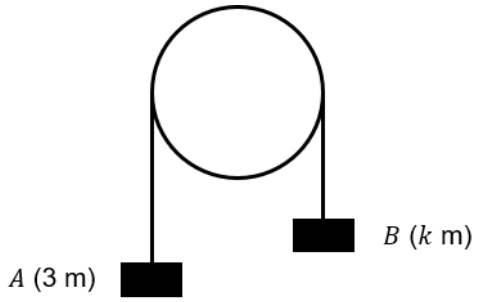
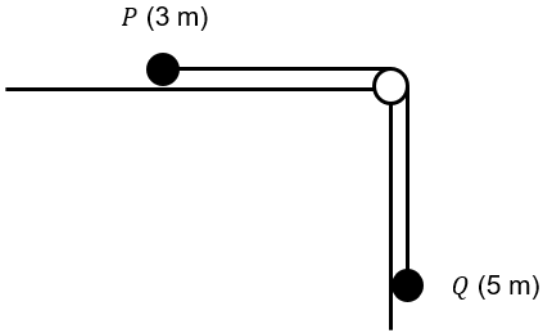
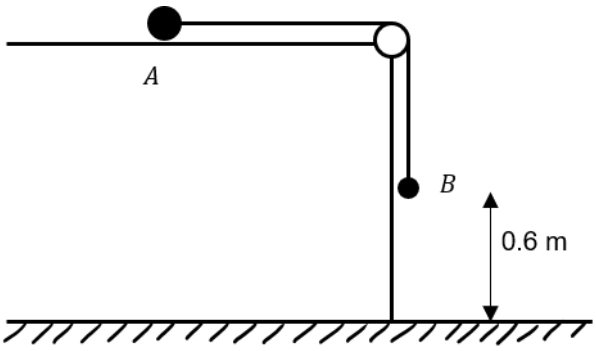
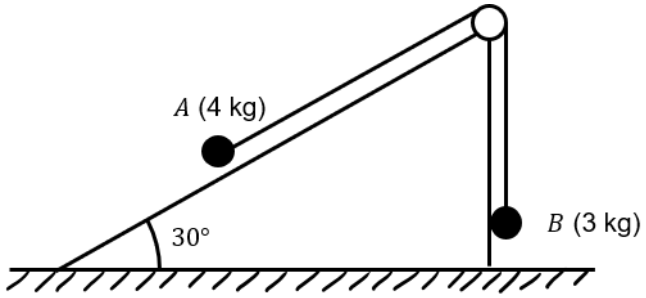
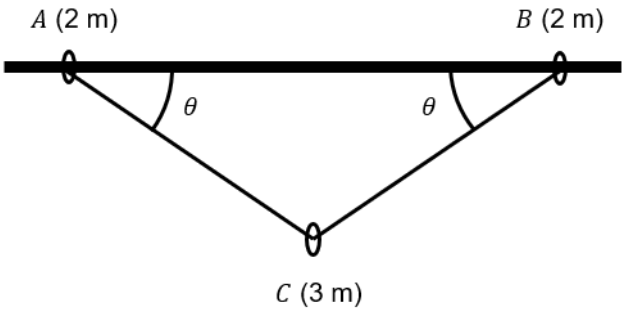
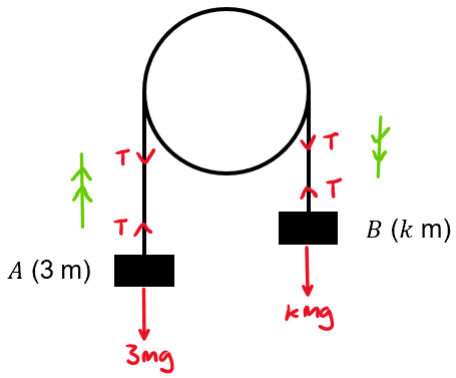
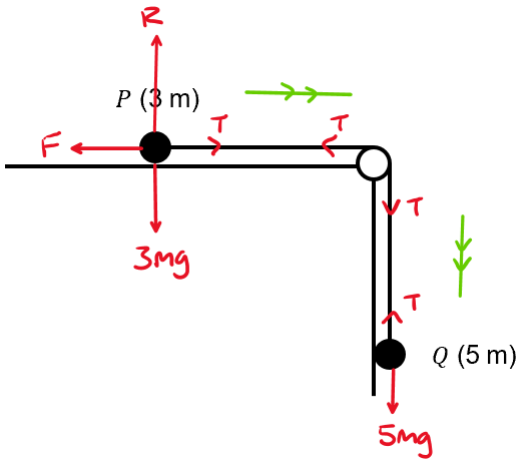
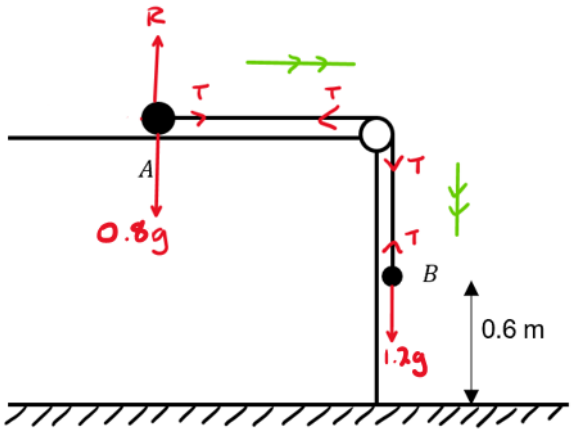
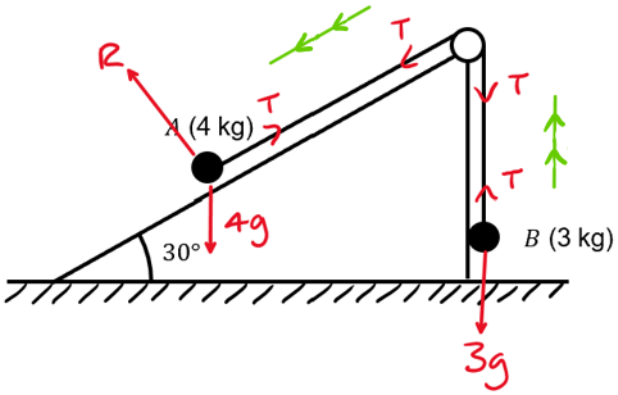
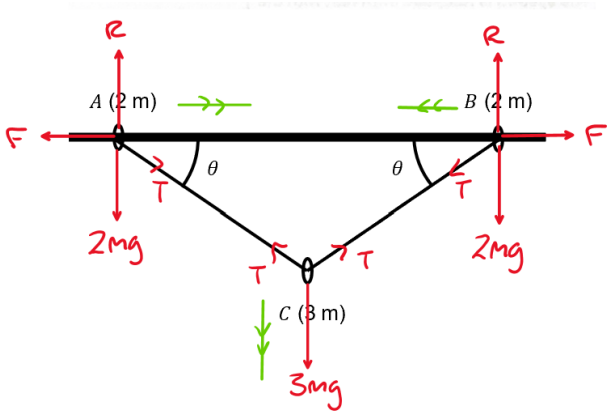
Labelling Force Diagrams

Context	Force diagram
Two particles A and B have masses $3m$ and km respectively, where $k > 3$. They are connected by a light, inextensible string which passes over a smooth fixed pulley. The system is released from rest with the string taut and the hanging sections vertical, as shown in the diagram. While the particles are moving freely, particle A has acceleration $\frac{2}{5}\ g$. **Task:** label the force diagrams for both particles.	
Two particles P and Q have masses 3 m and 5 m respectively. They are connected by a light, inextensible string which passes over a small smooth light pulley fixed at the edge of a rough horizontal table. Particle P lies on the table, and particle Q hangs freely below the pulley, as shown in the diagram. The coefficient of friction between P and the table is 0.6. The system is released from rest with the string taut. **Task:** label the force diagrams for both particles (before Q hits the ground or P reaches the pulley).	
A particle A of mass 0.8 kg rests on a horizontal table and is attached to one end of a light, inextensible string. The string passes over a small smooth pulley P fixed at the edge of the table. The other end is attached to a particle B of mass 1.2 kg, which hangs freely below the pulley, as shown in the diagram. The system is released from rest with the string taut with B at a height of 0.6 m. In the subsequent motion, A does not reach P before B reaches the ground. In initial model of the situation, the table is assumed to be smooth. **Task:** label the force diagrams for both particles.	

Context	Force diagram
A particle A of mass 4 kg moves on the inclined plane of a smooth wedge. This face is inclined at $30°$ to the horizontal. The wedge is fixed on horizontal ground. Particle A is connected to a particle a B, of mass 3 kg, by a light inextensible string. The string passes over a small light smooth pulley which is fixed at the top of the plane. The section of the string from A to the pulley lies in a line of greatest slope from of the wedge. The particle B hangs freely below the pulley, as shown in the diagram. The system is released from rest with the string taut. **Task:** Draw and label the force diagrams for both particles (before A reaches the pulley and B reaches the ground).	
Two small rings, A and B, each of mass 2 m, are threaded on a rough horizontal pole. The coefficient of friction between each ring and the pole is μ. The rings are attached to the ends of a light inextensible string. A smooth ring C of mass 3 m is threaded on the string and hangs in equilibrium below the pole, with $\angle BAC = \angle ABC = \theta$, where $\tan\theta = \frac{3}{4}$ **Task:** label the force diagrams for each ring.	
A sledge of mass 78 kg is pulled up a slope by means of a rope. The slope is modelled as a rough plane inclined at an angle α to the horizontal, where $\tan\alpha\frac{5}{12}$. The rope is modelled as a light and inextensible, and acts along the line of greatest slope. The coefficient of friction between the sledge and the plane is 0.25. The sledge accelerates up the slope at 0.5 ms^{-2}. **Task:** Draw and label the force diagram for the sledge.	

Labelling Force Diagrams

Context	Force diagram
Two particles A and B have masses $3m$ and km respectively, where $k > 3$. They are connected by a light, inextensible string which passes over a smooth fixed pulley. The system is released from rest with the string taut and the hanging sections vertical, as shown in the diagram. While the particles are moving freely, particle A has acceleration $\frac{2}{5}\ g$. **Task:** label the force diagrams for both particles.	
Two particles P and Q have masses 3 m and 5 m respectively. They are connected by a light, inextensible string which passes over a small smooth light pulley fixed at the edge of a rough horizontal table. Particle P lies on the table, and particle Q hangs freely below the pulley, as shown in the diagram. The coefficient of friction between P and the table is 0.6. The system is released from rest with the string taut. **Task:** label the force diagrams for both particles (before Q hits the ground or P reaches the pulley).	
A particle A of mass 0.8 kg rests on a horizontal table and is attached to one end of a light, inextensible string. The string passes over a small smooth pulley P fixed at the edge of the table. The other end is attached to a particle B of mass 1.2 kg, which hangs freely below the pulley, as shown in the diagram. The system is released from rest with the string taut with B at a height of 0.6 m. In the subsequent motion, A does not reach P before B reaches the ground. In initial model of the situation, the table is assumed to be smooth. **Task:** label the force diagrams for both particles.	

Context	Force diagram
A particle A of mass 4 kg moves on the inclined plane of a smooth wedge. This face is inclined at $30°$ to the horizontal. The wedge is fixed on horizontal ground. Particle A is connected to a particle a B, of mass 3 kg, by a light inextensible string. The string passes over a small light smooth pulley which is fixed at the top of the plane. The section of the string from A to the pulley lies in a line of greatest slope from of the wedge. The particle B hangs freely below the pulley, as shown in the diagram. The system is released from rest with the string taut. **Task:** Draw and label the force diagrams for both particles (before A reaches the pulley and B reaches the ground).	
Two small rings, A and B, each of mass 2 m, are threaded on a rough horizontal pole. The coefficient of friction between each ring and the pole is μ. The rings are attached to the ends of a light inextensible string. A smooth ring C of mass 3 m is threaded on the string and hangs in equilibrium below the pole, with $\angle BAC = \angle ABC = \theta$, where $\tan\theta = \frac{3}{4}$ **Task:** label the force diagrams for each ring.	
A sledge of mass 78 kg is pulled up a slope by means of a rope. The slope is modelled as a rough plane inclined at an angle α to the horizontal, where $\tan\alpha\frac{5}{12}$. The rope is modelled as a light and inextensible, and acts along the line of greatest slope. The coefficient of friction between the sledge and the plane is 0.25. The sledge accelerates up the slope at 0.5 ms^{-2}. **Task:** Draw and label the force diagram for the sledge.	