 Folding a piece of paper

Can folding a piece of paper get you to the moon?

Get students to discuss the answer to this. How many times would you have to fold the paper? Would it matter how big the paper was or how thick it was?

Have students create a table similar to the one below to begin to consider the number of folds and the number of layers of paper. (Assuming we fold it in half each time)

| Number of folds | Layers of paper |
| --- | --- |
| 0 | 1 |
| 1 | 2 |
| 2 | 4 |
| 3 | 8 |
| 4 | 16 |
| 5 | 32 |
| 6 | 64 |
| 7 | 128 |
| 8 | 256 |

See if students can come up with a rule for the table.

Have students draw a graph from their table, either by hand or using technology such as Excel or DESMOS. Point out features of the graph, such as the y-intercept, how quickly it climbs and name of the graph ‘exponential’.

We can’t measure the thickness of a single sheet of paper but we can measure the thickness of a ream of paper (500 sheets).

Have students consider the thickness for different numbers of folds.

Given it is 384,400km to the moon. Have students predict how many folds this is (Answer: 42)

Discuss with students any flaws in their model (i.e. you can’t fold a piece of paper more than 7 times)