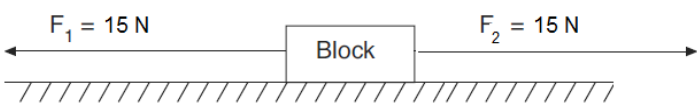
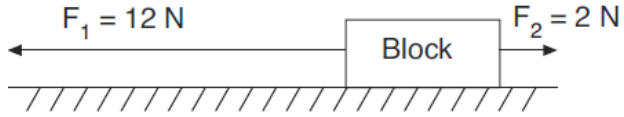
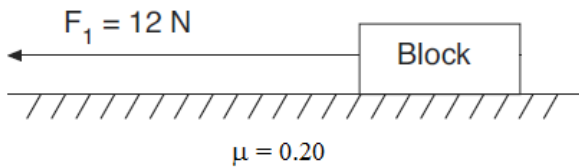


Newton's 2nd law and Friction
Honors Physics

Name _____

- A classroom desk supported by long legs is stationary in the room. A teacher comes around and pushes upon the desk in an effort to start it into a state of motion. The desk does not *budge*. The desk remains at rest because _____.
 - there is a force of static friction opposing its motion
 - there is a force of kinetic or sliding friction opposing its motion
 - there is a force of rolling friction opposing its motion
 - there are small dust mites at the desk's feet that push back on the desk to keep it at rest
- A classroom desk supported by long legs is stationary in the room. A teacher comes around and pushes upon the desk in an effort to start it into a state of motion. The desk is finally accelerated from rest and then moves at a constant speed of 0.5 m/s. The desk maintains this constant speed because _____.
 - there is a force of static friction balancing the teacher's forward push
 - there is a force of kinetic or sliding friction balancing the teacher's forward push
 - there is a force of rolling friction balancing the teacher's forward push
 - the teacher must have stopped pushing
- The symbol μ stands for the _____.
 - coefficient of friction
 - force of friction
 - normal force
- The units on μ are _____.
 - Newton
 - kg
 - m/s/s
 - ... nonsense! There are no units on μ .
- Which of these is NOT a force (circle all that apply)?
 - Friction
 - inertia
 - velocity
 - weight
 - air resistance
- Draw in all missing forces and label them. (F_w , F_f , F_N) Show all equations and work to determine all missing values. Be sure to indicate direction on each force and acceleration.

 <p>Two forces, F_1 and F_2, are applied to a block on a frictionless horizontal surface as shown. The mass of the block is 5.0 kg. Determine all of the values below.</p> <p>weight = _____</p> <p>Normal force = _____</p> <p>$\Sigma F_x =$ _____</p> <p>a = _____</p> <p>Is this block necessarily at rest? Explain.</p>	 <p>A force F_1 is applied to a block and there is a 2N force of friction on the block. The block accelerates to the left at a rate of 2 meters per second squared. Determine all of the values below.</p> <p>$\Sigma F_x =$ _____</p> <p>a = _____</p> <p>m = _____</p> <p>weight = _____</p> <p>Normal force = _____</p>
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One force, F_1 is applied to a block on a horizontal surface where the coefficient of friction is 0.20 as shown. The block has a mass of 3.0 kg. Determine all of the values below.

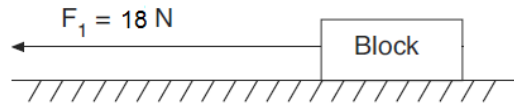
weight = _____

Normal force = _____

Frictional force = _____

$\Sigma F_x =$ _____

a = _____



One force, F_1 is applied to a 4.0 kg block on a horizontal surface where there is friction. The block is being dragged along at a constant velocity of 4.0 m/s. Determine all of the values below.

weight = _____

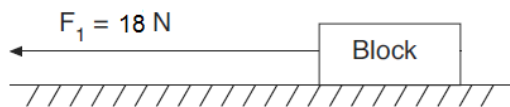
Normal force = _____

a = _____

$\Sigma F_x =$ _____

Frictional force = _____

$\mu =$ _____



One force, F_1 , is applied to a 4.0 kg block on a horizontal surface where there is friction. The block is speeding up at a rate of 0.50 m/s^2 . Determine all of the values below.

weight = _____

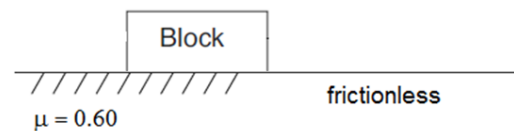
Normal force = _____

a = _____

$\Sigma F_x =$ _____

Frictional force = _____

$\mu =$ _____



A 3.0 kg block is initially sliding to the left with a velocity of 4.0 m/s on a frictionless surface when it hits a patch of asphalt where the coefficient of friction is 0.60. Determine all of the values below.

weight = _____

Normal force = _____

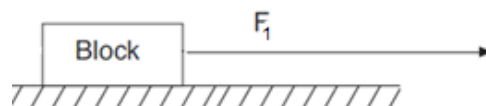
Frictional force = _____

$\Sigma F_x =$ _____

a = _____



One force, $F_1 = 45 \text{ N}$, is applied to a 6.0 kg block on a horizontal surface where there is friction. The block is being dragged along at a constant velocity of 2.0 m/s. What is the coefficient of friction?



One force, $F_1 = 15 \text{ N}$, is applied to a 4.5 kg block on a horizontal surface where the coefficient of friction is 0.15. Determine the acceleration of the block.