Answer on Question #49078-Physics-Other

A block of mass M is hanging over a smooth and light pulley through a string. The other end of a string is pulled by a constant force F. The kinetic energy of the block increases by 20J in 1 sec.

(1) the tension in string is Mg

(2) the tension in string is F

(3) the work done by the tension on the block is 20J in the above 1 sec.

(4) the work done by the force of gravity is-20J in above 1 sec

Solution

(1) If tension in the string is equal to Mg, then the block of mass M would not move.

(2) Note that the pulley is smooth and light.

(3) Work is done by (F-Mg).

(4) Force of gravity, in this question, cannot increase the kinetic energy of the block.

Answer: (2) the tension in string is F.