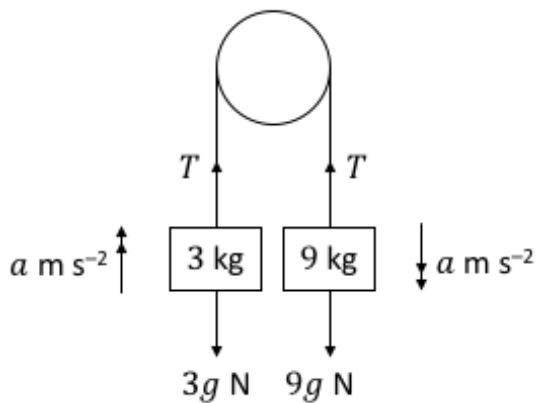


# Pulleys

## Question 1



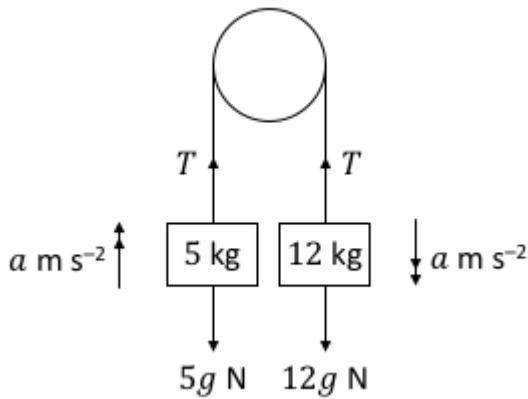
The diagram shows two particles of masses 3 kg and 9 kg attached to the end of a light inextensible string.

The string passes over a small smooth pulley and the particles hang with the string taut.

The system is released from rest.

Find the acceleration of the system, and the tension in the string.

## Question 2



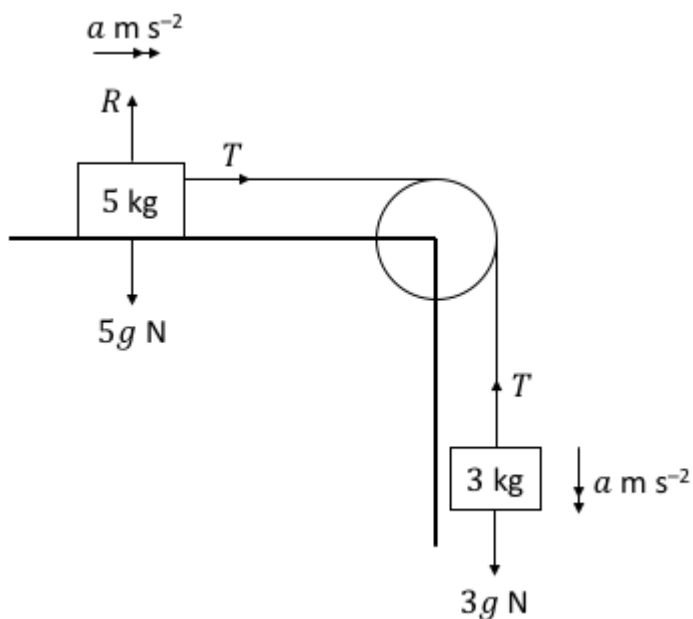
The diagram shows two particles of masses 5 kg and 12 kg attached to the end of a light inextensible string.

The string passes over a small smooth pulley and the particles hang with the string taut.

The system is released from rest.

Find the acceleration of the system, and the tension in the string.

## Question 3



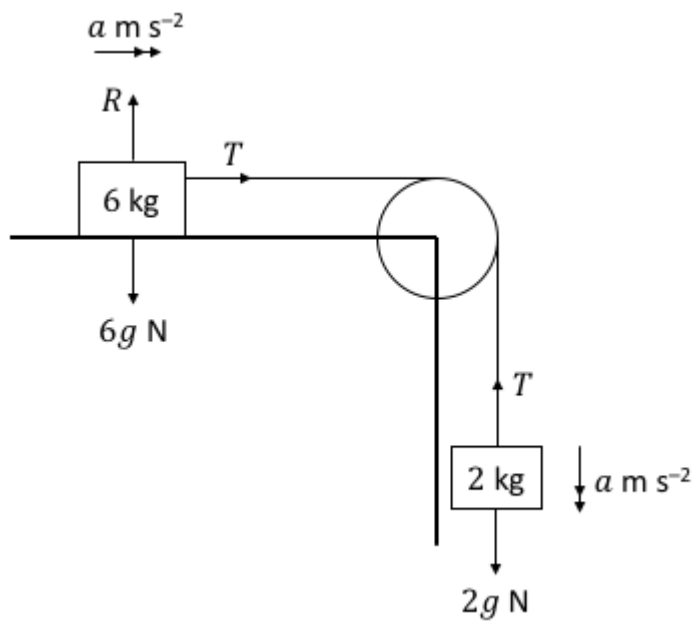
Two particles are connected by a light inextensible string, passing over a smooth small pulley which is fixed at the edge of the table.

The particle with mass 5 kg lies on a smooth horizontal table and the particle with mass 3 kg hangs vertically with the string taut.

The system is released from rest.

Find the acceleration of the system and the tension in the string.

### Question 4



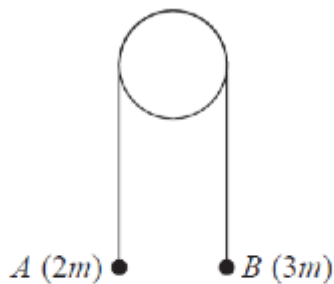
Two particles are connected by a light inextensible string, passing over a smooth small pulley which is fixed at the edge of the table.

The particle with mass 6 kg lies on a smooth horizontal table and the particle with mass 2 kg hangs vertically with the string taut.

The system is released from rest.

Find the acceleration of the system and the tension in the string.

### Question 5



Two particles  $A$  and  $B$  have masses  $2m$  and  $3m$  respectively. The particles are connected by a light inextensible string which passes over a smooth light fixed pulley. The system is held at rest with the string taut. The hanging parts of the string are vertical and  $A$  and  $B$  are above a horizontal

**Figure 2**

plane, as shown in Figure 2. The system is released from rest.

Find the tension in the string immediately after the particles are released in terms of  $m$  and  $g$ .