procedure sheet 4

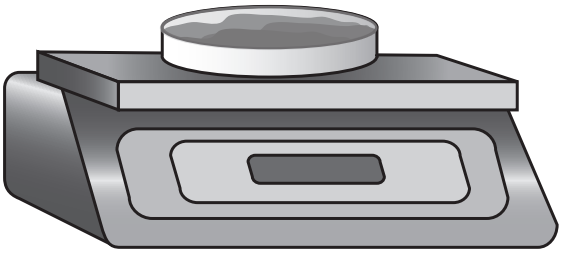
Measuring soil bulk density and soil moisture content

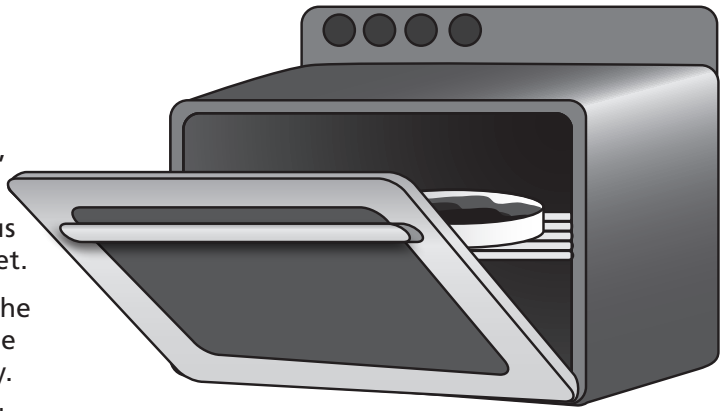
SAFETY

Handling soil and compost: Always wear safety glasses. Do not ingest or smell the soil/compost, and avoid inhaling its dust, since harmful bacteria and fungi could be present. Wash your hands thoroughly with soap and water afterwards.

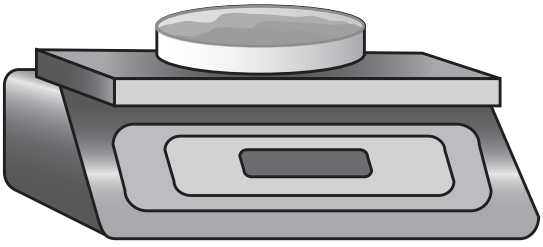
You will need…

- ☐ 2 x soil samples (A4 & B4)
- ☐ 2 x ovenproof dish plus lid
- ☐ calculator
- ☐ balance
- ☐ oven





1. Weigh an ovenproof dish with its lid, and record the mass [W1] in your record sheet overleaf.
2. Empty a soil sample (A4 or B4) into the dish, shaking out any loose bits left behind.
3. Re-weigh the dish, now with soil sample plus lid, and add its mass [W2] to the record sheet.
4. Now repeat with the second sample. Place the dishes into an oven, with their lids off to one side, and leave for 2 hours at 105°C until dry.
5. Replace the lid and allow the sample to cool outside the oven, or place in a desiccator.
6. Re-weigh the cooled dish with dried soil and lid [W3] and add to the record sheet.
7. Calculate dry soil mass.
8. Work out the volume of your soil sample.
9. Use this information to calculate the soil bulk density.
10. Calculate 'wet' soil mass, which is the soil's mass before drying.
11. Use this information to determine the soil's moisture content.
12. Transfer your results to the collected data sheet.



Soil bulk density & soil moisture

		A4	B4
W1 (g)	W1 = dish + lid		
W2 (g)	W2 = soil + dish + lid		
Wet (g)	Wet soil mass = W2 – W1		
DRY YOUR SOIL SAMPLE			
W3 (g)	W3 = dry soil + dish + lid		
Dry (g)	dry soil mass = W3 – W1		
V (cm^3)	soil volume = (3.14 x $radius^2$ x ring ht)		
soil bulk density (g/cm^3)	**soil bulk density = Dry / V**		
moisture content (g)	moisture content = Wet - Dry		
soil moisture (% dry soil mass)	**soil moisture = (moisture content / Dry) x 100**		