Two particles A and B, of masses $2.4\,\text{kg}$ and $1.2\,\text{kg}$ respectively, are connected by a light inextensible string which passes over a fixed smooth pulley. A is held at a distance of $2.1\,\text{m}$ above a horizontal plane and B is $1.5\,\text{m}$ above the plane. The particles hang vertically and are released from rest. In the subsequent motion A reaches the plane and does not rebound and B does not reach the pulley.

(a) Show that the tension in the string before A reaches the plane is $16\,\text{N}$ and find the magnitude of the acceleration of the particles before A reaches the plane. [4]

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(b) Find the greatest height of B above the plane. [3]