PHYSICS

Energy Calculations Quiz

- **Work … [$W = fd$]**
- **Power … [$Power = W/t$]**
- **Potential Energy … [$PE = wt\ h$]**
- **Kinetic Energy … [$KE = \frac{1}{2}\ mv^2$]**
- **Work - Energy Theorem … [$W = \Delta KE$]**

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1. **A lifter lifts a 453.2 pound barbell 0.44 meters off the ground (1 lb is about 4.45 Newtons). How much *work* did he do in joules (1 j = 1Nm)?**

   Work = _____ j

2. **What is the *power* of a 500 horsepower truck that someone is driving to get several tons of McDonald's hamburgers, in watts? Remember that 1horsepower = 750 watts.**

   Power = _____ watts

3. **How much *potential energy* does a 55.8N rock have if it is on a cliff that is 321.2m above the valley floor? Remember that 1j = 1Nm.**

   PE = _____ j

4. **a) How much *change in Potential Energy* is accomplished by carrying a 6.7N bowling ball horizontally across the room for 99m? b) How about the work of lifting it 1.84m?**

   a) W = _____ j b) W = _____ j

5. **a) How much *kinetic energy* in joules does a .133kg ball thrown at 42.5m/s? b) How about 0.1kg bullet shot at 777.55 m/s?**

   a) KE = _____ j b) KE = _____ j

6. *****EXTRA CREDIT*****
   a) How much *work* in joules does a 666 kg car exert in slowing down from 25 m/s (which is about 90 km/hr or 60 mph) to 8.3 m/s (which is about 30 km/hr or 20 mph)?
   b) Since the formula [$KE = \frac{1}{2}\ mv^2$] has velocity being squared, how much more stopping distance will the car need at 90 km/hr compared to 30 km/hr?

   a) KE = _____ j b) stopping distance of _____ times more