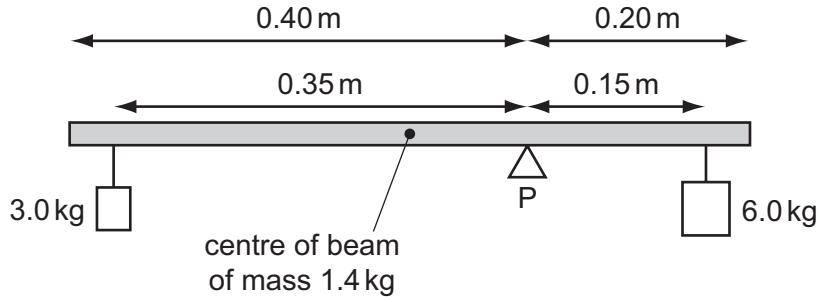
14 A uniform beam of mass 1.4 kg is pivoted at P as shown. The beam has a length of 0.60 m and P is 0.20 m from one end. Loads of 3.0 kg and 6.0 kg are suspended 0.35 m and 0.15 m from the pivot as shown.



What torque must be applied to the beam in order to maintain it in equilibrium?

A 0.010 N m **B** 0.10 N m **C** 0.29 N m **D** 2.8 N m

15 A ball is thrown vertically upwards.

Neglecting air resistance, which statement is correct?

A The kinetic energy of the ball is greatest at the greatest height attained.

B By the principle of conservation of energy, the total energy of the ball is constant throughout its motion.

C By the principle of conservation of momentum, the momentum of the ball is constant throughout its motion.

D The potential energy of the ball increases uniformly with time during its ascent.

16 A bow of mass 400 g shoots an arrow of mass 120 g vertically upwards. The potential energy stored in the bow just before release is 80 J. The system has an efficiency of 28%.

What is the height reached by the arrow when air resistance is neglected?

A 4 m **B** 19 m **C** 187 m **D** 243 m

Space for working