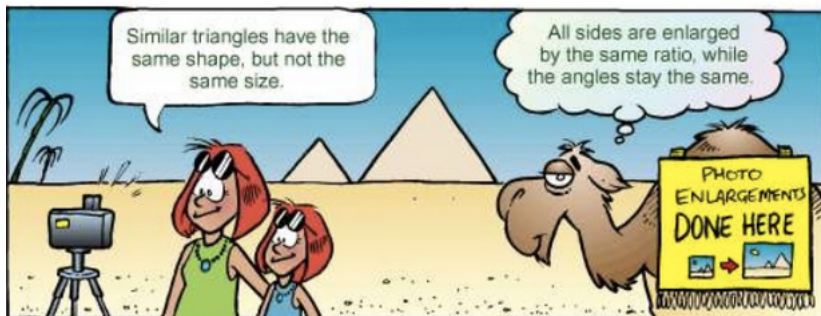
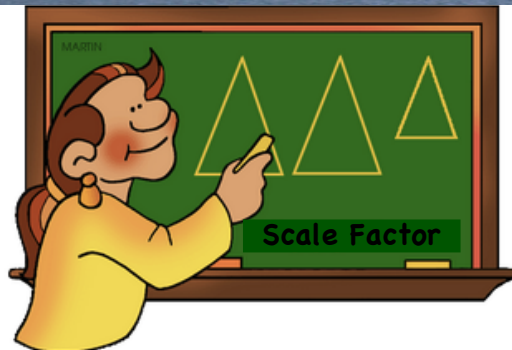


SEMINAR NOTES

Learning Guide 13

Similarity



Scale Diagrams and Enlargements

A scale diagram can be larger than the original diagram. This type of scale diagram is called an enlargement.

- Each dimension is enlarged by the same scale factor.
- The scale factor is written as a ratio or fraction with the dimension of the diagram on top and the dimension of the original diagram on bottom.

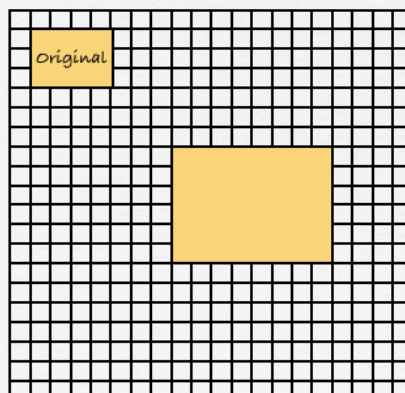
Remember

$$\frac{D}{O}$$

Ex.

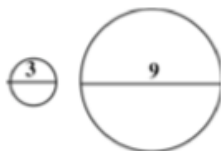
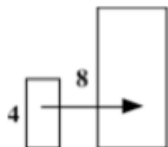
Find the scale factor for the following enlargement.

SF



Practice:

Find the scale factor between the 2 diagrams.



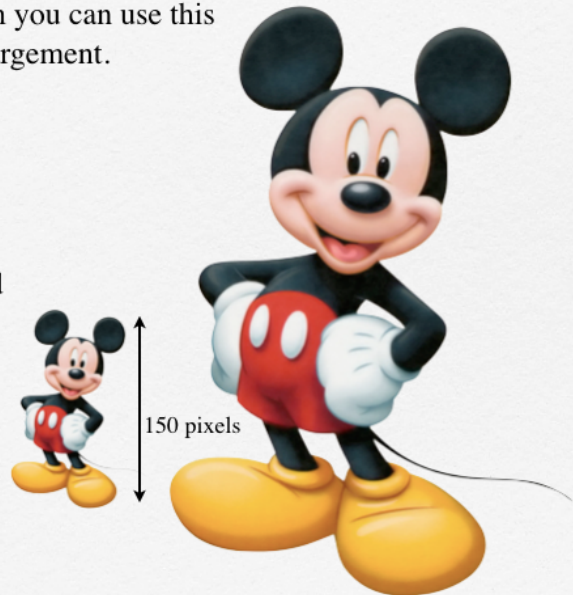
Using a Scale Factor to Find Lengths

If you know the scale factor of a diagram you can use this as a multiplier to find the size of the enlargement.

- Measure the original.
- Multiply by the scale factor.

Ex.

Little Mickey has been enlarged by a scale factor of 3. How tall is the big Mickey?



Practice: 1. Find the scale factor between the original measurement and its scale diagram.

Original = 4cm
Diagram = 12cm

Original = 8cm
Diagram = 24cm

Original = 5cm
Diagram = 8cm

2. Use the scale factor between to find the scale diagram measurement.

Original = 4cm
Scale Factor = 5

Original = 8cm
Scale Factor = 3

Original = 5cm
Scale Factor = 3

3. Find the dimensions of the scale diagram given the following stamp sizes and scale factor.



When is Something a Scale Diagram?

To be a scale diagram all dimensions must have the same scale factor.

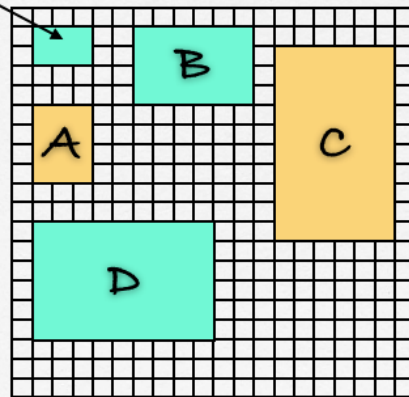
- Measure each dimension on both the original and diagram.
- Check to see if all corresponding sides have the same scale factor.

Ex.

Identify which figures are scale diagrams of the top left figure.

Original:
 Diagram A:
 Diagram B:
 Diagram C:
 Diagram D:

Original



Practice:

Identify which figures are scale diagrams of the original and find the scale factor.

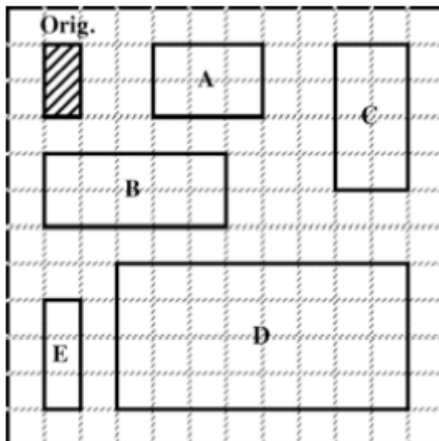


Diagram A	Diagram B	Diagram C	Diagram D	Diagram E

Scale Diagrams and Reductions

A scale diagram can be smaller than the original diagram. This type of scale diagram is called a reduction.

- Each dimension is reduced by the same scale factor.
- The scale factor is written as a ratio or fraction with the dimension of the diagram on top and the dimension of the original diagram on bottom.

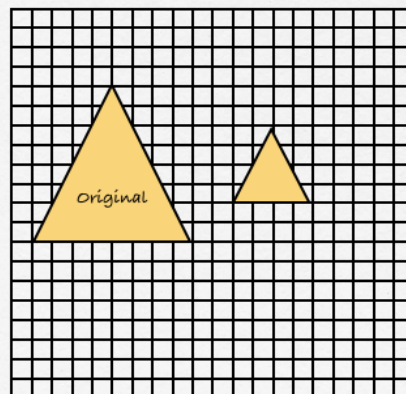
Remember

$$\frac{D}{O}$$

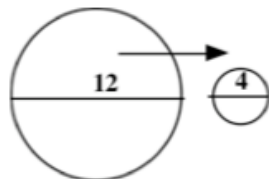
Ex.

Find the scale factor for the following reduction.

SF



Practice: Find the scale factor between the 2 diagrams.



Finding & Using Scale Factors

The scale factor can be used when working with scale diagrams.

Remember

$\frac{D}{O}$

- Write a ratio with $\frac{\text{reduction}}{\text{original}}$ to find the scale factor.
- Multiply the original dimension by the scale factor to get the reduction dimension.
- Divide the reduction dimension by the scale factor to get the original dimension.

Ex.

Fill in the missing values for each pair of circles.

Diameter of Actual Circle	Diameter of Reduction	Scale Factor
30 cm	10 cm	
50 m		$\frac{1}{2}$
	30 cm	$\frac{3}{10}$
40 cm	10 cm	
75 m		$\frac{1}{5}$

Practice:

1. Find the scale factor between the original measurement and its scale diagram.

Original = 16cm
Diagram = 4cm

Original = 32cm
Diagram = 8cm

Original = 16cm
Diagram = 6cm

2. Use the scale factor between to find the scale diagram measurement.

Original = 4cm
Scale Factor = $\frac{1}{2}$

Original = 20cm
Scale Factor = $\frac{2}{5}$

Original = 16cm
Scale Factor = $\frac{3}{4}$

Using a Scale Factor to Find Lengths

If you know the scale factor of a diagram you can use this as a multiplier to find the size of the reduction.

- Measure the original.
- Multiply by the scale factor.

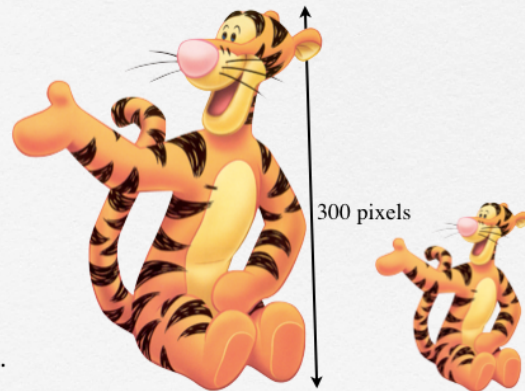
Ex.

Big Tigger has been reduced by a scale factor of $\frac{1}{2}$. How tall is the little Tigger?

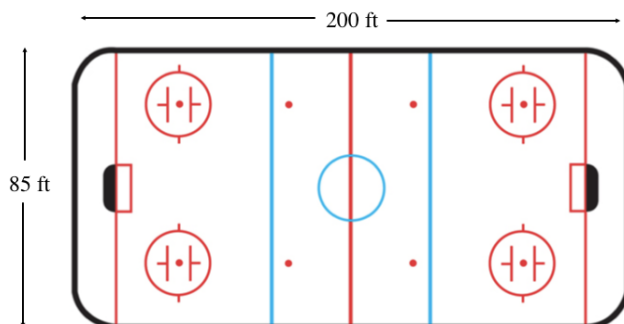
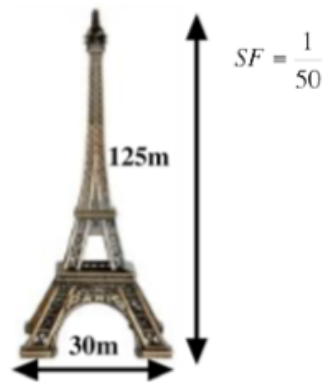
Original \times SF = Reduction

$$300 \times \frac{1}{2} = 150$$

The little Tigger is 150 pixels tall.



Practice: Find the dimensions of the scale diagram given the following scale factor.



Find the new dimensions if the Scale is 1:50