Kinetic and Potential Energy Problems

Name_____

Use the equations for Potential Energy (PE) and Kinetic Energy (KE) on your formula sheet to complete the following energy calculations. Please use the 4-step problem-solving method that we have learned this year in class (Circle/bracket, list, formula, plug and chug). The steps are provided for questions 1 and 2, but be sure to do them for all of the problems afterwards too!

1. There is a 3 Kg coconut growing in the top of a coconut tree. The tree is 15 meters tall. What is the Gravitational Potential Energy (PE) of the coconut?

Formula Work Answer

PE=
m=
h=
g=

2. A crazy roller skater with a mass of 75 Kg is roller skating down the street at a velocity of 10 m/s. What is the kinetic energy (KE) of the roller skater?

Formula Work Answer

KE=
m=
v=

3. A giant rock with mass 400 Kg is sitting on top of a cliff that is 100 m tall. What is the PE of the rock at the top of the cliff?

4. During Mr. Ross's class, a giant bird flies into the window. If the bird has a mass of 2 Kg, and it was flying with a velocity of 18 m/s, what was its KE when it hit the window?

5. Mr. Clark rings the victory bell in Panther stadium, but it breaks and falls to the ground. If the bell has a mass of 22 Kg, and it was 1.5 m above the ground, what was the PE it had before falling?

6. Justin Bieber visits the school and a whole group of students run him over in their excitement. If the total mass of the students was 320 Kg, and they were all running at 6 m/s, what was the total amount of energy that the Beliebers hit Justin with?

7. Write in the blanks provided which main energy type each example is (Kinetic or Potential).

_____ Sunlight

_____ Tornado Sirens

_____ A Sugar cookie

_____ A runner

_____ A hot stove

_____ Electric blanket

8. Thermal energy (heat) is classified as kinetic energy, but when some things heat up, you can't see anything moving. Please explain why thermal energy is considered kinetic energy (draw a picture if it helps).

**9. A man is throwing eggs straight at the ground to try and hit a scary spider. If one egg has a mass of 0.1 kg and he throws them at a velocity of 15 m/s, then what is the TOTAL energy of the egg when it hits the ground IF the eggs are thrown from a height of 1.5 m ? (THIS IS A 2-step problem).

**10. TJ drops a 0.5 Kg bag of marshmallows out of a treehouse to his friend below during a campout. If the treehouse is 10 m high, what would the VELOCITY of the marshmallows be when they have fallen 8 m to his friend?