**Understanding by Design Unit Template**

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| **Title of Unit** |       Fractions | **Grade Level** |       4  |
| **Curriculum Area** |       Math | **Time Frame** |       3 Weeks |
| **Developed By** |  |
| **School** |  |
| **Identify Desired Results (Stage 1)** |
| **Content Standards –Curricular Outcomes** |
| [**N4.6**](http://www.curriculum.gov.sk.ca/index.jsp?view=indicators&lang=en&subj=mathematics&level=4&outcome=1.6)**Demonstrate an understanding of fractions less than or equal to one by using concrete and pictorial representations to:*** **name and record fractions for the parts of a whole or a set**
* **compare and order fractions**
* **model and explain that for different wholes, two identical fractions may not represent the same quantity**
* **provide examples of where fractions are used.**
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| **Essential Questions** | **Enduring Understandings** |
| **Open-ended questions that stimulate thought and inquiry linked to the content of the enduring understanding.** | **What do you want students to understand & be able to use several years from now?**  |
| 1. How can I use fractions in real life?
2. What is a fraction?
3. How is a fraction different than a whole number?
4. How can I represent fractions in multiple ways?
5. Why is it important to compare fractions as representations if equal parts of a whole or of a set?
6. How do I explain the meaning of a fraction and its numerator and denominator, and use my understanding to represent and compare fractions?
7. How do I explain how changing the size of the whole affects the size or amount of a fraction?
8. How can models be used to compare fractions with like and unlike denominators?
 |      1. Fractions are an important part to our number system.
2. Fractions are numbers.
3. Fractions are an important part of our daily life and problem solving.
4. Fractions can be used to represent numbers equal to, less than and greater than 1.
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| **Misconceptions** |
| **(Optional)** |
|  |
| **Knowledge**Students will know… | **Skills**Students will be able to… |
|      1. What a fraction is.
2. What a numerator and denominator are.
3. The part and the whole of a fraction.
4. How fractions are used in the real world.
 |      1. Use concrete materials to represent fractions.
2. Use pictures to represent a fraction.
3. Compare and order fractions with like and unlike denominators.
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| **Assessment Evidence (Stage 2)** |
| **Performance Task Description**  |
| **The PERFORMANCE TASK describes the learning activity in “story” form. Typically, the P.T. describes a scenario or situation that requires students to apply knowledge and skills to demonstrate their understanding in a real life situation. Describe your performance task scenario below:** | Helpful tips for writing a performance task. |
| **Goal:** To show who ate the most pizza in a pizza eating contest. **Role:** Judge **Audience:** Your contestants. **Situation**: You are having a pizza-eating contest. Each contestant has the same size pizza, but cuts their pizzas into different slice sizes. **Part 1:** You decide to enter the contest as well. You cut your pizza into four pieces. You eat 3 pieces. Write a fraction to show how many pieces you ate. Draw a picture to represent this fraction.**Part 2:** One contestant leaves early. You need to write the fraction for how many pieces they ate. Write the fraction beside this picture. **Part 3:** Each contestant has written their fraction of pieces they ate. Who would get first, second, third and fourth place?Sally ate 5/7 of her pizza.John at 2/4 of his pizza.Martin ate ½ of his pizza.Shawn ate 0 pieces of his pizza. **Part 4:** You decide that you want to challenge the winner. You each make your own pizza. You each eat half of your pizza. You ate more pizza than the winner. How is this possible? | **Goal:**What should students accomplish by completing this task? |
| **Role:**What role (perspective) will your students be taking? |
| **Audience:**Who is the relevant audience? |
| **Situation:**The context or challenge provided to the student. |
| **Product/Performance:**What product/performance will the student create? |
| **Standards****(Create the rubric for the Performance Task)** |
| **BLOOMS TAXONOMY:**REMEMBERING: Can the students recall or remember the information?UNDERSTANDING: Can the students explain ideas or concepts?APPLYING: Can the students use the information in a new way?ANALYZING: Can the students distinguish between the different parts?EVALUATING: Can the students justify a stand or decision?CREATING: Can the students create new product or point of view? | **Digital Taxonomy for Bloom:**KNOWLEDGE: Highlighting, bookmarking, social networking, searching, googlingCOMPREHENSION: Advanced searches, blog journaling, twittering, commentingAPPLICATION: Running, loading, playing, operating, hacking, uploading, sharing, editingANALYSIS: Mashing, linking, tagging, validating, cracking, reverse-engineeringSYNTHESIS: Programming, filming, animating, blogging, wiki-ing, publishing, podcasting, video castingEVALUATION: Blog commenting, reviewing, posting, moderating, collaborating, networking, posting moderating |
| **Standards Rubric****The STANDARDS RUBRIC should identify how student understanding will be measured.**  |
| * **This rubric will be used throughout the unit, including the performance task.**

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| **Other Assessment Evidence: (Formative and summative assessments used throughout the unit to arrive at the outcomes.)** |
| **Conversation** | **Observation** | **Product** |
| Oral ConversationsEntrance Questions | Class DiscussionsIndividual Help | Entrance/Exit SlipsHand-In AssignmentsPerformance Task SRSD Common Assessment |
| **Learning Plan (Stage 3)** |
| **Where are your students headed? Where have they been? How will you make sure the students know where they are going?** |
| 1. Present outcomes and performance task. Discuss what students will be doing and learning in this unit.
2. Pre-assess prior knowledge of fractions.

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| **How will you hook students at the beginning of the unit? (motivational set)** |
| 1. Show 3 clear jugs that are filled with different amounts of water. Ask students to describe how much water is in each jug.
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| **What events will help students experience and explore the enduring understandings and essential questions in the unit? How will you equip them with needed skills and knowledge? How will you organize and sequence the learning activities to optimize the engagement and achievement of all students?** |
| **Lesson 1: Introduction to Fractions \*2 minute focus on how fractions are used in the real world** * Song explaining fractions <https://www.youtube.com/watch?v=DnFrOetuUKg>
* Have students create different shapes using coloured tiles.
* Have students describe these shapes using words and fractions.
* Sort fractions and wholes on the SMARTBOARD

**Lesson 2: Naming and Drawing Fractions \*2 minute focus on how fractions are used in the real world*** Review fraction song again
* Naming fractions (picture and print) on SMARTBOARD
* Drawing Fractions (on whiteboard)
* Go over numerator and denominator
* Fraction Hunt (students will hunt around the classroom for the fractions that you call out)

**Lesson 3: Fraction Benchmarks \*2 minute focus on how fractions are used in the real world** * Show cups with liquid in it. Is it closer to 0, ½, or 1?
* Use fraction strips and assignment (p. 178/179 Math Makes Sense)
* Create a Giant number line. Give students a fraction and they need to stand on the number line where their fraction would fall.

**Lesson 4: Fractions of a Set \*2 minute focus on how fractions are used in the real world*** Form groups of students and find ways to describe the set
* Fraction basketball
* Use p. 180 in Math Makes Sense as a Guide

**Lesson 5: Finding a Fraction of a Set \*2 minute focus on how fractions are used in the real world*** P. 183 Explore Math Makes Sense
* Use counters to complete questions 1-5 on page 184

**Lesson 6: Relating Fractional Parts of Different Wholes and Sense \*2 minute focus on fractions in the real world*** P. 186 Explore and Connect

**Lesson 7: Comparing and Ordering Unit Fractions \*2 minute focus on fractions in the real world** * p. 190 Math Makes Sense do Explore and Connect
* Compare the Pairs Game (Pairs are revealed, students have to move to the room is it greater, less than or equal to)

**Lesson 8: Comparing and Ordering Fractions with the Same Numerator or Denominator** * p. 193 Math Makes Sense Explore and Connect
* p. 196 1-5
 | **Time Frame** |
| 90 minutes90 minutes90 minutes60 minutes60 minutes 60 minutes90 minutes90 minutes  |
| **How will you cause students to reflect and rethink? How will you guide them in rehearsing, revising, and refining their work based on your essential questions and enduring understandings?**  |
| * Entrance/Exit Slips
* Practice Assignments will give students an opportunity to practice the new skills they have learnt as well as identify areas of strength and areas of difficulty
 |
| **How will you help students to exhibit and self-evaluate their growing skills, knowledge, and understanding throughout the unit?** |
| * Students will have multiple opportunities to self-evaluate their own understanding throughout the unit. Students will answer Entrance and Exit Questions, participate in classroom discussions, and be given specific feedback on assignments. This will give students the chance to see what level they are currently at and then identify what specific skills or objectives they need to improve on in order to meet that outcome.
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| **How will you tailor and otherwise personalize the learning plan to optimize the engagement and effectiveness of ALL students, without compromising the goals of the unit?** |
| * Students will be given questions based on their understanding of the content
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| **What resources will you use in the learning experiences to meet the outcomes?** |
| * Math Makes Grade 4 Student Textbook
* Fraction Cards
* Fraction Circles
* <https://www.youtube.com/watch?v=DnFrOetuUKg>
* Smartboard Presentation
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| **Assess and Reflect (Stage 4)** |
| **Required Areas of Study:** **Is there alignment between outcomes, performance assessment and learning experiences?** |  |
| **BAL’s:** **Does my unit promote life long learning, encourage the development of self and community, and engage students?** |  |
| **CELS & CCC’s:** **Do the learning experiences allow learners to use multiple literacies while constructing knowledge, demonstrating social responsibility, and acting autonomously in their world?** |       |
| **Adaptive Dimension:** **Have I made purposeful adjustments to the curriculum content (not outcomes), instructional practices, and/or the learning environment to meet the learning needs of all my students?** |  |
| **Instructional Approaches:** **Do I use a variety of teacher directed and student centered instructional approaches?** |       |
| **Student Evaluation:** **Have I included formative and summative assessments reflective of student needs and interests based on curricular outcomes?** |       |
| **Resource Based Learning:** **Do the students have access to various resources on an ongoing basis?** |       |
| **FNM/I Content and Perspectives/Gender Equity/Multicultural Education:** **Have I nurtured and promoted diversity while honoring each child’s identity?**  |       |
| **Blueprint for Life:** **Have I planned learning experiences in the unit that prepare students for a balanced life and/or work career?** |       |

Adapted from: Wiggins, Grant and J. McTighe. (1998). *Understanding by Design*, Association for Supervision and Curriculum Development.