

6.4A Volume of a Right Prism

Name: _____

Explore

Work with a group.

You will need Pattern Blocks and a ruler.

The red Pattern Block is a **right prism** with a base that is a trapezoid.

In a right prism, all faces, other than the polygonal bases, are rectangular.

- Find the height and the area of the base of a red Pattern Block.
Calculate the volume of the block.
Record your data in this table.

Number of Blocks	Height of Prism (cm)	Area of Base (cm ²)	Volume of Prism (cm ³)
1			
2			
3			
4			
5			
6			

- Stack a second red block.
Find the new height and the new volume.
Record your data in the table.
- Continue to stack blocks and complete the table.
- Write a formula you can use to find the volume of a right trapezoidal prism.
- Use two stacks of 3 red Pattern Blocks to make a right prism with a base that is a regular hexagon.
- Compare the volumes of the trapezoidal prism with a height of 6 Pattern Blocks and the hexagonal prism with a height of 3 Pattern Blocks.
What do you notice?

Reflect & Share

Compare your formula with those of other groups. What do you notice?
Is there another way to find the volume of a right prism? Explain.

6.4B Surface Area of a Right Prism

Explore

Work with a group.

You will need Pattern Blocks and a ruler.

- Use trapezoidal Pattern Blocks to build a right trapezoidal prism.
- Find the area of each face of your prism. Record the areas in the table.
- Add the areas.
- Write a formula to find the surface area of a right prism.

Face	Area (cm ²)
Front	
Back	
Left	
Right	
Top	
Bottom	

Reflect & Share

Compare your formula with those of other groups.

Are there ways to simplify the formula? Explain.

Connect

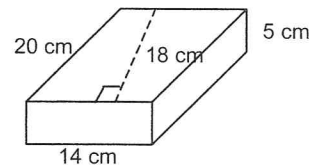
A net is a pattern that folds to make an object.

A net shows each face of the object.

The surface area of a prism is the sum of the areas of its faces.

So, a net of the prism can be used to find the surface area of the prism.

Here is a right prism with parallelogram bases and below is a net of the prism.



To find the surface area of this prism, first find the area of each face.

Top face: $14 \times 18 = 252$

Left face: $20 \times 5 = 100$

Front face: $14 \times 5 = 70$

Right face: $20 \times 5 = 100$

Back face: $14 \times 5 = 70$

Bottom face: $14 \times 18 = 252$

Add the areas of the faces:

$70 + 70 + 100 + 100 + 252 + 252 = 844$

The surface area of the prism is 844 cm^2 .

