

Stretching and Shrinking: Investigation 3 Big Ideas: Similar Figures

Problem 3.1 and 3.2 Rep-tiles.

Students built rep-tiles with Scale Factor 1 and Scale Factor 2 and determined How area and perimeter are affected by scale factor.

They found that the Original Area \times Scale Factor² = new area.
 Original Perimeter \times Scale Factor = new perimeter.

If the area is enlarged 16 times then the scale factor is 4 because $4 \times 4 = 16$

8 in

Original

24 in

Area = 32 m²

Perimeter = 24 in

SF: 4

32 in

8 8 8 8

4 4 4 4

Area 512 m²

Perimeter = 96 in

16 in

You can see 16 of the original rectangles fit in the new rectangle which illustrates the sides getting 4x larger but area getting 16x larger

Problem 3.3

Drawing an enlarged or reduced image using scale factor.

Applying Scale Factor to draw a new figure.

Given the original dimensions, you multiply the original dimensions by the scale factor to find the new corresponding side length.

For Example if you have a rectangle that is 2 in by 4 in. and you have a scale factor of 2, the new dimensions are 4 in by 8 in. because 2 in. \times 2 = 4 in and 4 in. \times 2 = 8 in.

8 in

Original

4 in

$4 \times 2 = 8$

8 in

Enlarged

Scale Factor 2

8 in

16 in

$8 \times 2 = 16$

$4 \times \frac{1}{2} = 2$

2 in

4 in

Reduced

Scale Factor $\frac{1}{2}$

Problem 3.3 & 3.4

Finding Missing side lengths of similar figures.

1st) Determine the Scale Factor using the two given corresponding sides
 2nd) Use the Scale Factor to find the missing side.

6 in

3 in

3 in

$\times 3$

18 in

X

Scale Factor is 3 \rightarrow 9 in

$\frac{9}{3} = 3$
Scale Factor