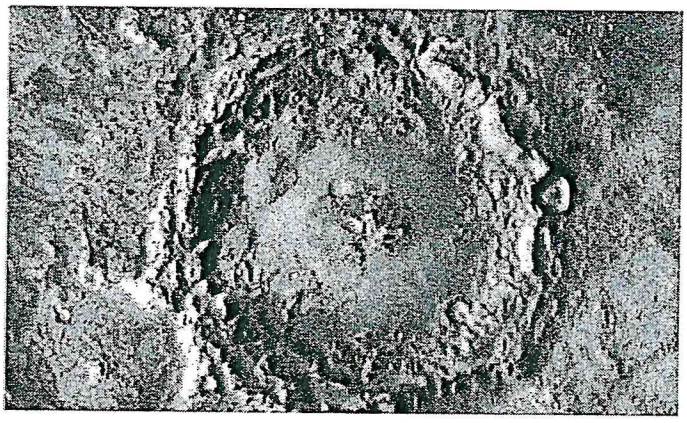
8.1.3 Task - How much does energy change? (Print 2 copies and place in plastic sleeves)

Guiding Question: ***How does the mass and velocity of a moving object affect its kinetic energy?***

Background Information:



Storyline: As a NASA engineer, you are designing transport vehicles to be used in future interplanetary missions. The transport vehicle will be traveling very fast when it hits the surface of the planet. As we design our vehicle, we must consider:

- *How much energy will be transferred to the vehicle at impact?*
- *How does it change with the size and speed of the lander?*
- *Which is the more IMPORTANT factor.*
- *Should we focus on making our vehicle LIGHTER or worrying about its VELOCITY?*

In physics, **KINETIC ENERGY** is the energy an object has BECAUSE of its motion. Kinetic energy is also a measure of how much change an object can cause.

- a *larger* moving object will do more damage (cause more change) than a *smaller* moving object.
- a *faster* moving object will do more damage (cause more change) than a *slower* moving object.

Task 1: Graphing Data

You will receive some experimental data that our NASA research scientists determined for the KINETIC ENERGY (measured in kilojoules (kJ) = 1000 Joules) of the impact of our lander.

1) Determine if you and your partner are graphing MASS vs KINETIC ENERGY or VELOCITY vs KINETIC ENERGY
2) Draw and label the axes for your data on the given graph paper
3) Label your axes with a proper SCALE so that your data will FILL the graph
4) Plot the points on your own paper
5) Connect the dots to see the relationship
6) When you are finished, compare your data with a team that recorded the OTHER set of data and answer the "data match" and analysis questions