APRIL 8, 2019

UNIT 7: SIMILARITY AND TRANSFORMATIONS

7.1 / 7.2: SCALE DIAGRAMS: ENLARGEMENTS AND REDUCTIONS

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MATH 9

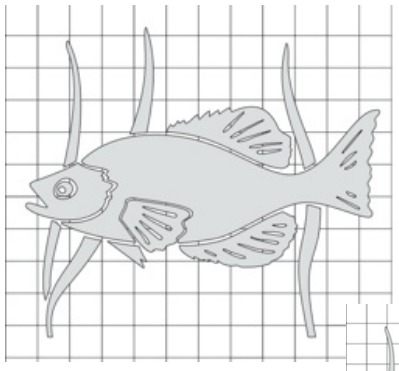
WHAT'S THE POINT OF TODAY'S LESSON?

We will begin working on the Math 9 Specific Curriculum Outcome (SCO) "Shape and Space 4" OR "SS4" which states:

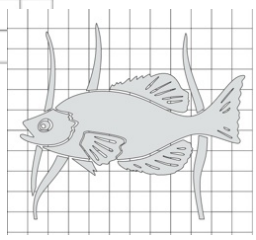
"Draw and interpret scale diagrams of 2-D shapes."

PLEASE TURN TO PAGE 314 IN *MMS9*:

"What You'll Learn" / "Why It's Important"



original



scale

Scale Diagram:

A diagram that is an enlargement or reduction of another diagram.

The measurements in each diagram are compared.

$$\text{Scale Factor} = \frac{\textit{Length of Scale Diagram}}{\textit{Length of Original Diagram}}$$

The scale factor can be written as a fraction or decimal.

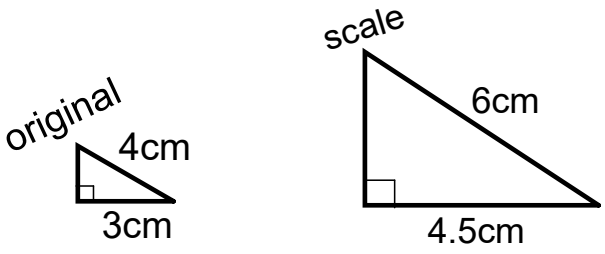
If the scale factor is less than one, the diagram is a reduction. If it is greater than one, it is an enlargement.

$$S.F. = \frac{S}{O}$$

S.F. < 1 reduction

S.F. > 1 enlargement

Scale factor = $\frac{\text{scale}}{\text{original}}$



Hypotenuse

$\frac{\text{scale}}{\text{original}} = \frac{6}{4}$

$= 1.5$

Leg

$\frac{\text{scale}}{\text{original}} = \frac{4.5}{3}$

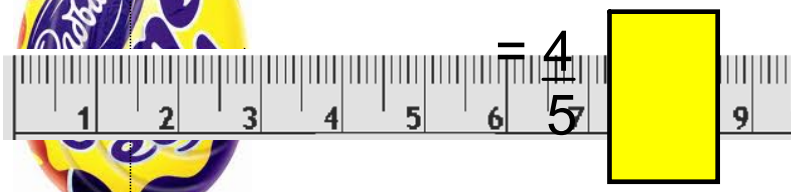
$= 1.5$

original

scale

Determine the scale factor:

Scale Factor = $\frac{\text{Scale Diagram}}{\text{Original Diagram}}$



$= \frac{4}{5}$

$= 0.8$

$\frac{2.8}{3.5}$

$= 0.8$

This photo of longhouses has dimensions 9 cm by 6 cm.

The photo is enlarged by a scale factor of $\frac{7}{2}$

What are the dimensions of the enlargement?

original

6 cm

9 cm

scale

21 cm

31.5cm

$6\left(\frac{7}{2}\right) = 21\text{cm}$ $9\left(\frac{7}{2}\right) = \frac{63}{2}$

$= 31.5\text{cm}$

(O) $\text{S.F.} = \frac{S}{O}$ (O)

$O(\text{S.F.}) = S$

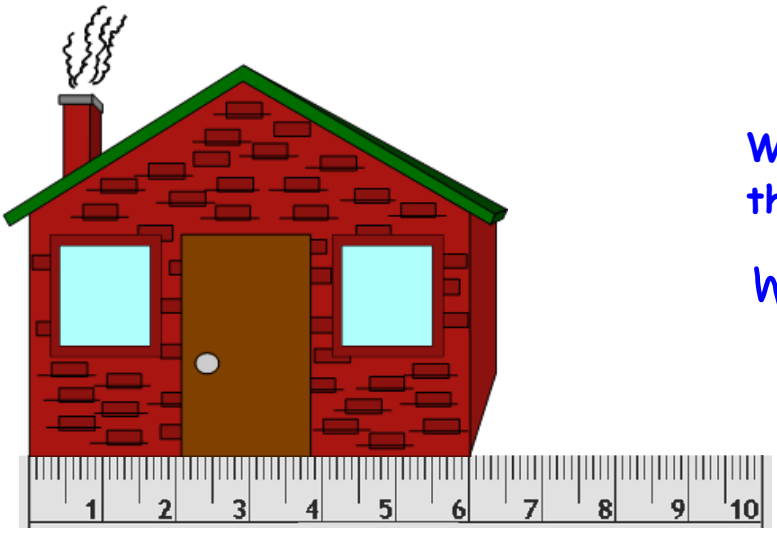
$\frac{O(\text{S.F.})}{\text{S.F.}} = \frac{S}{\text{S.F.}}$

$O = \frac{S}{\text{S.F.}}$

Sometimes you are only given the scale diagram....

A scale may be given as a ratio.

The scale on this diagram of a house is **1 : 150**. This means that 1 unit is equal to 150 units on the actual house.



What is the width of the actual house?

$W = 6(150)$
$= 900$

CONCEPT REINFORCEMENT:

MMS9:

PAGE 323: #4,5,6,7 (scale = 48 mm) & 8 (scale = 15 mm)

PAGE 324: #11,12 & 15 (one enlargement only)

PAGE 329: #4,5,6,8 & 9

PAGE 330: #10 & 11

PAGE 331: #20

4a) S.F. $= \frac{5}{0}$
$= \frac{8}{2}$
$= 4$