Inspiring Greatness

ISD

INDEPENDENCE SCHOOL DISTRICT

Math Virtual Learning

Pre-Algebra

Volume of Rectangular and Triangular Prisms

May 12, 2020

Pre-Algebra
Lesson: May 12, 2020

Objective/Learning Target:
Find the volume of rectangular and triangular prisms.

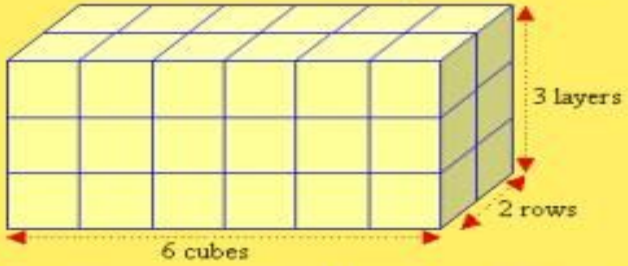
Let's Get Started:
Watch Video: Volume of Rectangular Prisms

What is a Rectangular Prism?

- A Solid or 3-D Dimensional figure
- Has length, width and height.
- Each **face** is a rectangle.
- Each corner is called a **vertex** (vertices)
- Each line segment is called an **edge**

What is Volume?

1) Space Inside
2) Amount that would fit inside or fill a prism.

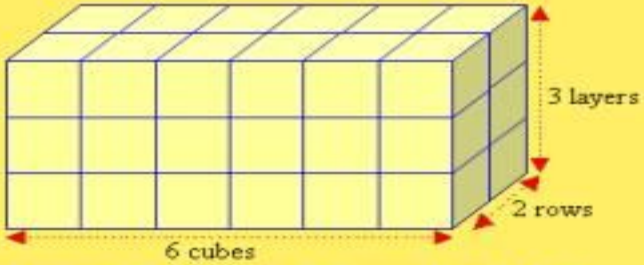


6 cubes are on the bottom row.

There are two rows or 12 cubes per layer (2 x 6)

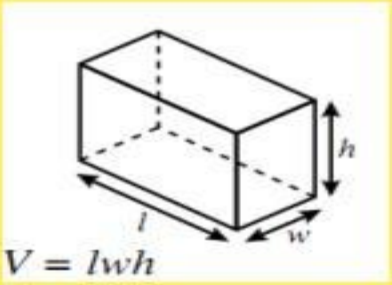
There are 3 layers or 36 cubes (12 x 3)

Formula for Volume of a Prism



V = length x width x height

V = l x w x h



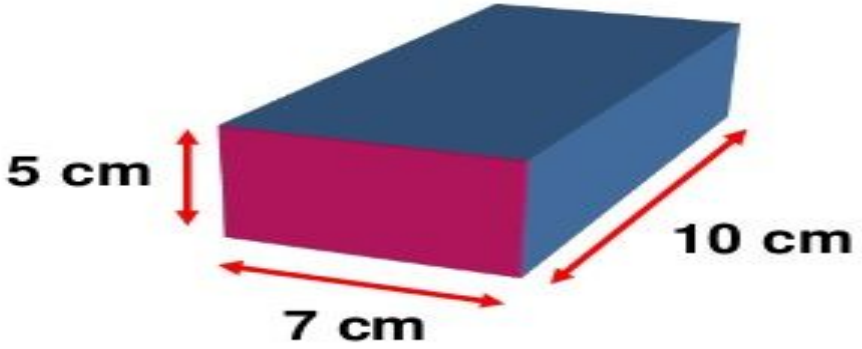
For the prism above V = 6 x 2 x 3 = 36cm^3

Practice:

Volume of Rectangular Prism

V = Area x Height

V = L x W x H



V = L x W x H

V =

answer

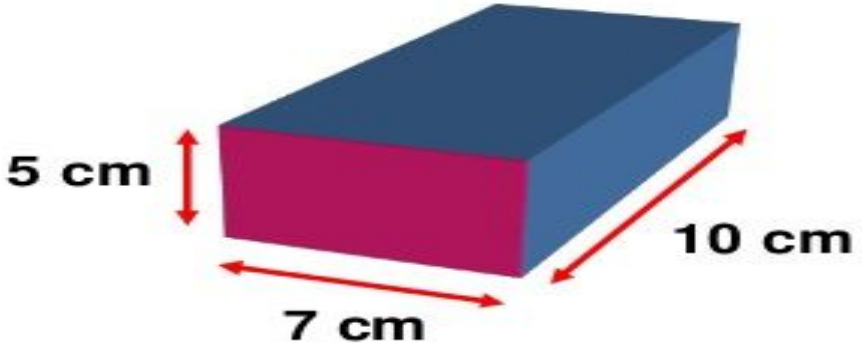
V =

Practice Answer:

Volume of Rectangular Prism

$V = \text{Area} \times \text{Height}$

$V = L \times W \times H$



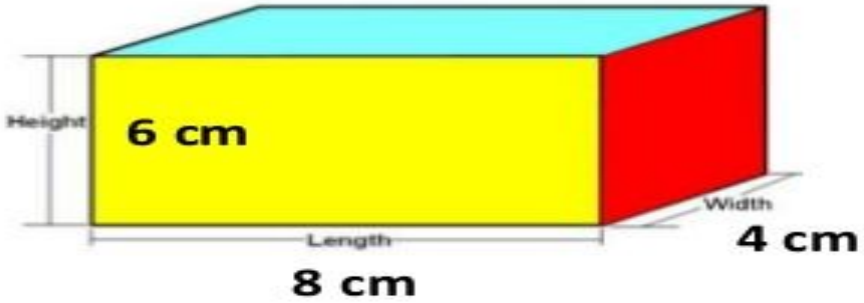
$V = L \times W \times H$

$V = 10 \times 7 \times 5$

$V = 350\ cm^3$ ✓

More Practice!

Rectangular Prism - FORMULA



$$V = L \times W \times H$$
or
$$V = LWH$$

$$V = L \times W \times H$$

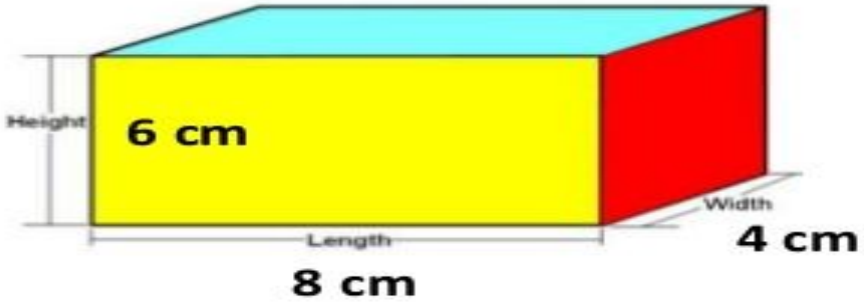
$$V =$$

answer

$$V =$$

Practice Answer:

Rectangular Prism - FORMULA



$$V = L \times W \times H$$
or
$$V = LWH$$

$$V = L \times W \times H$$

$$V = 8 \times 4 \times 6$$

$$V = 192 \text{ cm}^3$$ ✓

Additional Practice: Challenge

Changing a measurement

What is the volume of a rectangular prism if its length is 5 inches, its width is 2inches, and its height is 3 inches?

V =
V =
V= ?

Now, triple the width of the prism. How many times greater is the volume of the new prism than the volume of the original prism?

Original width = ? **New width** = ?

V =
V =
V= ?

Compare: ? ***.....new volume is*** ? ***times greater!***

Additional Practice: Challenge

Changing a measurement

What is the volume of a rectangular prism if its length is 5 inches, its width is 2inches, and its height is 3 inches?

$V = lwh$
$V = 5x2x3 = 30$
$V = 30\ in^3$

Now, triple the width of the prism. How many times greater is the volume of the new prism than the volume of the original prism?

Original width = 2 **New width** = 3x2 = 6

$V = lwh$
$V = 5x6x3 = 90$
$V = 90\ in^3$

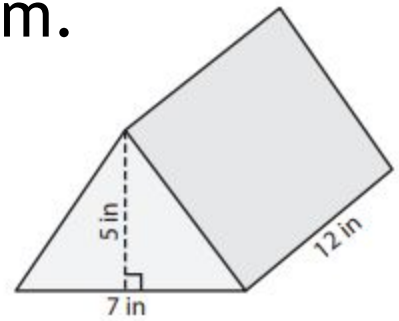
Compare: 30 and 90……..new volume is 3 times greater!

Now we'll learn how to find the volume of triangular prisms!

Watch Video: Volume of Triangular Prism

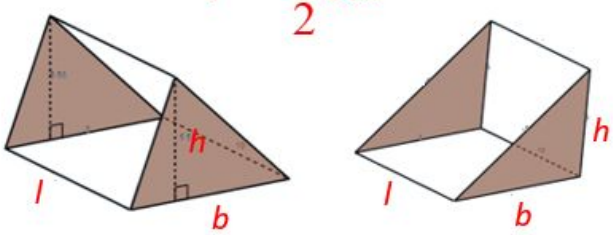
Practice:

Find the volume of the triangular prism.



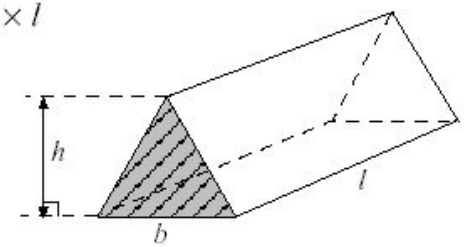
Volume of Triangular Prism

$$V = \frac{1}{2}bhl$$



Volume of triangular prism = area of cross-section × length

Volume $= \frac{1}{2} \times b \times h \times l$



Volume = ½ bhl

Volume = ½(7)5(12)

Volume = (3.5)5(12)

Volume = 210 in^3

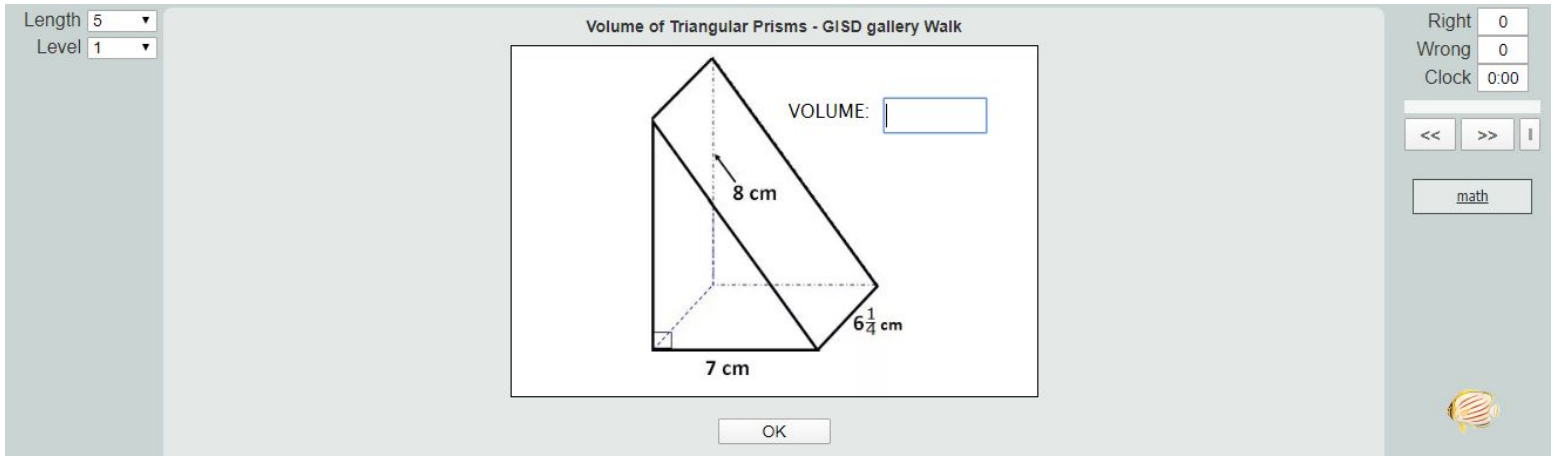
Correct Answer

Practice:

Go to this website:

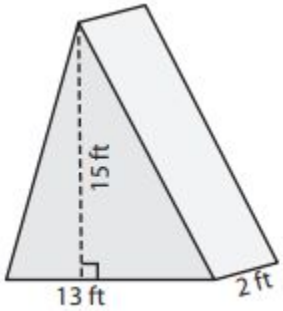
[Volume of Triangular Prism]

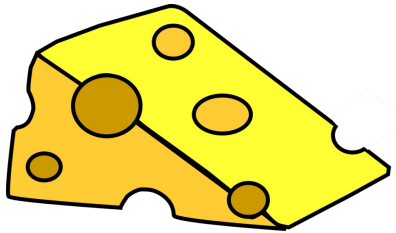
1. Look at the triangular prism carefully.
2. Solve for the surface area.
3. Select the correct answer and then click “OK”.

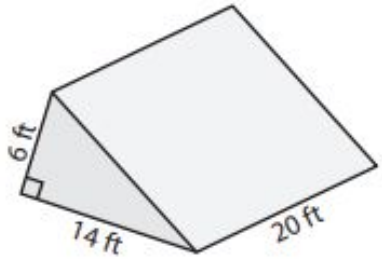


Practice:

Answer the questions on a piece of paper.
Find the volume of the triangular prism.





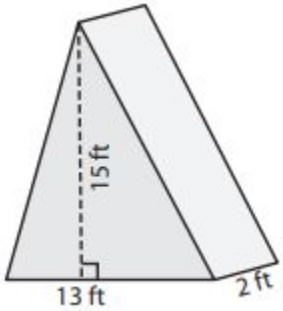


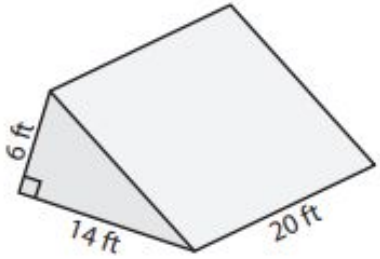
The base of a prism is a right triangle with legs measuring 16 cm and 4 cm. If the length of the prism is 14 cm, find its volume.

The base of a prism is a triangle with a base of 9 inches and a height of 5 inches. Determine the volume if its length is 18 inches.

Answer Key:

Once you have completed the problems, check your answers here.





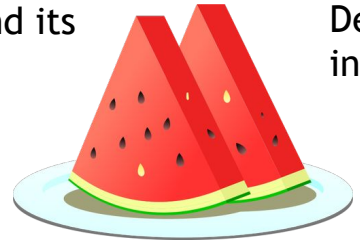
Volume = ½ bhl
Volume = ½(13)15(2)
Volume = (6.5)15(2)
Volume = 195 ft^3

Volume = ½ bhl
Volume = ½(14)6(20)
Volume = (7)6(20)
Volume = 840 ft^3

Answer Key:

Once you have completed the problems, check your answers here.

The base of a prism is a right triangle with legs measuring 16 cm and 4 cm. If the length of the prism is 14 cm, find its volume.



Volume = ½ bhl
Volume = ½(16)4(14)
Volume = (8)4(14)
Volume = 448 cm^3

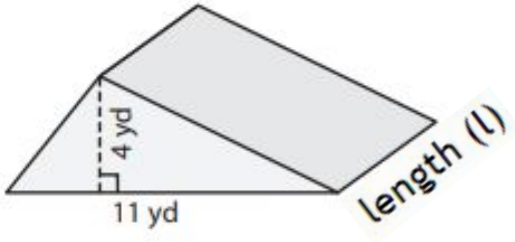
The base of a prism is a triangle with a base of 9 inches and a height of 5 inches. Determine the volume if its length is 18 inches.

Volume = ½ bhl
Volume = ½(9)5(18)
Volume = (4.5)5(18)
Volume = 405 in^3

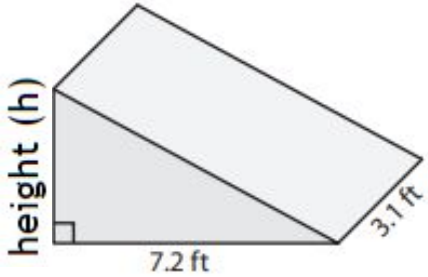
Additional Practice: Challenge

Find the missing measurement for the triangular prisms.

Volume = 132 yd^3



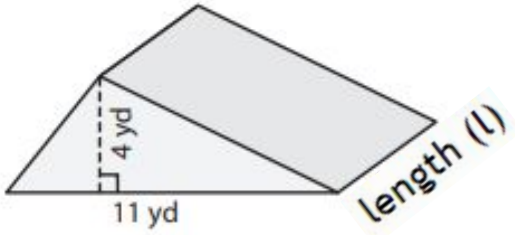
Volume = 43.52 ft^3



Additional Practice: Challenge Answers

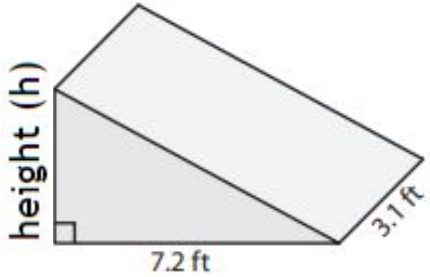
Once you have completed the problems, check your answers here.

Volume = 132 yd^3



Volume = ½ bhl
132 = ½(11)4(l)
2 · 132 =[½(11)4(l)] · 2
264 = (11)4(l)
264 = 44 l
264 ÷ 44 = 44 l ÷ 44
6 = l

Volume = 43.52 ft^3



Volume = ½ bhl
43.52 = ½(7.2)h(3.1)
2 · 43.52 =[½(7.2)h(3.1)] · 2
87.04 = (7.2)h(3.1)
87.04 = 22.32 h
87.04 ÷ 22.32 = 22.32 h ÷ 22.32
3.9 = h

Additional Practice: Rectangular Prisms

Click on the links below to get additional practice and to check your understanding!

Khan Academy - Practice

IXL - Practice

Quizizz - Practice

Love to find the volume of rectangular prisms, I do!

Additional Practice: Triangular Prisms

Click on the links below to get additional practice and to check your understanding!

Quizizz - Practice

ThatQuiz - Challenge

IXL - Practice

Mathkite - Practice