

IGCSE Physics

Name: _____ Score: _____

1. You measure water in a measuring cylinder. How should you read the scale?
 - ☐ eye level with the bottom of the meniscus (the curved surface)
 - ☐ eye above, looking down at the water
 - ☐ eye below, looking up at the water
 - ☐ at the very top of the cylinder
2. A runner covers 100 m in 8.0 s. What is the average speed, in m/s?
_____ m/s
3. An astronaut travels from Earth to the Moon. What happens to their **mass** and **weight**?
 - ☐ mass stays the same; weight gets smaller
 - ☐ both stay the same
 - ☐ mass gets smaller; weight stays the same
 - ☐ both get smaller by the same amount
4. A force of 8.0 N stretches a spring by 0.040 m (within the limit of proportionality). What is the spring constant, in N/m?
_____ N/m
5. Momentum is a vector.
 - ☐ True ☐ False
6. Select **all** of these that are **energy stores**.
 - ☐ kinetic
 - ☐ chemical
 - ☐ gravitational potential
 - ☐ loud
 - ☐ fast

Tick every correct option.

7. A box pushes down with a force of 200 N over an area of 0.50 m². What is the pressure, in Pa?
_____ Pa
8. A stack of 100 sheets of paper is 12 mm tall. How thick is one sheet, in mm?
_____ mm

9. A car speeds up from rest to 20 m/s in 4.0 s. What is its acceleration, in m/s²?

_____ m/s²

10. How do you find the volume of a small, oddly-shaped stone?

- ☐ lower it into water in a measuring cylinder and read the rise in level
- ☐ measure its length with a ruler and cube it
- ☐ weigh it on a balance
- ☐ heat it until it melts

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1. eye level with the bottom of the meniscus (the curved surface)

Read at the bottom of the meniscus with your eye level with it — looking from above or below gives a parallax error (a wrong reading).

2. 12.5 m/s

$$v = \frac{s}{t} = \frac{100}{8.0} = 12.5 \text{ m/s.}$$

3. mass stays the same; weight gets smaller

Mass (amount of matter) never changes. Weight is the force of gravity, and the Moon's gravity is weaker, so the weight is smaller.

4. 200 N/m

$$k = \frac{F}{x} = \frac{8.0}{0.040} = 200 \text{ N/m.}$$

5. True

Momentum is mass $\times$ velocity, and velocity has a direction, so momentum is a vector.

6. kinetic; chemical; gravitational potential

Kinetic, chemical and gravitational potential are energy stores. "Loud" and "fast" describe things, but they are not energy stores.

7. 400 Pa

$$p = \frac{F}{A} = \frac{200}{0.50} = 400 \text{ Pa.}$$

8. 0.12 mm

Measure many and divide: $12 \div 100 = 0.12 \text{ mm}$. Dividing makes the small measurement much more accurate.

9. 5 m/s²

$$a = \frac{\Delta v}{\Delta t} = \frac{20 - 0}{4.0} = 5.0 \text{ m/s}^2.$$

10. lower it into water in a measuring cylinder and read the rise in level

The stone pushes the water up. The rise in the water level equals the stone's volume — the displacement method.