4.1 Enlargements and Reductions

MathLinks 9, pages 130–138
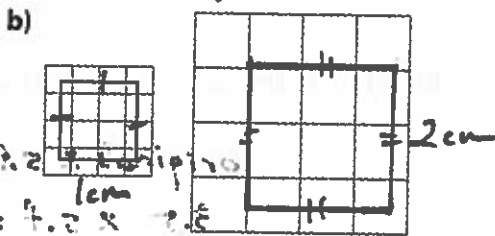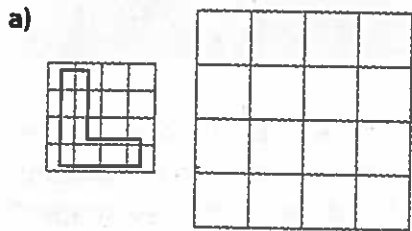
Teacher Key

Key Ideas Review

Choose from the following terms to complete #1.

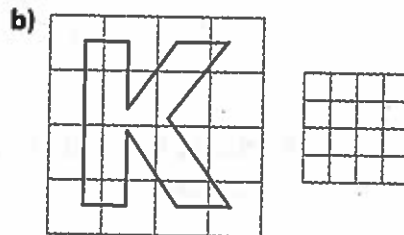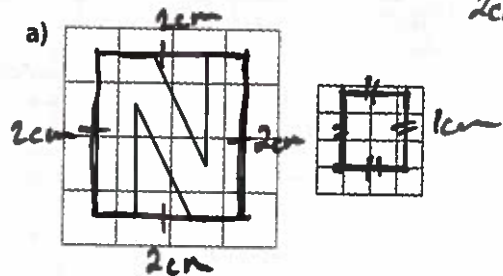| constant | enlargement | larger | reduction | scale factor | smaller |

1. a) A scale factor greater than 1 indicates a(n) __enlargement__, which results in an image that is the same shape but proportionally __larger__ than the original.

   b) A scale factor less than 1 indicates a(n) __reduction__, which results in an image that is the same shape but proportionally __smaller__ than the original.

   c) The __scale factor__ is the __constant__ amount by which all dimensions of an object are enlarged or reduced in a scale drawing.

Check Your Understanding

2. Draw an enlargement of each figure using a scale factor of 2.

   a)

   b)

   $1 \text{cm} \times 2 = 2\text{cm}.$
   ↑
   Scale factor
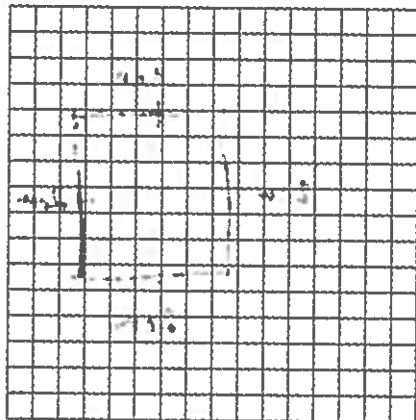
3. Draw a reduction of each letter using a scale factor of 0.5.

   a)

   $2\text{cm} \times 0.5 = 1\text{cm}$

   b)

4. For each image in column A, state whether the image in column B has a scale factor
   - greater than 1
   - less than 1
   - equal to 1

	A	B
a) $=1$		
b) <1		
c) >1		

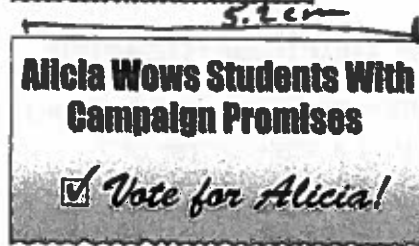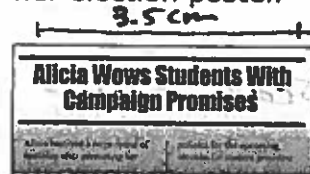5. a) Draw an enlargement of the butterfly using a scale factor of 4.

b) Explain how you know that your drawing is correct.

6. Draw an image of the flag of Greece using a scale factor of $\frac{1}{4}$. →4 times smaller.

7. Alicia copied a headline from the school newspaper and included it on her election poster.

3.5 cm

Alicia Wows Students With Campaign Promises

5.2 cm

Alicia Wows Students With Campaign Promises

☑ *Vote for Alicia!*

a) Is the headline on the poster an enlargement or a reduction of the headline in the newspaper?

Enlargement.

b) What is the scale factor? How do you know?

original x s.f = new

$3.5 \times s.f = 5.2$

$\frac{3.5}{3.5} \qquad \frac{5.2}{3.5}$

s.f = 1.5