

# Multiplication: Reviewing the standard algorithm

A room at the Plaza Hotel costs \$124 for one night.

Estimate the total cost for 2 nights.

\$

Think about how you would calculate the exact cost.

Paul multiplied the parts to calculate the total cost.

Look at the steps he followed.

Write the total cost in the empty boxes.

	1	2	4
×			2
			8
		4	0
	2	0	0

Kimmie used the standard algorithm for multiplication to calculate the total cost. She followed these steps.

Step 1			
	H	T	O
	1	2	4
×			2
			8

Step 2			
	H	T	O
	1	2	4
×			2
		4	8

Step 3			
	H	T	O
	1	2	4
×			2
	2	4	8

Estimate the product of  $1,223 \times 3$ .

Then use the standard multiplication algorithm to calculate the exact product.

Estimate				
	Th	H	T	O
×				



# Multiplication: Reviewing the standard algorithm

Estimate each product. Then use the standard multiplication algorithm to calculate the exact answer.

<b>a.</b> Estimate <div style="border: 1px solid black; width: 100px; height: 30px; margin-bottom: 5px;"></div> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%; text-align: center;">H</th> <th style="width: 25%; text-align: center;">T</th> <th style="width: 25%; text-align: center;">O</th> <th style="width: 25%;"></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> <td style="text-align: center;">3</td> <td></td> </tr> <tr> <td colspan="3" style="border-top: 1px solid black;"></td> <td></td> </tr> <tr> <td style="text-align: center;">×</td> <td></td> <td style="text-align: center;">3</td> <td></td> </tr> <tr> <td colspan="3" style="border-top: 1px solid black;"></td> <td></td> </tr> </tbody> </table>	H	T	O		2	1	3						×		3						<b>b.</b> Estimate <div style="border: 1px solid black; width: 100px; height: 30px; margin-bottom: 5px;"></div> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%; text-align: center;">H</th> <th style="width: 25%; text-align: center;">T</th> <th style="width: 25%; text-align: center;">O</th> <th style="width: 25%;"></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td></td> </tr> <tr> <td colspan="3" style="border-top: 1px solid black;"></td> <td></td> </tr> <tr> <td style="text-align: center;">×</td> <td></td> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td colspan="3" style="border-top: 1px solid black;"></td> <td></td> </tr> </tbody> </table>	H	T	O		1	2	3						×		2						<b>c.</b> Estimate <div style="border: 1px solid black; width: 100px; height: 30px; margin-bottom: 5px;"></div> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%; text-align: center;">H</th> <th style="width: 25%; text-align: center;">T</th> <th style="width: 25%; text-align: center;">O</th> <th style="width: 25%;"></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td></td> </tr> <tr> <td colspan="3" style="border-top: 1px solid black;"></td> <td></td> </tr> <tr> <td style="text-align: center;">×</td> <td></td> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td colspan="3" style="border-top: 1px solid black;"></td> <td></td> </tr> </tbody> </table>	H	T	O		3	2	3						×		2						<b>d.</b> Estimate <div style="border: 1px solid black; width: 100px; height: 30px; margin-bottom: 5px;"></div> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%; text-align: center;">H</th> <th style="width: 25%; text-align: center;">T</th> <th style="width: 25%; text-align: center;">O</th> <th style="width: 25%;"></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> <td></td> </tr> <tr> <td colspan="3" style="border-top: 1px solid black;"></td> <td></td> </tr> <tr> <td style="text-align: center;">×</td> <td></td> <td style="text-align: center;">4</td> <td></td> </tr> <tr> <td colspan="3" style="border-top: 1px solid black;"></td> <td></td> </tr> </tbody> </table>	H	T	O		2	2	1						×		4																									
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This activity uses the standard algorithm to multiply three- and four-digit numbers by one-digit numbers with no regrouping. The product is estimated first then the algorithm is used to calculate the exact answer.

# Multiplication: Using the standard algorithm with three- and four-digit factors

One tire costs \$172. Think about how you could calculate the total cost of 4 tires.

Corey calculated it like this.

Write the total cost in the empty boxes.

	1	7	2
×			4
			8
	2	8	0
	4	0	0



I would use the standard multiplication algorithm.

Step 1			
	H	T	O
	1	7	2
×			4
			8

Step 2			
	H	T	O
	2		
	1	7	2
×			4
		8	8

Step 3			
	H	T	O
	2		
	1	7	2
×			4
	6	8	8

Estimate the product of  $1,032 \times 4$ .

Then use the standard multiplication algorithm to calculate the exact product.

Estimate				
<div></div>				
	Th	H	T	O
×				



In this activity, the standard algorithm is used to multiply three- and four-digit numbers by one-digit numbers with regrouping in one or more places. The product is estimated first then the algorithm is used to calculate the exact answer.

# Multiplication: Using the standard algorithm with three- and four-digit factors

Write your estimate. Then use the standard multiplication algorithm to calculate the exact product.

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In this activity, the standard algorithm is used to multiply three- and four-digit numbers by one-digit numbers with regrouping in one or more places. The product is estimated first then the algorithm is used to calculate the exact answer.

# Multiplication: Using the standard algorithm with two two-digit factors

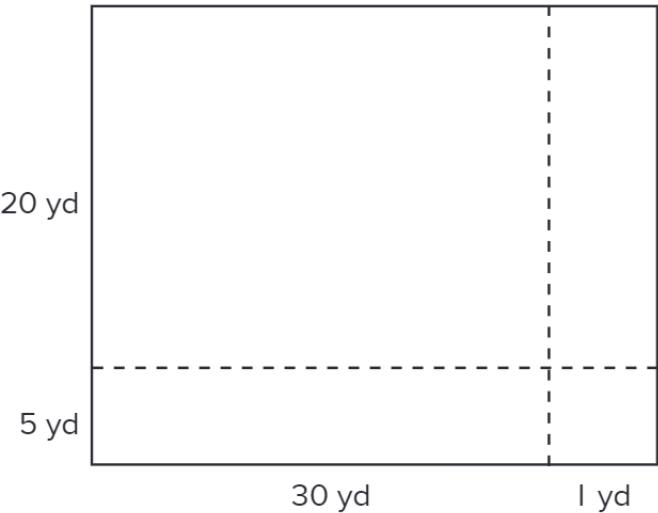
The town hall has a rectangular floor that is 25 yd wide and 31 yd long.

Write your estimate of the floor area.  yd<sup>2</sup>

Archie drew this diagram to help him calculate the exact area.

Write the partial product inside each part of the diagram then write the area below.

Area  yd<sup>2</sup>



Pati used the standard multiplication algorithm to calculate the exact area.

Step 1	Step 2	Step 3	Step 4	Step 5
<div> <div>H</div> <div>T</div> <div>O</div> <div></div> <div>2</div> <div>5</div> <div>×</div> <div></div> <div>3</div> <div>1</div> <div></div> <div></div> <div></div> <div>5</div> </div>	<div> <div>H</div> <div>T</div> <div>O</div> <div></div> <div>2</div> <div>5</div> <div>×</div> <div></div> <div>3</div> <div>1</div> <div></div> <div></div> <div>2</div> <div>5</div> </div>	<div> <div>H</div> <div>T</div> <div>O</div> <div></div> <div>1</div> <div>2</div> <div>5</div> <div>×</div> <div></div> <div>3</div> <div>1</div> <div></div> <div></div> <div>2</div> <div>5</div> <div></div> <div>5</div> <div>0</div> </div>	<div> <div>H</div> <div>T</div> <div>O</div> <div></div> <div>1</div> <div>2</div> <div>5</div> <div>×</div> <div></div> <div>3</div> <div>1</div> <div></div> <div></div> <div>2</div> <div>5</div> <div></div> <div>7</div> <div>5</div> <div>0</div> </div>	<div> <div>H</div> <div>T</div> <div>O</div> <div></div> <div>1</div> <div>2</div> <div>5</div> <div>×</div> <div></div> <div>3</div> <div>1</div> <div></div> <div></div> <div>2</div> <div>5</div> <div></div> <div>7</div> <div>5</div> <div>0</div> <div></div> <div>7</div> <div>7</div> <div>5</div> </div>

Look carefully at the numbers being multiplied in each step of the algorithm.

Find the matching partial products in Archie's diagram above.



# Multiplication: Using the standard algorithm with two two-digit factors

Alisa calculated these products. Make an estimate, then check each calculation and shade the ☐ to show if it is correct or not. If it is incorrect, write the correct calculation to the side.

a.

$$\begin{array}{r} 42 \\ \times 29 \\ \hline 378 \\ 840 \\ \hline 1218 \end{array}$$

- ☐ Is correct  
☐ Is not correct

b.

$$\begin{array}{r} 55 \\ \times 31 \\ \hline 55 \\ 1650 \\ \hline 1605 \end{array}$$

- ☐ Is correct  
☐ Is not correct

c.

$$\begin{array}{r} 24 \\ \times 33 \\ \hline 72 \\ 72 \\ \hline 144 \end{array}$$

- ☐ Is correct  
☐ Is not correct

d.

$$\begin{array}{r} 45 \\ \times 62 \\ \hline 80 \\ 24300 \\ \hline 24380 \end{array}$$

- ☐ Is correct  
☐ Is not correct

e.

$$\begin{array}{r} 59 \\ \times 27 \\ \hline 413 \\ 1180 \\ \hline 1593 \end{array}$$

- ☐ Is correct  
☐ Is not correct

f.

$$\begin{array}{r} 69 \\ \times 21 \\ \hline 69 \\ 1380 \\ \hline 1449 \end{array}$$

- ☐ Is correct  
☐ Is not correct

g.

$$\begin{array}{r} 48 \\ \times 25 \\ \hline 240 \\ 960 \\ \hline 1100 \end{array}$$

- ☐ Is correct  
☐ Is not correct

h.

$$\begin{array}{r} 38 \\ \times 28 \\ \hline 204 \\ 760 \\ \hline 964 \end{array}$$

- ☐ Is correct  
☐ Is not correct



# Multiplication: Using the standard algorithm with two- and three-digit factors

A school paid for 43 students to attend a leadership camp. The cost was \$122 for each student. What was the total cost?

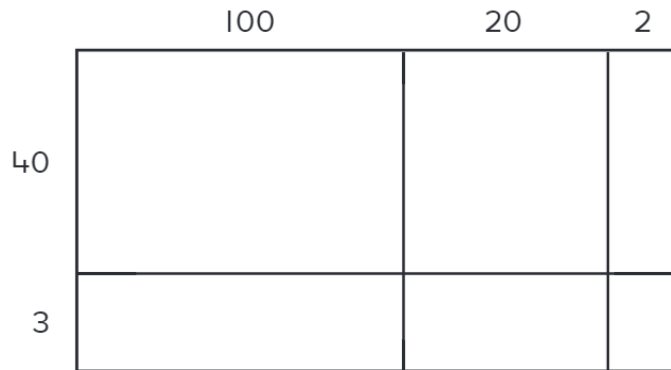


Write your estimate of the total cost.

Estimate of total cost

\$ \_\_\_\_\_

Victoria drew this diagram to calculate the exact area.



Total cost

\$ \_\_\_\_\_

Write the partial product inside each part of the diagram then write the total cost above.

Franco used the standard multiplication algorithm to calculate the total cost.

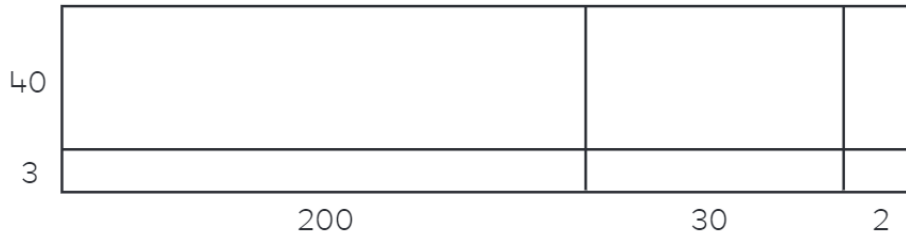
Complete the algorithm to show his calculation.

	1	2	2
×		4	3
	3	6	6



# Multiplication: Using the standard algorithm with two- and three-digit factors

1. Write the partial product inside each part of the diagram below. Then add these to calculate the area.



$$43 \times 232 = \underline{\hspace{2cm}}$$

2. Use the standard multiplication algorithm to calculate the exact product. Then estimate the product to check that your answer makes sense.

a.

$$\begin{array}{r} 153 \\ \times 34 \\ \hline \end{array}$$

b.

$$\begin{array}{r} 435 \\ \times 53 \\ \hline \end{array}$$

c.

$$\begin{array}{r} 317 \\ \times 27 \\ \hline \end{array}$$

d.

$$\begin{array}{r} 282 \\ \times 55 \\ \hline \end{array}$$

e.

$$\begin{array}{r} 309 \\ \times 24 \\ \hline \end{array}$$

f.

$$\begin{array}{r} 183 \\ \times 46 \\ \hline \end{array}$$

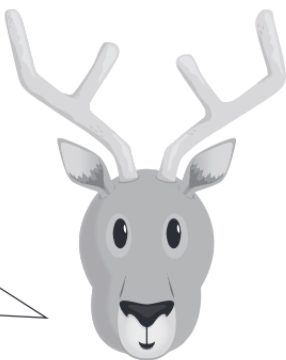


In this activity, the standard multiplication algorithm is used to multiply three- and two-digit numbers. The partial-products method is used to show the steps of the algorithm.



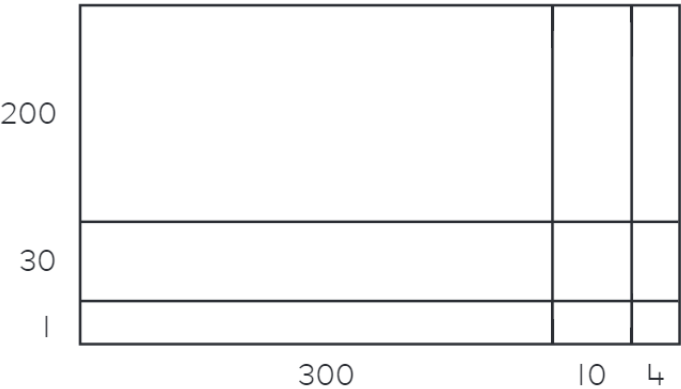
# Multiplication: Extending the standard algorithm

A 6-month pass to all performances at a theater costs \$314.  
 231 people bought one of these passes in January.  
 How much money was made from these ticket sales?



That will be a bit less than \$73,000.

Jamal drew this diagram to calculate the exact total sales.



Total sales  
 \$ \_\_\_\_\_

Write the partial product inside each part of the diagram then write the total sales above.

Jayden used the standard multiplication algorithm to calculate the total sales.

Complete the algorithm to show her calculation.

	×	3	1	4
		2	3	1
		3	1	4
			2	0



# Multiplication: Extending the standard algorithm

1. Write the partial product inside each part of the diagram below. Then add these to calculate the area.



$164 \times 259 =$

2. Use the standard multiplication algorithm to calculate the exact product. Then estimate the product to check that your answer makes sense.

a.

$$\begin{array}{r} 2421 \\ \times 13 \\ \hline \end{array}$$

b.

$$\begin{array}{r} 478 \\ \times 342 \\ \hline \end{array}$$

c.

$$\begin{array}{r} 297 \\ \times 228 \\ \hline \end{array}$$

d.

$$\begin{array}{r} 1504 \\ \times 234 \\ \hline \end{array}$$

e.

$$\begin{array}{r} 526 \\ \times 408 \\ \hline \end{array}$$

f.

$$\begin{array}{r} 3015 \\ \times 158 \\ \hline \end{array}$$



## Multiplication: Solving word problems

Callum is a basketball player.  
He is paid \$2,512 for each game played.  
During the season, he plays 5 games.  
How much does he earn for the season?



Look at how these students figured out the amount.

Bella used the standard algorithm to multiply like this.

$$\begin{array}{r} \phantom{0}2\phantom{0}5\phantom{0}1\phantom{0}2 \\ \times \phantom{0}5 \\ \hline 1\phantom{0}2\phantom{0}5\phantom{0}6\phantom{0}0 \end{array}$$

Evan multiplied the parts like this.

$$\begin{array}{r} 2,000 \times 5 = 10,000 \\ 500 \times 5 = 2,500 \\ 12 \times 5 = 60 \\ 10,000 + 2,500 + 60 = 12,560 \end{array}$$

🔍 Lifen multiplied by 10 and then halved her answer.

$$2,512 \times 10 = 25,120$$

SO

$$2,512 \times 5 = 12,560$$

Use one of the methods above or another one you prefer to calculate these season earnings.

## Player A

\$925 for each game  
18 games played

\$ \_\_\_\_\_

## Player B

\$15,281 for each game  
24 games played

\$\_\_\_\_\_

## Player C

\$5,836 for each game  
12 games played

\$ \_\_\_\_\_



# Multiplication: Solving word problems

Solve each problem. Show your thinking.

- a. There are 35 seats in each row of a spectator stand. There are 46 rows. How many seats are in the stand?

seats

- b. There are 24 cans of beans in a box. A store ordered 138 boxes. How many cans of beans were ordered?

cans

- c. Two-way flights from Dallas to Australia cost \$1,524 for a coach ticket. There are 233 coach seats. How much will be paid to the airline if all these seats are sold?

\$

- d. There are 61 bundles of wire in each main cable on the Golden Gate Bridge. Each bundle has 452 strands of wire. How many strands of wire are in three main cables?

strands

- e. A bakery uses 312 eggs each day. How many eggs will be used in 365 days?

eggs

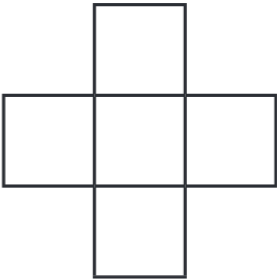
- f. Tickets to the opera are \$158 each. 2,304 tickets were sold. How much money did the opera company receive in tickets sales?

\$



# Volume: Developing the concept

Imagine you placed base-10 ones blocks on this base picture so it is five layers high.



Complete this table to show how many cubes you would use.

Number of cubes in base	Number of layers	Total number of cubes
5	1	5
5	2	10
5	3	
5		
5		

What does the total number of cubes represent?

The total number of cubes tells you the volume of the object.



**Volume** is the amount of space that an object occupies.

Write the volume of an object that has a base of 12 cubes and is 6 layers high.

 cubes

Write the volume of an object that has a base of 9 cubes and is 11 layers high.

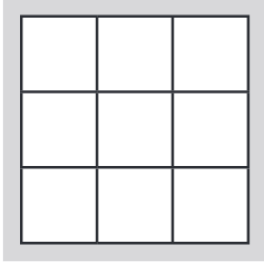
 cubes


This activity develops the rule used to calculate volume by multiplying the number of cubes in the base of an object by the number of identical layers.

# Volume: Developing the concept

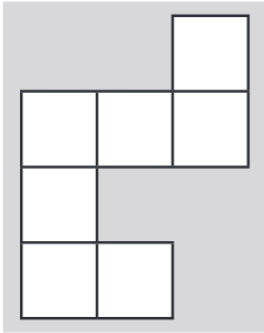
Imagine base-10 ones blocks were placed on each base picture and the number of layers were built up to match the data in the table. Complete the tables.

a.



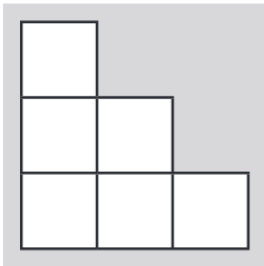
Number of cubes in base	Number of layers	Total number of cubes
9	1	9
9	2	18
9	3	

b.



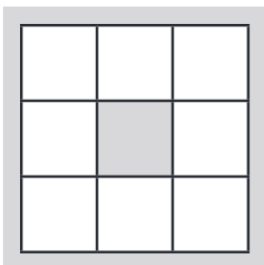
Number of cubes in base	Number of layers	Total number of cubes
7	1	
	2	
	3	

c.



Number of cubes in base	Number of layers	Total number of cubes
6	3	
	5	
	7	

d.

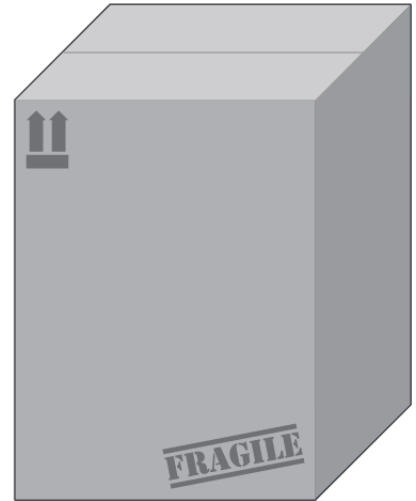
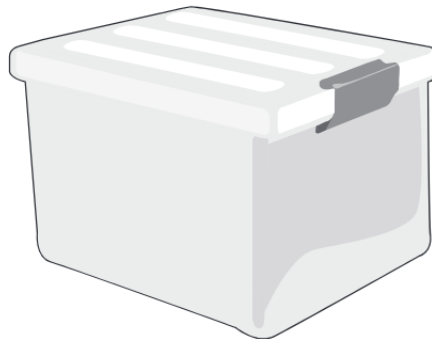


Number of cubes in base	Number of layers	Total number of cubes
8	2	
	4	
	6	



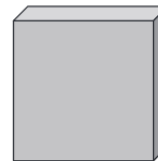
# Volume: Analyzing unit cubes and measuring volume

Aran wanted to compare the amount of space that each of these boxes occupies.



To measure the space, he decides to fill each box with objects that are the same shape.

Circle the object that you would use.



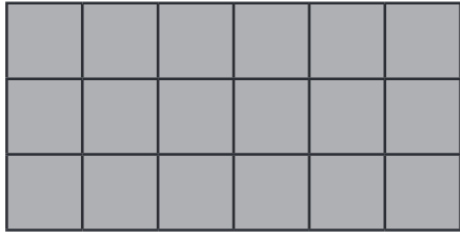
Write how you would use your object to find the volume of a small box.



# Volume: Analyzing unit cubes and measuring volume

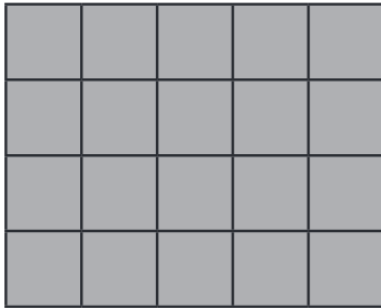
1. Each grid square is 1 cm by 1 cm. Write the dimensions of the base then write the total number of cubes.

a.



Dimensions of the base of the prism (cm)	Number of layers	Total number of centimeter cubes
$\times$	1	
$\times$	2	
$\times$	3	

b.



Dimensions of the base of the prism (cm)	Number of layers	Total number of centimeter cubes
$\times$	1	
$\times$	2	
$\times$	3	

2. Complete each table to show the total number of centimeter cubes in each prism.

Dimensions of the base (cm)	Number of layers	Total number of centimeter cubes
$6 \times 7$	1	
$6 \times 7$	2	
$6 \times 7$	3	
$6 \times 7$	5	

Dimensions of the base (cm)	Number of layers	Total number of centimeter cubes
$9 \times 5$	1	
$9 \times 5$	2	
$9 \times 5$	4	
$9 \times 5$	8	

3. Write a rule to figure out the total number of cubes in a prism when you know the dimensions of the base and the number of layers. Use your answers in Question 2 to help.

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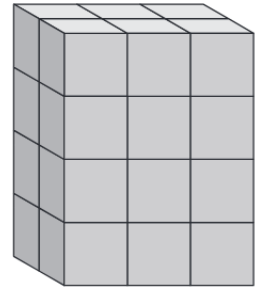




# Volume: Developing a formula

How can you calculate the volume of this prism without counting each individual cube?

I know there are 6 cubes in the base. There are 4 layers.  $6 + 6 + 6 + 6 = 24$ .



Henry multiplied the height of the prism by the number of cubes in the base.

<b>Base</b>	<b>Height</b>
6 cubes	4 layers

$6 \times 4 = 24$  cubes  
Volume is 24 cubes.

Anya multiplied the dimensions.

<b>Length</b>	<b>Width</b>	<b>Height</b>
3 cubes	2 cubes	4 cubes

$3 \times 2 \times 4 = 24$  cubes  
Volume is 24 cubes.

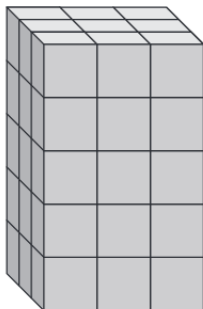
What rule could you write to match Henry's method?

Volume = base  $\times$  height.



Write a rule to match Anya's method.

Use one of the methods above to calculate the number of cubes in this prism. Show your thinking.



cubes

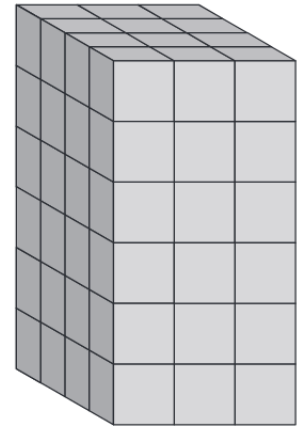


# Volume: Developing a formula

1. Imagine you built this prism with base-10 ones blocks.

- a. Complete this table to match.

Length (blocks)	Width (blocks)	Height (blocks)	Total number of blocks



- b. Write the volume of the prism.   $\text{cm}^3$

2. Here are the dimensions of another prism.

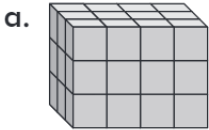
Length 4 cm      Width 2 cm      Height 9 cm

Write how you can calculate the volume without counting blocks.

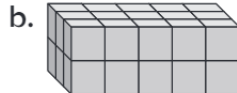
3. Use your rule from Question 2 to calculate the volume of these prisms.

	Length (cm)	Width (cm)	Height (cm)	Volume ( $\text{cm}^3$ )
a.	3	5	7	
b.	6	4	4	
c.	2	3	5	

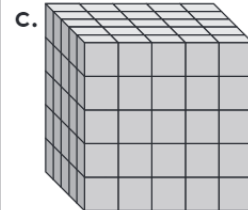
4. Calculate the volume of each prism.  
Then write an equation to show the order that you multiplied the dimensions.



$\text{cm}^3$



$\text{cm}^3$



$\text{cm}^3$



# Volume: Finding the dimensions of prisms with a given volume

The volume of a box is  $80 \text{ in}^3$ . Write some possible dimensions for the box.

$$\boxed{\phantom{00}} \times \boxed{\phantom{00}} \times \boxed{\phantom{00}} = 80 \text{ in}^3$$

$$\boxed{\phantom{00}} \times \boxed{\phantom{00}} \times \boxed{\phantom{00}} = 80 \text{ in}^3$$

$$\boxed{\phantom{00}} \times \boxed{\phantom{00}} \times \boxed{\phantom{00}} = 80 \text{ in}^3$$

How did you calculate the dimensions?

What do you notice about each of the dimensions?

Each dimension is a factor of 80.



Write 5 factors of 100.

Use these factors to write possible dimensions for a box that has a volume of  $100 \text{ in}^3$ .

Then draw and label the dimensions of a prism with a volume of  $100 \text{ in}^3$ .

$$\boxed{\phantom{00}} \times \boxed{\phantom{00}} \times \boxed{\phantom{00}} = 100 \text{ in}^3$$

$$\boxed{\phantom{00}} \times \boxed{\phantom{00}} \times \boxed{\phantom{00}} = 100 \text{ in}^3$$

$$\boxed{\phantom{00}} \times \boxed{\phantom{00}} \times \boxed{\phantom{00}} = 100 \text{ in}^3$$



# Volume: Finding the dimensions of prisms with a given volume

1. For each of these, draw and label the dimensions of a prism to match. Then write the volume.

a. just less than  $20 \text{ in}^3$

$\text{in}^3$

b. just more than  $20 \text{ in}^3$

$\text{in}^3$

2. Complete each table to show the dimensions of three different prisms that have the same volume.

a. Volume is $60 \text{ in}^3$		
Length	Width	Height

b. Volume is $48 \text{ in}^3$		
Length	Width	Height

c. Volume is $90 \text{ in}^3$		
Length	Width	Height

d. Volume is $84 \text{ in}^3$		
Length	Width	Height

3. Write the dimensions for another prism that has the same volume as  $6 \text{ cm} \times 6 \text{ cm} \times 10 \text{ cm}$ .

Length  cm

Width  cm

Height  cm

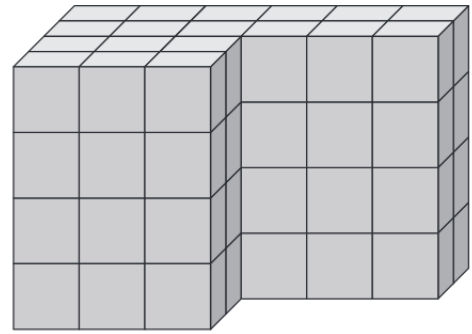


This activity focuses on finding the dimensions of a prism when given the volume. The use-factors strategy for multiplication can be used to help find the dimensions.

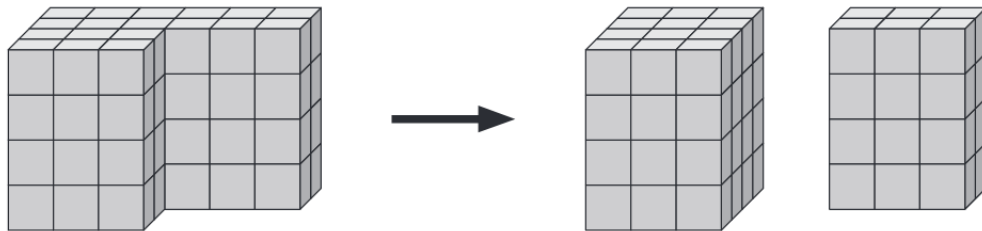
# Volume: Composing and decomposing prisms

The base of this prism has 6 sides.  
It is called a hexagonal-based prism.

Think about how you could calculate the volume of this prism.

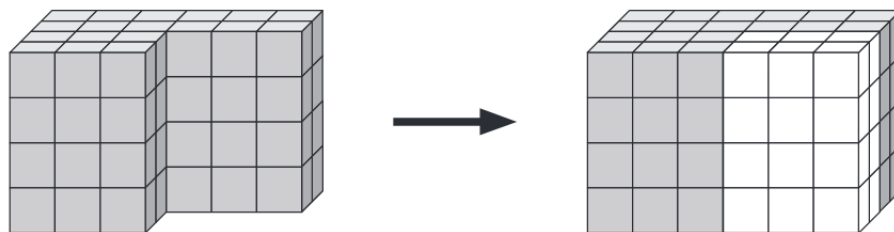


Anna split the prism into two rectangular-based prisms.



Write an equation to match Anna's strategy for calculating the volume.

Hernando used a different strategy. He added more blocks to change the hexagonal-based prism into a rectangular-based prism.



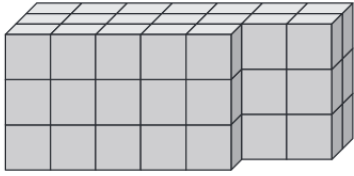
Write an equation to match Hernando's strategy for calculating the volume.



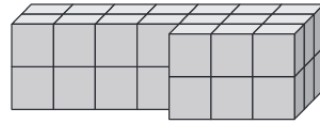
# Volume: Composing and decomposing prisms

1. Each small cube is  $1 \text{ cm}^3$ . Calculate the volume of the prism. Write equations to show your thinking.

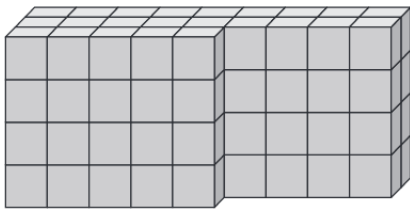
a.


  $\text{cm}^3$ 

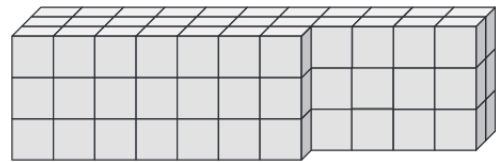
b.


  $\text{cm}^3$ 

c.

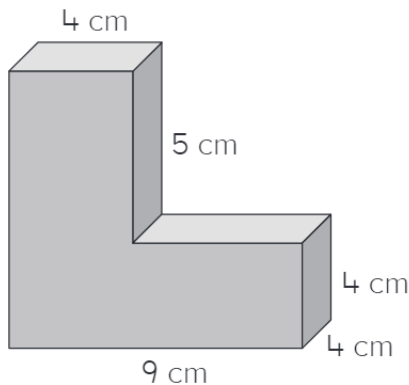

  $\text{cm}^3$ 

d.

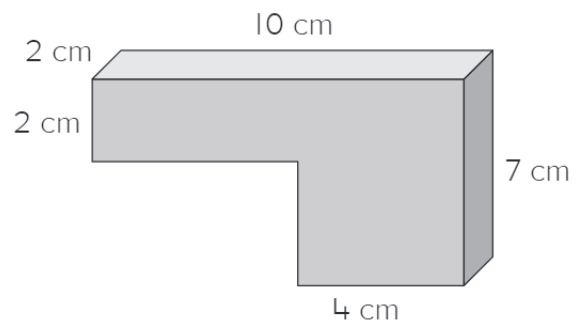

  $\text{cm}^3$ 

2. Calculate the volume of each prism. Show your thinking.

a.


  $\text{cm}^3$ 

b.

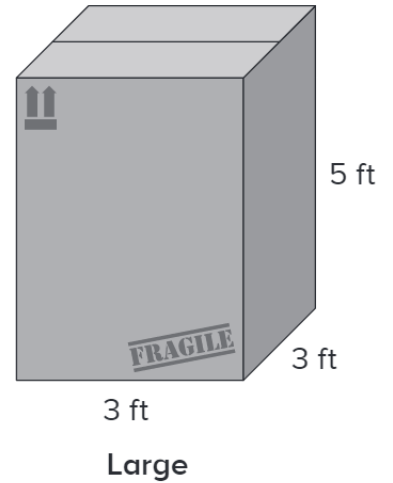
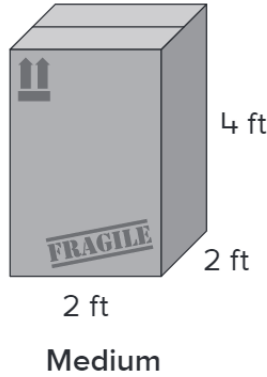
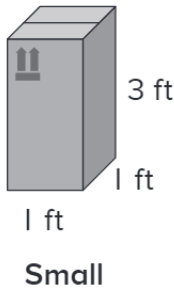

  $\text{cm}^3$ 


This activity uses two strategies to calculate the volume of different-shaped prisms. One method is to split the prism into 2 rectangular-based prisms to make the calculation easier. The other involves adding to the prism to build a rectangular-based prism, calculating the volume of the new prism, then subtracting the volume of the part that was added.

# Volume: Solving real-world problems

Anna is storing some household items. She decides to buy boxes to use.  
Boxes are sold in these three sizes.

Calculate the volume of each box.  
Write an equation below each box to show your thinking.



Anna then rents some storage space with the dimensions 10 ft × 10 ft × 9 ft.

Calculate the volume of the storage space.  
Write an equation to show your thinking.

Calculate the total volume that each group of boxes would occupy. Show your thinking.

## Group A

4 large boxes  
3 medium boxes

 ft<sup>3</sup>

## Group B

2 large boxes  
6 small boxes

 ft<sup>3</sup>

## Group C

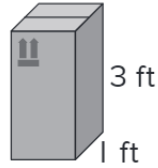
4 large boxes, 2 medium boxes  
5 small boxes

 ft<sup>3</sup>

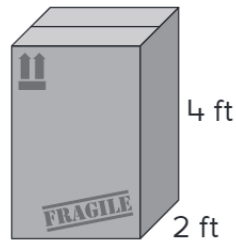

# Volume: Solving real-world problems

Use these box sizes to solve the following problems.

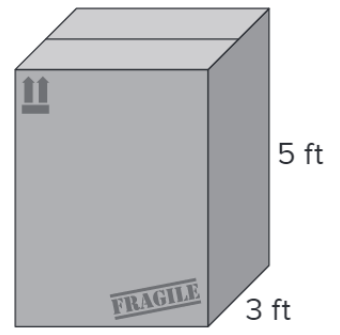
Show your thinking.



1 ft  
1 ft  
**Small**



2 ft  
2 ft  
**Medium**



3 ft  
3 ft  
**Large**

- a. Marvin buys and fills 5 boxes of each size. What is the total volume of the boxes?

ft<sup>3</sup>

- b. Eva has 6 medium boxes in the attic and 3 large boxes in the basement. Which group of boxes has the greater volume?

- c. Brady's storage space measures 7 ft  $\times$  9 ft  $\times$  10 ft. What is the greatest number of full large boxes she can put in this storage space?

large boxes

- d. Corey has a storage space that measures 8 ft  $\times$  8 ft  $\times$  8 ft. What is the greatest number of medium boxes he can pack into this space?

medium boxes

