

Name: _____

Date: _____

Water Displacement:

Finding the volume of regular and irregular objects

Goals:

- Determine the volume of an irregular-shaped object using the displacement method.
- Determine the volume of a regular object using the displacement method.
- Create a formula for finding the volume of a regular object.

Objective:

Students will create a formula to solve for the volume of a regular shaped object and make predictions using the water displacement method.

Materials:

- Graduated cylinder
- Regular shaped objects- 6 dice
- Irregular-shaped rock
- Ruler

Things to be Aware of:

1. Always make sure _____ when reading the graduated cylinder.
2. Make sure the graduated cylinder is on a _____ surface.
3. Meniscus: _____.
4. Always read the measurement at the _____ of the meniscus.

Problem 1: Water Displacement- Irregular Object

We cannot take the measurement of this object and develop a formula to calculate the volume because of its irregular shape. In order to find the volume of an irregular object, we need to use the water displacement method.

Step 1: Fill the graduated cylinder to a specific volume. For this experiment, we will keep a starting volume of _____.



Step 2: Place the object in the graduated cylinder and wait for it to be fully submerged in the water.

Step 3: Make sure you are _____ with the water and then record the new volume of the water. _____

Step 4: Subtract the new volume from the starting volume to find the volume of the object. _____

Volume of a Regular Object:

This object is a similar size to the irregular object we just found the volume of using the water displacement method. Now, let's find the volume of this regular object to compare.



Prediction: The volume of the regular object will be _____ the irregular object.

Step 1: Fill the graduated cylinder to 100 ml.

Step 2: Place the object in the graduated cylinder and wait for it to be fully submerged in the water.

Step 3: Make sure you are at eye level with the water and then record the new volume of the water. _____

Step 4: Subtract the new volume from the starting volume to find the volume of the object. _____

Let's Create a Formula!

The measurements of this regular object are:

Length=

Width=

Height=

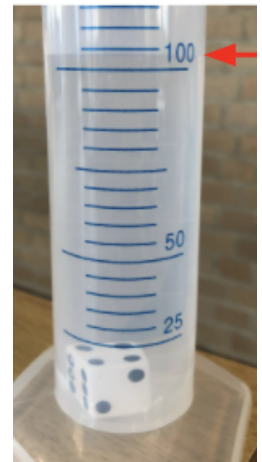
And the volume=

Create a formula to find the volume of any regular object:

Problem 2: 2 Dice Displacement Method:

Step 1: Fill the graduated cylinder to 100 ml.

Step 2: Place the object in the graduated cylinder and wait for it to be fully submerged in the water.



Step 3: Make sure you are at eye level with the water and then record the new volume of the water. _____

Step 4: Subtract the new volume from the starting volume to find the volume of the object. _____

Prediction: The volume of this object will be _____.

2 Dice Formula Method:

Step 1: Find the measurements

Length=

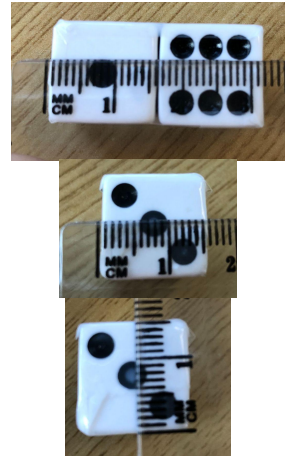
Width=

Height=

Step 2: Calculate the volume using the formula

$$\text{Length} \times \text{Width} \times \text{Height} = \text{Volume}$$

Was your prediction correct? _____.



Problem 3: 3 Dice Formula Method:

Step 1: Find the measurements

Length=

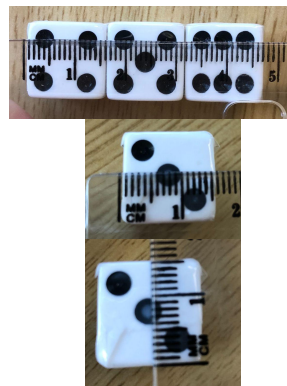
Width=

Height=

Step 2: Calculate the volume using the formula

$$\text{Length} \times \text{Width} \times \text{Height} = \text{Volume}$$

Prediction: The volume of this object will be _____.



Problem 3: 3 Dice Displacement Method:

Step 1: Fill the graduated cylinder to 100 ml.

Step 2: Place the object in the graduated cylinder and wait for it to be fully submerged in the water.

Step 3: Make sure you are at eye level with the water and then record the new volume of the water. _____

Step 4: Subtract the new volume from the starting volume to find the volume of the object. _____

Was your prediction correct? _____.

Reflection: During this experiment we used two different methods to calculate the volume of the same object. Why might our calculations for water displacement not have been 100% accurate? _____

_____.

Review:

Methods for Finding Volume:

Regular object formula:

Water displacement:

