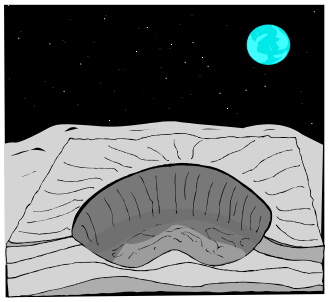


Does the weight of the ball affect the depth of the crater formed?

VARIABLES

I dropped balls onto some sand to make craters. The height at which the different balls were dropped at was the independent variable, where the depth of the crater was the dependent variable.

METHOD OF DATA COLLECTION

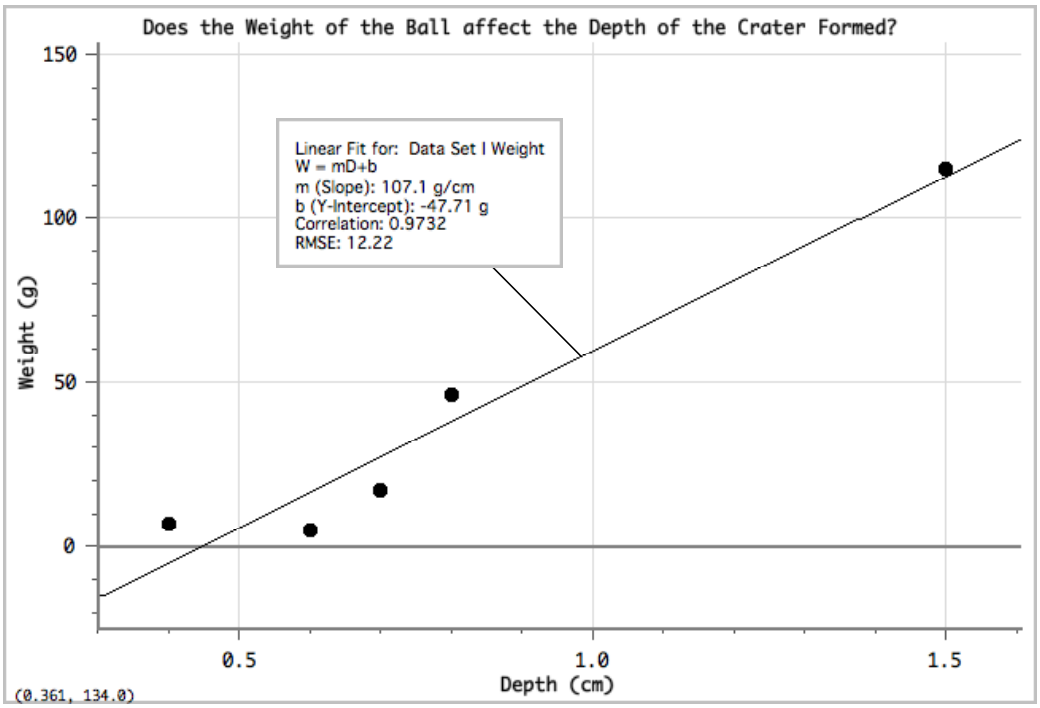
The height at which the ball was dropped from was kept the same, but the weight of each ball was changed. This was to show how the weight of the ball can affect the depth of the crater which it created. The height that the ball was dropped was 20 cm, and the original depth of the sand of 2 cm.

I used 5 different sized balls, a scale, a meter ruler, and sand in a tray. Firstly, the apparatus is to be assembled. When this was done I then began to weigh the different balls on a scale to find their different weights. I will choose the heaviest ball and drop it first. When the ball is dropped into the sand I then will measure the depth of the hole or crater that is made. The depth will be affected by the weight but also the amount of gravity acting on it, for example this is commonly shown on the moon when asteroids hit it and create large craters. Also I chose to use sand rather than then another type of material to drop the balls on as it was easier to measure the depth of each crater. After the depth of the crater has been measured with the largest ball, I will repeat this method three more times with the same ball to get an average. Each ball will follow the same method and each result will be put into a results table shown below.

Results Table

Weight / g	Depth / cm
115	1.5
46	0.8
17	0.7
7	0.4
5	0.6

And then you can see the data from the results table presented on the graph below.



CONCLUSION AND EVALUATION

By looking at the results shown in the graph is it seen that as the weight of the ball decreases so does the depth of the crater formed. The smallest ball weighed 5 g and had an anonymous [sic.] result when looking at the depth it made. This is seen as instead of following the trend of the weight and depth decreasing together, the weight decreased but the depth then increased. This may have been due to many problems of the experiment, for example to the depth of the sand at this time may have not been as deep; the ball may have also dropped in a previous crater formed by the last ball dropped, where the sand was not smoothed out. Other then this result the experiment was successful in showing a correlation between the results and a similar trend throughout. This was expected as it would follow the rules of gravity, and such like on the moon the greater the asteroid the bigger the crater left in the moon. So it was expected that the experiment would work as planned out to with all independent variables staying the same.

IMPROVEMENTS

Though the experiment was quite successful, I believe that it could be improved. If the experiment was to be altered the question being asked may be changed to see if the height at which the ball is dropped affects the depth of the crater, as this too would imitate a real asteroid hitting the moon. Also, improving the techniques to measure the depth in the sane was difficult, by using heavier objects to drop into it making the crater may have made it easier. Or a smaller more accurate ruler could have been used to do the measurements of the depth. When dropping the ball from 20 cm it was difficult to set the ball at the same point each time, though mainly accurate, it could have been measured with a pin or small stick to be more sufficient. Finally, when the ball was dropped into the sane, covering the crater for the next drop was hard as it had to make the same depth of sand as before at 2 cm. This I found was not always sufficient, nor easy for measure the depth of the sand with a larger ruler. In another experiment a smaller ruler again would be used.