**7B Static Models & Tension**

1. A smooth bead, Y, is threaded on a light inextensible string. The ends of the string are attached to two fixed points X and Z on the same horizontal level. The bead is held in equilibrium by a horizontal force of 8N acting in the direction ZX. Bead Y hangs vertically below X and angle XZY = 30°.

Find:

1. The tension in the string
2. The weight of the bead
3. A Particle P with mass 8kg is suspended from two strings at point A and B. The angle PAB is 30° and the angle ABP is 50°.

Find the Tension in the two strings

1. A mass of 3kg rests on the surface of a smooth plane inclined at an angle of 45° to the horizontal. The mass is attached to a cable which passes up the plane and passes over a smooth pulley at the top. The cable carries a mass of 1kg which hangs freely at the other end. There is a force of PN acting horizontally on the 3kg mass and the system is in equilibrium.

By modelling the cable as a light inextensible string and the masses as particles, calculate:

1. The magnitude of P
2. The normal reaction between the mass and the plane