

Due date: Fri Feb 27 10:59:59 pm 2015 (EST)

Choose whether each of the following statements is true or false.

Choices: True, False.

- F • A freight train is accelerating on a level track. The tension in the coupling between the engine and the first freight car would change if some of the cargo in the last car were transferred to other cars.
- T • A freight train is accelerating on a level track. The tension in the coupling between the last two freight cars would change if some of the cargo in the last car were transferred to other cars.
- F • Suppose that the coefficients of static and kinetic friction have values such that $\mu_s = 2.0\mu_k$ for a crate in contact with a concrete floor. This means that the magnitude of the static frictional force acting on the crate at rest is always twice the magnitude of the kinetic frictional force acting on the moving crate.
- F • Astronauts orbiting the Earth feel weightless because the gravitational attraction of the Earth is so much less at their orbiting altitude.

You are correct. Your receipt no. is 156-5690

(hrwc6p21_5e) The coefficient of static friction between the floor of a truck and a box resting on it is 0.38. the truck is traveling at 85.8 km/h. What is the least distance in which the truck can stop and ensure that the box does not slide?

76.3 m

You are correct. Your receipt no. is 156-1451

Two blocks, stacked one on top of the other, slide on a frictionless horizontal surface. The surface between the two blocks is rough, however, with a coefficient of static friction equal to 0.47. The top block has a mass of 3.0 kg, and the bottom block's mass is 5.3 kg. If a horizontal force F is applied to the bottom block, what is the maximum value F can have before the top block begins to slip?

38.3 N

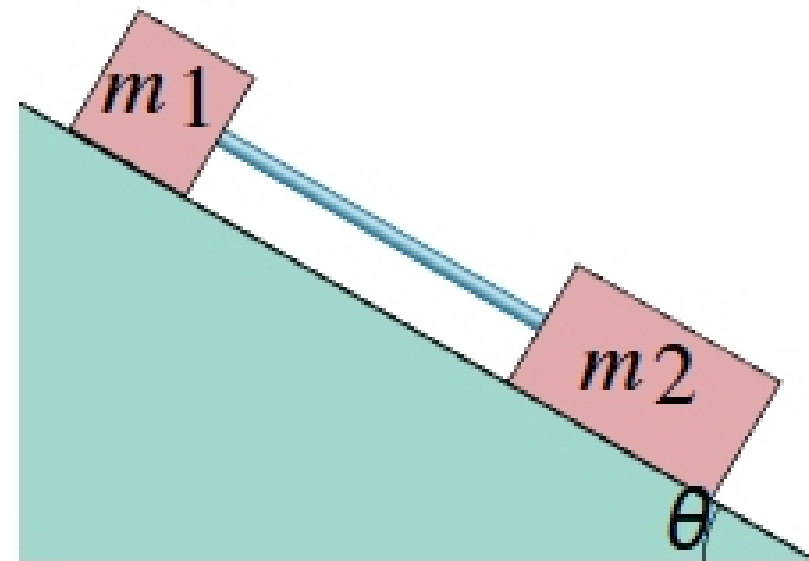
You are correct. Your receipt no. is 156-6335

If the mass of the bottom block increases, then the maximum value of F

- A. increases.
- B. stays the same.
- C. decreases.

You are correct. Your receipt no. is 156-4007

(hrwc6p68) Two masses of 4.00 kg each, connected by a string, slide down a ramp making an angle of 40° with the horizontal. The coefficient of kinetic friction between m_1 and the ramp is 0.33. The coefficient of kinetic friction between m_2 and the ramp is 0.16. Find the magnitude of the acceleration of the masses.



4.46 m/s²

You are correct. Your receipt no. is 156-5751
What is the tension in the string?

2.55 N

You are correct. Your receipt no. is 156-7703

A block with a mass of 4.55 kg is placed at rest on a surface inclined at an angle of 44.3° above the horizontal. The coefficient of static friction between the block and the surface is 0.600, and a force of magnitude F pushes upward on the block, parallel to the inclined surface. The block will remain at rest only if F is greater than a minimum value, F_{\min} , and less than a maximum value, F_{\max} . Calculate F_{\min} .

12 N

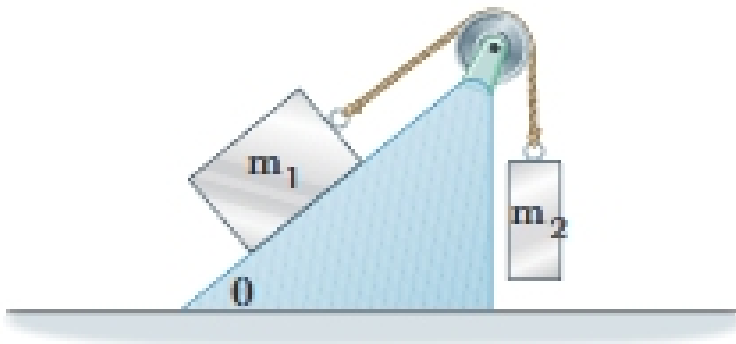
You are correct. Your receipt no. is 156-1264

Calculate F_{\max} .

50.3 N

You are correct. Your receipt no. is 156-4287

Two blocks are connected by a string, as shown in the figure below.



The smooth inclined surface makes an angle of $\theta = 43.9^\circ$ with the horizontal, and the block on the incline has a mass of $m_1 = 6.43$ kg. Calculate the mass of the hanging block that will cause the system to be in equilibrium. (The pulley is assumed to be ideal).

4.46 kg

You are correct. Your receipt no. is 156-783