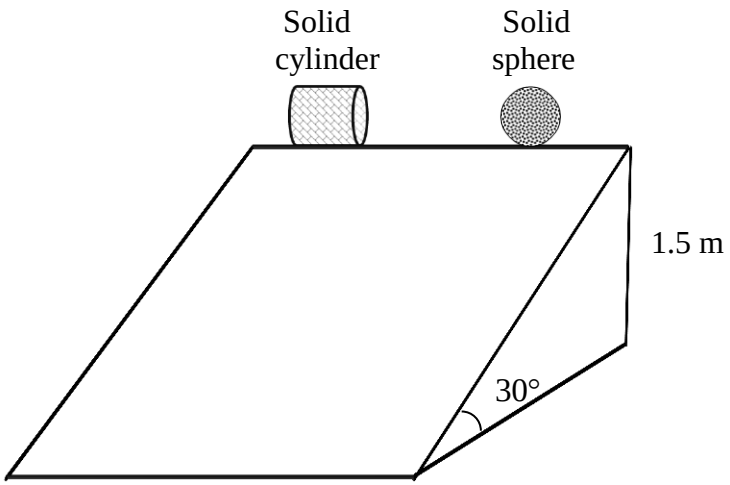
# 2021 Worksheet 8
# Year 13 Physics

**Write the answers in your Exercise Book**.

A solid cylinder and a solid sphere each of mass m and radius r start from **rest** at a height of 1.5 m and roll down an inclined plane at an angle of 30° as shown below.




Moments of Inertia:

- cylinder $I = \frac{1}{2}mr^2$
- sphere $I = \frac{2}{5}mr^2$

1. Find the **linear velocity** of the cylinder at the bottom of the incline. **(2 marks)**

2. Find the **linear velocity** of the sphere at the bottom of the incline. **(2 marks)**

3. Which object arrives at the bottom first? **(1 mark)**

4. If two solid spheres of different sizes are released from a height of 1.5 m on the inclined plane as shown above, which one will reach the bottom first? **(1 mark)**