

# Edexcel Physics GCSE

## Practical 6: Particle Model

### Practical Flashcards

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Outline the basic steps of the practical.



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1. Measure the mass of the irregular shape
2. Fill a displacement can with water and submerge the object
3. Record the volume of water that has been displaced
4. Calculate the density from the mass and volume



What should you place under the can spout to collect the water?



What should you place under the can spout to collect the water?

A measuring beaker.



Explain how you should fill the displacement can to get the most accurate results.



Explain how you should fill the displacement can to get the most accurate results.

Fill the can until water starts to drip out of the spout and into the beaker. Wait until the dripping just stops before submerging the object.



What equation is used to calculate density?





What equation is used to calculate density?

$$\text{Density} = \text{Mass} / \text{Volume}$$



What unit is used for density?



What unit is used for density?

$\text{kg/m}^3$



What piece of equipment is used to measure the object's mass? What must you do before using it?



What piece of equipment is used to measure the object's mass? What must you do before using it?

A digital balance, which should be zeroed before placing the object on it to avoid a zero error.



How do you convert from  $\text{g/cm}^3$  to  $\text{kg/m}^3$ ?



How do you convert from  $\text{g}/\text{cm}^3$  to  $\text{kg}/\text{m}^3$ ?

Multiply the value by 1000.



When reading the volume of water that has been displaced, how should the reading be taken?





When reading the volume of water that has been displaced, how should the reading be taken?

- The reading should be taken from the meniscus of the liquid
- Taken at eye level to avoid parallax error



# What is the meniscus of a liquid?



# What is the meniscus of a liquid?

The lowest part of the liquid's top surface, directly in the middle of the surface.



If the object was regularly shaped, how could you calculate its density?



If the object was regularly shaped, how could you calculate its density?

1. Measure the object's dimensions and calculate the volume
2. Measure the mass of the shape
3. Calculate density from the mass and volume



What safety precaution should be taken  
in this experiment?



What safety precaution should be taken in this experiment?

Ensuring no water goes near the electronic balance since it could lead to electric shocks and a fire hazard.



How can you calculate the density of a liquid?





How can you work out the density of a liquid?

- Use a scale/balance to measure its mass
  - Read off the volume of liquid
- Use  $\rho = m/V$  to calculate the density



How can you work out the mass of a liquid?



How can you work out the mass of a liquid?

Place a beaker on a balance and zero the device. Pour the liquid into the beaker and read off its mass.



How can you work out the volume of a liquid?



How can you work out the volume of a liquid?

Pour it into a beaker / measuring cylinder  
and read off the volume.

