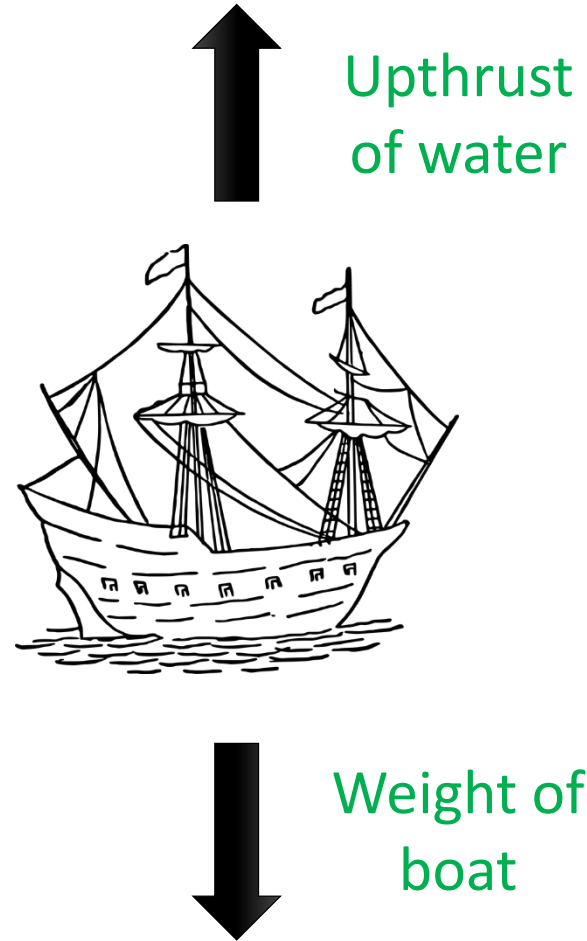# AnswerIT!

Forces

- **Essential knowledge**

1. Name the unit for force.   Newton.

2. Name the equipment used to measure force in an investigation.
Newton meter or force meter.

3. Describe the forces acting on a stationary object.
Equal in opposite directions.

4. Name two non-contact forces.
Gravity (gravitational), magnetism (magnetic), static electricity (electric).

5. Explain the difference between contact and non-contact forces.
Contact forces: objects must touch each other
Non-contact: objects do not need to touch each other.

6. Draw and label the forces acting on a stationary boat floating on water.

Upthrust of water

Weight of boat

7. Why does an astronaut weigh less on the Moon than on the Earth?
Gravitational force increases with mass; the mass of the Moon is less than the Earth; weight is a force caused by gravity on the mass; less gravity = less weight; the mass stays the same.

8. Why does a skydiver weigh slightly less when they jump out of a plane than they do on the ground?
Gravitational force decreases with distance; the further from the Earth the lower the gravity; weight is a force caused by gravity on the mass; less gravity = less weight; the mass stays the same.

9. Draw and label the forces acting on the plane travelling at a steady speed.
   The opposing forces should equal each other.

Lift

Drag

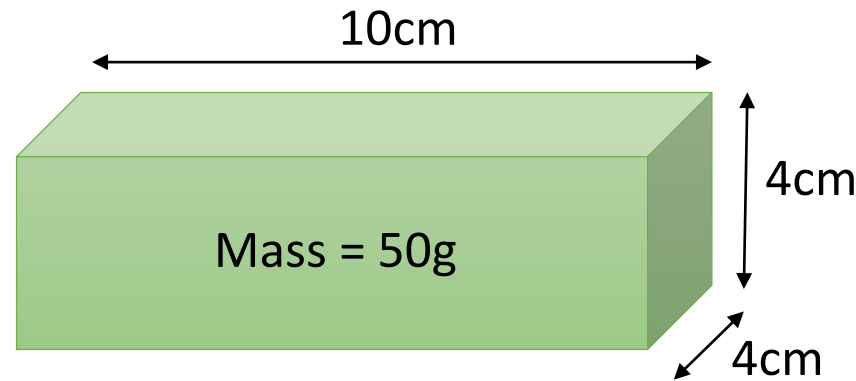Thrust

Weight
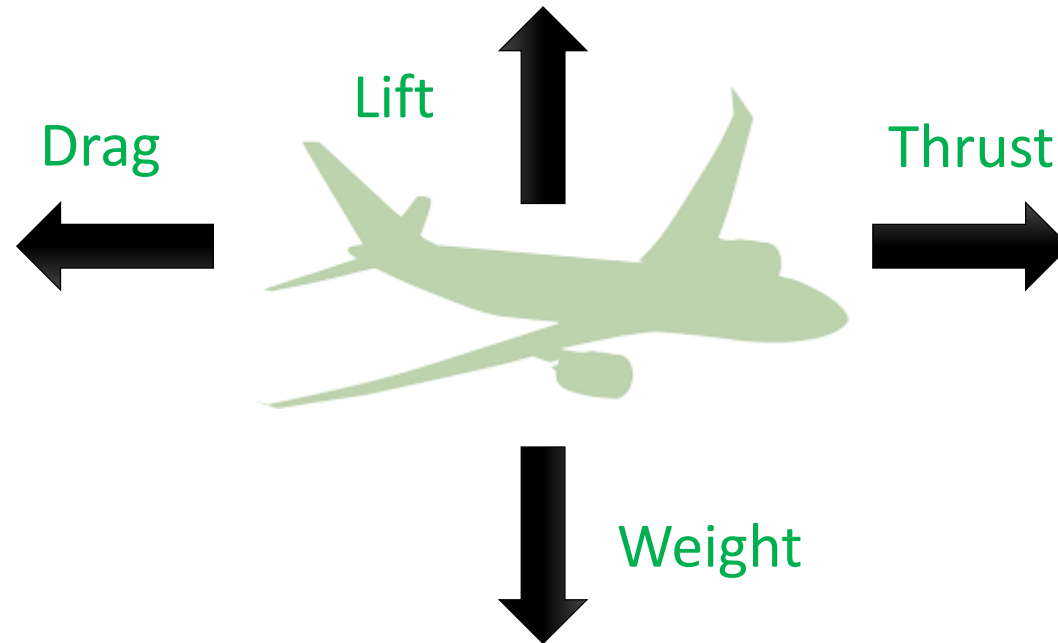
AnswerIT!

Forces

- **Practical skills**
- **Mathematical skills**

1. Describe how to find the volume of an irregular object.
   Place it in water/ Eureka can; find the volume of displaced water.

2. State the equation linking density, mass and volume.
   Density = mass ÷ volume.

3. Calculate the density of the following object to 2 decimal places.

10cm

Mass = 50g

4cm

4cm

Volume = 10 x 4 x 4 = 160cm^3
Density = mass ÷ volume = 50 ÷ 160 = 0.3125 = 0.31g/cm^3

4. Calculate the density of the following in **g/cm³**.
    a) 1kg block with a volume of 100cm^3

    1kg x 1,000 = 1,000g

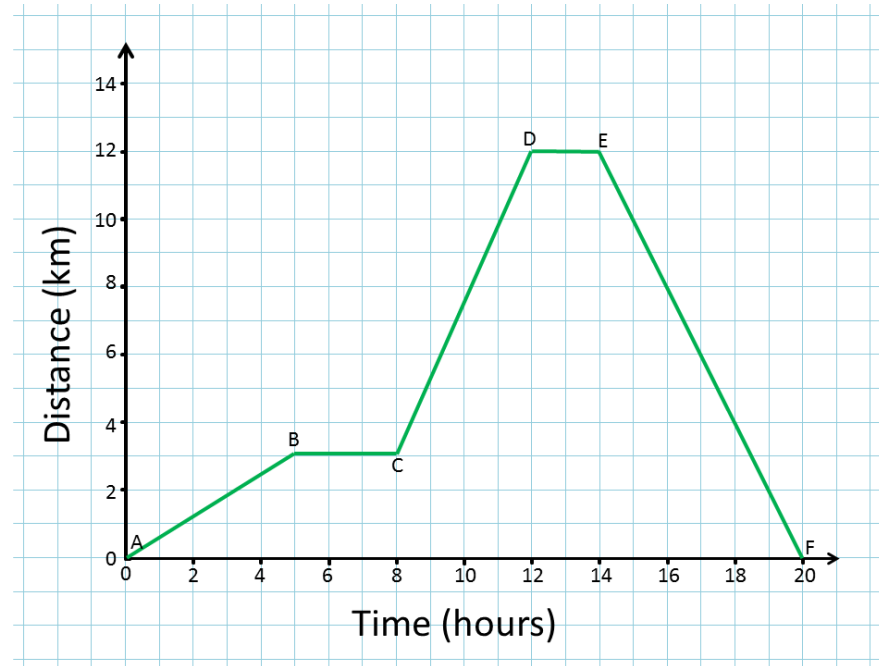   Density = mass ÷ volume = 1,000 ÷ 100 = 10g/cm^3

    b) 0.5kg block with a volume of 20cm^3

    0.5kg x 1,000 = 500g

    Density = mass ÷ volume = 500 ÷ 20 = 25g/cm^3

5. Look at the following graph.

a) What is happening between B and C?   Stationary

b) When is the object moving the slowest?   A-B

c) Calculate the speed between A and B in km/h.

Distance = 3km; time = 5hours

Speed = distance ÷ time = 3 ÷ 5 = 0.6km/h