**Math 20-2: U8L3 Notes**

**Scale Diagrams of 2-Dimensional Objects**

**Key Math Learnings:**

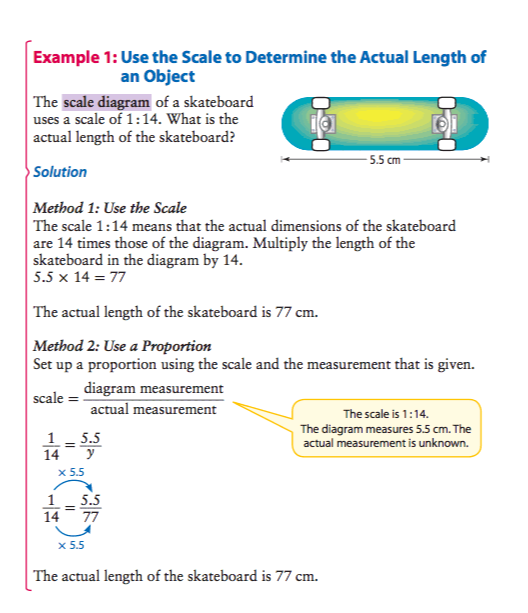
**By the end of this lesson, you will learn the following concepts:**

* Explain, using examples, how scale diagrams are used to model   
  a 2-D shape
* Determine, using proportional reasoning, the scale factor, given   
  one dimension of a 2-D shape
* Determine, using proportional reasoning, an unknown dimension   
  of a 2-D shape given a scale diagram or a model.
* Draw, with or without technology, a scale diagram of a given 2-D   
  shape, according to a specified scale factor (enlargement or   
  reduction).
* Solve a contextual problem that involves a scale diagram.

**Scale Diagrams**

**Scale diagrams** can be:

To create a scale diagram, you must determine an appropriate   
scale to use. This is called the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_.**



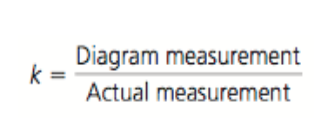
The **scale factor** represents the ratio of:

<http://www.youtube.com/watch?v=Q7AWGlLePuw>

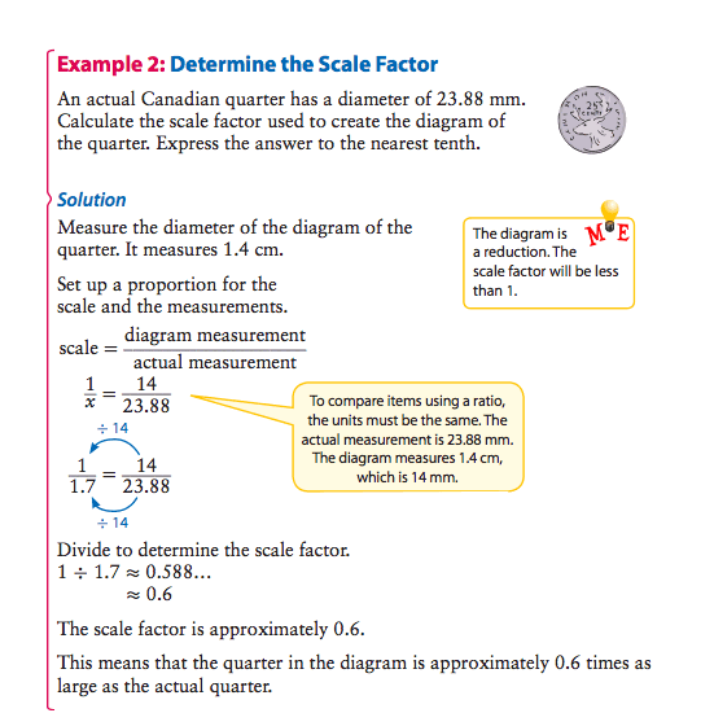
<http://www.youtube.com/watch?v=XtkU4VkWh8I>

**Determining Scale Factor**

**An easy way to determine the scale factor,** *k*, used in a scale diagram, we use the following guideline.



D.O.A. 🡺 Diagram over Actual



**How Does Scale Factor Affect the Original Shape**

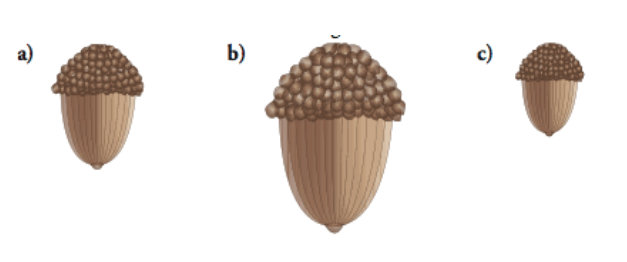
When a scale factor is between 0 and 1

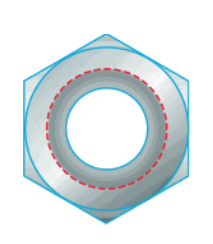
When a scale factor is greater than 1

<http://www.youtube.com/watch?v=ciIcmysb67A>

**Example**

The Garry oak is a tree that is found on Vancouver Island. The original acorn   
for these scale diagrams was 1.9 cm long. Determine the scale factor that was   
used for each diagram. (You will need to measure the acorn in the textbook on   
page to get the correct answer)





**Example**

This top view of a hex-nut must be enlarged by a   
scale factor of 250% for a display at a trade   
show.

a) Measure the necessary distances on the   
diagram.

b) Determine what the corresponding distances   
on the enlarged diagram should be.

c) Draw the scale diagram of the hex-nut.

**Example**

A billboard measures 4.5 m by 3.5 m. Draw a scale diagram of the   
billboard that fits in a space measuring 20 cm by 15 cm.