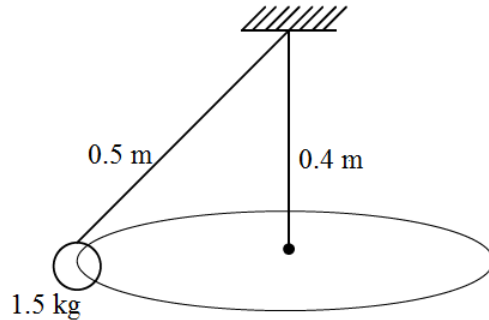


Year 13 Physics 2021 Worksheet 3

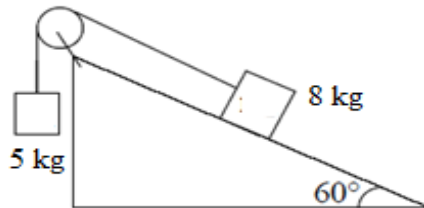
Write the answers in your Exercise Book.

1. A 1.5 kg object at the end of a 0.5 m length of string is rotating in a **horizontal circle** as shown below.



The object completes 10 revolutions in 20 s.

- (a) Calculate the **period** of the object's rotation. (1 mark)
 - (b) Calculate the **radius** of the circle described by the 1.5 kg mass. (1 mark)
 - (c) What is the **linear speed** of the object? (1 mark)
 - (d) Determine the **angular velocity** of the object. (1 mark)
 - (e) Find the **tension** in the string. (2 marks)
2. A 5 kg hanging mass is connected by a string over a pulley to a 8 kg mass as shown below. The system is then released.



If the coefficient of kinetic friction is 0.25, calculate

- (a) the **acceleration** of the masses. (3 marks)
 - (b) the **tension** in the string. (2 marks)
3. A mass of 0.3 kg at the end of a 25 cm long string is swung in a vertical circular path. The angular speed at the top of the path is 12 rad s^{-1} .
- Find the **tension** in the string at the **top** of the circular path. (2 marks)