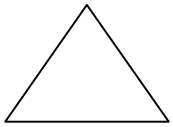
Part 2 NEWTON'S SECOND LAW

EQUATION : Force = mass X acceleration

F = m X a



SAMPLE PROBLEM : A soccer ball accelerates at a rate of 22 m/s/s forward when kicked by a player. The soccer ball has a mass of 0.5 kg. How much force was applied to the ball to produce this acceleration?

Force = mass X acceleration
Force = 0.5 kg X 22 m/s/s
Force = 11 N

Use the equation above to complete the following problems:

1. Calculate the force necessary to accelerate the following vehicles at the rate of acceleration show in the illustration.

2. How much force is needed to move a 0.1 kg snowball at a rate of 15 m/s/s upward?

3. At lift-off, an astronaut on the space shuttle experiences an acceleration of approximately 35 m/s/s upward. What force does an 80 kg astronaut experience during this acceleration?

4. What is the acceleration of a 7 kg mass if a force of 68.6 N is used to move it toward Earth?

5. What is the acceleration of a 0.3 kg ball hit with a force of 20 N?

6. What is the mass of an object if a force of 34 N produces an acceleration of 4 m/s/s?

7. What force is needed to accelerate a 1,000 kg car at a rate of 35 m/s/s?

8. What force is required to accelerate a 5 kg object to 6 m/s/s?

9. What is the mass of an object if a force of 17 N causes it to accelerate at 1.5 m/s/s?

10. What is the acceleration of a 10 kg object if a force of 3 N is applied to it?

11. What is the mass of an object that requires a force of 25 N to accelerate at 5 m/s/s?

12. How much force is required to accelerate an 1,800 kg truck at 3 m/s/s?