

How Much is a Million? And a Billion?

Sarah Lonberg-Lew

BEFORE YOU READ: Read the article by Darly Corniel on pp. 6-10. Or at least read the first page.

What Does This Number Really Mean?

When I read Darly Corniel’s article, “What about Excluded Workers?,” I saw something that made me pause. I read that during the pandemic, “New York City lost 1.25 million jobs.” Often when I read stories with numbers in them, my eyes slide right over the numbers, but that number made me pause. I wondered, what does it really mean? The more I thought about it, the more questions I had:

How big is 1.25 million really? Is that a lot of jobs? Is it a lot compared to how many people are working in New York City? Is saying that 1.25 million jobs were lost the same as saying that 1.25 million people lost their jobs?

I started thinking about these questions. I really wanted to wrap my head around just how big 1.25 million is so that I could get an idea of what it means that 1.25 million jobs were lost. Another way of saying 1.25 million is “one and a quarter



million” or $1\frac{1}{4}$ million. That means a million and then another quarter of a million on top of that.

How big is a million anyway? I can count to one hundred pretty quickly. I think I could even count to one thousand. Could I count to one million? What about one billion?

How many zeros are in one million? Is it a lot more than a thousand? How many zeros are in one billion? Is it more than one million?

A Billion Is A Thousand Times More than a Million

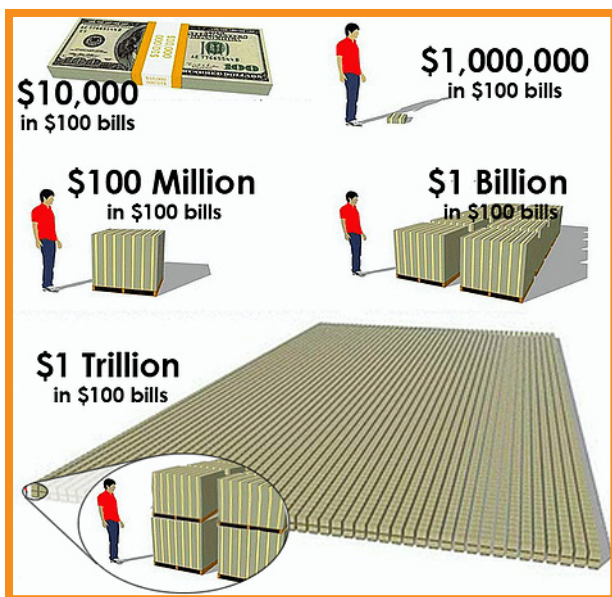
These questions are important to figure out because I hear words like million and billion and even trillion in the news, and I don’t usually stop to think about what they mean. I looked up the numbers of zeros in these numbers:

One million is 1,000,000.

One billion is 1,000,000,000.

One trillion is 1,000,000,000,000.

That’s a lot of zeros, but what do they really mean? I can count to 10 in a few seconds and to 100 in less than a minute. Does adding on more



Describe what you see in this image.

zeros really make a number that much bigger?

To get an idea of how big a million and a billion are, visit this [web page](#) where I used boxes of noodles and grains of rice to get a sense of a million and a billion. If you can't click on the link, read the box on the right for another way to wrap your mind around the meaning of these large numbers.

Putting 1.25 Million in Context

Now that you know how big 1.25 million is, here are a few other numbers to think about.

The population of New York City is close to 8½ million people. About 65% of the residents of New York City are between 18 and 65 years old. That is about 5½ million people.¹ How does knowing that there are about 5½ million working age people in NYC affect how you think about the 1.25 million jobs that were lost?

The article goes on to say that 75% of the jobs lost were low-wage jobs. 75% of 1.25 million jobs is 937,500 jobs. Those 937,500 jobs are more likely to have belonged to people living near or below the poverty line and to people of color. People of color are overrepresented in low wage jobs. For example, Black people represent 58% of workers in nursing care facilities but are less than 25% of the population overall.² This means that people of color were hit much harder than white people by the huge job losses.

Large numbers can look and feel abstract. But they represent real people, so it's good not to slide over them.

AFTER YOU READ: How would you describe the difference between a million, a billion, and a trillion?

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Sources: 1. <https://www.census.gov/quickfacts/newyorkcitynewyork>. 2. <https://nycfuture.org/research/stark-disparities-in-employment-and-wages-for-black-new-yorkers>; and <https://nycfuture.org/research/stark-disparities-in-employment-and-wages-for-black-new-yorkers> (Note: 24.3% identify as Black or African American only. An additional 3.6% identify as two or more races, so it could be more accurate to say "less than 30%" which would then include those who identify as Black and also as two or more races.) 3. <https://www.forbes.com/profile/jeff-bezos/?sh=3f78009b1b23>.



Think about It This Way!

To count to one million, if I counted one number every second, would take one million seconds. Is that a few hours? A few days?

It turns out, it would take me 11.574 days, or over a week and a half, to count to one million! Get a calculator and try doing the math yourself.

What about a billion? If it takes about 11½ days to count to one million, how long would it take to count to one billion? A few days? A few weeks? A month?

One billion has three more zeros than one million. Those extra three zeros mean that one billion is 1,000 times bigger than one million. That means it would take 1,000 times longer to count to one billion. $11.574 \times 1,000 = 11,574$ days, which means it would take 31.7 years to count to one billion! The next time you aren't sure about the difference between a million and a billion, think about how much more 31.7 years is than 11½ days!

What about a trillion? How long would it take to count to a trillion. Find out by multiplying 31.7 years by 1,000.

Here are a few places I've seen millions and billions recently:

- Jeff Bezos (founder of Amazon) has a net worth of over \$200 billion.³ (Net worth means cash plus assets minus any debt.) Jeff Bezos could give \$25 to every person on earth and still have over \$7 billion left.
- In April of 2020, Jeff Bezos gave \$100 million to Feeding America to support food banks. \$100 million sounds like a generous donation, but at that time Bezos's net worth was \$148 billion. His donation represented 0.067% of his net worth. That's less than one-tenth of 1%!

What about a trillion? Share a time you have heard about a trillion in the news.