

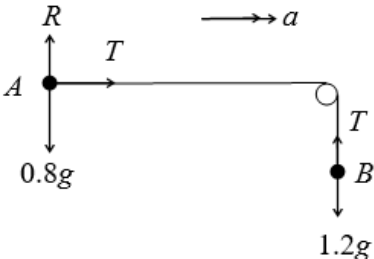
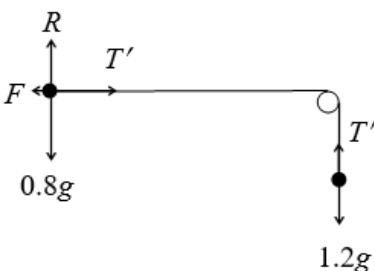
Daily Question

Day 5 Mechanics – Mark Scheme

Question 1

- (a) 's = ut + $\frac{1}{2}at^2$ ' for B: $0.4 = \frac{1}{2}a(0.5)^2$ M1 A1
 $a = \underline{3.2 \text{ m s}^{-2}}$ A1 (3)
- (b) N2L for B: $0.8g - T = 0.8 \times 3.2$ M1 A1
 $T = \underline{5.28 \text{ or } 5.3 \text{ N}}$ ↓ M1 A1 (4)
- (c) A: $F = \mu \times 0.5g$ B1
 N2L for A: $T - F = 0.5a$ M1 A1
 Sub and solve $\mu = \underline{0.75 \text{ or } 0.751}$ ↓ M1 A1 (5)
- (d) Same acceleration for A and B. B1 (1)

Question 2

- (a)  A: $T = 0.8a$
 B: $1.2g - T = 1.2a$
 Solve: $T = 0.48g = 4.7 \text{ N}$ B1 M1 A1 (5)
- (b) $a = 0.6g = 5.88$ M1
 Hence $0.6 = \frac{1}{2} \times 0.6g \times t^2$ M1
 $t = 0.45 \text{ or } 0.452 \text{ s}$ A1 (3)
- 
 $F = \mu R = \frac{1}{5} \times 0.8g$ B1
 A: $T' - F = 0.8a'$ M1 A1
 B: $1.2g - T' = 1.2a'$ B1
- Solve: $a' = 0.52g$ M1 A1
 $0.6 = \frac{1}{2} \times 0.52g \times t^2$ M1
 $t = 0.49 \text{ or } 0.485 \text{ s}$ A1 (8)
- (16 marks)**