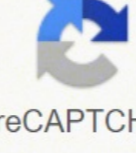


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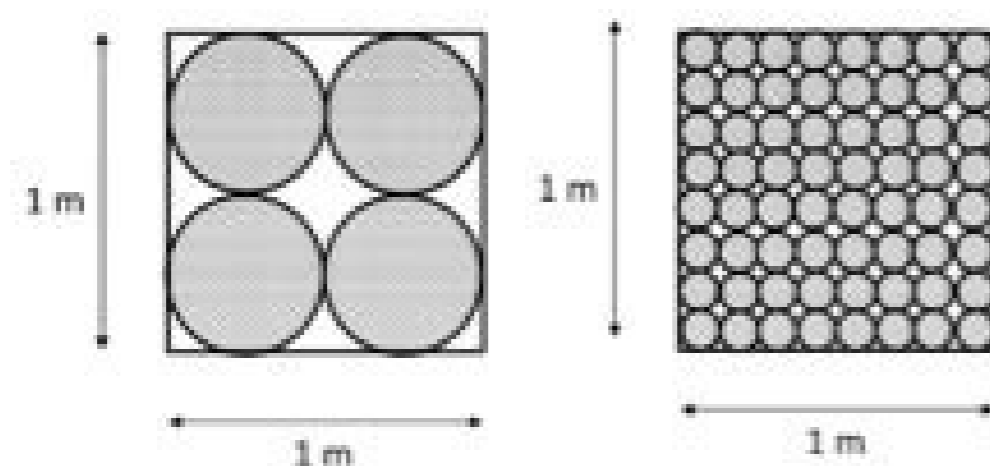
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1 of 2

CEEN 3342 – Geotechnical Engineering
Fall 2018
Homework #1
Due: Tuesday, September 11, 2018

Problem 1

There are two cubic boxes with dimension of $1\text{ m} \times 1\text{ m} \times 1\text{ m}$ containing spheres and their cross-section are shown below. For each box, determine the (1) number of spheres in the boxes, (2) porosity/void ratio inside the boxes, (3) surface area of each sphere (larger and smaller ones), and (4) sum of surface area of all the spheres in each box.

Problem 2

In its natural state, a moist soil has a volume of 0.33 ft^3 and weighs 39.93 lb . The oven-dry weight of the soil is 34.54 lb . If $G_s = 2.67$, calculate the moisture content, moist unit weight, dry unit weight, void ratio, porosity, and degree of saturation.

Problem 3

The moist weight of 0.2 ft^3 of a soil is 23 lb . The moisture content and the specific gravity of the soil solids are determined in the laboratory to be 11% and 2.7 , respectively. Calculate the following:

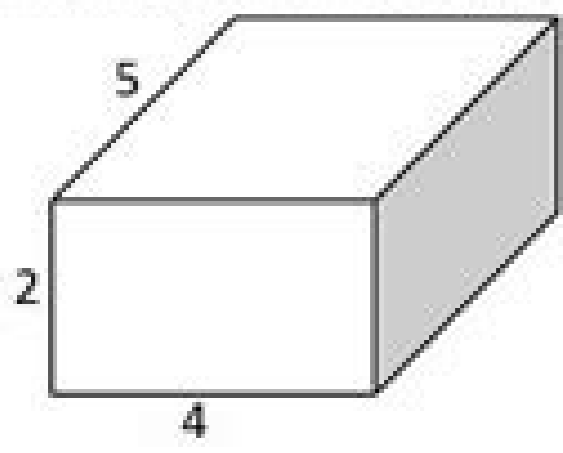
- Moist unit weight (lb/ft^3)
- Dry unit weight (lb/ft^3)
- Void ratio
- Porosity
- Degree of saturation (%)
- Volume occupied by water (ft^3)

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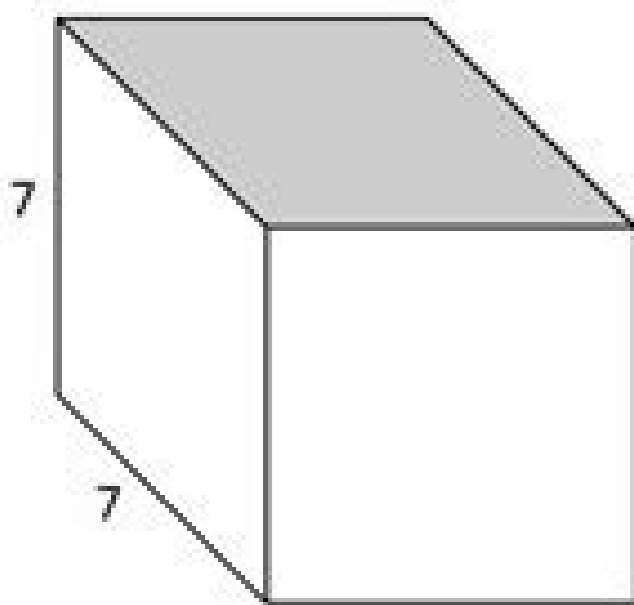
Quiz & Worksheet - Finding the Volume of Prisms and Pyramids

1. What is the volume of this prism?



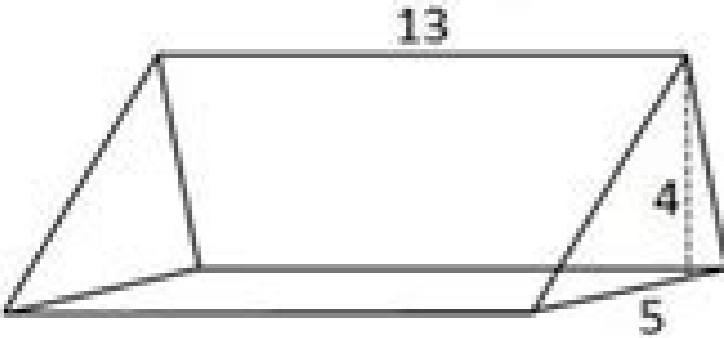
- 20
- 40
- 11
- 50
- 45

2. What is the volume of this cube?



- 343
- 49
- 172
- 14
- 21

3. What is the volume of this prism?



- 130
- 117
- 260
- 50
- 220

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