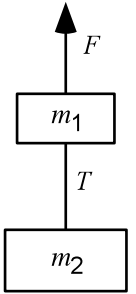


24. Two objects with masses of $m_1 = 6$ kg and $m_2 = 10$ kg are connected by a massless wire. They are pulled upward by an applied force F . The result is a constant acceleration of 3 m/s² downward for the two objects, because the force F is smaller than the total weight of the objects. The tension in the wire between the objects is labeled T .



Identify from choices (1)-(5) how each change described below will affect the magnitude of the tension (T) in the wire between the objects.

Compared to the case above, this change will:

- (1) *increase* the magnitude of the tension in the wire.
- (2) *decrease* the magnitude of the tension in the wire but not to zero.
- (3) *decrease* the magnitude of the tension in the wire to zero.
- (4) *have no effect* on the magnitude of the tension in the wire.
- (5) *have an indeterminate* effect on the magnitude of the tension in the wire.

All of these modifications are the only changes to the initial situation shown in the diagram.

- a) The mass of m_1 is decreased to 5 kg and the mass of m_2 is increased to 11 kg. _____

Explain.

- b) The mass of m_1 is increased to 7 kg and the mass of m_2 is decreased to 9 kg. _____

Explain.

- c) The applied force F is increased and the acceleration is 2 m/s² downward. _____

Explain.

- d) The applied force F is increased and the acceleration is 4 m/s² upward. _____

Explain.

- e) The applied force F is decreased and the acceleration is 4 m/s² downward. _____

Explain.

- f) The applied force F is decreased and the mass of m_1 is decreased. _____

Explain.

c) The applied force F is increased and the acceleration is 2 m/s^2 downward. _____

Explain.

d) The applied force F is increased and the acceleration is 4 m/s^2 upward. _____

Explain.

e) The applied force F is decreased and the acceleration is 4 m/s^2 downward. _____

Explain.

f) The applied force F is decreased and the mass of m_1 is decreased. _____

Explain.