Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Kinetic Energy of Meteors**

Period: \_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_



*Q. How much energy would be released if a 1m3 CUBE*

*traveling at meteor speeds crashed into the earth?*

You will use the kinetic energy equation to calculate the energy:

KE = ½ (mass) x (velocity)2 -or- KE = ½ mv2

**KE = 0.5 \* m \* v \* v**

The **mass** of a cube of granite 1 meter on each side (volume = 1m3) = **2.262 Mega grams.**

Mega is a million in the SI system.

For reference, 2.262 Mega grams = 4987 lbs, the weight of a large truck.

Meteors travel at a range of velocities, from as low as 11 kilometers/second (km/s) to as high as 72 kilometers/second (km/s). For references, 11 km/s = 24,606 mph, and 72 km/s =161,059 mph.

Since there is a wide range of meteor velocities, you will do three kinetic energy calculations, each at a different speed as shown in the table below.

Do the KE calculation (use a calculator) and fill in boxes 1, 2, and 3 in the data table:

|  |  |  |  |
| --- | --- | --- | --- |
|  | velocity = 11 km/s | velocity = 30 km/s | velocity = 72 km/s |
| Kinetic Energy  of a granite cube  in **gigajoules**  (giga = 1 billion) | 1. | 2. | 3. |
| **Leave this row blank for now.**  # of 1m3 granite cubes this would melt: |  |  |  |

*(That is a lot of energy!)*

*How much energy does it take to completely melt rock?*

4.