

Lesson 5: Comparing Big Numbers

Getting Started

? Questions to Explore

- How does place value work?
- How can we use place value to name, create, and compare numbers to a million?
- How do we write and speak in mathematical language?

⦿ Skills

- Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form
- Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons

✂ Materials

- fine point dry-erase markers (kit)
- laminated place value chart (kit)
- M&Ms
- small baggies (2)

Introduction

To review comparing multi-digit numbers and practice using the $=$, $<$, and $>$ signs, have your child play the interactive game at the following web link.



Town Creator

www.beyondthepage.com/link/7464/

Click "Choose Number Range" and choose Level 4 (up to 9,999) or Level 5 (up to 99,000). Have your child work through the questions to unlock all seven building levels. Use the arrows at the bottom of the game screen to reverse, pause, play, or speed up the rotation of the town.

To prepare for the next activity, while your child plays the game, make two small baggies of M&Ms with the following colors and numbers of candies:

- Bag #1: 1 brown, 4 yellow, 7 red, 4 orange, 1 green, 2 blue
- Bag #2: 1 brown, 4 yellow, 3 red, 9 orange, 8 green, 6 blue

Once your child has had about five minutes to compare and order a range of numbers in the previous game, pose the following questions:

- If you're comparing two three-digit numbers, how do you know which one is greater? (the one with the higher digit in the hundreds place is greater)
- Can you use the same approach when comparing four-digit numbers? How? (yes, you look at digits in the thousands place)

- What if you're comparing two four-digit numbers and they have the same digit in the thousands place? (then you look at the digits in the hundreds place)

Make sure that your child understands that he should begin comparing numbers by counting the number of digits in each number. Next, if the numbers have the same numbers of digits, he should look at the digits in the largest places (the places on the left end) first. If those digits are the same, then he should look to the next smaller place. If those digits are also the same, he should then look to the next smaller place, and so on.

Give your child the laminated place value mat and dry-erase markers. He will write the following numbers in the rows provided on the mat as you dictate them:

- one million three hundred sixty-six thousand four hundred thirty-two (1,366,432)
- two million one hundred eighty-seven thousand one hundred twenty-two (2,187,122)
- one million four hundred sixty-five thousand two hundred sixty-two (1,465,262)

Now, pose the following questions as your child looks at the numbers:

- Which is the greatest number? (2,187,122)
- How do you know? (it has 2 in the millions place and the other numbers have only 1 in the millions place, it has more millions than the other numbers)
- Of the remaining numbers, which is the greatest? (1,465,262)
- How do you know? (it has more hundred thousands than the other number)

Activities

Activity 1: Comparing Numbers in the Millions

Give your child the baggies of M&Ms that you prepared during the Introduction activity, and ask, "Which baggie has a greater amount?" After your child answers the question, give him the "Which Has More?" sheet, and tell him to read the sheet and complete it as directed. Explain that he should be careful not to mix up the M&Ms in the different baggies.

Your child should find the following:

Baggie #1: 1,474,121

Baggie #2: 1,439,861

Baggie #1 has a greater amount.

Activity 2: U.S. City Populations

Show your child the "U.S. City Populations for 2019" sheet. Say, "These are numbers that show how many people lived in cities around our country in 2019. The cities are ranked in order from the cities with the greatest number of people to those with the smallest number of people."

As your child looks at the data provided on the sheet, pose the following questions. When answers require numbers, make sure that he reads them correctly:

- How many cities have more than one million people? (11)
- How many of those cities are in Texas? (4)

- Which city is ranked #17? (Indianapolis, Indiana)
- How many people does it have? (863,771)
- Why is Chicago ranked higher than Houston? How can you explain this using the numbers provided? (because it has more people, Chicago's population has 6 in the hundred thousands place and Houston's has 3 in the hundred thousand's place)

Now, give your child the "Working With U.S. City Populations" sheet, and tell him to complete it as directed. When he has finished this activity, he should save the "U.S. City Populations for 2019" sheet for an activity in the next lesson.

Answer Key:

1. Write the population of Phoenix, Arizona, in expanded form.
(1,000,000+700,00+10,000+1,000+300+50+6)
2. Which three populations in the top ten have 9 in the thousands place? Name the cities. (Chicago, Houston, Dallas)
3. Which cities have populations greater than 2 million? (New York City, Los Angeles, Chicago, Houston)
4. Write the population of Austin, Texas, in word form. (one million one thousand one hundred four)
5. Write > or < between the cities in each pair to show how their populations compare.
Los Angeles > San Diego
Fort Worth < New York City
Philadelphia > San Antonio
Dallas < Chicago

Wrapping Up

Provide time for your child to play the game at the following web link. It is similar to the game he played in the lesson introduction. While your child plays the game, check his work for this lesson. Look for patterns in items that he missed, and go over them with him, providing time for him to correct his mistakes.



Sea Life

www.beyondthepage.com/link/8303/

Click "Choose Number Range" and choose Level 4 (up to 9,999) or Level 5 (up to 99,000). Have your child work through the questions to unlock all six sea item levels. Use the arrows at the bottom of the game screen to reverse, pause, play, or speed up the submarine.

Learning Gates

Have your child take the [Learning Gates quiz](#) for this lesson.

Which Has More?



Each M&M has a given value based on its color as follows:

Brown = 1 and 1,000,000

Orange = 1,000

Yellow = 100,000

Green = 100

Red = 10,000

Blue = 10

Use the spaces below to figure out the numbers represented by each baggie. Count the M&Ms and enter the numbers of each color in the correct spaces. For example, if a baggie has 5 red M&Ms, then you should write "5" in the ten thousands place. When you write the numbers in the blanks provided, be sure to place the commas correctly!

Baggie #1:

Millions,	Hundred Thousands	Ten Thousands	Thousands,	Hundreds	Tens	Ones

What number does baggie #1 represent? _____

Baggie #2:

Millions,	Hundred Thousands	Ten Thousands	Thousands,	Hundreds	Tens	Ones

What number does baggie #2 represent? _____

Based on what you know now, which baggie has a greater amount? _____



Populations

Rank	City	State	2019 Population
1	New York City	New York	8,601,186
2	Los Angeles	California	4,057,841
3	Chicago	Illinois	2,679,044
4	Houston	Texas	2,359,480
5	Phoenix	Arizona	1,711,356
6	Philadelphia	Pennsylvania	1,576,596
7	San Antonio	Texas	1,565,929
8	San Diego	California	1,453,775
9	Dallas	Texas	1,379,735
10	San Jose	California	1,033,519
11	Austin	Texas	1,001,104
12	Jacksonville	Florida	920,984
13	Forth Worth	Texas	913,939
14	San Francisco	California	897,536
15	Columbus	Ohio	890,228
16	Charlotte	North Carolina	889,019
17	Indianapolis	Indiana	863,771
18	Seattle	Washington	766,893
19	Denver	Colorado	732,144
20	Washington, D.C.	n/a	713,549

Working With U.S. City Populations

Instructions: Use the data provided on the “U.S. City Populations for 2019” page to answer the questions and complete the tasks.

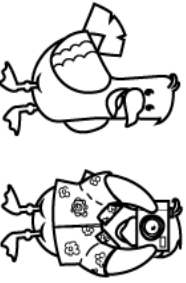
1) Write the population of Phoenix, Arizona, in expanded form.

2) Which three populations in the top ten have 9 in the thousands place? Name the cities.

3) Which cities have populations greater than 2 million?

4) Write the population of Austin, Texas, in word form.

5) Write $>$ or $<$ between the cities in each pair to show how their populations compare.



Los Angeles	_____	San Diego
Fort Worth	_____	New York
Philadelphia	_____	San Antonio
Dallas	_____	Chicago

