Subject: Place value (Number Concepts)

## Grade Level: 2

## Lesson Objectives:

$\rightarrow$ Understand that the two digits of a two-digit number represent amounts of tens and ones; e.g. 46 equals 4 tens and 6 ones.
$\rightarrow$ Further thinking: Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.
$\rightarrow$ BC Curriculum:

- Big Idea: Numbers to 100 represent quantities that can be decomposed into 10s and 1 s .
- Content: Number concepts to 100
- Curricular Competencies: Visualize to explore mathematical concepts;

Connect mathematical concepts to each other and to other areas and personal interests.

## Key terms:

$\rightarrow$ Place value: The value that a digit has based on where it appears in a number
$\rightarrow$ Digit/Numeral: the symbol used to write a number
$\rightarrow$ Manipulatives: tools used to help in counting and math understanding (can be blocks, toys, beans, etc.)
$\rightarrow$ Ones, tens, hundreds: The value given to the number placements of 3 digit numbers
$\rightarrow$ Standard form: The way a number is most commonly written (ie. 394)
$\rightarrow$ Expanded form: A way of writing out a number to show the value of each digit (ie. 3 hundreds, 9 tens, 4 ones)

Prerequisite Skills and Concepts: Children should know how to count to 100 and read number words.

Materials: tens and hundreds charts; cubes in ones, tens, and hundreds (enough for each student to have at least 2 hundreds, 10 tens, 10 ones - preferably more single cubes so the students can explore).
(see activity descriptions below for a list of specific materials)

## Lesson Timeline ( $\sim 1$ week)

This lesson could be condensed into a 45 minute lesson introducing 10s and 100 s with some of the activities mentioned in Days 1-3 and excluding "math menu" time. The following is a
timeline of an ideal situation where one might have a week to teach the concept.
Day 1:

1. Introductory Activity: Explain the concept of place value (focusing on $10 \mathrm{~s} \& 1 \mathrm{~s}$ )
2. Exploration Activity 1: Place Value Work Mat with 10s
3. Discuss Activity
a. If they need more explanation, show 10 s video (https://www.youtube.com/watch?v= dHu5TFxPtk)
b. Guiding Questions: Are the numbers $4 \& 40$ the same? Why or why not? How many rods would I need to represent 40? How many cubes?
4. Explain math menu* activities
5. Go into math menu* time (not including Place Value Go Fish yet)

## Day 2:

6. Review of 10 s
a. Guiding Questions: Who can tell me what we learned yesterday? What was it called? What is the difference between a 5 in the 10's place versus a 5 in the 1 's place? What do you think it means if we add a 3rd number before the 10's place? Does anyone know what this place value is called?
7. Video: Introduce the concept of place value in terms of 100 s
(https://www.youtube.com/watch?v=FztLLUw1e6E) - have students try counting on their fingers
8. Optional: Practice 100s with work mats as well
9. Move into math menu* time (introduce Place Value Go Fish)

## Day 3:

10. Review concept of place value with 10 s and 100 s.
a. Guiding Questions: Who can remember what the 3 place value names were that we learned about yesterday? Can someone tell me what the expanded form of 96 is using the place value names? What does the 8 in 108 stand for in expanded form?
11. Exploration Activity 2: Place Value Foldable (During the actual lesson, there would be time for students to make these in class, but for the sake of time we will make example foldables and have our peers group up for the activity)
a. Demonstrate with your own foldable and have class follow instructions (write number on board) - start with 10s and move to 100s
b. Practice as a class - write numbers on the board or have students suggest numbers and then use the foldable to break it down
c. Encourage the students to use the foldables as aids in the future (they may be helpful in the addition unit)
12. Room for class discussion \& any questions from students
13. Math menu* time

## Day 4:

14. Exploration Activity 3: Place Value Bingo.
a. Guiding questions: Who wants to come write a number with 3 digits up on the board? How many different ways can we show this number using what we've learned this week? What types of manipulatives can we use to show this number?
15. Math menu* time (make sure you have conferenced with each student by the end of this day)

## Day 5:

16. Take it Outside Activity - demonstrate place value concepts with natural materials (Indigenous connection)
a. Guiding Questions: What natural objects could we use to represent our 100's, 10's, \& 1's? What do we do with the materials after we're done with them? Why is it important not to pick plants that are still attached?
17. Reflection and articulation of learning
a. Students fill in a reflective journal entry about what they learned based on photo documentation that was obtained throughout the week
*Activities to set up in class for students to practice any day during math menu time:
$\rightarrow$ Exploration Activity 4: Walk along a number line
$\rightarrow$ Exploration Activity 5: Whack it!
$\rightarrow$ Exploration Activity 6: Place Value Go Fish
$\rightarrow$ Have cubes and place value mats available to practice on work mats (with flash cards containing numbers so they can draw them randomly and proceed to organize their cubes)
$\rightarrow$ Teacher conferencing

# Description of Introductory Activity <br> (adapted from Houghton Mifflin Company) 

## Preparation:

Have a bag of cubes, a hundred chart, and a tens and ones chart ready for each child. Give each child the materials and have them set aside the hundred chart for use later.

1. Say: Today we are learning about something called place value!
2. Write the word "thirty-six" on the board (or some similar low two-digit number)
3. Ask: Who can come up and write the numeral for this number word on the board? (Invite a student to come up and write 36 on the board.)
4. Ask: Can anyone think of how we can show 36 with these cubes? (Have 40 cubes available.)
5. Circulate and observe how students are organizing their cubes
6. Ask: would anyone like to share with the class how they organized their cubes? (Remember: no wrong ways, just more efficient ways...)
7. Say: (If no one organized them in tens and ones) Can anyone think of a way that will make these cubes easier to count? I'll show you what helps me: I will make groups of ten cubes so that we can count them by ten. (Make 3 groups of ten cubes.) There are 6 left over, so I will just let them be single cubes.
8. Ask: How many groups of ten cubes did I make? (3), How many were left over? (6)
9. Introduce Exploration Activity 1: Place Value Work Mats - Say: Take out your work mat that has Tens and Ones at the top, and your bag of connecting cubes. We are going to model numbers on this mat so that we can see the tens and ones. Write the number 42 on the board. Say: "Use your cubes to show this number as tens and ones on your work mat" and circulate to see that children are making 4 tens and 2 ones.

Some guiding questions:

- What would happen if we had a zero in one of the place values? Does that still count as a number?
- How many 2 digit numbers can we build with the numbers 0-9? Can you build them out of blocks? Can you write them out?
- What other tools could we use to help make numbers? How can your body help you count? (ie. Fingers)
- What's the biggest 2 digit number we can make?


## Description of Exploration Activities

## 1. Place Value Mats

Students are provided with mats or create their own mats. Each mat contains a column for both ones and tens, with the option of adding a hundreds column if working with hundreds. Students are also provided with base ten cubes and blocks. Students are provided with a multi digit number that they must then showcase on their mats using blocks and cubes to display their understanding in a visual form and expanded form.
*Materials: ones, tens, hundreds blocks (x34), pens, place value mats (x34)

## 2. Place Value Foldables

Students are either provided with or create their own foldable place value chart. By using sentence strips and dry-erase tape, it creates a foldable math tool for practicing place value concepts and expanded form. Students are given a multi-digit number to write into each place value, when written and unfolded they can visually see how that number is created through each individual place value.
*Materials: Foldable tool (made with paper, sharpie, and white duct-tape or dry-erase tape), white board marker

## 3. Place Value Bingo

For place value bingo, each student is provided with a bingo card and place one blocks. The teacher says and/or writes down a number in standard form. Those bingo cards have numbers showcased on them but not in standard form. Instead, the numbers are displayed in expanded form and separated by tens and ones. Students need to use their new place value knowledge to try and win. Game ends when the first person gets 3 in a row! *Materials: Bingo cards (x34), set of multiple place one cubes.

## 4. Number Line Walk

In this activity, students will simultaneously practice the concept of place value while getting in some physical activity. Use duct tape (or masking tape) to create number lines on the floor for ones, tens, and hundreds. Choose a number and get the students to use paper plates to mark the correct plates on the line. If there are no plates available, they can stand on the correct mark instead. This can be done in small groups, or as a class. Not only is this a helpful math activity, but also an opportunity to integrate some of the physical education curriculum.
*Materials: Duct tape, Paper plates, Sharpie

## 5. Whack it

In this activity, students create their own interactive place value math game. Provide them with art materials so they can make a sheet with numbers in different place values. Students are given a multi digit number to put into their sheet. Students use a fly swatter to
slap the correct value as they're called out. This activity also touches on the physical education and art education curriculum. Students are using physical activity to slap the swatter as well as using their art skills to create the base.
*Materials: Fly swatter, place value sheet (art supplies).
6. Place Value Go Fish (PVGF)

In this place value variation of the classic game of 'Go Fish', students work in groups of 2-4. 5 PVGF cards are dealt to each player, the player with the birthday coming up next goes first. They ask the rest of the group if they have a specific number in their hand (ie. "Do you have 53 ?"), and the rest of the players must determine if they have the match, or say "Go Fish". All matches are represented in different forms. The round is over when there are no more cards to pick up, and a player has made matches out of all of their cards.
*Materials: PVGF printables (in appendix)
*See appendix for examples of activities.

## Connections to Indigenous Ways of Knowing

These activities can connect to Indigenous cultural knowledge by incorporating the First People's Principles of Learning. One of the principles explains how "learning involves patience and time". As teachers, it is our job to provide students with time to process the instructions and the material given to them before intervening. Learning takes time, and during these activities we want to give students the opportunity to take their time and fully understand the concept before moving onto something else. This is one of the reasons the ideal timeline for this lesson spans over a full week.

It is a value of Indigenous Peoples to appreciate nature and to treat it with a strong respect. Immersing oneself in nature can bring a strong sense of place and belonging. Indigenous Peoples have a history of being passionate about nature conservation and the sustainable use of natural resources (Indigenous people and nature: a tradition of conservation, 2017). We can encourage a respect for nature and use natural resources by bringing our class and activities outside into nature. It is for this reason that we have suggested doing an outdoor activity on the last day of the week - students can use the Place Value Mat activity outside and find natural, sustainable materials for learning (i.e. rocks for place one cubes, sticks for place ten, and leaves for hundreds).

## Accommodations and Personalized Learning

Accomodations, supports, and accessible learning strategies need to be essential parts of personalized learning. If done well, all students will be more engaged in their learning.

One way in which we are supporting personalized learning is by having a variety of practice activities available after each lesson during our math menu time. The goal would be to have a place-value-focused "math menu" available for several days during a math center time, where the students can choose various ways to practice the concept of place value. As described above, some activities involve a lot more visual components and some involve a lot of physical components as opposed to sitting in one spot. Some activities involve collaboration, whereas some can be done alone.

Having number charts available for each student will be especially helpful for those who need a little help with visualizing or memorizing numbers. The use of manipulatives, such as the number cubes, will aid with visualization as well. It might be helpful to have an anchor chart visible in the room for students to refer to, such as the one below, which has the added benefit of making place value somewhat relevant to everyday life.

(retrieved from https://www.pinterest.ca/pin/235031674280311868/)
This lesson involves introducing the concept of ones and tens, as well as moving on to introducing hundreds. It is important for us, as teachers, to realize that although we might move forward to the concept of hundreds as a class, some students may still be stuck on the concept of ones and tens. It is important to allow the option for students to continue practicing with ones and tens during the exploration activities if they need to. If there are students who fly through the activities and fully understand the concept of hundreds, have
challenging adaptations to the activities available that get them thinking about the concept of addition and subtraction or place values in the thousands. The Foldable activity can have a thousands spot to practice this.

Through the use of a variety of activities catering to different ways and different levels of learning, the hope is that each student has the opportunity to find a way in which they learn best and stay engaged in the process. This avoids putting the spotlight on certain students who are "struggling" or certain students who are "advanced." In a real classroom environment, of course, it would be ideal to get to know your students first and adjust the entire lesson plan a little bit according to what you know about your students - for example, you might try to add in elements that make it relevant to their lives! The key to knowing which students may need accommodations is through the use of formative assessment - observe, ask questions, and get to know your students. A simple way to get more time with each of your students is to organize a "teacher conferencing" time everyday during "math menu" time. This would allow the students to have increased one-on-one time with the teacher throughout each math unit.

## Assessment

## Whole Class/Group Activities:

- Exploration Activity 1: Work Mats
- Exploration Activity 2: Foldable
- Exploration Activity 3: Place Value Bingo
- Take It Outside Activity

For these whole class or small group activities, a skills checklist can be used to monitor student understanding and adjust lessons based on student understanding (see appendix for example checklist).

## Teacher Conference Centre:

Carried out during Math Menu time - A 1:1 conference with each student to allow the opportunity to ask specific questions that check for comprehension and mastery levels of place value. Task cards (such as the examples given in the appendix) could be an engaging way to complete this formative assessment.

Math Menu Activities (ie. Place Value Go Fish):
Formative Assessment for Math Menu activities can be done with student self-reflections integrated into the activity itself. For example, for Place Value Go Fish, students fill out all of
the pairs they made during each game (see appendix for example of game cards and self-assessment sheet).

## Photo Documentation \& Self-Reflection:

Throughout the place value lesson, pictures of the students will be taken while they take part in place value activities. These pictures can then be printed and pasted into each student's journal to be used during the 'Take It Outside' lesson. Students will be given time to reflect on what they've learned about place value, using their own picture as a prompt. Both drawn and written explanations are acceptable.

## References \& Resources

Down Under Teacher. Place Value Bingo - Tens and Ones Bingo. Retrieved from: https://www.teacherspayteachers.com/Product/Place-Value-Bingo-Tens-and-Ones -Bingo-Class-Set-of-Board-Games-137879 (extra Bingo example)

Houghton Mifflin Company. Math Background: Lesson: Place Value to 100, Introducing the Concept. Retrieved from: https://www.eduplace.com/math/mw/background/2/02/te 202 placeval ideas.h tml

Indigenous people and nature: a tradition of conservation. (2017, April 26). Retrieved from UN environment:
https://www.unenvironment.org/news-and-stories/story/indigenous-people-and-nature-tradition-conservation

Staake, J. (2019, July 9). These 22 Place Value Activities Make Math Learning Fun. Retrieved from We Are Teachers: https://www.weareteachers.com/place-value-activities/Intro

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## Appendix

Bingo Activity:


Whack It Activity:

## 8. Enjoy a game of Whack It!



What kid doesn't love to whack things with a fly swatter? Put that energy to good use by having them slap the swatter down on the correct values as you call them out.

## Number Line Activity:

22. Walk along giant number lines.


We love place value activities that also get kids up and moving! For this one, use masking tape to create number lines for ones, tens, hundreds, etc. on the floor. Choose a number and use paper plates to mark the correct places on the number lines, or have kids stand on the correct mark instead.

## Sample Checklist:

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| $\text { Division } 5$ |  |  |  |  |  |  |  |  |  |  |  |  | Stident Ohsenations |
| Demonstrates Understanding in: | Ashley | Brady | Chase | Darcy | Ellie | Fiona | Georse | Harry | Ian | Julia | Kira | Liam |  |
| Basic Numerals | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
| Numerals to 100 | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
| Concept of 1's place | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
| 10's place | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
| 100's place | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
| Extending beyond 100's | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
| Standard form w/ blocks | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
| Expanded form w/ block | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
| Written Standard form | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
| Written Expanded form | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
| Correct use in activities | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
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Sample Task Cards:


Place Value Go Fish Cards \& Self- Assessment Sample:


# Place Value Go Fish 

Name: $\qquad$ Date: $\qquad$
Write the matches you made during Place Value Go Fish:


