5 questions Basic Soil Water Math Calculations. Due by 7pm  
  
1. You have a 100 cm3 sample of soil A. The sample is oven dried and weighed. The weight is 160 g.

What is the bulk density of soil A? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



What is the % porosity of soil A? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Assuming ρs = 2.65 g/cm3:



2. You have a 100 cm3 sample of soil B. The sample is oven dried and weighed. The weight is 120 g.  
  
What is the bulk density of soil B? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



What is the % porosity of soil B? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Assuming ρs = 2.65 g/cm3:



Which soil (A or B) can hold more water when saturated? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
 Since Soil B has a greater porosity than Soil A, Soil B can hold more water when saturated.

3. You obtain a soil sample with a volume of 400 cm3. It has a moist weight of 450 g and an oven- dry weight of 400 g. Determine the soil bulk density, the porosity, the volumetric water content and the gravimetric water content.





















4. You obtain a soil sample with a volume of 400 cm3. It has a moist weight of 450 g and an oven- dry weight of 350 g. Determine the soil bulk density, the porosity, the volumetric water content and the gravimetric water content.





















No, the soil is not saturated.



Since the saturation is not 100%, the soil is not saturated.

5. You obtain a soil sample with a volume of 200 cm3. It has a moist weight of 250 g and an oven-dry weight of 200 g. Determine the soil bulk density, the porosity, the volumetric water content and the gravimetric water content.





















Total volume of water in this soil = *Vwater* = 50 *cm*3.

For the soil to be saturated, *Vwater*= *Vvoids*= *Vtotal– Vsolids* = 200 *cm*3 – 75.47 = 124.53 *cm*3. Thus, to completely saturate this soil, a total volume of 124.53 *cm*3 of water would be needed.