

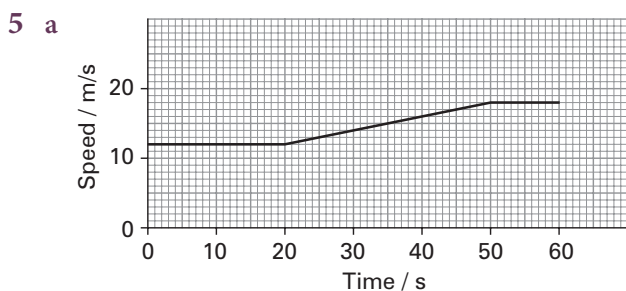
# Answers to Self-assessment practice tests Block 1

- 1 a 0.70 mm  
 b All wires laid closely side-by-side (no gaps).  
 c micrometer (or micrometer screw gauge)  
 d The micrometer; because it measures to within 0.01 mm.

- 2 a 52.0 g  
 b 52.0 cm<sup>3</sup>  
 c 13.6 cm<sup>3</sup>  
 d 31.4 g  
 e 2.31 g/cm<sup>3</sup>

- 3 a 1.152 m<sup>3</sup>  
 b 8640 kg

- 4 a 1.6 s  
 b 15.4 m/s  
 c Any errors in starting and stopping the watch will be smaller compared to the total time.  
 d Ben may not be able to keep up his greatest speed over this distance.



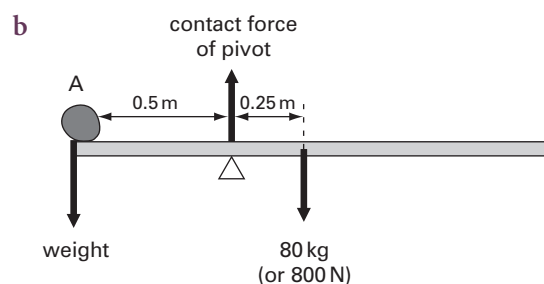
- b after 20 s  
 c 240 m  
 d 0.20 m/s<sup>2</sup>  
 e 870 m

- 6 a 2.5 m/s<sup>2</sup>  
 b 500 N forwards; 0.83 m/s<sup>2</sup>



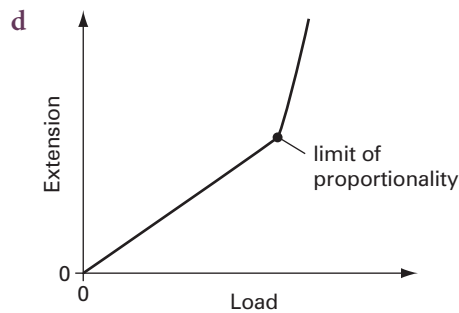
- b 150 N downwards  
 c 2.0 m/s<sup>2</sup>  
 d 750 N (equal to his weight)
- 8 a Her force is applied further from the pivot/fulcrum, so its turning effect will be greater.  
 b His turning effect/moment will be greater than the girl's because his weight is greater and he is the same distance from the pivot as she is.

- 9 a 800 N



- c 400 N  
 d 1200 N downwards

- 10** a 8.0 cm  
 b 66.0 cm  
 c 2.5 N



- 11** a The force is concentrated on a small area so that the pressure is great enough to push the needle through the fabric.  
 b For example: a ladder is placed on a fragile roof to spread weight of roofing worker over a larger area.
- 12** a  $16 \text{ N/m}^2$   
 b pascal (Pa)  
 c  $20.0 \text{ m}^2$
- 13** a  $1.2 \text{ m}^3$   
 b 1200 kg; 12 000 N  
 c  $15\,000 \text{ N/m}^2$

- 14** a kinetic energy  
 b gravitational potential energy  
 c heat energy (thermal energy)  
 d elastic (strain) potential energy
- 15** a 60 J  
 b 57 J  
 c principle of conservation of energy  
 d 5%
- 16** a 8.0 J  
 b 7.2 J
- 17** a nuclear power  
 b hydro-electric power (hydro-electricity)  
 c solar cell (photocell)  
 d wind energy
- 18** a 120 N  
 b 120 N  
 c 720 J
- 19** a 400 J  
 b 200 J  
 c 2.0 s