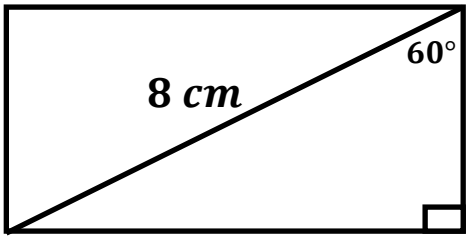
Notes 11.4

Effects of Changing Dimensions on Area & Volume

EXAMPLE 1: Find the area of the rectangle below.



$\mathbf{A} = \_\_\_\_\_$

What would happen if we changed one or both dimensions in this rectangle?

Original Area	***Change in Width***	***Change in Length***	***New Area***	***New Area / Orig. Area***
	$Twice$ as long	$Twice$ as long		
	$Twice$ as long	$Three\ times$ as long		
	$Four\ times$ as long	$Half$ as long		
	$One - fourth$ as long	$Twice$ as long		

What conjecture can you make regarding the changing of dimension(s) in a two dimensional figure?

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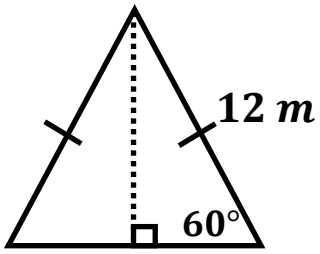
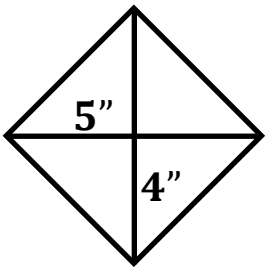
EXAMPLE 2: Find the area of the isosceles triangle below, if its base were $doubled$ and height were $tripled$.



$\mathbf{A}(\text{“}changed\text{” }triangle) =$ _____

EXAMPLE 3: Find the area of the rhombus below if one diagonal was $halved$ and the other diagonal were $doubled$.



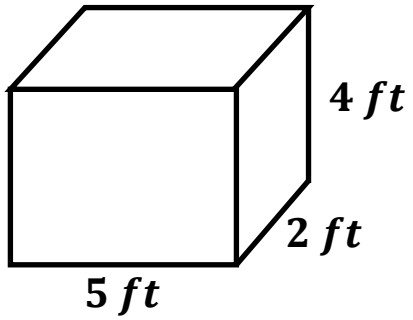
$\mathbf{A}(\text{“}changed\text{” }rhombus) =$ _____

EXAMPLE 4:

The area of a triangle is $36\ square\ millimeters$. Suppose the height was $three\ times$ as long, and the base was $four\ times$ as long. Find the area of the new triangle.

$\mathbf{A}(\text{“}changed\text{” }triangle) =$ _____

EXAMPLE 5: Find the volume of the prism below.



$\mathbf{V} =$ _____

What would happen if we changed the dimensions in this prism?

Original Volume	***Change in length***	***Change in width***	***Change in height***	***New Volume***	***New Vol. / Orig. Vol.***
	$Twice$ as long	$Twice$ as long	$Three\ times$ as long		
	$Three\ times$ as long	No Change	$Twice$ as long		
	$4\ times$ as long	$Half$ as long	$Three\ times$ as long		

What conjecture can you make regarding the effect of changing dimensions on volume?

EXAMPLE 6:

Suppose the volume of a right triangular prism is $360\ cubic\ units$. What would its new volume be if one of its dimensions was $twice$ as long, a second dimension was $three\ times$ as long, and the third dimension was $half$ as long?

$$V(\text{“}changed\text{”}\ prism) = \_\_\_\_\_$$

EXAMPLE 7:

Suppose the volume of a cube is $4\sqrt{3}\ cubic\ centimeters$. What would its new volume be if one of its dimensions was $halved$, a second dimension was $doubled$, and a third dimension did not change?

$$V(\text{“}changed\text{”}\ cube) = \_\_\_\_\_$$