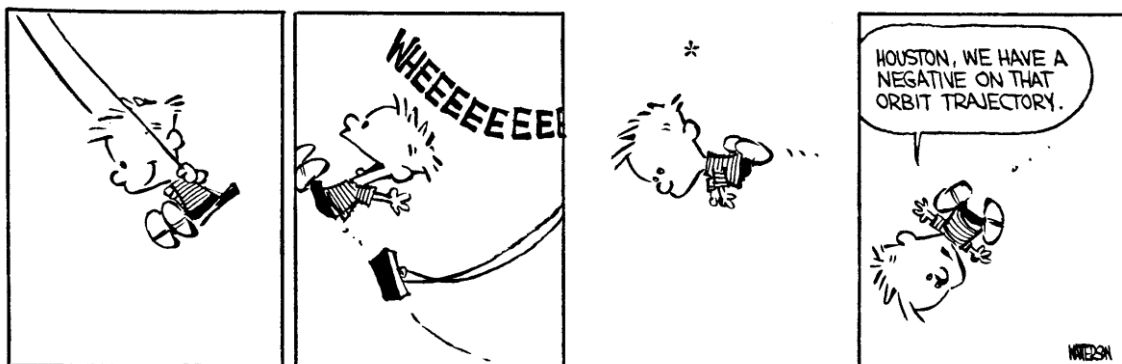


Who you? \_\_\_\_\_ Per \_\_\_\_\_



*Far away there in the sunshine are my highest aspirations. I may not reach them, but I can look up and see their beauty, believe in them, and try to follow where they lead. -- Louisa May Alcott*

1. A girl on a skateboard at rest, throws a bag of sand away from herself, giving it a speed of 12.0 m/s. The girl/skateboard's mass is 37.2 kg and the mass of the sandbag is 22.9 kg. What is the final velocity of the lass?
  
2. A 5.25 kg ball traveling rightward at 4.25m/s collides head on with a 2.00 kg ball traveling in the opposite direction at 3.55 m/s. If the final velocity of the second ball is 5.15 m/s rightward, (a) what is the final velocity of the first ball? (b) What is the change in kinetic energy?
  
3. A 65.0 kg astronaut at rest in space catches a 23.0 kg oxygen tank travelling at a speed of 6.25 m/s. With what velocity does the astronaut start to move through space?



9. A 2.35 kg ball is traveling at 5.30 m/s to the north. It glances off of a 2.75 kg ball that is at rest. The first ball ends up traveling to the west at 3.16 m/s. What is the final speed of the 2.75 kg ball?

10. A 1.50 kg block is pushed into a spring ( $k = 345 \text{ N/m}$ ) a distance of 25.0 cm. When the block is released it slides along a smooth surface and then up a ramp (elevation angle is  $32.0^\circ$ ). (a) What is the velocity of the block when it is released from the spring? If the length of the ramp is 1.20 m, (b) does the block slide off the end of the ramp? If it does not, how far up the ramp does it go?



11. A 2.50 kg stone ball hangs from two pieces of line as shown. The long line has a length of 76.0 cm. Find: (a) the tension in each of the cords. The short string breaks and the rock swings to the right. (b) find the speed of the ball at the lowest point in its travel.

