Name(s)_____ Period _____ Date _____

Activity Guide - Flippy Do Part 1

Directions

Use your **Flippy Do/ Binary Piano** to answer the questions or use the **Interactive Binary Cards**

All 4-Bit Numbers: Fill in the binary equivalents for the decimal numbers below. We've started the first three for you.

Binary: 4-bit number	Decimal
0000	0
0001	1
0010	2
0011	3
0100	4
0101	5
0110	6
0111	7

Binary: 4-bit number	Decimal
1000	8
1010	9
	10
	11
	12
	13
	14
1111	15

What do you notice when you compare the odd numbers with the even numbers? What might explain this?

Binary Numbers with exactly one 1: Complete the chart with all 8-bit binary numbers that have exactly one 1. We've done the first two for you.

Binary: 8-bit number (with exactly one *1*)	Decimal
0000 0001	1
0000 0010	2
0000 0100	4
0000 1000	8

Binary: 8-bit number (with exactly one *1*)	Decimal

What do you notice about the decimal equivalents above?

Conversion Practice: Find the equivalent binary or decimal numbers below.

Binary	Decimal
100	
101	
1101	
0001 1111	
0010 0000	
1010 1010	
1111 1111	

Binary	Decimal
	5
	17
	63
	64
	127
	256
	513

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When you add a zero to the right of a decimal number, it multiplies its value by 10 (For example, “15” becomes “150”). What similar result happens to the value of a binary number when you add a zero on the right? (For example, “11” would become “110”).

Do the binary numbers “0011” and “000011” have the same value or different values? Explain.

Would two bits be enough to assign a unique binary number to each vowel in the English language? Explain.

How many bits would you need if you wanted to count up to the decimal number 1000?