Midterm Preparation Quiz – Energy and Environment – Fall 2017

Name_____

1 inch = 2.54 cm 1 mile = 1.6 kilometers kilo– means 1,000 mega– means 1,000,000 1 foot = 12 inches
1 ton = 2000 lbs 1 kilogram=2.2 lbs milli– means 1/1,000 micro means 1/1,000,000 1 m = 100 cm

1) You drop a ball from a height of 10 meters above a sidewalk. As soon as you've let go of the ball, which of the following quantities related to the ball are changing with time? (You might answer more than one).
   A) velocity B) speed C) height
   D) position E) acceleration F) weight

2) You are in a car which is travelling on a straight, level section of road at a constant speed of 30 miles per hour. Which of the following quantities related to the car are changing with time? (You might answer more than one).
   A) velocity B) speed C) height
   D) position E) acceleration F) weight

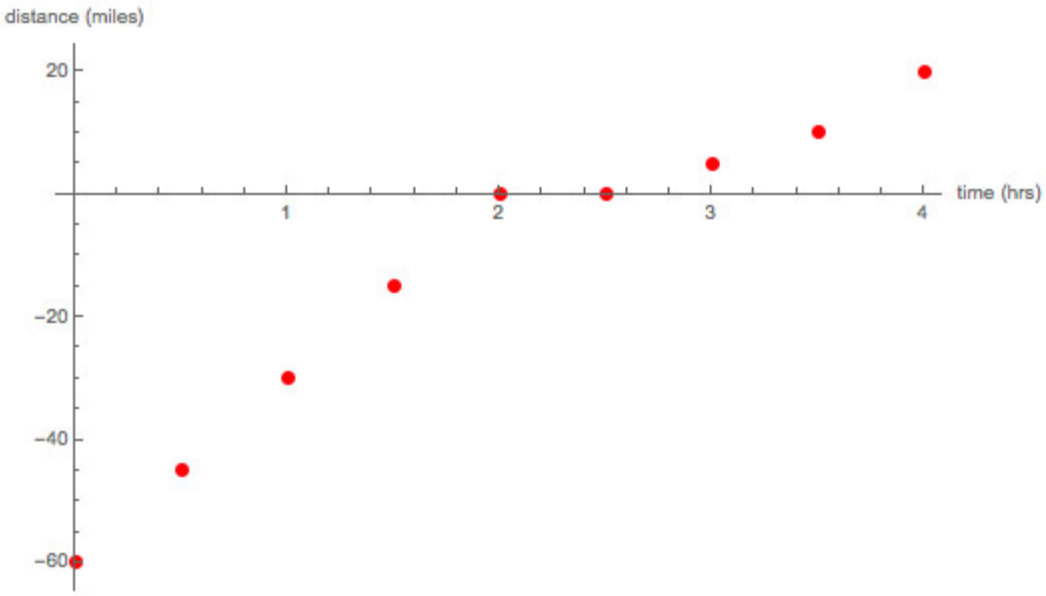
3) Jeff is 5 feet and 10 inches tall: 70 inches. What is his height in meters? (Show your calculations)

4) "Little Boy"--the atomic bomb that the United States Airforce dropped on Hiroshima--was a 15 kiloton bomb. That means it released the same energy as 15 kilotons of TNT. How many tons are there in 15 kilotons?
   A) 67 B) 15 C) 1,500 D) 0.067 E) 67,000 F) 15,000

5) Use your answer above: How many pounds (lbs) are there in 15 kilotons?

6) Some of these are the steps which describe how global warming works, due to greenhouse gases --GHGs--in the atmosphere. Some of these are *not* steps in that process. Select the correct steps and write the letters in the correct sequence which describes how global warming happens.
   A) The warmed objects emit infrared (IR) radiation.
   B) All of the IR radiation passes through the GHG's, so the energy is lost back to space.
   C) Some of the IR radiation is reflected by GHG's, trapping the energy in Earth's atmosphere.
   D) Light from the sun strikes objects (like roads) and is reflected, causing the objects to warm up.
   E) Sunlight is mostly absorbed by Earth's atmosphere.
   F) Light from the sun strikes objects (like roads) and is absorbed, causing the objects to warm up.
   G) Some of the IR radiation is absorbed by GHG's, trapping the energy in Earth's atmosphere.
   H) Sunlight mostly passes through Earth's atmosphere.
   J) Sunlight is mostly reflected by Earth's atmosphere.

7) The graph below shows the distance (from Goshen College) versus time that a train engineer recorded as she was passing through Goshen. (Negative distances mean she was South of GC. Positive means North of GC). What was the average speed of the train for the first two hours of the trip?



8) What was the average speed of the train during the whole 4 hours that are graphed?

9) Is there any time at which the train was not moving? Label on the graph where that happened, or else write 'at no time' below.

10) Is there any time at which the train was moving backwards (towards the south)? Label on the graph where that happened, or else write 'at no time' below.