Bulk density is the weight per unit volume of a soil sample.

1. Calculate the bulk density of a 400 cm3 soil sample that weighs 575 g (oven dry weight).

$r_b = M_s/V_s$

2. Calculate the bulk density of a 400 cm3 soil sample that weighs 600 g and that is 10% moisture.

Oven dry wt. = 600g/1.1 =

3. Calculate the volume of a soil sample that is 12% moisture, weighs 650 g and has a bulk density of 1.3 g/cm3.

4. Calculate the bulk density of a rectangular soil sample with dimensions 12 cm by 6 cm by 4 cm, that is 15% moisture content and weighs 320 g.

Vol. of soil = Length x Width x height

5. Calculate the oven dry weight of a 350 cm3 soil sample with a bulk density of 1.42 g/cm3.

6. Calculate the porosity of a soil sample that has a bulk density of 1.35 g/cm3. Assume the particle density is 2.65 g/cm3.

Porosity = (1-(r_b/r_d) x 100 =   %

7. Calculate the porosity (n) of a 250 cm3 clod that contains 140 cm3 water when saturated.

Porosity = V_{air} + V_{water}/V_{total} =

8. Calculate the bulk density of a soil sample that has a porosity of 45%.

i.e. for 1cm³ soil, assume r_d of 2.65 g/cm³

9. Calculate the porosity of a 250 g sample that contains 65 g of water when 55% of the pores are full of water.

10. What is the particle density of a soil sample that has a bulk density of 1.55 g/cm3 and a porosity of 40%.

Porosity = $(1-(r_b/r_d)$ x 100