## Exponents and their power

An inquiry into exponents and exponential growth!





## Inquiry time!

How many times can you fold a piece of paper in half?



Get into small groups and consider the question above. Don't begin folding yet!

- Would the size/type of the piece of paper make a difference? Write your thoughts below:
- Could you use some resources to help you fold the paper better?
- Make a prediction-how many folds in half do you think you and your groupmates can make?



## Inquiry time

How many times can you fold a piece of paper in half?



- Start folding! Use any resources at your disposal (paper size/type, tools to help you fold, etc.)
- What did you find out?
  Were any groups able to get more folds in half than others?
- Are you surprised at the results?
- Write your relfections below:



## Reflection

Each time you fold the paper, it grows in height expoentially.

Are you ready for this...

If you were able to fold any piece of paper 45 times in half, it would be tall enough to reach the moon!!!

Folding the paper in half is a great way to conceptualize the power of exponents. While this paper folding activity shows exponential growth, its not the same way we would see it in mathematics.

Take a look below:

 $10^2 = 100$ 

 $10^3 = 1,000$ 

 $10^{4} = 10,000$ 

 $10^{5} = 100,000$ 

 $10^6 = 1,000,000$ 

It only took 4 steps for the 100 from 10<sup>2</sup> to reach 1,000,000 from 10<sup>6</sup> !!!!

Watch this video to learn more: