Broad Overview

Overall Expectation				
This five-day block will the beginning of a Grade 6 Rational Numbers unit. Rational numbers fall under Number Sense in the Ontario math curriculum. These lessons will look at introducing students to integers and beginning to understand seeing integers in real life, how to represent integers, and how to compare integers. Each lesson will begin with a relevant number talk that relates somewhat to the lesson topic. Number talks are a great routine to get into in math classes, so it is important to keep this routine up in each unit. These lessons are all based on having a 100 minute time block. The curriculum expectations that fit with this 5-day plan are: B1.1 read and represent whole numbers up to and including one million, using appropriate tools and strategies, and describe various ways they are used in everyday life. B1.2 read and represent integers, using a variety of tools and strategies, including horizontal and vertical number lines. B1.3 compare and order integers, decimal numbers, and fractions, separately and in combination, in various contexts.				
Lesson 1	**Lesson 2**	**Lesson 3**	**Lesson 4**	**Lesson 5**

Topic: Rational Numbers & Integers Diagnostic **Minds-On:** Using a large number line on a smart board, students will be asked where they would place specific numbers on the number line. The numbers students would place will be 0, 1, 5, and 10. **Action:** The teacher will ask students a variety of questions such as, what is an integer, what is a positive number, what is a rational number, what is the difference between integers and rational numbers. In small groups, students will discuss these questions. The teacher will check in with each group and assess where students are at with this knowledge. The questions will then be answered as a whole	**Topic:** Positive and Negative Numbers **Minds-On:** Ask students to say where they see positive numbers in real life, and then where they see negative numbers in real life. **Action:** Students will watch a video on positive and negative numbers. Using flash cards with positive and negative integers on them, in pairs or small groups, students will be asked to each flip over a flash card and decide which number is the bigger number and explain why. **Consolidation:** Learning consolidation will be done through the use of consolidation discussion questions. **Assessment:** The teacher will complete informal assessment through the students answers to the consolidation questions.	**Topic:** Representing Integers **Minds-On:** Using a large thermometer on the board, students will be asked where they would place specific temperatures and why. **Action:** Review key terms such as integers and positive and negative numbers. The teacher will show students examples of where we see integers in real life and engage in a discussion about them. Teacher will model, and have students show where how we would represent integers on a number line, thermometer and with 2-coloured counters. **Consolidation:** Students will play temperature bingo! In this activity students will be given a set of bingo cards, and if the temperature they see is on one of their cards they must properly	**Topic:** Representing Integers Continued **Minds-On:** Using 2-colour counters or virtual 2-colour counters students will answer a variety of questions presented to the class. **Action:** Integer stations are set up around the classroom and in small groups students will go to each station and complete the activity at each one. The stations are modeling integers with counters, real life situation, modeling integers with a number life. At the modeling integers with counters station, students are asked to complete a worksheet using 2-coulour counters. At the real life situation students have a choice to complete a golf score card activity that represents integers in real life, or the opportunity to create	**Topic:** Comparing Integers **Minds-On:** Using the life size number line from the previous day, as a class, students will work through placing integers, opposite integers on the number line. **Action:** Students will watch a video on comparing and ordering integers. Students will go through a few practice questions as a whole group ordering integers on a number line, talking about opposite integers, and other questions relating to comparing integers. **Consolidation:** Students will complete an Integers escape room activity. In partners, students will complete a booklet where they explore. They will work through questions using manipulatives found around the class, and after each section they

group with practice questions. **Consolidation:** students will answer a few short questions about placing numbers on a number line independently. They will practice using a number line on a white board. Students will complete an exit slip recording one thing they learned from today and one question they have about integers. **Assessment:** In-formal assessment throughout the lesson during small group discussions and when students answer whole group questions. The teacher can use a chart to check off and make notes of student's level of understanding. Teacher will review and assess exit slips to gauge students understanding.	As well, during the flash card activity,	place the temperature on the thermometer. Lastly, students will be given an exit slip and will be asked to give one example of a time they see integers in real life, and an example of where they may see -10 in real life, and one sentence to describe how well the student understands the lessons content. **Assessment:** The teacher can review the students exit slips.	their own real life integers word problem for a partner to answer. At the modeling with a number life station, students will use a life size number line in the hallway to explore integers and answer questions. **Consolidation:** Students will engage in a discussion with consolidation questions about the activity as a whole group. They will then complete a reflection which they will have to answer a few questions about the activities. **Assessment:** The teacher will assess students work from each station, their answers to consolidation questions, and their reflection.	will receive a code, which will help them complete the escape room. **Assessment:** The teacher will mark the booklet based on how students found each code. This is a great activity to assess non math skills such as learning skills.

Lesson Plan

Lesson Title: Representing Integers

Approximate Time:	100 minutes
Grade Level:	6

Summary / Objectives

Students will explore different ways to represent integers. They will use number lines, 2-colour counters, thermometers, and dive into real life examples of integers.

Materials:	**Advance Preparation:**
Cut out large thermometer Cut out arrows to place on thermometer White board & white board markers 2-colour counters for each student Mini-white board and white board markers for each student Bingo cards for each student Computer/Projector	Cut out/make thermometer and arrows Gather 2-colour counters, mini white boards and white board markers Create bingo cards PowerPoint slides with review material and real life examples.

Learning Goals:

Learning Goal: I can represent integers in different ways, and explain how they are used.

The students will be introduced to different ways that integers are represented in math class and in real life situations.

Student Expectations:

At the end of this lesson, the students are expected to be able to represent integers using a number line, 2-colour counters and a thermometer. They are expected to be able to explain ways that we see and use integers in real life.

Success Criteria:

- I can describe what an integer means.
- I can represent a negative integer and its opposite.
- I can think of situations where -10 might occur.
- I can represent any integer in different ways.
- I can describe a situation when integers are useful.

Process:

Minds On (10 minutes):

Using the large thermometer and arrows, ask students to place the following temperatures on the board: 0°, 5°, -5°, 10°, -10°, 20°. Please ask them to explain their choice.

Place the arrow at -4°, then ask the students the following questions:

- Someone says that the temperature is below 0. How far below is it? How do you know?
- Is the temperature far below 0? Why?
- What month do you think it might be? Why? Suggested answers: It might be November since it's not super cold, but it's cold. It might be February because it is cold enough for snow and in February we have snow.

Activity/Action (60 minutes):

Recall through PowerPoint slides (10 minutes):

- What is an integer? Integers: the set of numbers that includes the counting numbers, 0, and the opposites of the counting numbers on the other side of 0 on the number line. For example -4, -3, -2, -1, 0, 1, 2, 3, 4. These are all integers because they are positive or negative whole numbers.
- Positive & Negative Integers: Watch the following video to review positive and negative integers: https://www.virtualnerd.com/middle-math/integers-coordinate-plane/integers-absolute-value/positive-negative-number-definitions
- Ask students the define the following terms as a review from previous lessons: positive integer, negative integer, opposite integer

Using a large number line on the board (15 minutes):

- Model 2-3 times how to set up a number line and how to place numbers on it. Ask students to pick/suggest the numbers you use.
- Allow 3-5 students to come up to the board and set up the number line and place a number of their choosing.
- Give students 5 minutes to practice setting up and placing a number on a number line independently with the use of a mini-white board. Ask students to share their board with a peer to check their answer and to look at additional examples.

Using 2-colour counters (15 minutes):

- Model 2-3 times how to represent integers using 2-coloured counters. Explain that yellow counters represent a positive integer, and red counters represent a negative integer. Ask students to pick/suggest the numbers you use.
- Allow 3-5 students to come up to the board to show an integer to the class using the counters.
- Give students 5 minutes to practice using 2-coloured counters to show integers. Ask them to show a negative integer, positive integer, and a set of opposite integers using the counters. Ask students to share their answers with their elbow-partner to check their answer and to look at additional examples.

On PowerPoint slides (20 minutes):

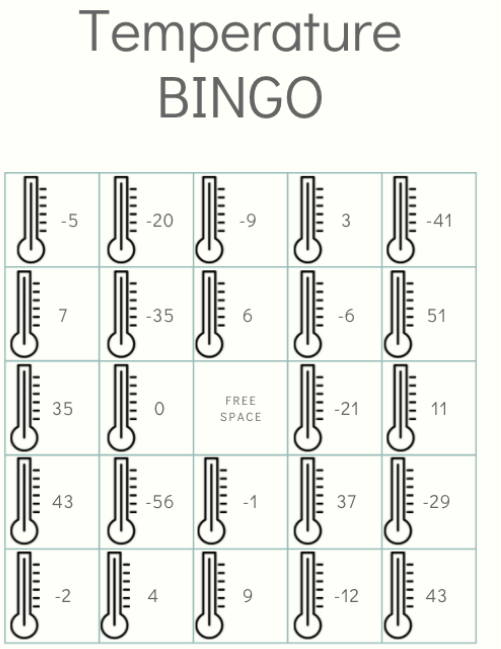
- Using the pre-created slides, show and explain different examples of real life integers.
- Example: We are using a hockey team and goals scored for and against when a player is on the ice. Priyanka was on the ice when her team scored a goal 9 times. She was also on the ice when her opposing team scored 2 times. This means her +/- score is +7.

Kim was on the ice when her team scored 7 times, but was also on the ice when the opposing team scored 6 times. Her +/- score is only +1. Abby was on the ice when her team scored 3 times, however was on the ice when the other team scored 8 times. She has a +/- of -5.
    - Who has the better record? A: Priyanka has the best record because she was on the ice more when her team scored and less when the other team scored. We can see this because her +/- score is +7.
    - Who has the worst record? A: Abby has the worst record because she was on the ice more times when her opponents scored giving her a score of -5.
- Example: thermometers to show temperature
- Example: golf scores.
    - Explain how golf scores work. Use this time to explain that negative integers are not always a bad thing! Negative scores in golf are good!
- Example: Sea Level
- Example: Floors in Buildings (Ie/ Basements/parking garages)

Consolidation (30 minutes):

Temperature bingo (20 minutes):

- Using the pre-made temperature bingo card, have a student call out different positive and negative integers. If the student has the temperature called out on their card they must draw colour in the thermometer to the correct spot.



Exit Slip (10 minutes):

- On a piece of paper have students answer the following questions:
- Give one example of a time they see integers in real life
- Give one example of where they may see -10 in real life
- Write one sentence to describe how well the student understood the lessons content.

Curriculum Links and Cultural Connections:

B1.1 Read and represent whole numbers up to an including one million, using appropriate strategies, and describe various ways they are used in everyday life.
B1.2 Read and represent integers, using a variety of tools and strategies, including horizontal and vertical number lines.

Assessment:

Assessment for learning: Exit slip where students are asked to give an example of a real life integer, and where they might see the integer -10 in real life.
Assessment as learning: Exit slip where students are asked to write one sentence about how well they think they understand the lessons content.

Accommodations:

Possible accommodations for students with exceptionalities include using virtual manipulatives instead of physical manipulatives (didax.com has great 2-colour counters, and number lines, and a virtual white board could be used instead of a physical whiteboard). Additional accommodations include, having flexible seating options, one-on-one support, or extended instruction.