APRIL 9, 2018

UNIT 7: SIMILARITY AND TRANSFORMATIONS

7.1 / 7.2: SCALE DIAGRAMS: ENLARGEMENTS AND REDUCTIONS

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MATH 9

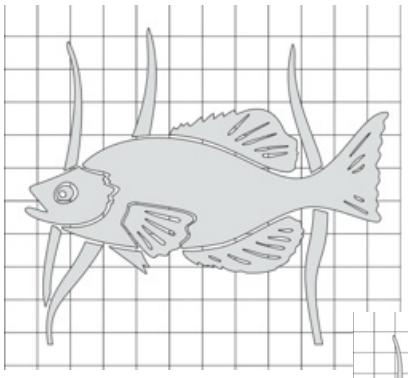
WHAT'S THE POINT OF TODAY'S LESSON?

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

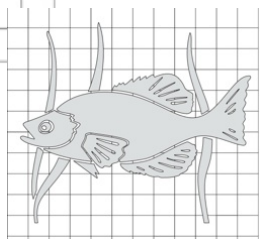
"Draw and interpret scale diagrams of 2-D shapes."

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.

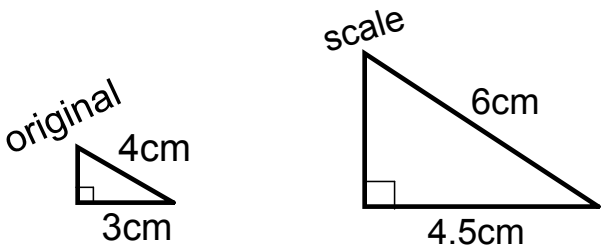
$$\text{Scale Factor} = \frac{\text{Length of Scale Diagram}}{\text{Length of Original Diagram}}$$

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

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.

When pairs of corresponding lengths have the same scale factor, we say that the corresponding lengths are *proportional*. They have the same scale factor



Hypotenuse

$\frac{\text{scale}}{\text{original}} = \frac{6}{4} = 1.5$

Leg

$\frac{\text{scale}}{\text{original}} = \frac{4.5}{3} = 1.5$

Determine the scale factor:

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

$= \frac{4}{5}$

$= 0.80$

Sideways S.F. $= \frac{2.75}{3.5}$

$= 0.8$

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

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

Calculate the dimensions of the enlargement.

$6 \times \frac{7}{2} = 21$

$9 \times \frac{7}{2} = 31.5$

original

6 cm

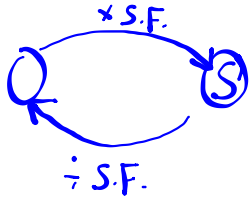
9 cm

21 cm

31.5 cm **scale**

(0) $\times$ S.F. = S (0)

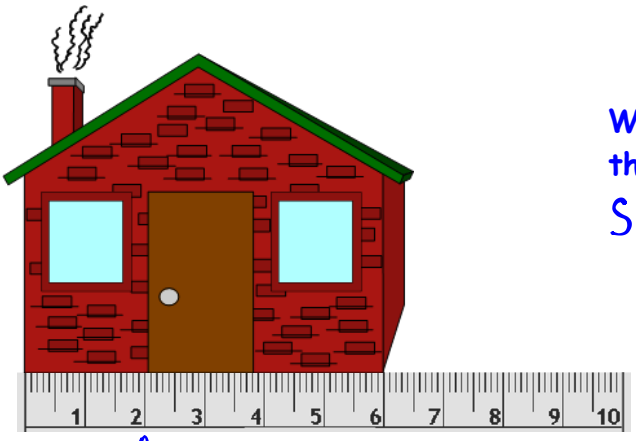
0 (S.F.) = S



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

A scale may be given as a ratio.

The scale on this scale diagram of a house is 1 : 150. This means that 1 cm on the diagram represents 150 cm (or 1.5 m) on the house. In other words, the scale factor is $\frac{1}{150}$.



What is the width of the actual house?

$SF = \frac{S}{O}$

$\frac{SF}{SF} O = \frac{S}{SF}$

$O = \frac{6}{\frac{1}{150}}$

$= 6 \div \frac{1}{150}$

$= 6 \times \frac{150}{1}$

$= 900 cm$

CONCEPT REINFORCEMENT:

#4a) $SF = \frac{S}{O}$

$= \frac{8}{2}$

$= 4$

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