**Kinematics Combined with Dynamics**

1. A rock is thrown upward with a velocity of 12m/s from the top of a 35m cliff.
   1. How long would it take the rock to reach the bottom of the cliff if this takes place on Earth?
   2. How long would it take the rock to reach the bottom of the cliff if this takes place on Planet X? (Planet X has roughly 1/6th the mass of Earth and the same radius as Earth)
2. A 63kg hockey player is moving 12m/s. The player exerts a force 15000N to come to a stop. How far does the player slide before they stop?
3. A 33kg rocket is propelled from launch position directly upward from the surface of the Earth by a constant 750N force. How fast is the rocket going after it reaches 100m above the ground?
4. A cart is travelling at 15m/s to the left. It is pushed by a 3000N force to the right for 12 seconds. After the force is applied, it is travelling to the right at 3.7m/s. How much mass does the cart have?
5. A 2kg block slides over a surface with a coefficient of friction of 0.24. If it started moving with a velocity of 8.4m/s, how far will it go before it stops?