Name_____

Date_____ **Pd**____

Unit 6 Worksheet 1:

1. A bowling ball rolls down the hallway.

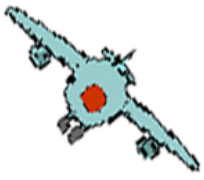
   a. To curve the ball turn in a smooth circular turn to the right, draw a picture to indicate how you would push on the ball to make it turn.

   b. While you are curving the ball's path, are the forces on the ball balanced? Draw a force diagram for the ball.

   c. Is the ball accelerating? If so, what is changing about the velocity?

2. An airplane banks and makes a wide circle.

   a. Draw a force diagram for a head-on view of the banking plane.



   b. Name the force that allows the plane to travel in a circle.

3. A car enters a circular turn.

    a. Name the force (the interaction between objects) that allows the car to travel in a circle. In what direction does this force push on the car? Draw a force diagram for the car as it approaches head-on.

    b. Describe the motion of the car if the force you described in part "a" suddenly vanished.

    c. If the 35 meter radius turn is level, the car has a mass of 1200 kg, and the coefficient of friction between the tires and the road is .85, what is the maximum speed that a car can travel through the turn?

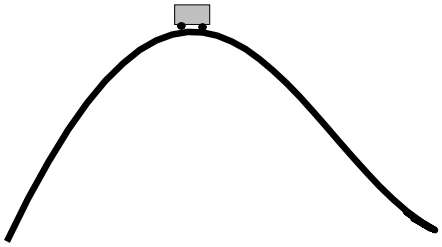
4. The international space station orbits earth once every 90 minutes.

    a. Name the force that allows the ISS to orbit earth.

    b. Explain why the space station doesn't crash to earth due to the force on it.

5. a. Draw a force diagram (side view) for a rollercoaster on level track. Should the forces perpendicular to the track be balanced? If the forces are unbalanced, explain why there is a net force and the direction of the net force.

b. Draw a force diagram (side view) for a rollercoaster traveling over the top of a hill. Should the forces perpendicular to the track be balanced? If the forces are unbalanced, explain why there is a net force and the direction of the net force.



c. Draw a force diagram (side view) for a rollercoaster traveling through a valley. Should the forces perpendicular to the track be balanced? If the forces are unbalanced, explain why there is a net force and the direction of the net force.