inches} \div \frac{1}{90} = 720 \text{ inches}$$

$$720 \text{ inches} \times \frac{1}{144} = 5 \text{ inches}$$

Is he correct? Explain why or why not.

- What is the scale factor of the new scale drawing to the original scale drawing (*SD2* to *SD1*)?
- Using the scale, if the length of the pool measures 10 cm on the new scale drawing:
 - Using the scale factor from Problem 1, $\frac{1}{144}$, find the actual length of the pool in meters.
 - What is the surface area of the floor of the actual pool? Rounded to the nearest tenth.
 - If the pool has a constant depth of 1.5 meters, what is the volume of the pool? Rounded to the nearest tenth.
 - If 1 cubic meter of water is equal to 264.2 gallons, how much water will the pool contain when completely filled? Rounded to the nearest unit.
- Complete a new scale drawing of your dream room from the Problem Set in Lesson 20 by either reducing by $\frac{1}{4}$ or enlarging it by 4.