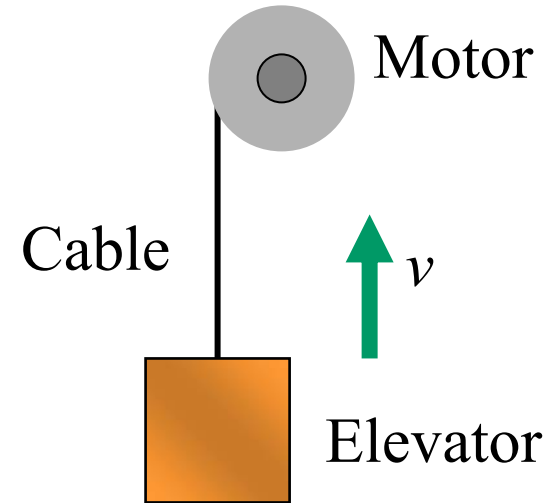


Q4.1



An elevator is being lifted at a constant speed by a steel cable attached to an electric motor. There is no air resistance, nor is there any friction between the elevator and the walls of the elevator shaft.

The upward force exerted on the elevator by the cable is



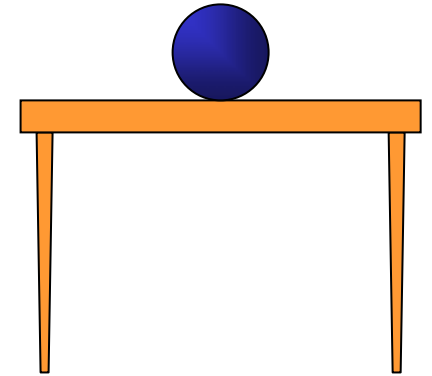
- A. greater than the downward force of gravity.
- B. equal to the force of gravity.
- C. less than the force of gravity.
- D. any of the above, depending on the speed of the elevator.

Q4.7



A ball sits at rest on a horizontal table top.

The gravitational force on the ball (its weight) is one half of an action-reaction pair. Which force is the other half?



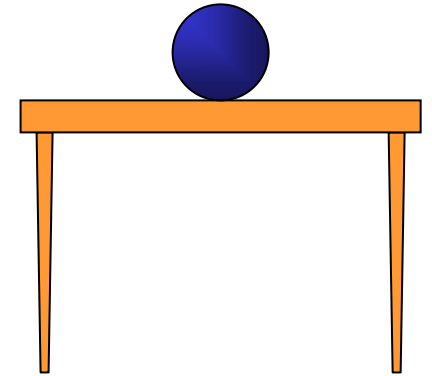
- A. the force of the Earth's gravity on the ball
- B. the upward force that the table top exerts on the ball
- C. the upward force that the ball exerts on the Earth
- D. the downward force that the ball exerts on the table top
- E. the frictional force between the ball and the table top

Q4.8



A ball sits at rest on a horizontal table top.

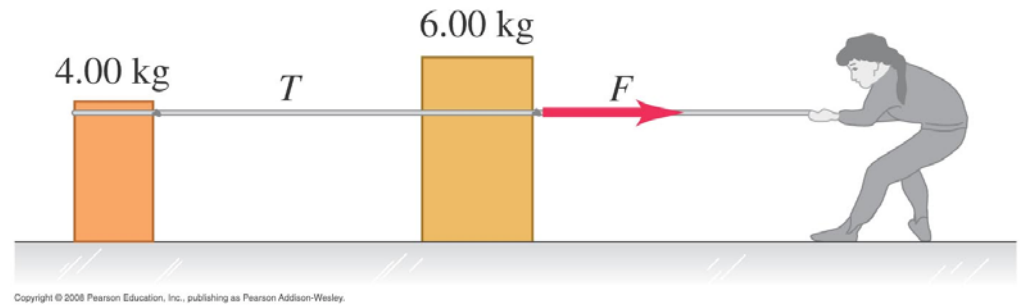
The weight of the ball is equal to the magnitude of the upward force that the table top exerts on the ball. Why?



- A. This is a consequence of Newton's first law.
- B. This is a consequence of Newton's third law.
- C. Because we assume that the table top is perfectly rigid.
- D. Two of the above three statements are correct.
- E. All of the first three statements are correct.

Q4.9

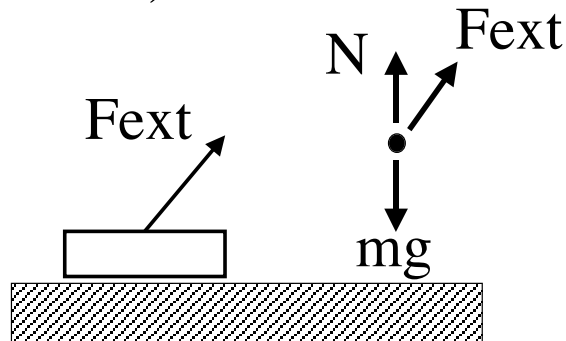
A woman pulls on a 6.00-kg crate, which in turn is connected to a 4.00-kg crate by a light rope. The light rope remains taut.



Compared to the 6.00-kg crate, the lighter 4.00-kg crate

- A. is subjected to the same net force and has the same acceleration.
- B. is subjected to a smaller net force and has the same acceleration.
- C. is subjected to the same net force and has a smaller acceleration.
- D. is subjected to a smaller net force and has a smaller acceleration.
- E. none of the above

5-24: A mass m is pulled along a frictionless table by constant force external force F_{EXT} at some angle above the horizontal. (The magnitudes of the forces on the free-body diagram have not been drawn carefully, but the directions are correct.)



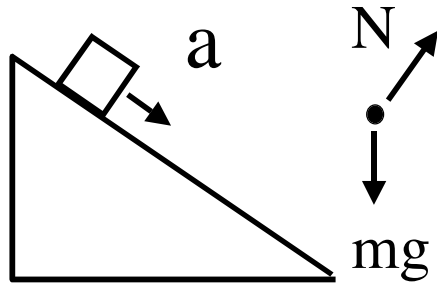
Which statement below must be true?

A: $mg > N$

B: $N > mg$

C: $N = mg$

5-25: A mass m is accelerated down along a frictionless inclined plane. The magnitudes of the forces on the free-body diagram have not been drawn carefully, but the directions of the forces are correct.



Which statement below must be true?

A: $mg > N$

B: $N > mg$

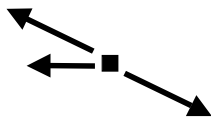
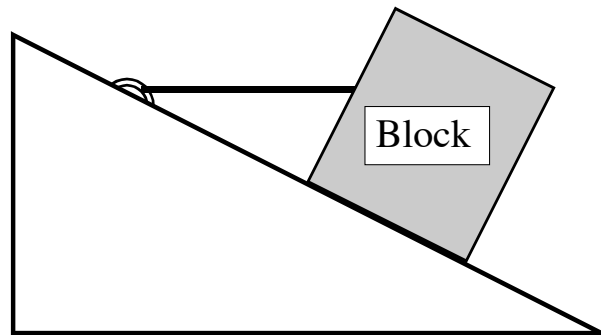
C: $N = mg$

5-26

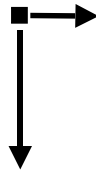
A block is held in place on a *frictionless* incline by a *massless* string, as shown.

The string is horizontal.

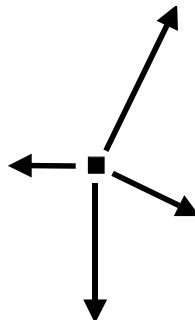
Which figure best represents the force diagram ("free body diagram") for the block.



A)



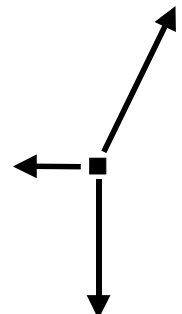
B)



C)



D)



E)