## AP Physics - Newton's Laws - 10

Name $\qquad$


The society which scorns excellence in plumbing because plumbing is a humble activity, and tolerates shoddiness in philosophy because it is an exalted activity, will have neither good plumbing nor good philosophy. Neither its pipes nor its theories will hold water. -- John W. Gardner

1. A rock is thrown at an angle of $35.0^{\circ}$ to the horizontal with a speed of $11.5 \mathrm{~m} / \mathrm{s}$. How far does it travel horizontally down field?
2. A 450 kg mass is accelerated at $2.5 \mathrm{~m} / \mathrm{s}^{2}$. (a) What is the force causing this acceleration? (b) If the mass of the car is doubled, what happens to the acceleration?
3. How much does a 34.5 kg gymnast weigh on earth?
4. A 2500 kg car is pushed with a 250 N force. (a) What is the acceleration acting on the car? (b) If the car starts from rest, what is the car's velocity at the end of 35 seconds?
5. A ball rolls down the ramp onto a smooth table and then onto the deck as shown. Find (a) the acceleration of the ball down the ramp and (b) the horizontal distance the ball travels when it falls off the table.

6. Add these vectors and find the resultant. Also find the angle it makes with the x axis.

