Section 3.3

TERMINOLOGY 3.3

For each of the following terms, provide 1) a definition in your own words, 2) the formal definition (as provided by your text or instructor), and 3) an example of the term using a drawing or problem. A sample filled-out form is available in the Introduction.

Area

Your definition	
Formal definition	
Example	

Perimeter

Your definition	
Formal definition	
Example	

Volume

Your definition	
Formal definition	
Example	

CRITICAL THINKING QUESTIONS 3.3

1. What are the similarities between perimeter and area? What are the differences?

   Similarities: They are both measures of an aspect of a two-dimensional geometric object. Differences: Area is a measure of the region enclosed by the sides of a geometric object, while the perimeter is a measure of the sum of the lengths of all the (outward) sides of a geometric object. Area uses square units like ft^2 while the perimeter will have a length measure like ft.

2. What are the similarities between area and volume? What are the differences?

   Area and volume are both measures. Area measures the two-dimensional region enclosed by a geometric object, while volume measures the region enclosed by a three-dimensional geometric object. The units will be different.

3. In what real-life situations would you need to calculate perimeter? Provide at least two.

   Answers will vary. Common examples might include problems/something like calculating the number of bricks that will be placed around a patio and taking a waist measurement when sewing a dress.

4. In what real-life situations would you need to calculate area? Provide at least two.

   Answers will vary. Common examples might include problems/something like calculating area to know how much paint to buy to cover the walls and ceiling of a room in your house or computing area to determine the cost of a rug to cover the floor in two rooms of your house.

5. In what real-life situations would you need to calculate volume? Provide at least two.

   Answers will vary. Common examples might include problems/something like calculating volume when you are trying to determine the amount of concrete to order before pouring a concrete patio that is 10 feet by 10 feet and 4 inches deep or computing volume when you are figuring out how much water it will take to fill your hot tub.

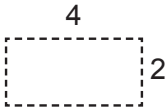
DEMONSTRATE YOUR UNDERSTANDING 3.3

1. Draw figures with the required measurements. Be sure to label the dimensions of your drawings.

Perimeter of 24 cm	Area of 24 cm^2	Volume of 24 cm^3
Answers will vary. Check to make sure that students have correctly labeled their drawings and that the perimeter, area, and volume of each, when calculated, are equal to the values given.	**Answers will vary. Check to make sure that students have correctly labeled their drawings and that the perimeter, area, and volume of each, when calculated, are equal to the values given.**	**Answers will vary. Check to make sure that students have correctly labeled their drawings and that the perimeter, area, and volume of each, when calculated, are equal to the values given.**

IDENTIFY AND CORRECT THE ERRORS 3.3

In the second column, identify the error(s) you find in the following worked solution and describe the error made. Solve the problem correctly in the third column.

Problem	Describe Error	Correct Process
Calculate the area of a rectangle that is 4 units long by 2 units wide.  **Worked Solution** *(What is wrong here?)* $A = 2L + 2W$ $= 2(4) + 2(2)$ $= 8 + 4$ $\mathbf{A = 12\ units}$	**The student has used the formula for the perimeter ($P = 2L + 2W$) instead of the formula for area ($A = L \times W$).**	$A = L \times W$ $= 4 \times 2$ $= 8\ units$