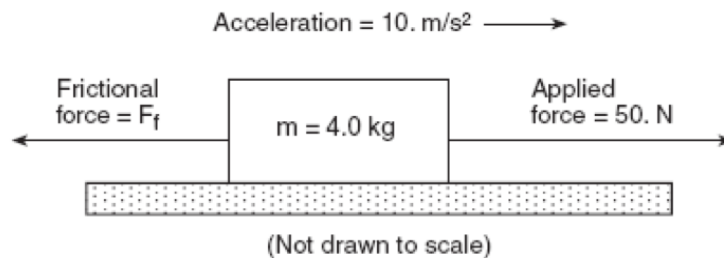


<b>Quantitative Problems</b> (Given, Find, Solution REQUIRED)
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1. A horizontal 8.0 [N] force applied to a 4.0 [kg] block that rests on a frictionless table. What is the magnitude of the block's acceleration?
2. A car of mass 6608 [kg] is traveling at 1.01 [m/s]. It then accelerates at 1.76 [m/s<sup>2</sup>], for 1.38 [s], what is the force acting on the car during this time?
3. The diagram below shows a 4.0 [kg] object accelerating at 10.0 [m/s<sup>2</sup>] on a rough horizontal surface. What is the magnitude of the frictional force  $F_f$  acting on the object?



4. A car of mass 5962 [kg] is traveling at 1.73 [m/s]. The driver steps on the gas which provides 6000 [N] of force that accelerates the car. However, 1844 [N] of frictional force acts to slow the car down. What is the acceleration of the car?
5. A rocket in deep space (a zero-gravity and zero air resistance environment) is traveling at 17,000 [m/s]. It uses its rocket boosters to apply a force of 10,000 [N] to accelerate to 20,000 [m/s] in 130 [s]. What is the mass of the rocket?

## Qualitative Problems

Short answer (in a complete sentence) or a fully labeled graph  
(Given, Find, Solution NOT required)

6. Describe how a rocket ship traveling in deep space (a zero-gravity and zero air resistance environment) can accelerate itself.

You may refer to the following website for the answers to the following questions

<http://www.physicsoftheuniverse.com/cosmological.html>

7. What is the meaning of the term “cosmos”?
8. What was Aristotle’s view of the cosmos? Draw a picture that depicts Aristotle’s view of the cosmos.
9. What was Ptolemy’s view of the cosmos? Draw a picture that depicts Ptolemy’s view of the cosmos.
10. What was Copernicus’ view of the cosmos? Draw a picture that depicts Copernicus’ view of the cosmos.
11. Imagine that the sun was to suddenly disappear into thin air.
- i. What would Newton say about how long we would still see light?
  - ii. What would Newton say about how and when the orbits of the planets would be affected?
12. Imagine that the sun was to suddenly disappear into thin air.
- i. What would Einstein say about how long we would still see light?
  - ii. What would Einstein say about how and when the orbits of the planets would be affected?

## HW Set 5 Answers

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1. 2 [m/s<sup>2</sup>]
2. 11,630.08 [N]
3. 10 [N]
4. 0.697 [m/s<sup>2</sup>]
5. 433.33 [kg]
- 6-12. Will discuss in class