TOPIC 1

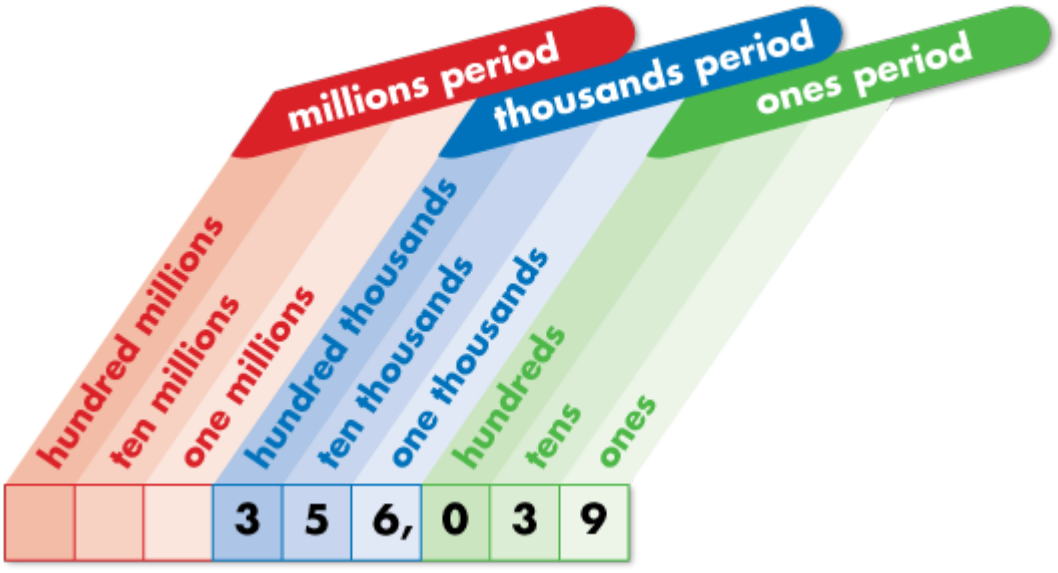
Generalize Place Value Understanding

OVERVIEW

Topic 1 extends your child's understanding of place value to one million. Your child will compare and round numbers using the relationship between the values of digits in different places.

PLACE VALUE

Represent Multi-Digit Whole Numbers This topic introduces your child to place values above 1,000 up to 1,000,000. Your child will learn the names for three periods, or groupings, of place value. Even though this topic involves numbers through the thousands period only, the millions period is shown so that your child can see the structure of the periods.



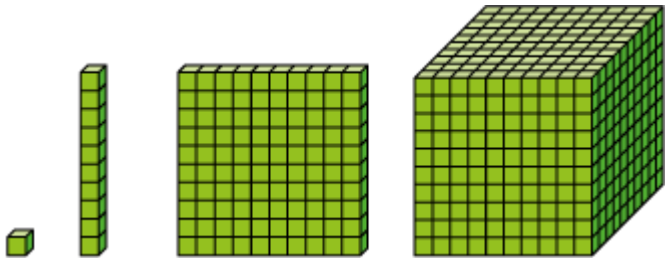
The period names are used to read and write multi-digit whole numbers using base-ten numerals (standard form), number names (word form), and expanded form.

Standard form: $356{,}039$
Word form: three hundred fifty-six thousand, thirty-nine
Expanded form: $300{,}000 + 50{,}000 + 6{,}000 + 30 + 9$

Place-Value Relationships The work your child does in this topic will develop these understandings of the number system:

It is based on groups of 10.
Ten digits are used, 0 through 9.
The position of a digit within a number, or its place, tells the value of the digit.
A digit in a place has a value that is 10 times the value that digit would have in the place to the right.

Your child will use place-value blocks to represent the places and to help see the relationships between them.



COMPARE AND ROUND WHOLE NUMBERS

Compare Multi-Digit Whole Numbers Your child will learn that the place values of digits in multi-digit whole numbers are used to compare and order numbers.

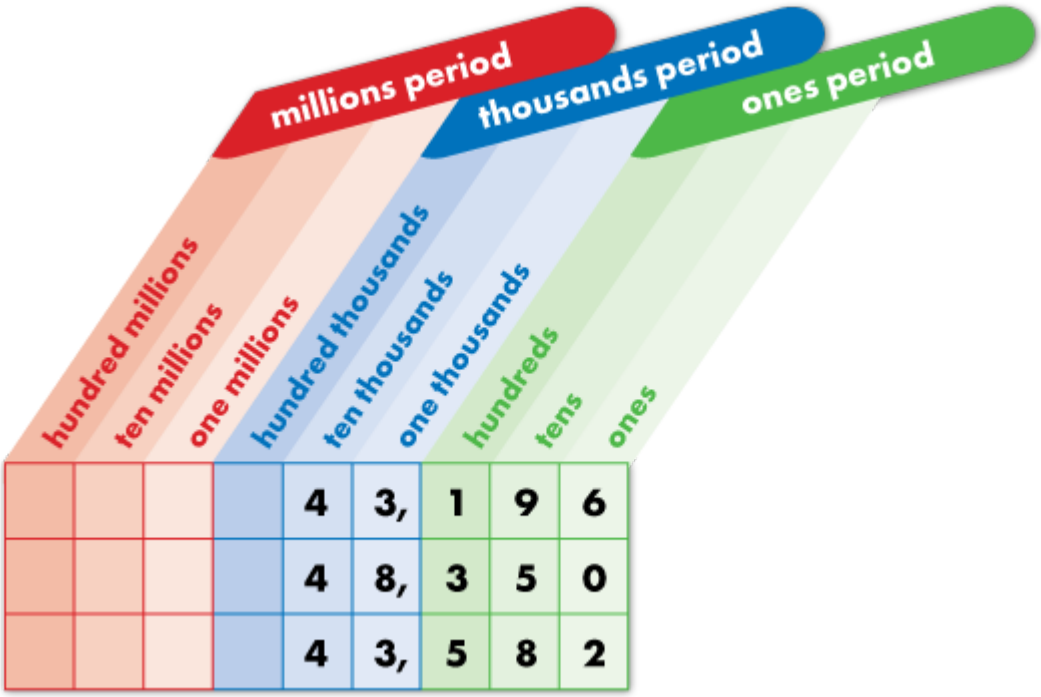
Use place value to compare 45,423 and 44,897. Start comparing from the left. Look for the first digit that is different.

45,423

44,897

$5 > 4$
$5{,}000 > 4{,}000$
So, $45{,}423 > 44{,}897$.

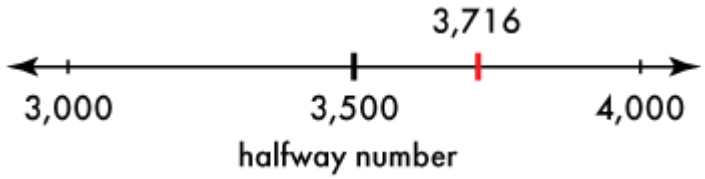
A place-value chart helps your child compare the places from left to right.



8,000 is greater than 3,000, so 48,350 is greater than 43,582 and 43,196. 500 is greater than 100, so 43,582 is greater than 43,196.

Round Whole Numbers Your child will learn how to round multi-digit whole numbers to any place. Rounding involves finding the nearest multiple of a specified power of ten (such as ten, hundred, or thousand) for a given number. The rounding process involves knowing the halfway point between multiples of powers of tens.

There is a mathematical agreement that numbers exactly halfway between two multiples are rounded to the greater number. A shortcut is to just look at the digit to the right of the rounding place. If it is less than 5, leave the rounding digit alone. If it is 5 or greater, add 1 to the rounding digit. Your child might use a number line to determine that 3,716 rounded to the nearest thousand is 4,000.



To find 9,679 rounded to the nearest hundred, find the digit in the rounding place, and then look at the next digit to the right. If that digit is 5 or greater, add 1 to the rounding digit. If the digit is less than 5, leave the rounding digit alone. Then change all digits to the right of the rounding place to 0.

CONNECT THE MATH

You can connect the math in this topic to everyday experiences. Look for numbers in the thousands in your daily activities. When you see a number, ask your child to name the number in different forms, to compare the number to another, and to round the number. For example, if you see that someone on social media has 3,578 followers, you might ask your child, "How would you write this number in expanded form? Is this number more or less than 3,587? About how many followers is this, to the nearest hundred?" Then ask, "How many is that to the nearest thousand?"

TOPIC 1 LESSONS

Construct Arguments

LESSON 1-1

Numbers Through One Million

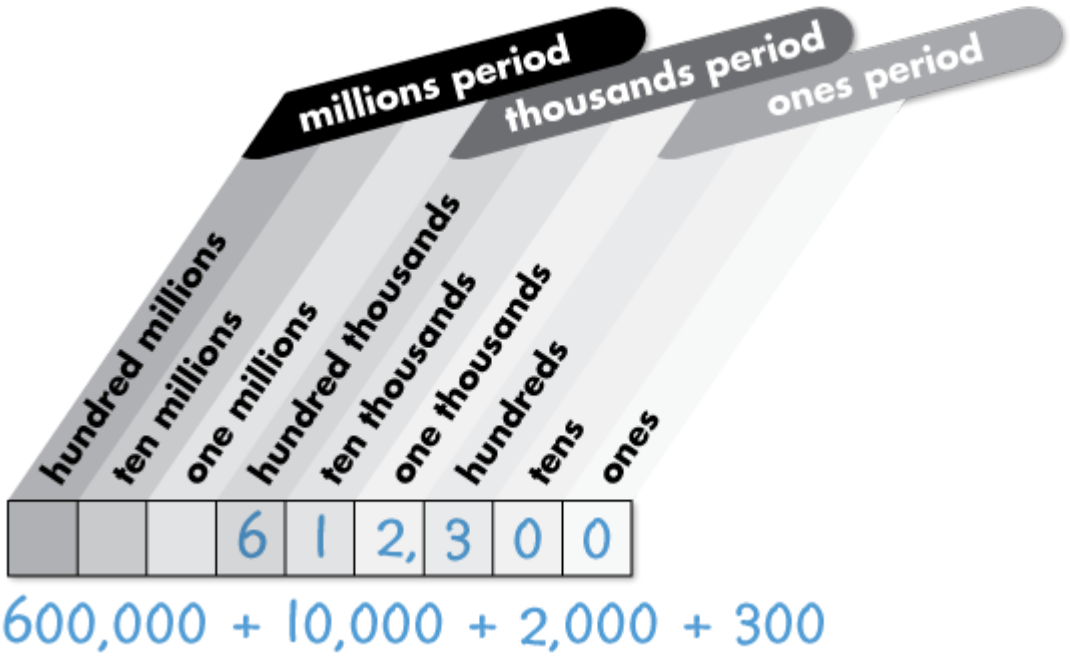
Lesson Objective

For more help with this lesson, view the Visual Learning Animation or the Another Look Video.

MATH HELP AT HOME

Sample Additional Practice Exercise 1

Write six hundred twelve thousand, three hundred in the place-value chart. Then write the number in expanded form.



Expanded form shows the sum of the values of each digit.
6 hundred thousands is written as 600,000.

1 ten thousand is written as 10,000.
2 one thousands is written as 2,000.
3 hundreds is written as 300.

HOME ACTIVITY

Roll to a Million

MATERIALS

Number Cube, Paper, Pencil

ACTIVITY

Have your child roll a number cube 6 times while you record the numbers to create a 6-digit number. Together, decide where to write the comma in this number and do so. Then ask your child to read aloud the number. Here is an example: your child rolls 4, 2, 3, 5, 6, 1, you write 423,561, and your child says "four hundred twenty-three thousand, five hundred sixty-one." Check your child's words. Switch roles: you roll the number cube 6 times, your child writes the 6-digit number with a comma, you read aloud the number, and your child checks your words. Repeat several times for more practice.

LESSON 1-2

Place Value Relationships

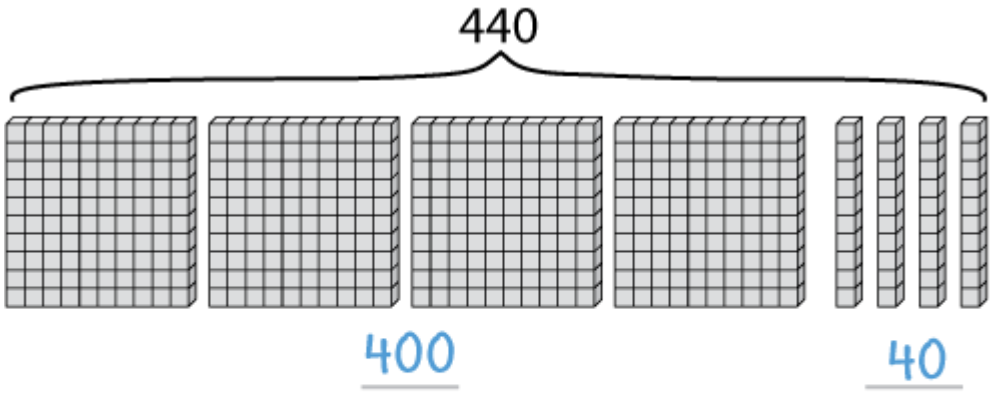
Lesson Objective

For more help with this lesson, view the Visual Learning Animation or the Another Look Video.

MATH HELP AT HOME

Sample Additional Practice Exercise 1

Write the value of the digit in the hundreds place and the value of the digit in the tens place for 440. What is the relationship between the values of those two digits?



The 4 in the hundreds place has a value 10 times as great as the 4 in the tens place.

The place-value blocks show 4 hundreds and 4 tens: $400 + 40 = 440$. One hundred is 10 times as great as one ten, so 4 hundreds is 10 times as great as 4 tens.

HOME ACTIVITY

Place Value Switcheroo

MATERIALS

Playing Cards

ACTIVITY

Play this card game with your child. Remove all Aces, 10s, Jacks, Queens, and Kings. Count the remaining cards to check that you have 32. Shuffle the cards. Have your child choose 3 cards to lay on the table to create a 3-digit number. Point to one digit and ask your child what the value of this digit is. Here is an example: the number is 483, you point to the 8, and your child should say its value is 80. Now switch the card to another place in the number and ask your child to tell you what the value of the digit is now. In this example, you might switch the 8 to the hundreds place to make the number 843. Now the value of the 8 is 800. Repeat with other cards, making 3-, 4-, and 5-digit numbers.

LESSON 1-3

Compare Whole Numbers

Lesson Objective

For more help with this lesson, view the Visual Learning Animation or the Another Look Video.

MATH HELP AT HOME

Sample Additional Practice Exercise 1

Complete by writing $>$, $=$, or $<$ in the circle.

854,376 is greater than 845,763 because 854,376 has 50 thouands while 845,763 only has 40 thousands.

HOME ACTIVITY

Build It Big

MATERIALS

Playing Cards

ACTIVITY

Play this card game with your child. Remove all Aces, 10s, Jacks, Queens, and Kings. Count the remaining cards to check that you have 32. Shuffle the cards. Deal 4 cards face-down to each player. Each player arranges the 4 cards to build the greatest possible 4-digit number. Players lay down their cards and say their number. The player with the greater 4-digit number gets all 8 cards and puts them in a pile. Make sure both players agree on which number is greater. Deal 5 new cards, build 5-digit numbers, and compare to see who gets the cards. Finally, deal 6 new cards, build 6-digit numbers, and compare to see who gets the cards. Each player counts the cards in their pile, and the player with the most cards wins. Play several times.

LESSON 1-4

Round Whole Numbers

Lesson Objective

For more help with this lesson, view the Visual Learning Animation or the Another Look Video.

MATH HELP AT HOME

Sample Additional Practice Exercise 1

Use place value or a number line to round the number to the place of the underlined digit.

$$\underline{1}60{,}656$$

$$200{,}000$$

The digit 1 is underlined and in the hundred thousands place, so round to the nearest 100,000. Decide if 160,656 rounds to 100,000 or to 200,000. The number halfway between 100,000 and 200,000 is 150,000, and 160,656 is greater than the halfway number. So, 160,656 rounds to 200,000.

HOME ACTIVITY

Round and Round

MATERIALS

Playing Cards, Paper, Pencil, Highlighters or Colored Pencils

ACTIVITY

Remove all 10s, Jacks, Queens, and Kings. Let Aces equal 1. Count the remaining cards to check that you have 36 and shuffle. Play this card game with your child to practice rounding.

Round 1 (round to the nearest 10): Deal all the cards to two players. Write these numbers to keep score: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100. Take turns playing 2 cards to form a 2-digit number that rounds to a number on the sheet. Use your color to highlight the number you rounded to; this number cannot be used again. Continue to play until all numbers are highlighted. The winner has the most numbers highlighted (a tie is likely).

Round 2 (round to the nearest 10): Like Round 1, but you deal only 10 cards each to two players. If a player has a turn and no cards work, the other player can continue to play and score.

Round 3 (round to the nearest 100): Deal all the cards to two players. Write these numbers to keep score: 100, 200, 300, 400, 500, 600, 700, 800, 900, 1,000. Take turns playing 3 cards to form a 3-digit number that rounds to a number on the sheet. Keep score and play as in the other rounds.

Round 4 (round to the nearest 1,000): Deal all the cards to two players. Write these numbers to keep score: 1,000; 2,000; 3,000; 4,000; 5,000; 6,000; 7,000; 8,000; 9,000; 10,000. Take turns playing 4 cards to form a 4-digit number that rounds to a number on the sheet. Continue to play until all cards are used.