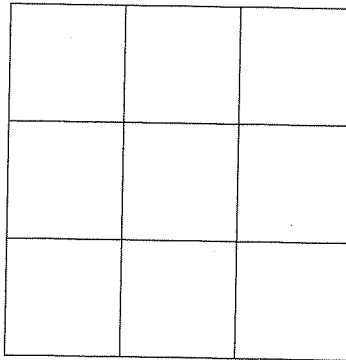


## Lesson 7: Replacing Letters with Numbers

### Classwork

#### Example 1



What is the length of one side of this square?

3 units

What is the formula for the area of a square?

$$A = s^2$$

What is the square's area as a multiplication expression?

3 units  $\times$  3 units

What is the square's area?

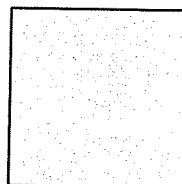
9 Square units

We can count the units. However, look at this other square. Its side length is 23 cm. That is just too many tiny units to draw. What expression can we build to find this square's area?

What is the area of the square? Use a calculator if you need to.

$$23\text{ cm} \times 23\text{ cm}$$

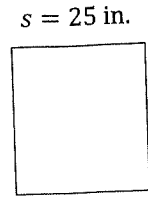
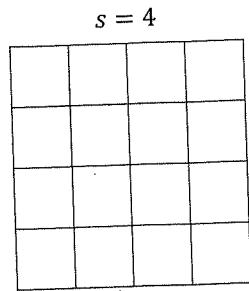
$$529\text{ cm}^2$$



23 cm

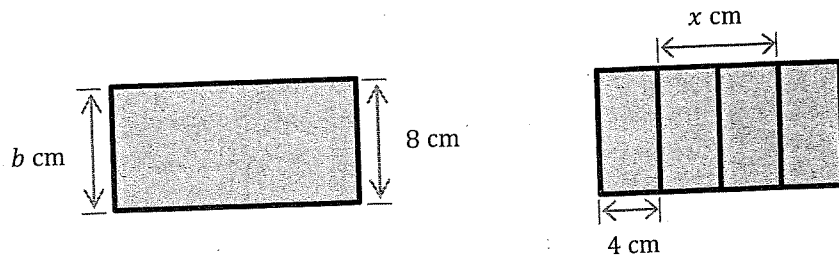
**Exercise 1**

Complete the table below for both squares. Note: These drawings are not to scale.



Length of One Side of the Square	Square's Area Written as an Expression	Square's Area Written as a Number
4 units	4 units $\times$ 4 units	16 Square units
25 in	25 in $\times$ 25 in	625 in <sup>2</sup>

**Example 2**



What does the letter  $b$  represent in this blue rectangle?

$b = 8$

With a partner, answer the following question: Given that the second rectangle is divided into four *equal* parts, what number does the  $x$  represent?  $x = 8$

How did you arrive at this answer?

Each width of the 4 congruent rectangles must be the same. Two 4cm lengths equal 8cm.

What is the total length of the second rectangle? Tell a partner how you know.

The length consists of 4 segments that each has a length of 4cm.  
 $4 \times 4\text{cm} = 16\text{cm}$ .

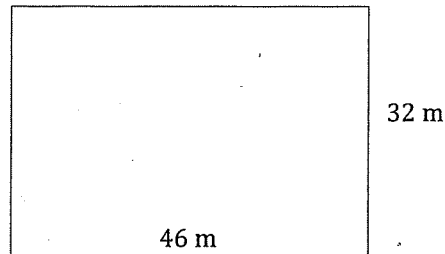
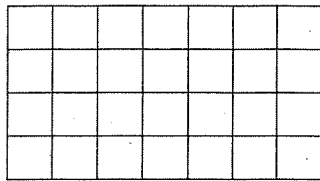
If the two large rectangles have equal lengths and widths, find the area of each rectangle.

$$8\text{cm} \times 16\text{cm} = 128\text{cm}^2$$

Discuss with your partner how the formulas for the area of squares and rectangles can be used to evaluate area for a particular figure.

### Exercise 2

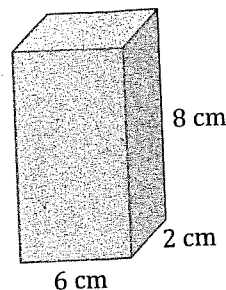
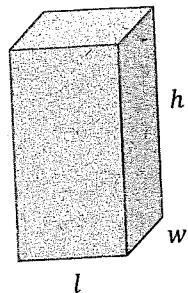
Complete the table below for both rectangles. Note: These drawings are not to scale. Using a calculator is appropriate.



Length of Rectangle	Width of Rectangle	Rectangle's Area Written as an Expression	Rectangle's Area Written as a Number
7 units	4 units	7 units $\times$ 4 units	28 Square units
46 m	32 m	46 m $\times$ 32 m	1,472 m <sup>2</sup>

Example 3

$$V = l \times w \times h$$



What does the  $l$  represent in the first diagram?

The length of the rectangular prism.

What does the  $w$  represent in the first diagram?

The width of the rectangular prism.

What does the  $h$  represent in the first diagram?

The height of the rectangular prism.

Since we know the formula to find the volume is  $V = l \times w \times h$ , what number can we substitute for the  $l$  in the formula? Why?

6; The length of the second rectangular prism is 6cm

What other number can we substitute for the  $l$ ?

Only one number can replace one letter.

What number can we substitute for the  $w$  in the formula? Why?

2; The width of the second rectangle is 2cm.

What number can we substitute for the  $h$  in the formula?

8; The height of the second right rectangular prism is 8cm.

Determine the volume of the second right rectangular prism by replacing the letters in the formula with their appropriate numbers.

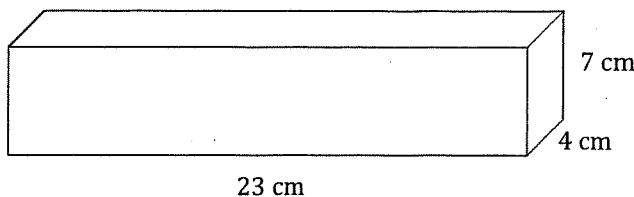
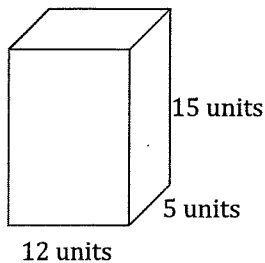
$$V = l \times w \times h$$

$$6\text{cm} \times 2\text{cm} \times 8\text{cm}$$

$$96\text{cm}^3$$

**Exercise 3**

Complete the table for both figures. Using a calculator is appropriate.



Length of Rectangular Prism	Width of Rectangular Prism	Height of Rectangular Prism	Rectangular Prism's Volume Written as an Expression	Rectangular Prism's Volume Written as a Number
12 units	5 units	15 units	$12\text{ units} \times 5\text{ units} \times 15\text{ units}$	900 cubic units
23 cm	4 cm	7 cm	$23\text{ cm} \times 4\text{ cm} \times 7\text{ cm}$	644 $\text{cm}^3$