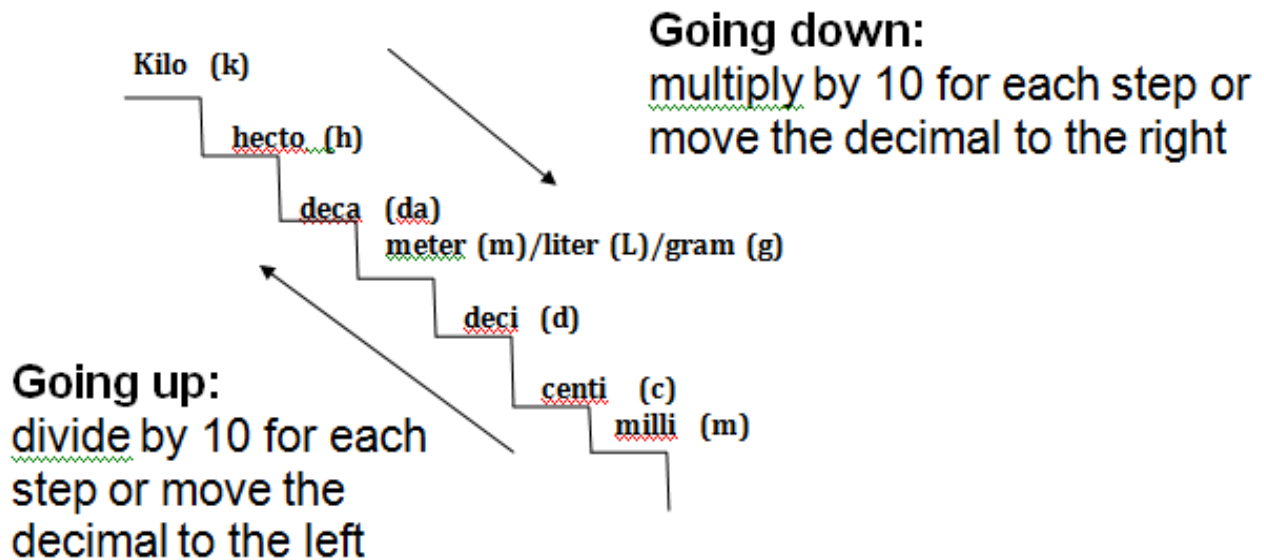


CHAPTER 7: Similarity and Transformations

Section 7.1: Scale Diagrams and Enlargements

Whenever setting up numbers in a ratio or fraction, both numbers MUST have the same units.

REVIEW how to convert units:



EXAMPLES:

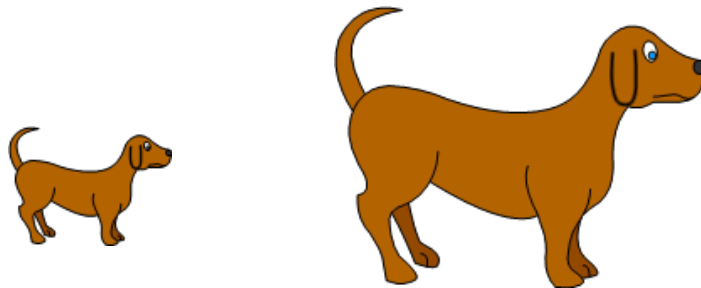
1. What is 300 m in centimeters?
2. Write 1 cm represents 5 m as a ratio.

3. If a map scale tells you that 1 cm represents 15 km. What is 15 km in centimeters? Write the answer as a ratio.

4. What is 7.5 m in centimeters?

5. How many kilometers does 3 750 000 cm represent?

A diagram that is an **enlargement** or a **reduction** of another diagram is called a **scale diagram**.

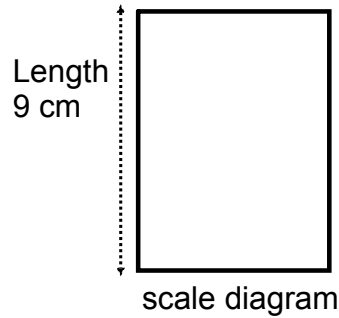
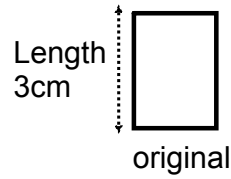


The **scale factor** is the relationship between the matching lengths on the two diagrams.

$$\text{SCALE FACTOR} = \frac{\text{length on the scale diagram}}{\text{length on original diagram}}$$

Example 1:

Determine the scale factor.

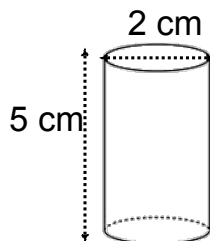


NOTE:

- the units must be the same on the original and scale diagram
- if they do not have the same units, you must convert one to make them the same
- scale factors **do not** have units

Example 2:

The cylinder is to be enlarged by a scale factor of 3. Determine the dimensions of the enlargement.



Example 3:

A photo has dimensions 10cm by 15cm. Two enlargements are to be made with each scale factor below. Find the dimensions of each enlargement.

A) scale factor 4

B) scale factor $\frac{13}{4}$

