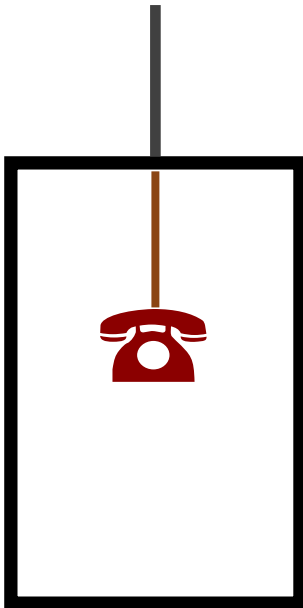


Question 1

A phone is suspended in an elevator as illustrated. The elevator moves up with decreasing speed. The rope suspending the phone is taut throughout the motion.

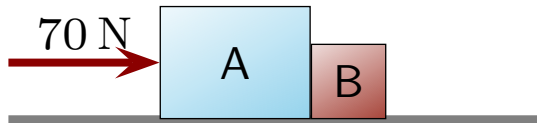


Let F_g denote the gravitational force exerted on the phone. Which of the following is true regarding the tension in the rope from which the phone is suspended while it moves as described?

1. $T = F_g$
2. $T > F_g$
3. $T < F_g$

Question 2

Two blocks are on a frictionless horizontal surface. A has mass 50 kg and B has mass 20 kg. They are in contact with each other while a hand pushes on block A with the indicated force.

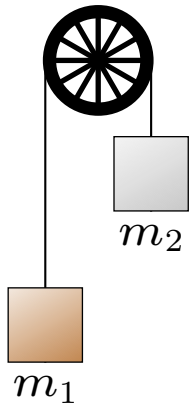


Which of the following is true while the blocks slide along the surface?

1. The force exerted by A on B is 70 N.
2. The force exerted by A on B is between 70 N and 35 N.
3. The force exerted by A on B is between 35 N and 0 N.

Question 3

Two blocks are connected by a string over a massless pulley as illustrated with $m_2 > m_1$. They are released from rest.

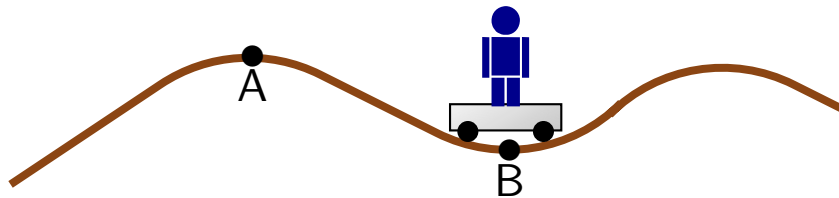


Which of the following is true regarding the tension in the string on the left?

1. $T < m_1g < m_2g$
2. $T = m_1g < m_2g$
3. $m_1g < T < m_2g$
4. $m_1g < m_2g = T$
5. $m_1g < m_2g < T$

Question 4

A cart carrying a passenger moves along the road whose profile is as illustrated. The passenger stands on a scale, which measures the normal force exerted on the passenger.

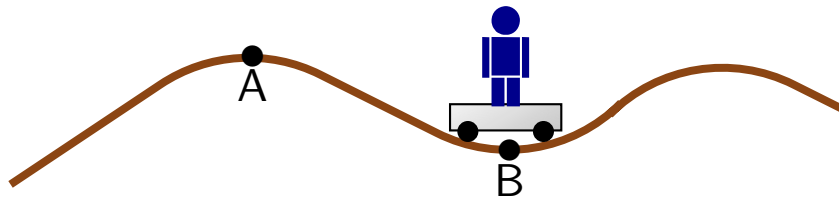


Suppose that the cart is at rest at location B. How does the scale reading compare to the gravitational force on the person?

1. Same.
2. Larger.
3. Smaller.

Question 5

A cart carrying a passenger moves along the road whose profile is as illustrated. The passenger stands on a scale, which measures the normal force exerted on the passenger.



Suppose that the cart is moving at location B. How does the scale reading compare to the gravitational force on the person?

1. Same.
2. Larger.
3. Smaller.