

Second Grade Nemeth Braille Code Curriculum
Module 3: Place Value, Numbers to 1000, and the
Contracted Form of the Horizontal Bar

It is almost time to get on the road! Before we begin our journey, let's review skip counting by 10 to 120.

Note: *As needed, the Counting to 120 Chart can be used. Please note the chart incorporates a 40 cell line. There is not a title in the braille document so that all of the numbers fit on one page. In addition, there are multiple counting songs available online if you would like to incorporate music into the counting activities.*

10 20 30 40 50 60 70 80 90 100 110 120

Super skip counting! Let's skip count by 10 to 200 together!

10 20 30 40 50 60 70 80 90 100

110 120 130 140 150 160 170 180 190 200

Now you try skip counting by 10 to 200 by yourself!

10 20 30 40 50 60 70 80 90 100

110 120 130 140 150 160 170 180 190 200

You got it! Now let's skip count by 100 to 1000 together.

100 200 300 400 500 600 700 800 900 1000

Let's practice once more together!

100 200 300 400 500 600 700 800 900 1000

Now you try skip counting by 100 to 1000 by yourself! You can do it!

100 200 300 400 500 600 700 800 900 1000

Excellent! Since it time to go, let's call for a taxi and ensure that we have enough money to pay the taxi driver for taking us to our destination.

We will need to check the time often because it is important for us to be outside and ready to leave when the taxi arrives! While we wait until it is time for us to go outside, locate and read the title at the top of the page.

Yes, it says Second Grade Nemeth Code Curriculum Module 3: Place Value, Numbers to 1,000, and the Contracted Form of the Horizontal Bar.

Now, move your hands down to the seventh line of braille on the page. There is just one symbol on the line. What is this symbol called and what is its purpose?

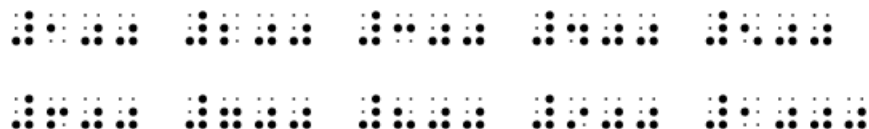


You got it! It is called an opening Nemeth Code indicator, and it tells us that we are going to read math or science.

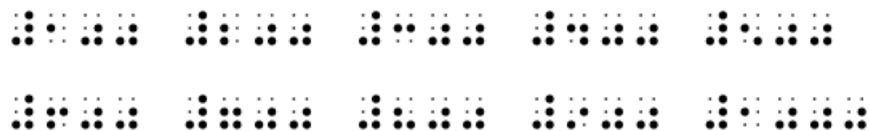
Fun fact: A taxi is a car or van used for public transportation. You can tell the driver where you want to go, and unlike a bus or train, they will take you to your destination directly!

The taxi has arrived! The driver will help us stow our bags in the trunk and then we will get into the back seat of the taxi and put on our seatbelts.

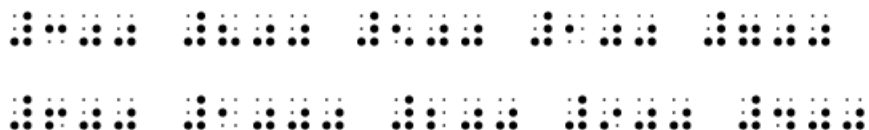
During the first part of our journey, let's learn how to read numbers to 1000. We will begin by reading the numbers used to skip count by 100 to 1000. There will be five numbers on each line.



Read the numbers once more by yourself!



You got it! Now read the same numbers. They will be in a different order this time.



Very nice! Now let's practice reading numbers from 1-300. Continue to the next line of braille on page 1 and read just the numbers.

Note: *Ensure that the student knows how the numbers over 100 are voiced. For example, 101 is voiced as one hundred one, and 215 is voiced as two hundred fifteen. Notice that the word "and" is not used when voicing whole numbers.*

1111 1111 1111 1111
 1111 1111 1111 1111 1111
 1111 1111 1111 1111
 1111 1111 1111 1111 1111
 1111 1111 1111 1111
 1111 1111 1111 1111 1111 1111 1111 1111 1111

Activity time: Use your flash cards to practice reading numbers ranging from 1 to 600. Once you can read all of the numbers correctly, go back and time how quickly you can read the numbers! Do you think you can read the numbers even quicker? If so, try one more time! You can do it!

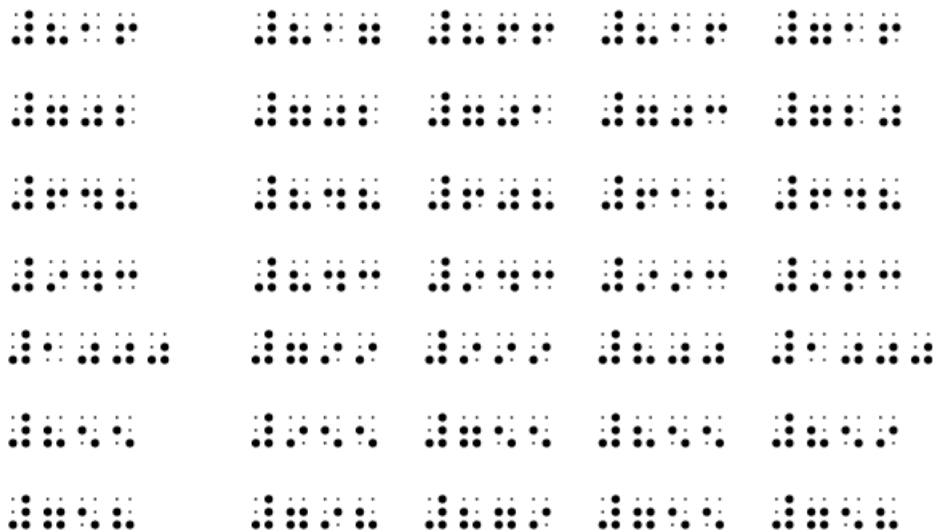
Congratulations! You are a Nemeth champion!

Fun fact: Taking a taxi to your destination is usually more expensive than taking a bus or a subway.

Beginning at the top of page 3, practice reading numbers from 601-1000. There will be 3 numbers on each line.

1111 1111 1111
 1111 1111 1111
 1111 1111 1111
 1111 1111 1111
 1111 1111 1111
 1111 1111 1111
 1111 1111 1111

You got it! Continue to the next line of braille and read the number at the beginning of the line. Then find its match on the line of braille and say “found it” when you find the match!



Fun fact: Similar to taxis today, carriages pulled by horses in London and Paris in the 1600s could be hired by individuals in need of transportation.

Activity time: Use your flash cards to practice reading the numbers 1-1000. Once you can read all of the numbers correctly, go back and time how quickly you can read the numbers! Do you think you can read the numbers even quicker? If so, try one more time! You can do it!

Note: *This would be a good time to use a two-compartment sorting tray.*

Congratulations! You are a Nemeth champion!

While we continue our journey in the taxi, let’s review how to use base ten blocks (or Digi-Blocks) to help us build three-digit numbers.

Note: *Place the units, rods, and flats in different containers, baskets or bowls. If preferred, Digi-Blocks (a different type of base ten blocks that nest) can be used.*

Use your hands to explore the blocks in the three baskets. Do you remember what we call the small blocks?

Yes, they are called units. What do you call the long, narrow blocks?

You got it! The long, narrow blocks are called rods.

If we place ten rods beside each other, they would be the same size as the large square blocks in the last basket.

What do you call this large square block?

That is correct! We call this block a flat.

The flats contain ridges. If we counted the number of squares on each flat, we would discover that there are 100 squares.

Note: *Show Place Value Chart_3 (available in contracted and uncontracted braille within the curriculum) to the student.*

Use your hands to explore a new place value chart that includes a column for thousands. Let's find the title and read it together. Where will we find the title?

That's right, pilot! The title will be at the top of the page. The title is Place Value Chart 3.

Notice that there are three lines going down the page. Find the column headings toward the top of the page, and I will help you read them from left to right.

The column on the left is thousands, the second column is hundreds, the third column is tens, and the column on the far right is ones.

Note: *A four-compartment sorting tray may be used as the place value chart. From left to right, label the compartments thousands, hundreds, tens, and ones in braille. The sorting tray may assist students in easily keeping their flats, rods, and unit blocks in the correct columns.*

As you already know, each unit block represents one, each rod represents ten, and each flat represents one hundred. In addition, a cube represents one thousand. We place our block called a cube in the thousands column and the blocks called flats in the hundreds column, the rods in the tens column, and unit blocks in the ones column.

Note: *If needed, model placing the blocks in the correct column using hand-under-hand technique. If you do not have a thousands cube, you may be able to borrow one from a general education second grade teacher.*

Let's work together to use base ten blocks (or Digi-blocks) and the place value chart to represent 116.

It will be important to remember that the position of each digit in a number shows its value. Begin by asking yourself what digit is in the ones column.

Yes, six is in the ones column. Then ask yourself what digit is in the tens column?

Yes, one is in the tens column. Now ask yourself what digit is in the hundreds column?

You got it! There is a second one in the hundreds column.

So if there is a one in the hundreds column, a one in the tens column, and a six in the ones column, how many flats, rods, and unit blocks do you need?

You got it! We will need 1 flat, 1 rod, and 6 unit blocks. Where would we place the blocks on the place value chart?

Excellent! The flat will go in the hundreds column, the rod will go in the tens column, and the units will go in the ones column.

So one hundred sixteen equals 1 hundred, 1 ten, and 6 ones.

Let's try another one together. The number is 124.

Begin by asking yourself what digit is in the ones column.

Yes, four is in the ones column. Then ask yourself what digit is in the tens column?

Yes, two is in the tens column. Now ask yourself what digit is in the hundreds column?

You got it! There is a one in the hundreds column.

So if there is a one in the hundreds column, two in the tens column, and a six in the ones column, how many flats, rods, and unit blocks do you need?

You got it! We will need 1 flat, 2 rods, and 4 unit blocks. Where would we place the blocks on the place value chart?

Excellent! The flat will go in the hundreds column, the rods will go in the tens column, and the units will go in the ones column.

Is this the only way that I could have built the number 124?

No, I could have built 124 in multiple ways.

Note: *If needed, model counting rods as you as skip count using hand-under-hand technique.*

For example, I could have built 124 by using 12 rods and 4 unit blocks. I used skip counting by 10s to figure out how many rods that I needed.

10 20 30 40 50 60 70 80 90 100 110 120

So I need 12 rods to build 120. Then if I add 4 unit blocks, I have 124.

I could have also built 124 with 124 unit blocks.

Fun fact: Wilhelm Bruhn invented the taximeter in 1891. The taximeter is a mechanical device that calculates the fare. Today, electronic taximeters are used.

Now let's work together to build 378. Begin by asking yourself what digit is in the ones column.

Yes, eight is in the ones column. Then ask yourself what digit is in the tens column?

Yes, seven is in the tens column. Now ask yourself what digit is in the hundreds column?

You got it! There is a three in the hundreds column.

So if there is a three in the hundreds column, seven in the tens column, and an eight in the ones column, how many flats, rods, and unit blocks do you need?

You got it! We will need 3 flats, 7 rods, and 8 unit blocks. Show me where the blocks should go on the place value chart.

Excellent! The flats will go in the hundreds column, the rods will go in the tens column, and the units will go in the ones column.

How else could you have built the number 378?

Note: Depending on the child's response, the following questions may be needed. Can you represent 378 using unit blocks? If so, how many unit blocks do you need? If not, why not? That's right. You would need 378 unit blocks. Can you represent 378 using only rods and unit blocks? If so, how many of each kind do you need? Can you use skip counting to help you figure out how many rods you will need? If not, why not?

Let's build three more numbers together, beginning with 649.

Begin by asking yourself what digit is in the ones column.

Yes, nine is in the ones column. Then ask yourself what digit is in the tens column?

Yes, four is in the tens column. Now ask yourself what digit is in the hundreds column?

You got it! There is a six in the hundreds column.

So if there is a six in the hundreds column, four in the tens column, and a nine in the ones column, how many flats, rods, and unit blocks do you need?

You got it! We will need 6 flats, 4 rods, and 9 unit blocks. Where would we place the blocks on the place value chart?

Excellent! The flats will go in the hundreds column, the rods will go in the tens column, and the units will go in the ones column.

How else could you have built the number 649?

Note: *Depending on the child's response, questioning and modeling can be used to assist the child in determining additional ways to build 649.*

The next number we will build together is 803.

Begin by asking yourself what digit is in the ones column.

Yes, three is in the ones column. Then ask yourself what digit is in the tens column?

Yes, a zero is in the tens column. Now ask yourself what digit is in the hundreds column?

You got it! There is an eight in the hundreds column.

So if there is an eight in the hundreds column, zero in the tens column, and a three in the ones column, how many flats, rods, and unit blocks do you need?

You got it! We will need 8 flats, 0 rods, and 3 unit blocks. Where would we place the blocks on the place value chart?

Excellent! The flat will go in the hundreds column, the rods will go in the tens column, and the units will go in the ones column.

How else could you have built the number 803?

Note: *Depending on the child's response, questioning and modeling can be used to assist the child in determining additional ways to build 803.*

The last number that we will build together is 1000.

Begin by asking yourself what digit is in the ones column.

Yes, a zero is in the ones column. Then ask yourself what digit is in the tens column?

Yes, a zero is in the tens column. Now ask yourself what digit is in the hundreds column?

You got it! There is a zero in the hundreds column.

This time we have a digit in the thousands column. What digit is it?

That is correct! There is a one in the thousands column.

So if there is a one in the thousands column, a zero in the hundreds column, a zero in the tens column, and a zero in the ones column, how many cubes, flats, rods, and unit blocks do you need?

You got it! We will need 1 cube, 0 flats, 0 rods, and 0 unit blocks. Where would we place the blocks on the place value chart?

Excellent! The cube will go in the thousands column.

How else could you have built the number 1000?

Note: *Depending on the child's response, questioning and modeling can be used to assist the child in determining additional ways to build 1000.*

Activity time: Use your place value chart and base ten blocks to build the following numbers.

959

556

798

305

934

587

1000

223

826

134

342

64

Fun fact: Taxis can be found in most cities such as New York City or Boston.

Honk! Honk! We are getting closer to our destination, but there is a lot of traffic on the busy city streets today. While we are waiting to arrive, let's have fun writing numbers to 1000 on the braillewriter!

Since the position of each digit in a number shows its value, we can use what we know about place value to help us write numbers to 1000. Let's use 439 as an example.

An answer key in braille is provided on page 1 of the document entitled "B3 Module 3_Answer Key for Writing Activities_2".

Begin by brailleing a numeric indicator. Then ask yourself a question. How many flats would I need to build 439?

You are welcome to use your place value chart and base ten blocks if you would like.

You got it! You would need 4 flats to build 439, so in the hundreds column, you will braille the number four with dots 2-5-6. How many rods would you need to build 439?

Yes, you would need 3 tens blocks (rods) to build 439, so in the tens column, you will braille the number three with dots 2-5.

Then ask yourself another question. How many unit blocks would I need to build 439?

Yes, you will need 9 unit blocks, so in the ones column, braille the number nine with the dots 3-5. Now that you are finished with writing your number, move your fingers across the braille and read it! Excellent! The number is 439.

Let's try one more together. This time braille the number 921. What should we braille first?

Yes, we will begin with the numeric indicator. What should you braille next and why?

You got it! We would braille the number 9 in the hundreds column. What should you braille next?

Perfect! We would braille the number 2 in the tens column since we would need 2 tens blocks to build the number 921. What should you braille next and why?

That's right! We would braille the number 1 in the ones column since we would need one unit block to build the number 921. Move your fingers across the braille and check your work!

Activity time: You will need the Accessible Equation Editor and/or your braillewriter and braille paper for this activity.

I will build several numbers with rods and unit blocks. Count the blocks and then write the number. Space one time between the numbers.

Note: Use Place Value Chart 3, a cube, flats, rods, and unit blocks to build the following numbers one at a time: 273, 517, 628, 935, 1000 and 141. An answer key in braille is provided on page 1 of the document entitled "B3 Module 3_Answer Key for Writing Activities_2".

Fun fact: Taxi company owner, Harry Allen, was the first person to have yellow taxis. Allen painted his taxis yellow so that they would stand out.

Activity time: You will also need the Accessible Equation Editor and/or your braillewriter and braille paper for this next activity.

Listen as I read a series of numbers. Then write the numbers in braille. Space one time between the numbers.

Note: Use Place Value Chart 3, a cube, flats, rods, and unit blocks as needed. Repeat saying each series of numbers as many times as needed. An answer key in braille is provided on page 1 of the document entitled "B3 Module 3_Answer Key for Writing Activities_2".

125 181 53 720 384

Now move your fingers across the braille and check your work as I say the numbers again.

125 181 53 720 384

Press your line spacing key twice to move to the next line.

475 329 512 915 270

Now move your fingers across the braille and check your work as I say the numbers again.

475 329 512 915 270

Press your line spacing key twice to move to the next line.

1000 104 411 50 726

Now move your fingers across the braille and check your work as I say the numbers again.

1000 104 411 50 726

We have almost reached our destination! As we have been traveling, the digital taximeter has been recording the distance as well as how much we will owe the taxi driver.

While we continue toward our destination, let's learn about how to read and write a number that has a single underlined digit.

In Nemeth code, the line under the digit is called a horizontal bar. When a horizontal bar is used directly under a single digit, two different symbols are used.

The first symbol is called a directly-under indicator, and it is written with dots 1-4-6. It tells you that the horizontal bar is located directly under the digit.

Locate the top line of braille on page 4, and softly guide your fingers across it. In the middle of the line, you will find the Nemeth symbol for the directly-under indicator. It is written with dots 1-4-6. There is a line of dots 2-5 before and after the indicator.

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Now it is your turn to find the directly-under indicator in each line of braille. Move your fingers lightly across the line of braille and say "directly-under indicator" when you locate the indicator!

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Move to the next line of braille on page 4, and softly guide your fingers across it. In the middle of the line, you will find the second symbol used when writing an underlined digit. It is the Nemeth symbol for the horizontal bar, and it is written with dots 1-5-6. There is a line of dots 2-5 before and after the symbol.

What two Nemeth symbols were used to indicate that a horizontal bar has been placed under the 6? Yes, there was a directly-under indicator and a horizontal bar symbol immediately after the digit.

What digit is underlined? Yes, the digit underlined is 6.

What is the value of the underlined digit? You got it! The 6 is in the tens place.

Now what is the value of the underlined digit? Yes, the value of the underlined digit is 6 tens which equals 60.

Note: *If needed, the student may use base ten blocks or Digi-blocks to assist them in determining the value of the underlined digit.*

Move your fingers to the next line of braille and read the first number.

48

375



You are a Nemeth superstar! The number would be read as forty-eight with a bar under the 8. What is the value of the underlined digit?

Perfect! The value of the underlined digit is 8 because the eight in 48 would be 8 ones which has a value of 8.

Now read the second number on the line.

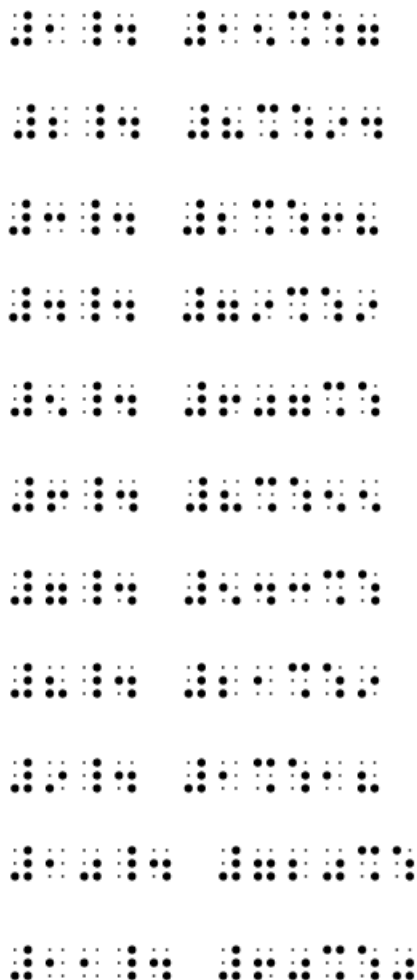
Yes, the number would be read as three hundred seventy-five with a bar under the 3. What is the value of the underlined digit and how do you know?

You got it! The value of the underlined digit is 300 because the 3 in 375 would be 3 hundred which has a value of 300.

Note: *There are multiple correct responses regarding how to determine the value of the underlined digit.*

Fun fact: A relatively new method of transportation is ridesharing. Through the use of a mobile app, you can arrange a one-time shared ride.

Activity time: Read each of the numbers that include a directly-under indicator and a horizontal bar symbol at the top of page 5. Then tell me the value of the underlined digit as well as the actual value of the digit.



Fun fact: When waiting for a taxi or a ridesharing vehicle, stay in a safe place that is well-lit and around others until the last minute.

We just turned onto Main Street! As we wait for the taxi to come to a complete stop at our destination, let's learn how to write numbers with a single underlined digit.

Place your fingers on the correct keys on either the Accessible Equation Editor or your braillewriter. Then press dots 1-4-6 to write the directly-under indicator. Practice writing this indicator several times.

Next, press dots 1-5-6 to write the horizontal bar symbol. Practice writing this symbol several times.

Note: *An answer key in braille is provided on page 1 of the document entitled "B3 Module 3_Answer Key for Writing Activities_2".*

Now let's write a number that has a single underlined digit.

135

Note: *The number would be read as one hundred thirty-five with a bar under the 1.*

Begin by writing a numeric indicator and one.

Since the one in the hundreds column is underlined, we will place a directly-under indicator and a horizontal bar immediately after it.

What dots make the directly-under indicator?

Yes, dots 1-4-6 make the directly-under indicator. So press dots 1-4-6 and write a directly-under indicator.

What dots make the horizontal bar symbol?

You are correct! Dots 1-5-6 make the horizontal bar symbol. So press dots 1-5-6 and write a horizontal bar symbol.

We finish writing the number by writing the digits in the tens and ones column.

You got it! Check your work as I read aloud what should have been brailled.

Note: *An answer key in braille is provided on page 1 of the document entitled "B3 Module 3_Answer Key for Writing Activities_2".*

Numeric indicator, one, directly-under indicator with dots 1-4-6, horizontal bar symbol with dots 1-5-6, three, five

Excellent! Let's write another number that has a single underlined digit.

482

Note: *The number would be read as four hundred eighty-two with a bar under the 2.*

Since the last digit is underlined, begin by writing the number 482.

Since the two in the ones column is underlined, we will place a directly-under indicator and a horizontal bar immediately after it.

What dots make the directly-under indicator?

Yes, dots 1-4-6 make the directly-under indicator. So press dots 1-4-6 and write a directly-under indicator.

What dots make the horizontal bar symbol?

You are correct! Dots 1-5-6 make the horizontal bar symbol. So press dots 1-5-6 and write a horizontal bar symbol.

You got it! Check your work as I read aloud what should have been brailled.

Numeric indicator, four, eight, two, directly-under indicator with dots 1-4-6, horizontal bar symbol with dots 1-5-6

Let's try one more together. The next number is 976.

Note: *The number would be read as nine hundred seventy-six with a bar under the 7.*

How should you begin?

Yes, you should begin by writing a numeric indicator, nine, seven.

Since the seven in the tens column is underlined, we will place a directly-under indicator and a horizontal bar immediately after it.

What dots make the directly-under indicator?

Yes, dots 1-4-6 make the directly-under indicator. So press dots 1-4-6 and write a directly-under indicator.

What dots make the horizontal bar symbol?

You are correct! Dots 1-5-6 make the horizontal bar symbol. So press dots 1-5-6 and write a horizontal bar symbol.

We finish writing the number by writing the digit in the ones column.

You got it! Check your work as I read aloud what should have been brailled.

Numeric indicator, nine, seven, directly-under indicator with dots 1-4-6, horizontal bar symbol with dots 1-5-6, six

Now try writing two numbers with a single underlined digit by yourself. The first number is 628, and the second number is 565.

Note: *The first number would be read as six hundred twenty-eight with a bar under the 2, and the second number would be read as five hundred sixty-five with a bar under the 5. An answer key in braille is provided on page 1 of the document entitled "B3 Module 3_Answer Key for Writing Activities_2".*

Way to go, Nemeth superstar!

Activity time: You will need the Accessible Equation Editor and/or your braillewriter and braille paper for this activity. Listen and then braille what you hear.

Note: Repeat saying each number as many times as needed. Also remind the student to move his/her fingers across the braille and check his/her work if needed. An answer key in braille is provided on page 2 in the document entitled "B3 Module 2_Answer Key for Writing Activities_2".

135

457

721

54

362

401

26

658

Fun fact: If using a ridesharing service, ask the driver to identify you by name and where you are going before getting into the car. If they are your actual driver, they will know this information.

The taxi is stopping! Let's ask the driver to confirm that we are at our destination!

Yay! We did it! Taking the taxi is a fun way to travel! Let's finish our adventure with a follow-up activity.

Follow-up activity: We are going to solve a series of riddles. You will need page 6 in the student braille document.

I will read each riddle. Then you will read the numbers associated with it, and figure out which one is the answer to the riddle. Good luck, Nemeth superstar!

Note: As needed, base ten blocks or Digi-Blocks can be used. If desired, this activity can be completed with other students. If any of the students read print, then they will need a copy of the activity in print. This can be found in the Teacher Reference Materials.

1. I am a 2 digit number. Double me, and you will have 100. Which number am I?

200 100 75 50 25








2. I am a 3 digit number. My hundreds digit is my biggest digit, and my ones digit is less than 2. Which number am I?

385 105 280 92 630








3. I am a 3 digit number. I am less than 600, and my tens digit is greater than 8.

579 483 976 599 413 792








4. I am a 3 digit number. I am less than 400 but more than 300. My ones digit is also used when skip counting by 2.

387 692 384 915 462 235

5. I am a 3 digit number, and I am not a multiple of 10. If you round me to the nearest 100, I become 700.

427 562 632 670 688 710

6. I am a 3 digit number, and I am a multiple of 10. If you round me to the nearest 100, I become 500.

428 430 294 460 595 840

Figure 1 shows the 1000 random samples of the 1000 simulated data sets. The first row shows the 1000 simulated data sets, and the second row shows the 1000 random samples of the 1000 simulated data sets. The third row shows the 1000 random samples of the 1000 simulated data sets, and the fourth row shows the 1000 random samples of the 1000 simulated data sets.

After the last number, there is a Nemeth Code terminator. This symbol tells us that we are finished with our math adventure.