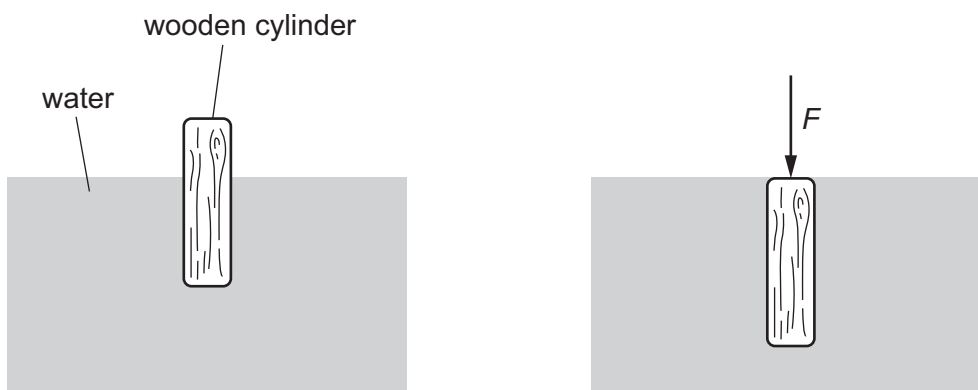


- 15 A wooden cylinder floats partially submerged in a bath of water. A force  $F$  is applied to the cylinder until it is just fully submerged.



Which statement is **not** correct?

- A Some of the water gains gravitational potential energy.
  - B The cylinder loses gravitational potential energy.
  - C Work is done by force  $F$  on the cylinder.
  - D Work is done by the upthrust on the cylinder.
- 16 A system has a useful power output of 4.0 W and a wasted power of 16 W.
- What is the efficiency of the system?
- A 5.0%
  - B 20%
  - C 25%
  - D 80%
- 17 A parachutist is falling towards the ground at a constant speed  $v$ . The rate at which she is losing gravitational potential energy is  $R$ .

The acceleration of free fall is  $g$ .

What is the mass of the parachutist?

- A  $\frac{gv}{R}$
  - B  $\frac{R}{gv}$
  - C  $\frac{2R}{v^2}$
  - D  $\frac{v^2}{2R}$
- 18 A copper wire of diameter 1.6 mm is stretched within its limit of proportionality by a tensile force of 430 N.

The Young modulus of copper is 130 GPa.

What is the strain in the wire?

- A  $4.1 \times 10^{-4}$
- B  $1.3 \times 10^{-3}$
- C  $1.6 \times 10^{-3}$
- D  $5.2 \times 10^{-3}$