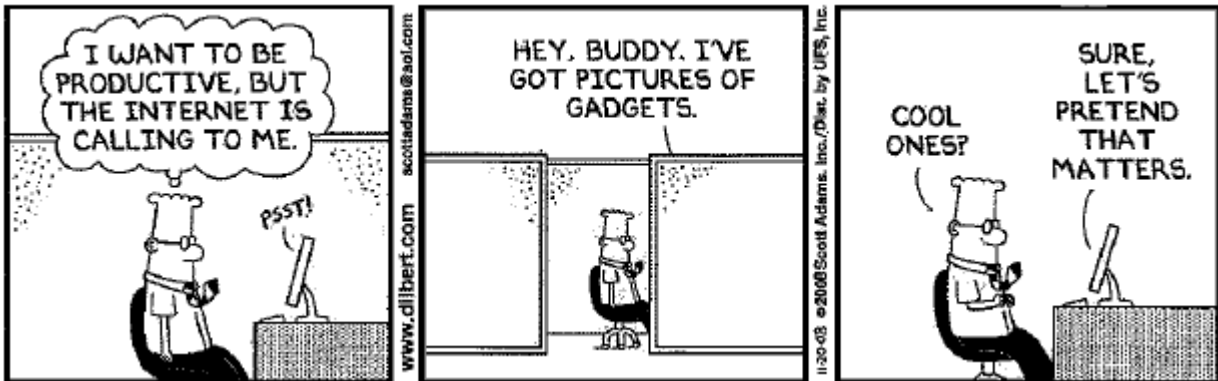


Identity of Student _____

Per _____



Life is no brief candle to me. It is a sort of splendid torch which I have got a hold of for the moment, and I want to make it burn as brightly as possible before handing it onto future generations. -- George Bernard Shaw

1. A 15 500 kg railroad car traveling at 3.85 m/s overtakes and couples with a 12 850 kg car traveling at 1.75 m/s in the same direction. (a) What is the new velocity of the two cars after they join up? (b) What is the change in kinetic energy?

2. A space hamster has a mass of 0.250 kg. It is 255 m from a 6 550 kg asteroid. What is the force of gravity acting between them?

6. A satellite in low orbit is 100.0 km above the earth's surface. What is its orbital velocity and period (in minutes)? Earth's radius = 6.37×10^6 m, Earth's mass = 5.98×10^{24} kg.

7. A 4 550 kg roller coaster goes through a 12.0 m diameter loop. What is the minimum velocity the coaster must have to make it through the loop?