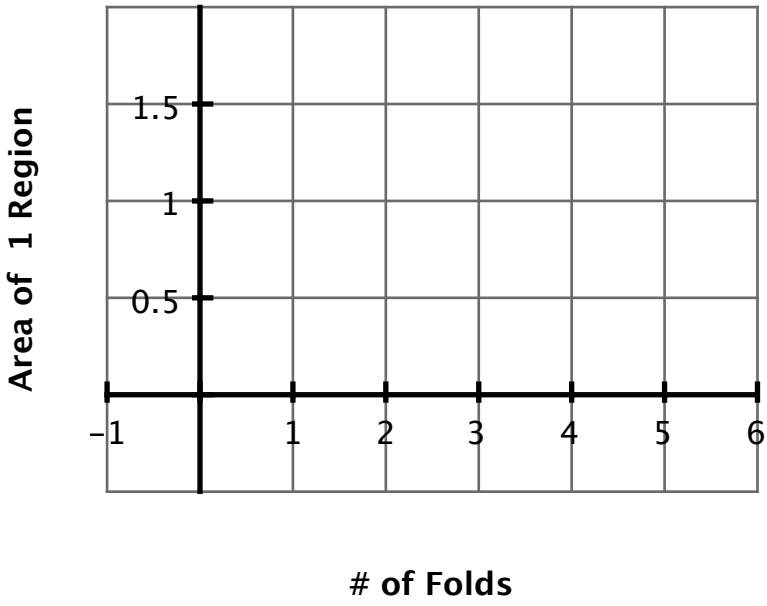
Paper Folding – Part II

Directions: Starting with a blank piece of paper, assume that the area of a full piece of paper is one square unit. After one fold, the area of each of the two regions would be ½ of a square unit. Record the area for zero folds and 1 fold in the "Area of each Region" column in the table below. If you **fold the paper** once more, what will the area of each region be (after folding the paper twice)? Record this in the table. Continue folding your paper and **recording the results** of the area of 1 region in relation to 1 whole square unit, through 6 folds. Once your table is complete, graph your results and answer the reflection questions.

# of Folds	Area of each Region
0	
1	
2	
3	
4	
5	
6	



1) What do you notice about the numbers in the right column of the table (Area of each Region)? (What is happening to the numbers?)

2) Describe what is happening in the graph.

Take out Paper Folding Part I from Day 2. Answer the following questions:

3) Describe how the **table** from Paper Folding Part II (today's activity) and the **table** from Paper Folding Part I are similar or different.

4) Describe how your **graph** from Paper Folding Part II (today's activity) and Paper Folding Part I are similar or different.

5) Go back to your table on page 1 and fill out the empty columns by re-writing the # of Regions using repeated multiplication, then as a **power**.

# of Folds	Area of each Region	Area of Each Region Written as Repeated Multiplication	Area of Each Region Written as a Power	Area of Each Region Written as a Negative Exponent
0	1	No folds, 1 flat sheet of paper		
1	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2^1}$	2^{-1}
2	$\frac{1}{4}$	$\frac{1}{2 \bullet 2}$	$\frac{1}{2^2}$	2^{-2}
3				
4				
5				
6				

a) Why is each answer in the repeated multiplication column a fraction? Where is the fraction coming from?

b) The **base** always has a 2 in it because _____.

c) When the area of each region is written as a power, where else do you see the exponent in the table?

d) If I continued folding my paper a 7^{th} time, my answer for the *Repeated Multiplication* column would be _____; my answer for the *Area of Each Region Written as a Power* column would be _____; and my answer *for Area of Each Region Written as a Negative Exponent* would be _____.

Independent Practice

6) Evaluate each expression.

a) $3^3 =$ b) $2^{-4} =$ c) $12^0 =$

d) $4^{-3} =$ e) $5^2 =$ f) $7^{-2} =$