

Algebra 2-1: Areas, Arrays, and Volumes

Warm-Up

Find the value of each.

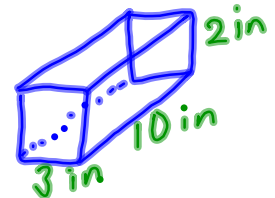
1. $x + x + x = 3x$


2. $y + y = 2y$

3. $3x(2y) = 6xy$

4. $5x^2 \cdot 4x^3 = 20x^5$
 $x^2 \cdot x^3 = x^{2+3}$

5. $4a^3 \cdot 3a^2b^2 = 12a^5b^2$
 $a^3 \cdot a^2 = a^5$



Vocabulary	Definition	Example
Area $units^2$	how many squares fit inside.	 $A = l \cdot w = 10 \cdot 3 = 30 in^2$
Volume $units^3$	how many cubes fit inside	$V = l \cdot w \cdot h = 3 \cdot 10 \cdot 2 = 60 in^3$
Dimension	length of a side	8" x 10" picture

Algebra 2-1: Areas, Arrays, and Volumes**Warm-Up****Find the value of each.**

1. $x + x + x$ _____

2. $y + y$ _____

3. $3x(2y)$ _____

4. $5x^2 \cdot 4x^3$ _____

5. $4a^3 \cdot 3a^2b^2$ _____

Vocabulary	Definition	Example
Area		
Volume		
Dimension		

Commutative Property

When multiplying or adding it is legal (OK) to change the order.

For example $2+4=4+2$ / $4 \cdot 2 = 2 \cdot 4$

Associative Property

When multiplying or adding it is legal to re-group and deals with (). For example

$$(4+3)+2 = 4+(3+2)$$

$$(4 \cdot 3) \cdot 2 = 4 \cdot (3 \cdot 2)$$

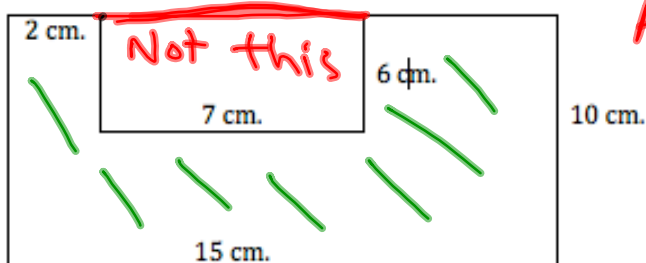
Example Problems

1. Name the property that is shown.

$$4(xy) = (4x)y \quad \underline{\text{Associative}}$$

$$4 \cdot x \cdot y = 4 \cdot y \cdot x \quad \underline{\text{Commutative}}$$

2. Find the area of the figure below.



$$\underline{108 \text{ cm}^2}$$

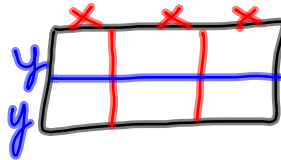
Area of Big - Area of small

$$15 \cdot 10 - 2 \cdot 7$$

$$150 - 14$$

$$\underline{108}$$

3. Draw a rectangle that is $3x$ by $2y$.



4. In the rectangle at the right...

a) What is its length?

$4x$

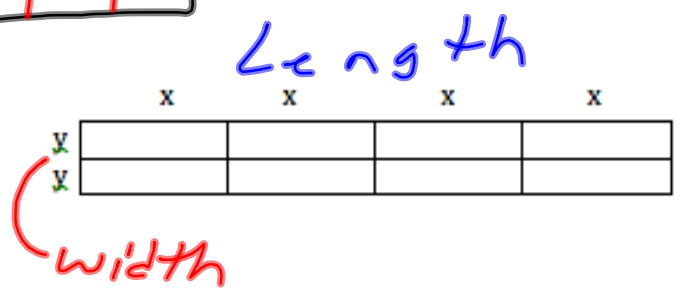
b) What is its wide?

$2y$

c) What is its area?

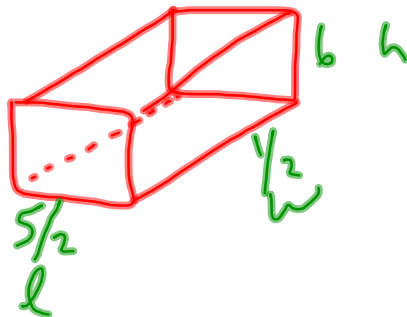
$4x \cdot 2y$

$8xy$



5. If a box has dimensions $l = 5/2$ in., $w = 1/2$ in., and $h = 6$ in., find the volume of the box.

7.5 in^3



$$\begin{aligned}
 V &= l \cdot w \cdot h \\
 &= \left(\frac{5}{2}\right) \left(\frac{1}{2}\right) (6) \\
 &= (2.5)(.5)(6) \\
 &= \boxed{7.5 \text{ in}^3}
 \end{aligned}$$