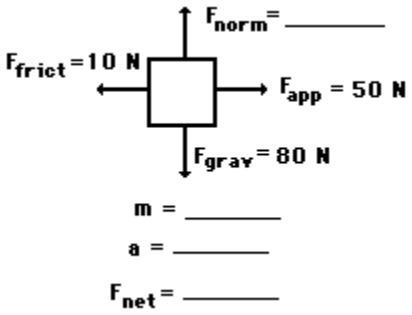
Name: _____ Period: _____ Due: _____ EN: ___

2nd Law CFU

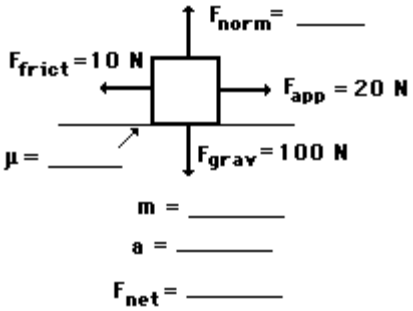
Finding Acceleration: net force is the vector sum of all the individual forces. You can determine the acceleration of an object if the magnitudes of all the individual forces

(Fnet = m*a), gravitational force (F_{grav} = m*g) frictional force (F_{frict} = "mu"*F_{norm}).

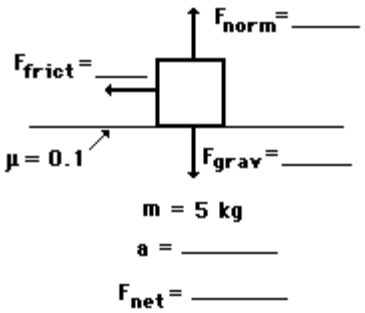
1. : An applied force of 50 N is used to accelerate an object to the right across a frictional surface. The object encounters 10 N of friction. Use the diagram to determine the normal force, the net force, the mass, and the acceleration of the object. (Neglect air resistance.)



2. : An applied force of 20 N is used to accelerate an object to the right across a frictional surface. The object encounters 10 N of friction. Use the diagram to determine the normal force, the net force, the coefficient of friction ("mu") between the object and the surface, the mass, and the acceleration of the object. (Neglect air resistance.)



3. : 5-kg object is sliding to the right and encountering a friction force which slows it down. The coefficient of friction ("mu") between the object and the surface is 0.1. Determine the force of gravity, the normal force, the force of friction, the net force, and the acceleration. (Neglect air resistance.)

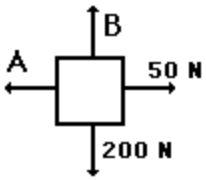


4. Edwardo applies a 4.25-N rightward force to a 0.765-kg book to accelerate it across a table top. The

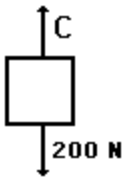
coefficient of friction between the book and the tabletop is 0.410. Determine the acceleration of the book.

5. In a physics lab, Kate and Rob use a hanging mass and pulley system to exert a 2.45 N rightward force on a 0.500-kg cart to accelerate it across a low-friction track. If the total resistance force to the motion of the cart is 0.72 N, then what is the cart's acceleration?

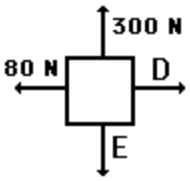
6.: Free-body diagrams for four situations are shown below. The net force is known for each situation. However, the magnitudes of a few of the individual forces are not known. Analyze each situation individually and determine the magnitude of the unknown forces.



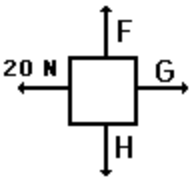
F_{net} = 0 N



F_{net} = 900 N, up

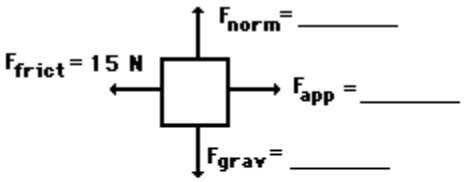


F_{net} = 60 N, left



F_{net} = 30 N, right

7. : A rightward force is applied to a 6-kg object to move it across a rough surface at constant velocity. The object encounters 15 N of frictional force. Use the diagram to determine the gravitational force, normal force, net force, and applied force. (Neglect air resistance.)

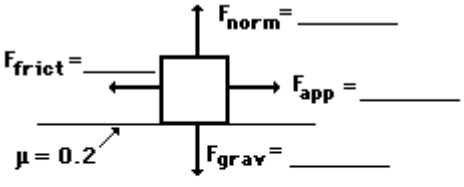


m = 6 kg

a = 0 m/s/s

F_{net} = _____

8. : A rightward force is applied to a 10-kg object to move it across a rough surface at constant velocity. The coefficient of friction between the object and the surface is 0.2. Use the diagram to determine the gravitational force, normal force, applied force, frictional force, and net force. (Neglect air resistance.)



m = 10 kg

a = 0 m/s/s

F_{net} = _____