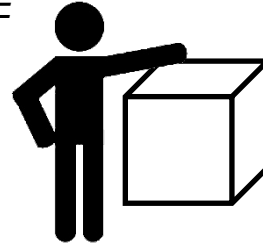


Kinetic Energy of Meteors

Name: _____

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:

$$KE = \frac{1}{2} (\text{mass}) \times (\text{velocity})^2 \text{ -or- } KE = \frac{1}{2} mv^2$$

$$KE = 0.5 * m * v * v$$

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 1m ³ granite cubes this would melt:			

(That is a lot of energy!)

How much energy does it take to completely melt rock?

4.