Name_____   Date_____

Volume

If you look in a carton of milk, at a balloon, or a box of cookies, you will notice that there are different ways and things that take up space. In the example of the milk carton, the milk inside is taking up space. In the example of the balloon, air or gas is taking up space. When you look at the box of cookies, you will notice that the cookies are taking up space. This shows that solids, liquids, and gases all take up space. Volume is the measurement of the space taken up by solids, liquids, and gases. The measurement of 'volume' is essential to mathematics and science.

Perimeters are the measurement around an object. To measure the surface of something means that you measure the area of the thing. To measure what is inside something is to measure the volume of the thing. The measurement of volume is three dimensional because it takes into consideration what is inside the thing/object.

In the case of cubes, solid squares or rectangles, the volume can be measured by applying the following formula:

Volume = Length x Width x Height = l x w x h

The formula is sometimes also written as:

Volume = Base x Width x Height = b x w x h
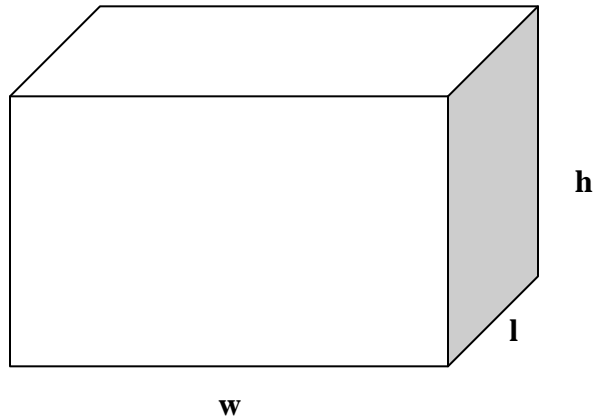
Volume (Cont'd)

For example, if the width is equal to 4, the length is equal to 1, and the height is equal to 3. Then to calculate the volume: l x w x h = 1 x 4 x 3 = 12. We always write a cube after the volume measurement, whether it is expressed in centimeters or inches, or if it is expressed in grams or ounces. So this means that the volume of the above rectangle is equal to $12cm^3$ or 12 inches cubed.

Volume can change. If you heat something, they usually take up more space than cooler things. When you heat an object, for example, the object or thing expands taking up more space. When you cool the object, it shrinks and takes up less space.

Volume Questions

Multiple Choice:

1. Volume is the measurement:

    a. Around an object
    b. Surface area of an object
    c. Inside an object
    d. None of the above

2. The formula to calculate the volume of a cube is:

    a. Length + Width + Height
    b. Length x Width x Height
    c. Length x Base x Height
    d. Base x Width

3. If the volume of something is 10, you would write it as:

    a. 10 inches
    b. 10 inches squared
    c. 10 inches cubed
    d. None of the above

4. The measurement of volume is:

    a. One dimensional
    b. Two dimensional
    c. Three dimensional
    d. Four dimensional

True or False:

____ 5. Usually if you heat an object, its volume will decrease as it takes less space.

____ 6. Only solids and liquids take up space.

____ 7. The measurement of volume is three dimensional.

____ 8. The formula to calculate the volume of cubes is: base x width x height.

____ 9. If the length of a box is 4, the width is 2, and the height is 1, then the volume is equal to 8.

Volume Answers

Multiple Choice:

1. Volume is the measurement:

         a. Around an object
         b. Surface area of an object
         c. **Inside an object**
         d. None of the above

2. The formula to calculate the volume of a cube is:

         a. Length + Width + Height
         b. **Length x Width x Height**
         c. Length x Base x Height
         d. Base x Width

3. If the volume of something is 10, you would write it as:

         a. 10 inches
         b. 10 inches squared
         c. **10 inches cubed**
         d. None of the above

4. The measurement of volume is:

         a. One dimensional
         b. Two dimensional
         c. **Three dimensional**
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True or False:

__F__ 5. Usually if you heat an object, its volume will decrease as it takes less space.

__F__ 6. Only solids and liquids take up space.

__T__ 7. The measurement of volume is three dimensional.

__T__ 8. The formula to calculate the volume of cubes is: base x width x height.

__T__ 9. If the length of a box is 4, the width is 2, and the height is 1, then the volume is equal to 8.