Each question has one correct answer, or none (choose “e” on the clicker).

1. Maria is riding her bicycle on a flat road at 10 mi/hr. Then she squeezes the brakes and comes to a halt. Once that process is complete, the kinetic energy of Maria and her bicycle has mostly been converted to
   (a) potential energy
   (b) thermal energy
   (c) electrical energy
   (d) nuclear energy

2. Which of the following is a major advantage of electric cars compared to gasoline cars?
   (a) batteries have a lower energy density than gasoline
   (b) electric motors are more efficient than gasoline engines
   (c) electric energy cannot easily be converted to kinetic energy
   (d) compared to buying a gallon of gasoline, it is much cheaper to buy the equivalent amount of electrical energy

3. When we say sugar “contains” about 4 Cal per gram, we mean
   (a) it takes that much energy to vaporize a gram of sugar
   (b) that is the energy released when a gram of sugar is dissolved in water
   (c) that is the amount of useful work a human body can do using the energy from a gram of sugar
   (d) that is the energy released when sugar is burned to CO$_2$ and H$_2$O

4. How fast (to within 20%) would an object have to be traveling for its kinetic energy per gram to be the same as the chemical energy density of gasoline (10 Cal/g) ?
   (a) 1 m s$^{-1}$        (b) 100 km s$^{-1}$        (c) 10 km s$^{-1}$        (d) 1000 m s$^{-1}$