



# Maggie's Activity Pack

Name \_\_\_\_\_

Date \_\_\_\_\_

## Googols of BIG Numbers!

Do you know how to write the number one googol? A googol is the name of one of the base-ten number names. Million and billion are other names that you might already know. In this activity, you will learn how to read and write HUGE numbers!

Before we start, let's learn a few important math facts. You may be used to putting a comma between three sets of numbers. Take a look at this set:

357,879,265

Is this the way you usually write three hundred fifty-seven million, eight hundred seventy-nine thousand, two hundred sixty-five?

Many people in the United States set off three sets of numerals with commas. Many other countries do not. They leave a space between the three sets of numerals. The United States Bureau of Standards now recommends leaving out the comma. They say we should just separate the three digits. This is the way to write big numbers according to this policy:

357 879 265

Name of number	Number of zeros after the 1
one thousand	3
one million	6
one billion	9
one trillion	12
one quadrillion	15
one quintillion	18
one sextillion	21
one septillion	24
one octillion	27
one nonillion	30
one decillion	33

This chart shows some really big number names!



Use numerals to write each BIG number. (We should continue to use commas when we write the names of numbers using words.)

1. Write this number:

four hundred twenty-nine trillion, eight hundred forty-two billion, six hundred fifty-five million, two hundred seventy-one thousand, two hundred eighty-seven

2. Write:

thirty-two quintillion, three hundred four quadrillion, eight hundred forty-nine trillion, nine hundred ninety-nine billion, two hundred eighty-four million, one hundred seventy-six thousand, nine hundred twenty-one.

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3. Write:

four hundred sixty-eight octillion, five hundred sixty-nine septillion, three hundred twenty-six sextillion, four hundred ninety-two quintillion, seven hundred thirty quadrillion, four hundred forty-eight trillion, one hundred fifty-three billion, two hundred sixty-one million, eight hundred twenty-three thousand, eight hundred thirty-nine

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4. Now try something new! Use words to write this BIG number:

568 840 469 248 253

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5. Try it again!

785 908 421 875 457 545 214 785

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Now let's learn about that really big number – the googol!

The word googol was made up by a nine-year-old boy named Milton Sirota. He is the nephew of a famous mathematician named Edward Kasner. Uncle Edward asked his nephew to come up with a name for a very large number. Milton said, "Googol!"

Have you ever "googled" something and come up with many Internet sites? When the Internet search engine Google was created, the makers wanted to name it after the number googol. They spelled it differently. Some people think it was a big spelling error and others think it was spelled Google for other reasons.

**And what is a googol? It is a number with one hundred zeros!**

Dear Colleague,

I find that children get excited about big numbers. Even adults were amazed when I began discussing the concept of googol! Of course, children need to do more than simply read and write big numbers, they also need to have an understanding of what these numbers mean. You may want to have a discussion with your class about the kinds of things that might be counted/represented using terms like googol. The army ants I saw “marching” through the rain forests came to mind right away when I thought about something that may be counted using googols. Ask your children to brainstorm other appropriate ways to use googol. You may even want to have children make a long strip showing what the number one googol would look like. Make this the centerpiece of a display and have children write about things to count using big numbers.

I am a big believer in math journaling. Not only do these journals give you a ready-made assessment of a child’s understanding of mathematical concepts, but they demonstrate growth over a school year. Why not have your students journal things to count using the various place value terms on the chart? This will get them thinking about the *meaning* of the numbers rather than merely memorizing terms.

One book that I find particularly helpful in discussions of big numbers is ***If the World Were a Village*** by David J. Smith. This book describes a village of one hundred people and using ratios, tells how many people would speak English, how many would earn less than a dollar a day, etc. Not only does this make a wonderful math lesson, but it is also a great social studies lesson. You may even want to have your older students do similar work for specific habitats like the ocean, rain forests, etc. I can just see the beautiful displays or PowerPoints you will create!

Happy teaching,

Kathy

**Answer Key:**

1. 429 842 655 271 287

2. 32 304 849 999 284 176 921

3. 468 569 326 492 730 448 153 261 823 839

4. five hundred sixty-eight trillion, eight hundred forty billion, four hundred sixty-nine million, two hundred forty-eight thousand, two hundred fifty-three.

5. seven hundred eighty-five sextillion, nine hundred eight quintillion, four hundred twenty-one quadrillion, eight hundred seventy-five trillion, four hundred fifty-seven billion, five hundred forty-five million, two hundred fourteen thousand, seven hundred eighty-five.

**Goals:**

Students will read and write large numbers. Instruction is presented and a chart helps students to complete activities involving the use of both numerals and words to write large numbers. The activity is available on the primary and intermediate levels and correlates with the National Principles and Standards Number and Operations Strand: Understand numbers, ways of representing numbers, relationships among numbers, and number systems. An emergent reader activity is also available.