

Scale Drawing

MATCHING

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 2: Scaling

Materials Needed

Printed copies of the Worksheets

Lesson 2: Scaling

Many different occupations use scaling. In geometry, which is the study of shape and space, we use **scaling** to mean growing (enlarging) and shrinking (reducing) something proportionally.

Mathematically, a **scale** is a constant ratio between the actual measurements and the measurements in the enlarged or reduced model.

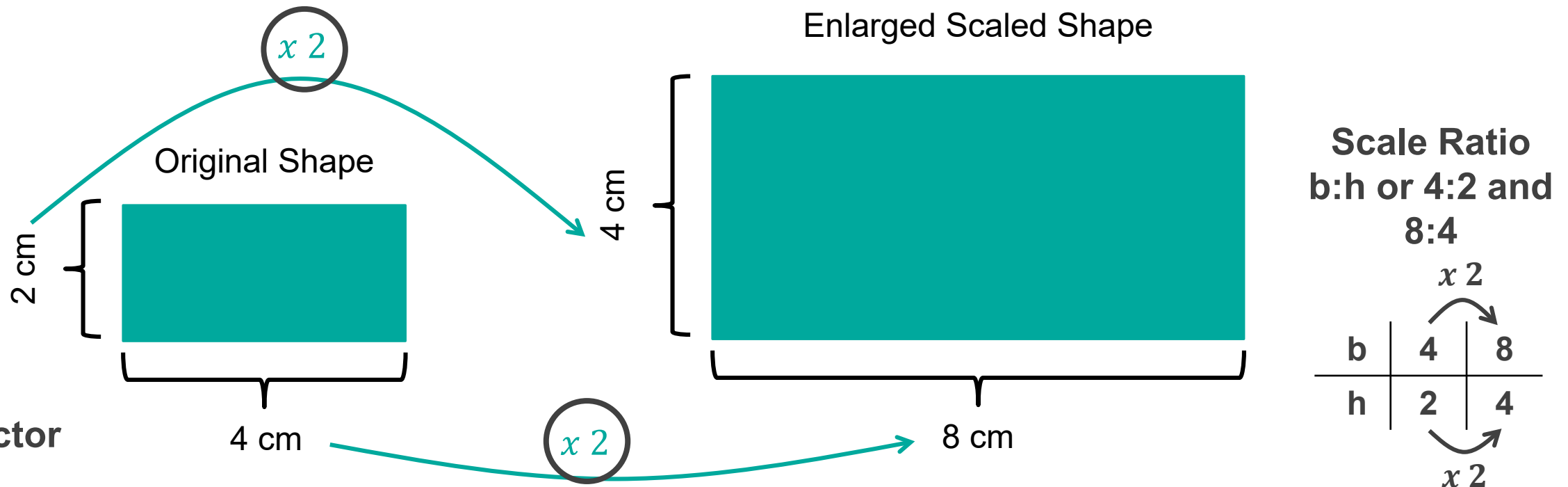
The notation we use for a **scale ratio** is $a:b$ or a to b or $\frac{a}{b}$.

A **scale factor** is the multiplier used to enlarge or reduce all the dimensions of an object by the same factor.

Here is an example using a simple shape.

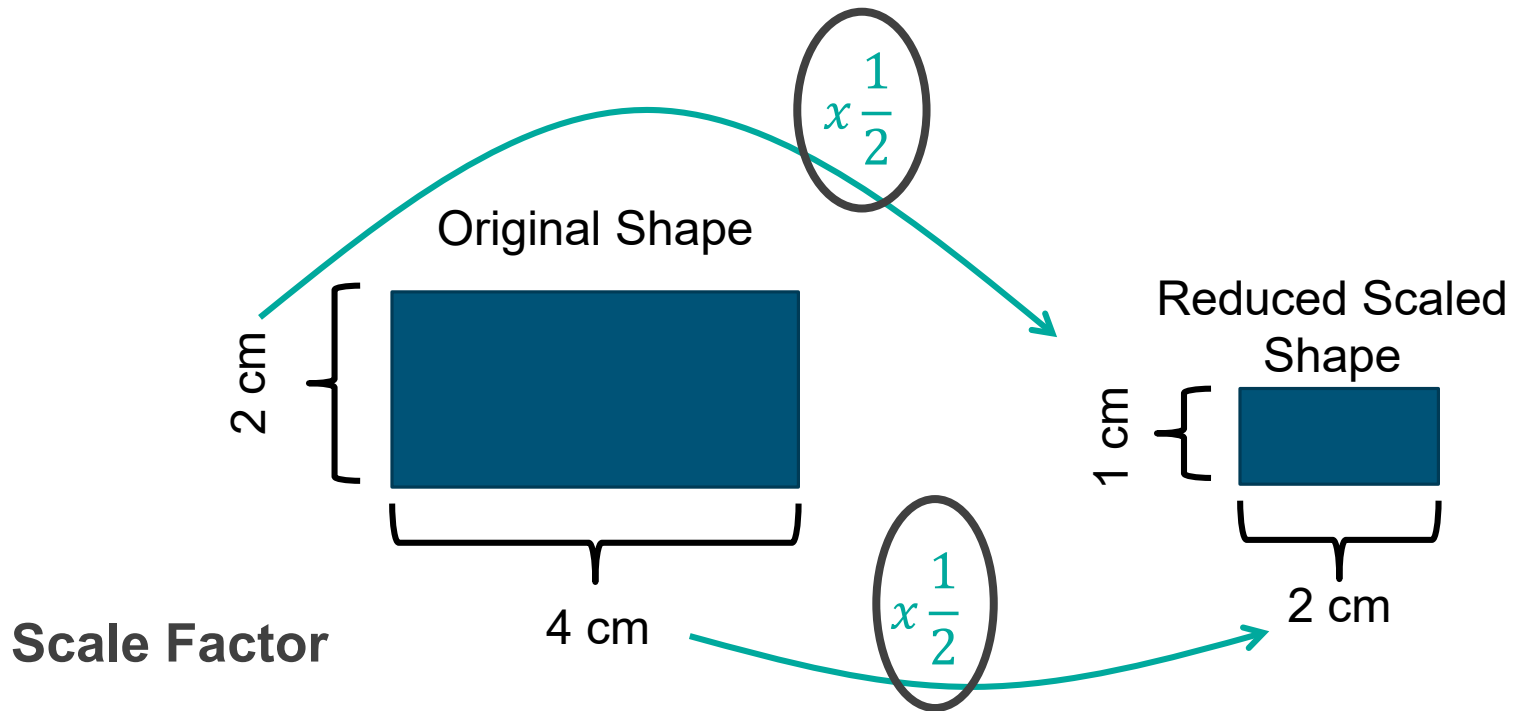
Lesson 2: Scaling

Here is an example using a rectangle. We are going to scale it by a factor of 2. This means that each dimension (base and height) will be enlarged by a factor of 2.

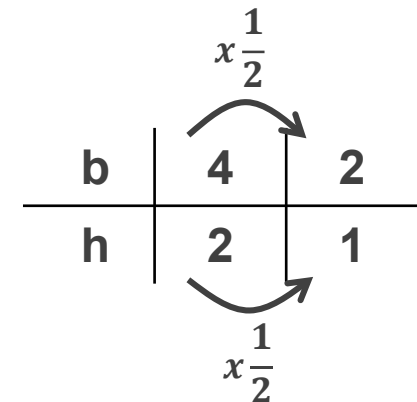


Lesson 2: Scaling

Now we are going to scale the same rectangle by a factor of $\frac{1}{2}$.



Scale Ratio
b:h or 4:2 and 2:1



Scale Drawing: Matching

1. Examine the template and determine which frames are in the same proportion as other frames on the worksheet. Use the scale provided as your measure.
2. Once you find shapes that have the same proportion, complete the worksheet to show how you know.
3. Try these visually and then you can cut them out to check your work.

Note: *Screen resolution or the device used to print the practice sheet may adjust the shapes' appearances in ways that do not match the key. If students can use measurements to justify their answers, the answers should be considered correct even if the key says otherwise.*

Scale:



= 1 sq unit

A.



B.



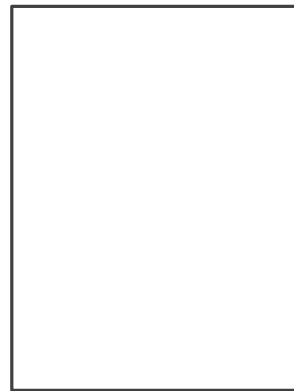
C.



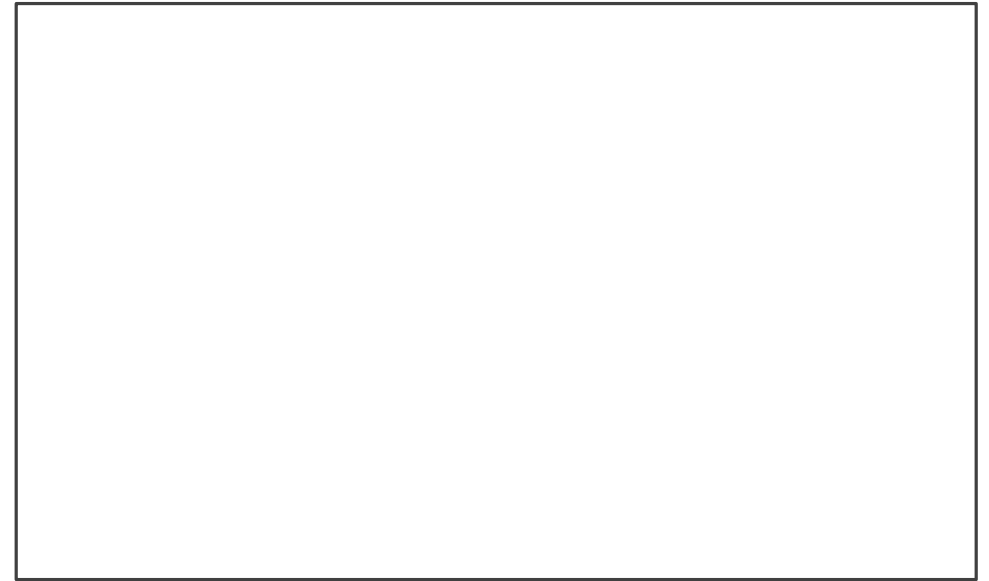
D.



E.



F.



Worksheet 2.1 – Scale Drawing: Matching

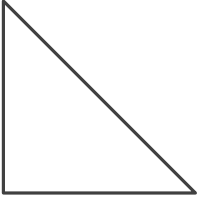
Pair	Ratio Table	Explanation
		<p>I know ___ and ___ are a pair because each dimension of rectangle ___ were enlarged by a factor of ___ to generate rectangle ___.</p> <p>Scale Ratio ___: ___ and ___: ___</p>

Pair	Ratio Table	Explanation								
A and F	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Length (units)</td> <td style="padding: 5px; text-align: center;">3</td> <td style="padding: 5px; text-align: center;">6</td> </tr> <tr> <td style="padding: 5px;">Width (units)</td> <td style="padding: 5px; text-align: center;">5</td> <td style="padding: 5px; text-align: center;">10</td> </tr> </table>	Length (units)	3	6	Width (units)	5	10	<p>I know <u>A</u> and <u>F</u> are a pair because each dimension of rectangle <u>A</u> were enlarged by a factor of <u>2</u> to generate rectangle <u>F</u>.</p> <p style="text-align: center;">Scale Ratio 3:5 and 6:10</p>		
Length (units)	3	6								
Width (units)	5	10								
B and E	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Length (units)</td> <td style="padding: 5px; text-align: center;">2</td> <td style="padding: 5px; text-align: center;">4</td> </tr> <tr> <td style="padding: 5px;">Width (units)</td> <td style="padding: 5px; text-align: center;">$1\frac{1}{2}$</td> <td style="padding: 5px; text-align: center;">3</td> </tr> </table>	Length (units)	2	4	Width (units)	$1\frac{1}{2}$	3	<p>I know <u>B</u> and <u>E</u> are a pair because each dimension of rectangle <u>B</u> were enlarged by a factor of <u>2</u> to generate rectangle <u>E</u>.</p> <p style="text-align: center;">Scale Ratio $2:1\frac{1}{2}$ and 4:3</p>		
Length (units)	2	4								
Width (units)	$1\frac{1}{2}$	3								
D and C	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Length (units)</td> <td style="padding: 5px; text-align: center;">1</td> <td style="padding: 5px; text-align: center;">2</td> <td style="padding: 5px; text-align: center;">3</td> </tr> <tr> <td style="padding: 5px;">Width (units)</td> <td style="padding: 5px; text-align: center;">$2\frac{1}{2}$</td> <td style="padding: 5px; text-align: center;">5</td> <td style="padding: 5px; text-align: center;">$7\frac{1}{2}$</td> </tr> </table>	Length (units)	1	2	3	Width (units)	$2\frac{1}{2}$	5	$7\frac{1}{2}$	<p>I know <u>C</u> and <u>D</u> are a pair because each dimension of rectangle <u>D</u> were enlarged by a factor of <u>3</u> to generate rectangle <u>C</u>.</p> <p style="text-align: center;">Scale Ratio $1:2\frac{1}{2}$ and $3:7\frac{1}{2}$</p>
Length (units)	1	2	3							
Width (units)	$2\frac{1}{2}$	5	$7\frac{1}{2}$							

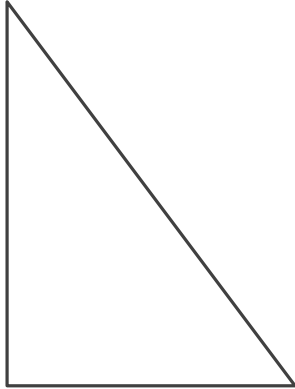
Template 2: Triangles

Scale:  = 1 sq unit

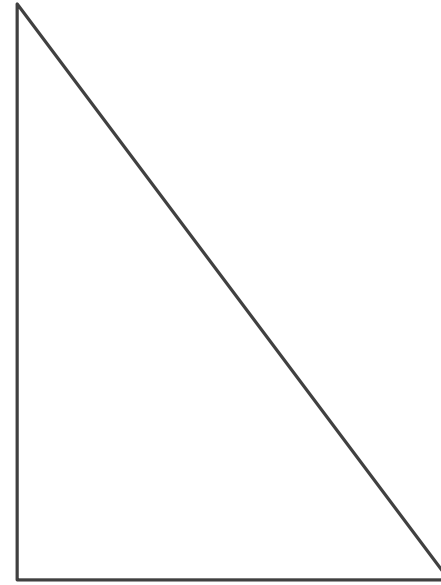
A.



B.



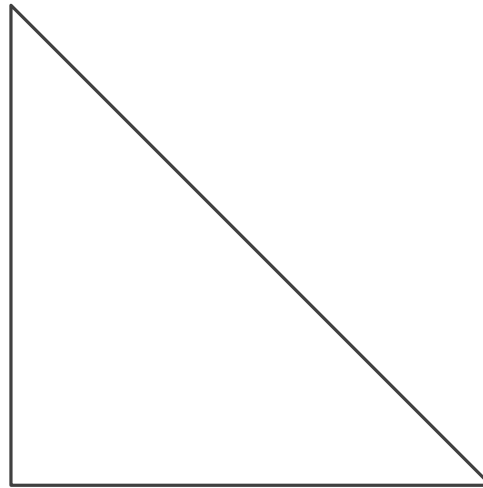
C.



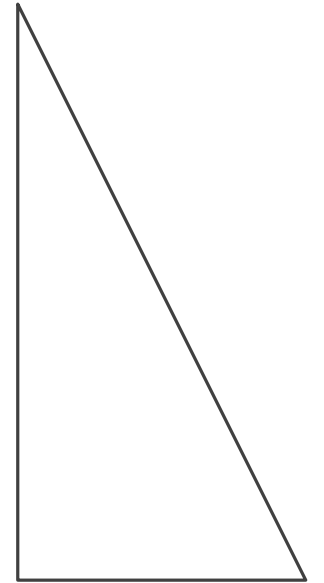
D.



E.



F.



Worksheet 2.2 – Scale Drawing: Matching

Pair	Ratio Table	Explanation
		<p>I know __ and __ are a pair because each dimension of Triangle __ were enlarged by a factor of _ to generate triangle __.</p> <p>Scale Ratio __: __ and __: __</p>

Pair	Ratio Table	Explanation										
A and E	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Base (units)</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;">1</td> <td style="padding: 5px;">5</td> </tr> <tr> <td style="padding: 5px;">Height (units)</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;">1</td> <td style="padding: 5px;">5</td> </tr> </table>	Base (units)	2	4	1	5	Height (units)	2	4	1	5	<p>I know <u>A</u> and <u>E</u> are a pair because each dimension of triangle <u>A</u> was enlarged by a factor of $2\frac{1}{2}$ to generate triangle <u>E</u>.</p> <p style="text-align: center;">Scale Ratio 2:2 and 5:5</p>
Base (units)	2	4	1	5								
Height (units)	2	4	1	5								
B and C	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Base (units)</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;">6</td> </tr> <tr> <td style="padding: 5px;">Height (units)</td> <td style="padding: 5px;">3</td> <td style="padding: 5px;">$1\frac{1}{2}$</td> <td style="padding: 5px;">$4\frac{1}{2}$</td> </tr> </table>	Base (units)	4	2	6	Height (units)	3	$1\frac{1}{2}$	$4\frac{1}{2}$	<p>I know <u>B</u> and <u>C</u> are a pair because each dimension of triangle <u>B</u> was enlarged by a factor of $1\frac{1}{2}$ to generate triangle <u>C</u>.</p> <p style="text-align: center;">Scale Ratio 4:3 and $6:4\frac{1}{2}$</p>		
Base (units)	4	2	6									
Height (units)	3	$1\frac{1}{2}$	$4\frac{1}{2}$									
D and F	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Base (units)</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;">6</td> </tr> <tr> <td style="padding: 5px;">Height (units)</td> <td style="padding: 5px;">1</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;">3</td> </tr> </table>	Base (units)	2	4	6	Height (units)	1	2	3	<p>I know <u>D</u> and <u>F</u> are a pair because each dimension of triangle <u>D</u> was enlarged by a factor of <u>3</u> to generate triangle <u>F</u>.</p> <p style="text-align: center;">Scale Ratio 2:1 and 6:3</p>		
Base (units)	2	4	6									
Height (units)	1	2	3									