

Scale Drawing

GENERATING NEW FIGURES

DMTI Varied Practice Worksheets

This PowerPoint or PDF displays the worksheets that have varied situations (context, visual, equations, and other mathematical models) for children to work on. By completing these worksheets, children increase their foundational skills in the topic, which will help them with these standards and future mathematical topics.

1. If using a journal, have the student present the worksheet and complete all the problems.
2. Or print the 'Varied Practice Worksheet Slide' for them to work on. Then, you can return to the PowerPoint or PDF to look at the keys to check their work.

Lesson 1: Scaling

Materials Needed

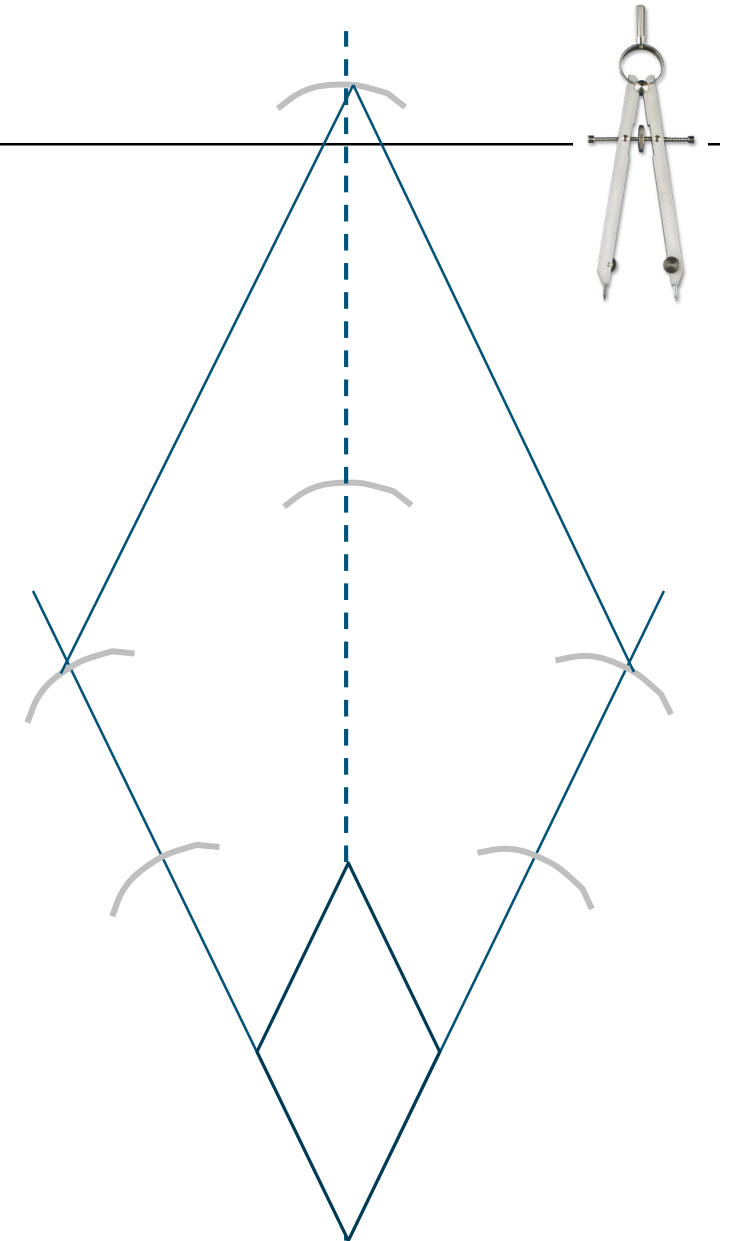
Printed copies of the Worksheets

Lesson 1: Scaling

There are a few different strategies for creating a scaled figure. One way is to measure each time, but another approach is to use a compass. Here is a rhombus with a height of 2 inches and a width of 1 inch.

5. Use a compass and straight edge to create an enlarged figure that has a scale factor of 3.
 - a. Using the straight edge to extend the lines to enlarge the figure.
 - b. Use a compass to measure the original distance and then create the arcs to grow the dimension.
 - c. Draw lines for the new figure

Note: A ruler can be used for this process if you do not have a compass.



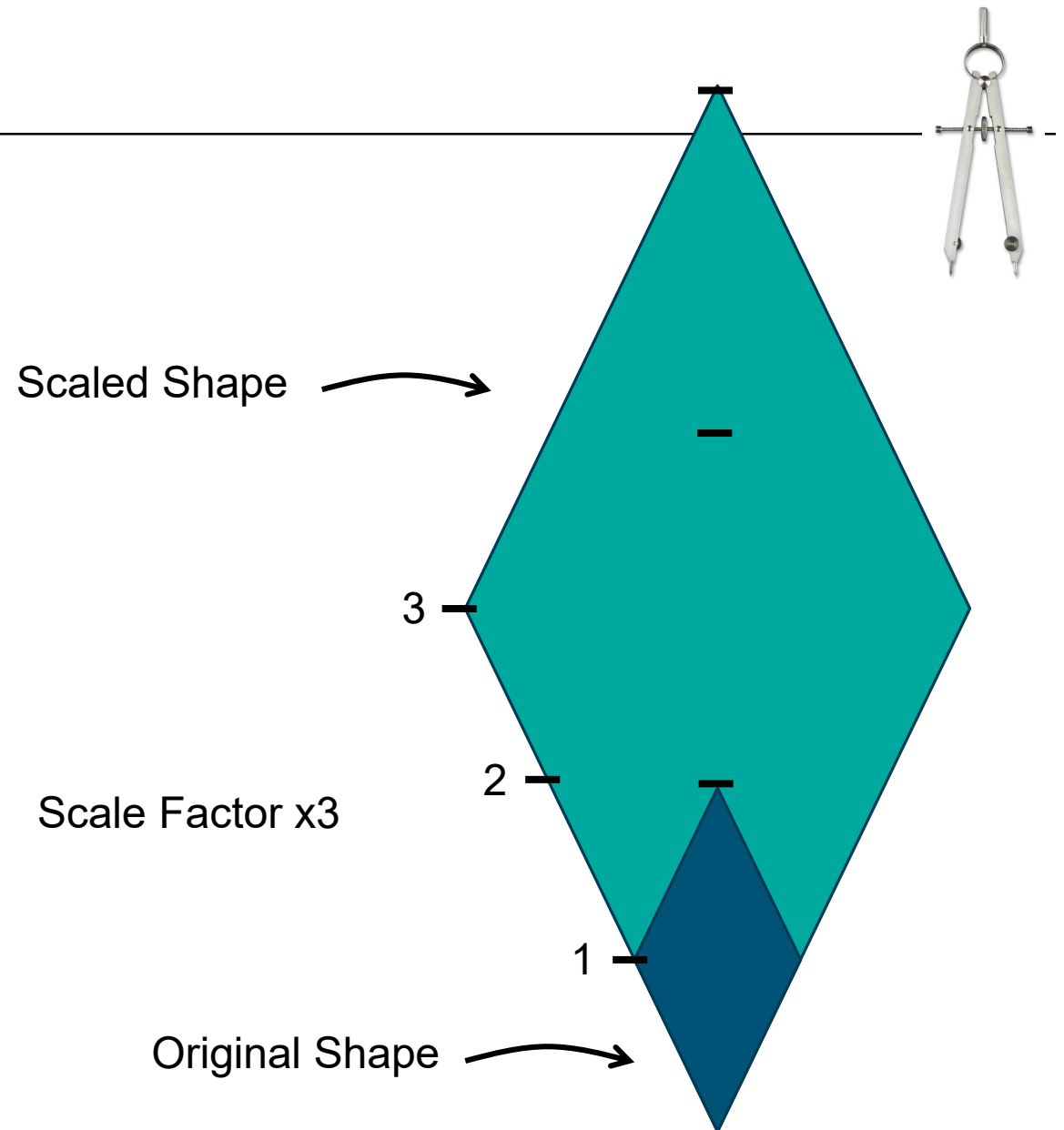
Lesson 1: Scaling

Jean thinks the scale factor is related to percent enlargement.

6. Describe the percent enlargement for the height?

7. How is the percent enlargement for height related to the percent enlargement of the length of the side of the rhombus?

8. What happens to area of the figure? Describe the area percent enlargement.



Lesson 1: Scaling

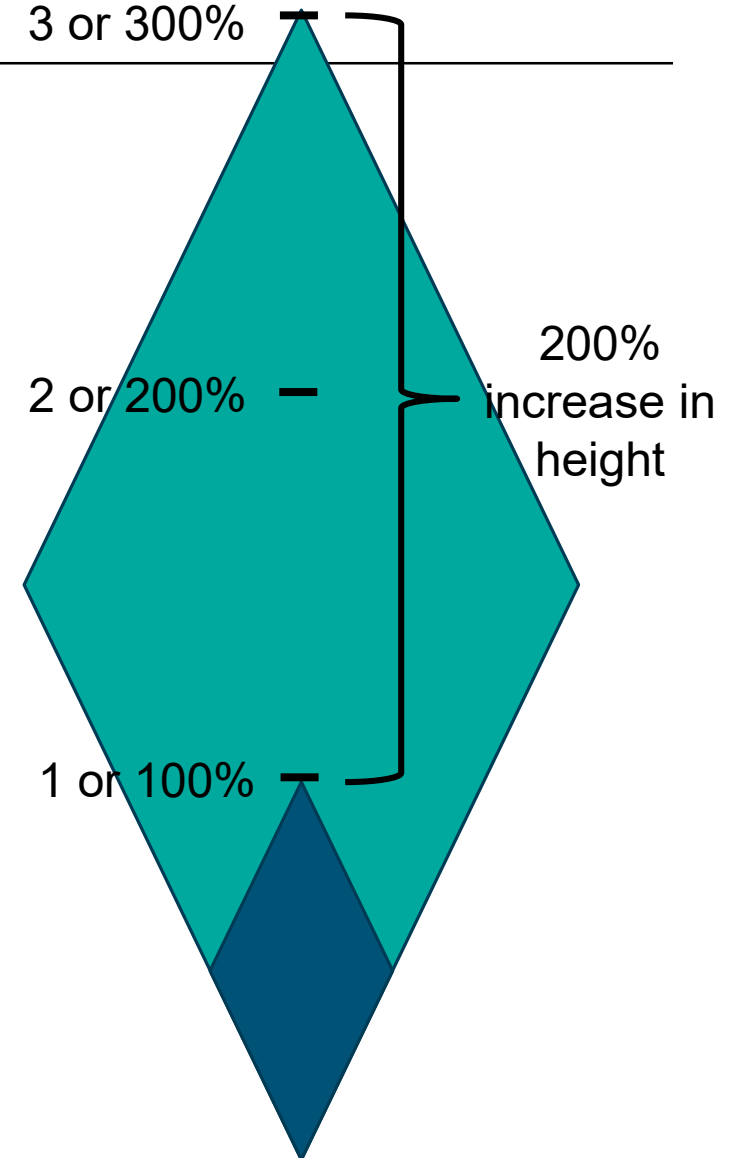
Scale Factor x3

3 or 300%

2 or 200%

1 or 100%

200%
increase in
height



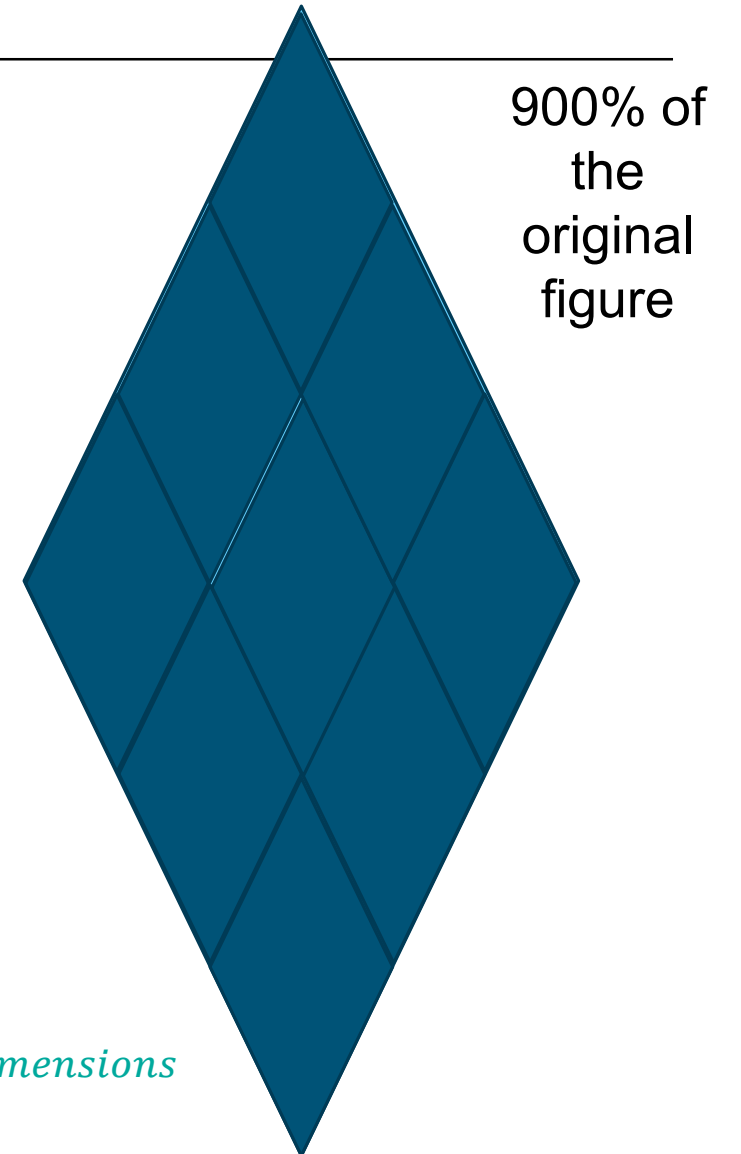
Jean was correct the percent enlargement is related to the scale factor. In this case the scale factor is 3 and the percent enlargement is 300%.

Another way to discuss this is that the percent increase or percent change. We say that the height of the new rhombus changed by 200% or increased by 200%.

Lesson 1: Scaling

However, the area is 900% of the original shape. This is because there are 2 dimensions, which means the area is 3^2 or 9 times larger.

How would you describe the percent increase or change in area from the original rhombus to the enlarged one?



$$\text{Area times larger} = (\text{Scale factor})^{\text{Dimensions}}$$

Scale Drawing: Drawing

1. Use the scale factor to draw the new figure.
2. State the percent changes based on your drawing and scale factor.

Worksheet 1.1 – Scale Drawing: Generating new figures

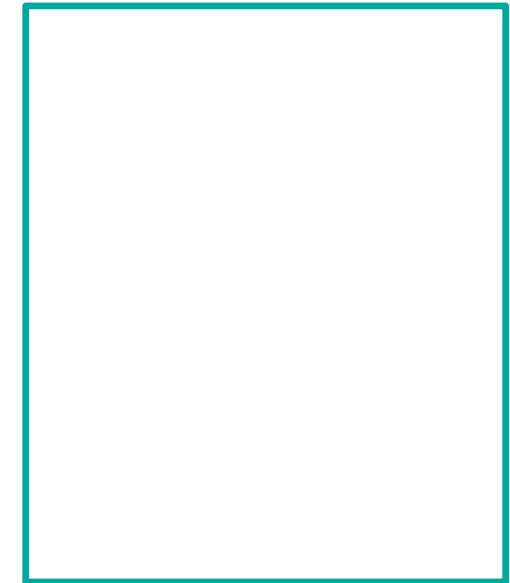
Scale factor x2



Scale factor x3



Scale factor $\times \frac{1}{2}$

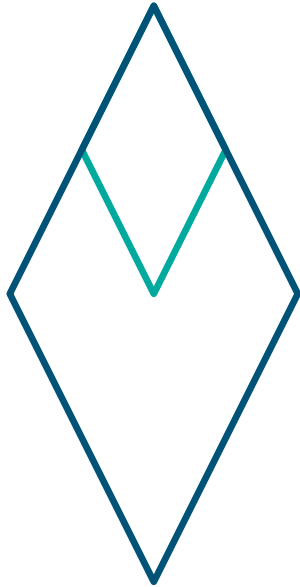


The new shape is ___% of the original and ___% increase.

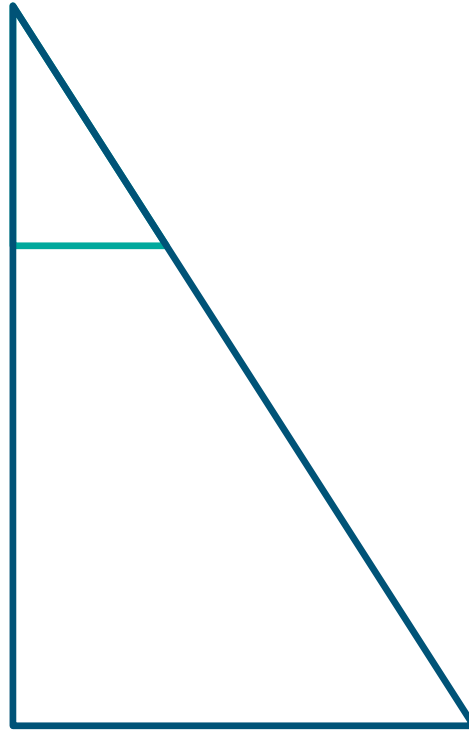
The new shape is ___% of the original and ___% increase.

The new shape is ___% of the original and ___% decrease.

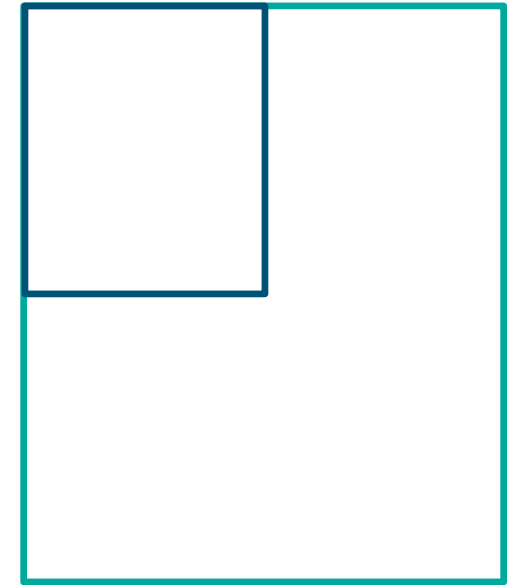
Scale factor x2



Scale factor x3



Scale factor $\times \frac{1}{2}$



The new shape is 400% of the original and 300% increase.

The new shape is 900% of the original and 800% increase.

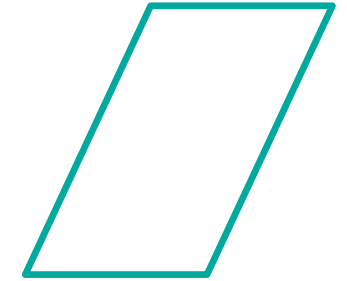
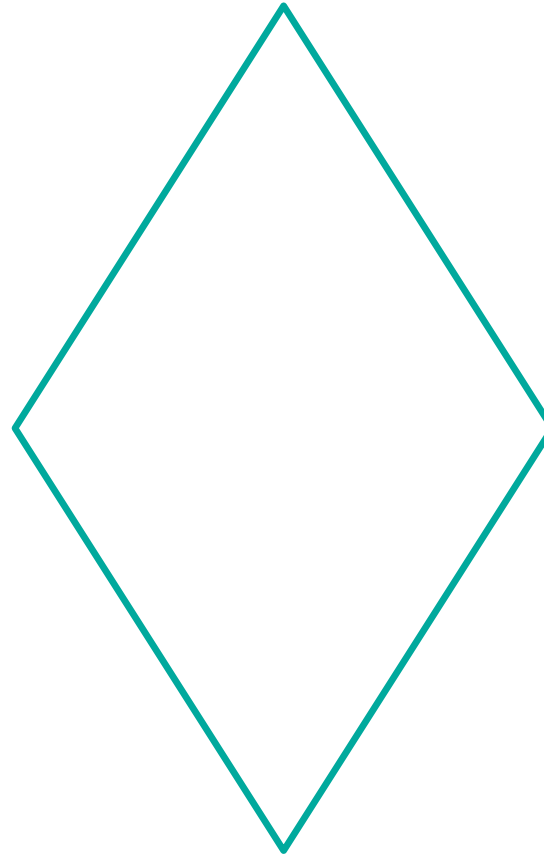
The new shape is 25% of the original and 75% decrease.

Worksheet 1.2 – Scale Drawing: Generating new figures

Scale factor $\times 2\frac{1}{2}$

Scale factor $\times \frac{1}{4}$

Scale factor $\times 1\frac{1}{2}$

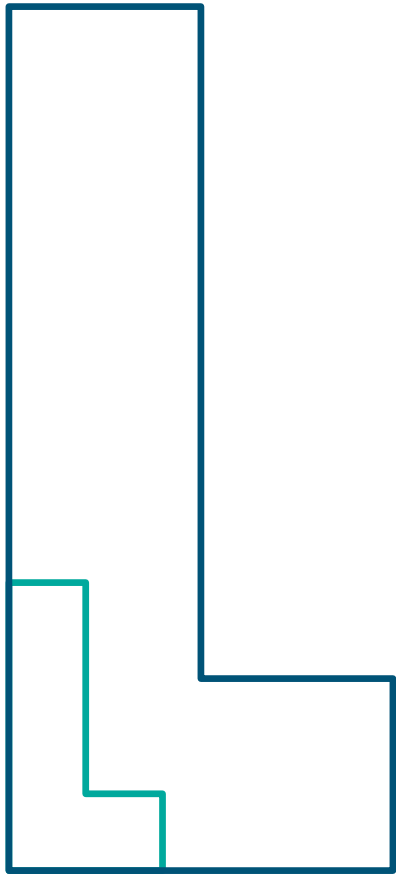


The new shape is ___% of the original and ___% increase.

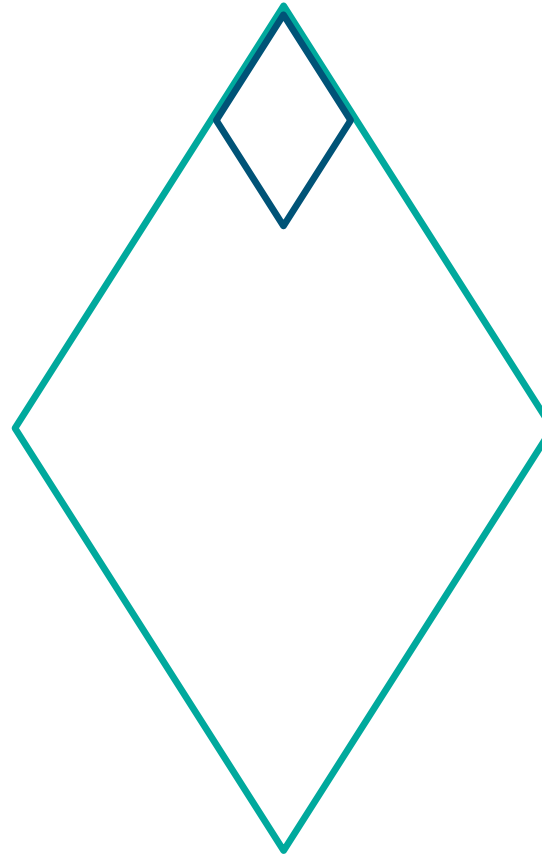
The new shape is ___% of the original and ___% decrease.

The new shape is ___% of the original and ___% increase.

Scale factor $\times 2\frac{1}{2}$



Scale factor $\times \frac{1}{4}$



Scale factor $\times 1\frac{1}{2}$



The new shape is 625% of the original and 525% increase.

The new shape is 6.25% of the original and 93.75% decrease.

The new shape is 225% of the original and 125% increase.