

# Chapter 12 Surface Area and Volume

## 12.5 Volume of Rectangular Prisms

Pages 655-661

## NOTES (12.5) Volume of Regular Prisms

The **volume** is the amount of space the solid contains  
& is always measured in **cubic units** (units<sup>3</sup>)  
\*Key Concept p 655\*

Memorize!

$$V = lwh$$

Guided Practice pp 657-658

Do # 6-10 like this

$$\begin{aligned} 9) \quad V &= lwh \\ V &= 15 \cdot 24 \cdot 22 \\ V &= 4620 \text{ ft}^3 \end{aligned}$$

Do # 12 & 14 like this

$$\begin{aligned} 13) \quad V &= lwh \\ 160 &= 10 \cdot w \cdot 8 \\ 2 \frac{160}{80} &= \frac{80w}{80} \\ 2 &= w \end{aligned}$$

$$w = 2 \text{ cm}$$

Do # 16 (in pieces) like this

17)

-Volume-

<u>large rectangle</u>	<u>small rectangle</u>
$V = lwh$	$V = lwh$
$V = 24 \cdot 5 \cdot 15$	$V = 8 \cdot 5 \cdot 8$
$V = 1800$	$V = 320$

$$1800 - 320 = 1480$$

$$V = 1480 \text{ in}^3$$

-Surface Area-

<u>large rectangle</u>	<u>Surface Area = 1142 in<sup>2</sup></u>
$S = 2lw + 2lh + 2wh$	
$S = 2 \cdot 24 \cdot 5 + 2 \cdot 24 \cdot 15 + 2 \cdot 5 \cdot 15$	
$S = 240 + 720 + 150$	
$S = 1110 \text{ in}^2$	

Area of front and back inner prism

$$A = 2x^2$$
$$A = 2 \cdot 8^2$$
$$A = 128 \text{ in}^2$$

1110  
~~128~~  
982 in<sup>2</sup>

Then add areas of 4 inner rectangles

$$982 + 4(8.5) = 982 + 160 = 1142 \text{ in}^2$$

To find the Volume of non-rectangular prisms, use this formula:

**Memorize!**

$$V = Bh$$

**B = Base area of the prism**

**Do # 20 & 22 like this**

$$21) \quad V = Bh$$

$$V = (\frac{1}{2} \cdot 6 \cdot h) h$$

$$V = (\frac{1}{2} \cdot 7 \cdot 30) 42$$

$$V = 15 \cdot 7 \cdot 42$$

$$V = 4410 \text{ ft}^3$$

**#28 = Extra Credit**