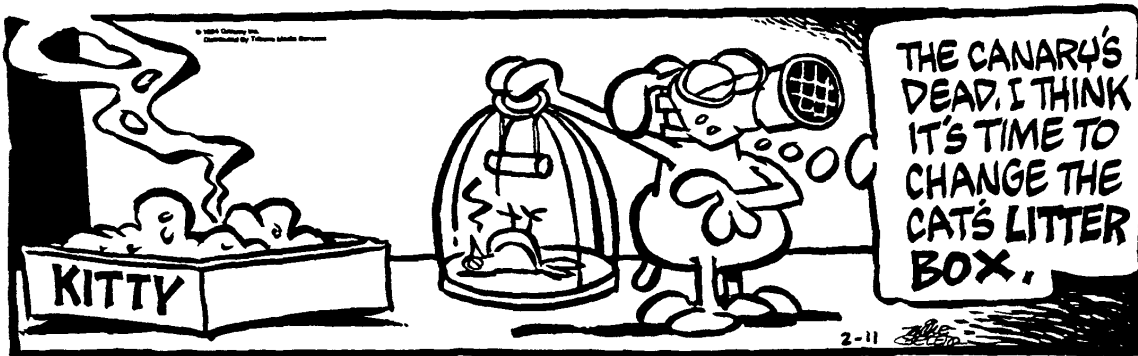


AP Physics – Gravity – 29

Bist du? _____ Per _____



What I see in Nature is a grand design that we can understand only imperfectly, one with which a responsible person must look at with humility. This is a genuine religious feeling and has nothing to do with mysticism. -- Albert Einstein

1. A 0.250 kg baseball traveling at 50.0 m/s is caught in a fielder's mitt. If the ball takes 0.0498 seconds to come to a stop in the mitt, what average force was exerted on the ball?

2. A 4.0 kg ball traveling to the right at 7.2 m/s collides with a 6.6 kg ball traveling in the opposite direction at 5.0 m/s. What is the velocity of the second ball (the 6.6 kg one) after the collision if the first ball ends up travelling at -8.9 m/s?

3. You weigh 625 N on Earth. What would you weigh on Venus? Venus' mass is 4.88×10^{24} kg and it has a radius of 6.07×10^6 m.

4. Neptune is 4.50×10^{12} m from the sun. Sun's mass is 1.99×10^{30} kg. Neptune's mass is 1.03×10^{26} kg. (a) What is the orbital velocity of this distant planet? (b) What is its period in units of *years*?

5. A 126 g ball rests on the edge of a table as shown in the drawing. A second ball of the same mass attached to a piece of string swings into the first ball and collides with it head on. The second ball ends up at rest after the collision. Find: (a) the speed of the swinging ball just before it collides with the resting ball, (b) the kinetic energy of the swinging ball just before it strikes the resting ball, (c) the time it will take the second ball to fall to the floor, (d) the distance x the second ball travels before it hits, and (e) the kinetic energy of the ball just before it hits the floor.

