Physics

name _____ period ____

Inv-7 Expan Part VI $\sum F = ma$ & angles

sheet # ____

Show your work on the problems   ***box in answers***   ***No Naked Numbers !***

1.) A rocket (350 kg) has a propulsion force of 3900. N. What will be its acceleration off the launching pad?

2a.) A 500. kg rocket has a propulsion force of 8000. N. It has enough fuel to keep this propulsion for 15 sec off the launching pad. At this point the rockets shut off. How far off the launching pad will the rocket be when the engines shut down?

2b.) What will be the rocket's upward velocity at the time the engines shut down?

2c.) What will be the maximum altitude the rocket will achieve?
Hint: Add what you found from 2a to the free fall part you calculate here:

2d.) What will be the rocket's **total** time of flight?
Hint: Add what was given in 2a to the free fall time you calculate here:

2e.) EXTRA CREDIT: Draw the triplet graph (y vs. t; v_y vs. t; a_y vs. t) representing the rocket's vertical motion.

3.) A moving man slides a 700. N box across a wooden floor. The contact between the box and the floor causes a frictional force of 200. N. How hard does the man have to push on the box in the horizontal direction to give it an acceleration of 1.2 m/s²?