

**Candidate's name:** Joni Hesselgrave

Grade/Class/Subject:	Grade 7 Mathematics	School:	Lakeview Elementary
Date:	Thursday, February 24, 2022	Allotted Time:	60 minutes
Topic/Title:	Fractions to Decimals – Extra Practice (Unit 3, Lesson 1 Material)		

## 1. LESSON ORIENTATION



**Key resources:** [Instructional Design Map](#)

*Briefly, describe purpose of lesson, and anything else to note about the context of lesson, students, or class, e.g. emergent learning needs being met at this time, elements of focus or emphasis, special occasions or school events.*

The purpose of this lesson is to have students **review and practice** processes required to convert **fractions to decimals**, building upon the knowledge required to convert fractions to decimals (using base 10 calculations, patterns, predictions, and calculators) as well as the processes required to determine whether a decimal will terminate (terminating decimal) or repeat (repeating decimal)—all concepts covered in Unit 3, Lesson 1.

## 2. CORE COMPETENCIES

**Key resources:** <https://curriculum.gov.bc.ca/competencies>

Core /Sub-Core Competencies (check all that apply):	Describe briefly how you intend to embed Core Competencies in your lesson, or the role that they have in your lesson.
<input checked="" type="checkbox"/> COMMUNICATION – Communicating <input type="checkbox"/> COMMUNICATION – Collaborating <input type="checkbox"/> THINKING – Creative Thinking <input checked="" type="checkbox"/> THINKING – Critical Thinking <input checked="" type="checkbox"/> THINKING – Reflective Thinking <input type="checkbox"/> PERSONAL AND SOCIAL – Personal Awareness and Responsibility <input type="checkbox"/> PERSONAL AND SOCIAL – Positive Personal and Cultural Identity <input type="checkbox"/> PERSONAL AND SOCIAL – Social Awareness and Responsibility	<p> <b>Communicating</b> encompasses the set of abilities that people use to impart and exchange information, experiences, and ideas; to explore the world around them; and to understand and effectively use communication forms, strategies, and technologies.</p> <ul style="list-style-type: none"> <li>Students will communicate their understanding of mathematical vocabulary and language as they engage in mathematical discussions pertaining to fractions, decimals, and the conversion of one to the other.</li> </ul> <p> <b>Critical and Reflective Thinking</b> encompasses a set of abilities that people use to examine their own thinking and that of others. This involves making judgments based on reasoning, where students consider options, analyze options using specific criteria, and draw conclusions. People who think critically reflect on the information they receive through observation, experience, and other forms of communication to solve problems.</p> <ul style="list-style-type: none"> <li>Students will think critically and reflectively, drawing upon information, reasoning, and specific criteria/processes, to convert fractions to decimals.</li> <li>Students will analyze patterns to predict fraction to decimal conversions and verify their thinking with calculators.</li> <li>Students will use patterns and long division to determine if decimals repeat or terminate.</li> </ul>

### 3. INDIGENOUS WORLDVIEWS AND PERSPECTIVES

**Key resources:** First Peoples Principles of Learning (FPPL); [Aboriginal Worldviews and Perspectives in the Classroom](#)

FPPL to be included in this lesson (check all that apply):	How will you embed Indigenous worldviews, perspectives, or FPPL in the lesson?
<input checked="" type="checkbox"/> Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits, and the ancestors. <input checked="" type="checkbox"/> Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place). <input checked="" type="checkbox"/> Learning involves recognizing the consequences of one's actions. <input type="checkbox"/> Learning involves generational roles and responsibilities. <input type="checkbox"/> Learning recognizes the role of Indigenous knowledge. <input type="checkbox"/> Learning is embedded in memory, history, and story. <input checked="" type="checkbox"/> Learning involves patience and time. <input type="checkbox"/> Learning requires exploration of one's identity. <input type="checkbox"/> Learning involves recognizing that some knowledge is sacred and only shared with permission and/or in certain situations.	Throughout this lesson, I will encourage students to be patient and kind to themselves as they learn new concepts. This lesson will be delivered via an open, non-judgmental group discussion, posited on positive teacher/student and student/student relationships and connections. Ideas and concepts will be learned experientially, through a mixture of explicit instruction, modelling, scaffolded support, and practice. Student understanding will be dependent upon their participation in, and attentiveness to, class and group discussions and the assigned practice questions (done in class, with support as needed).

### 4. BIG IDEAS

**Key resources:** <https://curriculum.gov.bc.ca/> (choose course under Curriculum, match lesson to one or more Big Ideas)

What are students expected to <b>UNDERSTAND</b> ? How is this lesson connected to Big Idea/s or an essential question?
<b>Big Idea:</b> Decimals, fractions, and percents are used to represent and describe parts and wholes of numbers. <b>Elaboration:</b> What is the relationship between decimals, fractions, and percents? <b>Note:</b> In this lesson, only the relationship between fractions and decimals will be discussed (percent comes later in Unit).
1. Decimals are another way to write fractions. It is important to understand the relationships between them. 2. Percents and hundredths are the same. Percent is another way to write fractions and decimals. 3. Place value allows us to compare, order, and operate with decimals using strategies similar to those used with whole numbers. Estimation plays an important role in decimal computations.

### 5. LEARNING STANDARDS/INTENTIONS

**Key resources:** <https://curriculum.gov.bc.ca/> (choose course under Curriculum)

Curricular Competencies: What are students expected to <b>DO</b> ?	Content: What are students expected to learn ( <b>KNOW</b> )?
Students will convert fractions to decimals, using base 10 calculations, patterns and predictions (or calculators when needed). Students will use patterns and long division to determine if a decimal terminates (terminating decimal) or repeats (repeating decimal).  That is, students are expected to <b>DO</b> the following:  <b>1. Reasoning and analyzing:</b> <ul style="list-style-type: none"> <li>• Use reasoning and logic to explore, analyze, and apply mathematical ideas.</li> <li>• Demonstrate and apply mental math strategies.</li> <li>• Use tools or technology to explore and create patterns and relationships.</li> <li>• Model mathematics in contextualized experiences.</li> </ul>	Students will know that decimals are another way to write fractions and that the relationship between fractions and decimals is important. Students will know how to recognize and use base 10 calculations and patterns/predictions to convert fractions to decimals. Students will know what a terminating decimal and a repeating decimal is and how to determine which one a decimal is.  That is, students are expected to <b>KNOW</b> the following: <ul style="list-style-type: none"> <li>• Multiplication and division facts to 100 (developing computational fluency).</li> <li>• Relationships between decimals, fractions, ratios, and percents (the latter two relationships will be elaborated on later in the Unit).</li> </ul>

## 2. Understanding and solving:

- Apply multiple strategies to solve problems in both abstract and contextualized situations.
- Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving.
- Visualize to explore mathematical concepts.

## 3. Communicating and representing:

- Use mathematical vocabulary and language to contribute to mathematical discussions.
- Explain and justify mathematical ideas and decisions.
- Communicate mathematical thinking in many ways.
- Represent mathematical ideas in concrete, pictorial, and symbolic forms.

## 4. Connecting and Reflecting:

- Reflect on mathematical thinking.
- Connect mathematical concepts to each other and to other areas and personal interests.
- Use mathematical arguments to support personal choices.



## 6. ASSESSMENT PLAN

Key resources: [Instructional Design Map](#) and <https://curriculum.gov.bc.ca/classroom-assessment>

*How will students demonstrate their learning or achieve the learning intentions? How will the evidence be documented and shared? Mention any opportunities for feedback, self-assessment, peer assessment and teacher assessment. What tools, structures, or rubrics will you use to assess student learning (e.g. Performance Standard Quick Scale)? Will the assessments be formative, summative, or both?*

Students will demonstrate their learning and understanding of “Fractions to Decimals” (i.e., how to convert fractions to decimals using base 10 calculations, patterns, predictions, and calculators, and how to determine if a decimal will terminate or repeat using patterns and long division) in several ways:

- (1) In the responses they provide during class discussion.
- (2) In the responses they provide during a self-assessed thumbs up/down poll.
- (3) In their responses to practice questions.

Students will receive formative feedback at each of the three stages of learning.

Throughout the week, student responses to the practice questions will be handed in at the end of the lesson/block, so that I can review and provide feedback to students on where they are at in their learning (vs. where they need to be) before the next lesson.

This way, I can adjust my instruction, reviewing and/or re-teaching when necessary. I can also arrange additional support and go over corrections (working toward mastery of the concept).

Throughout the week, students will have the opportunity to practice, gain teacher feedback, and receive extra support.

At the end of the week (see Friday’s lesson plan), students will have a low-stakes, summative quiz to assess understanding of the concepts.

## 7. DESIGN CONSIDERATIONS

Key resources: [Instructional Design Map](#)

*Make brief notes to indicate how the lesson will meet needs of your students for: differentiation, especially for known exceptionalities, learning differences or barriers, and language abilities; inclusion of diverse needs, interests, cultural safety and relevance; higher order thinking; motivations and specific adaptations or modifications for identified students or behavioural challenges. Mention any other design notes of importance, e.g. cross-curricular connections, organization or management strategies you plan to use, extensions for students that need or want a challenge.*

This lesson will be delivered to students who have spent time working toward mastery of multiplication and division (as they pertain to the Grade 7 curriculum) and who have a proficient understanding of fractions (proper fractions, improper fractions, equivalent fractions, simplifying fractions, mixed numbers, going from improper to mixed, and adding and subtracting fractions). As such, all students have the knowledge necessary to understand that numbers can be written in both fraction and decimal form (i.e., decimals are another way to write fractions); that it is importance to understand the relationship between fractions and decimals; that converting fractions to decimals (using patterns and prediction, as well as calculators) is possible; and that a decimal will either terminate (terminating decimal) or repeat (repeating decimal).

**This lesson is review (of the past two day's materials) and will be used to prepare students for tomorrow's quiz.**

Exceptionalities: Several students in this group are colour-blind, so I have chosen visuals that account for colour-blindness (i.e., used black/grey and avoided red, green, and light blue). There are no other exceptionalities within the class that will interfere with student involvement in this lesson.

This lesson is important because students frequently encounter situations involving fractions, decimals, and percents in their daily lives. An understanding of these concepts provides students with the numerical and analytical skills necessary to be informed consumers and effective workers in our society. The skills students will develop in this lesson (and Unit) will enhance their knowledge of, and flexibility with, "number." This unit will help prepare students for the study of rational numbers, proportional thinking, and algebra in later years.

**Required preparation:** *Mention briefly the resources, material, or technology you need to have ready, or special tasks to do before the lesson starts, e.g. rearrange desks, book a room or equipment.*

I will need to do the following:

- (1) Scan to my email the following two worksheets: "Extra Practice 1" (from Master 3.21) and "Convert the Fractions to Decimals" (from About, math.about.com) and display on Smart Board.
- (2) Photocopy worksheets (1 page, double-sided) for students (15 copies).
- (3) Make sure extra loose-leaf paper and pencils are easily accessible.
- (4) Ensure that each student has a calculator (or phone with a calculator function).
- (5) Have the answer key ready for marking.

## 8. LESSON OUTLINE

Instructional Steps	Student Does/Teacher Does ( <i>learning activities to target learning intentions</i> )	Pacing
<b>OPENING:</b> <i>e.g. greeting students, sharing intentions, look back at what was learned, look ahead to what will be learning, use of a hook, motivator, or other introduction to engage students and activate</i>	<p>Cue Grade Seven students that it is time for their Math lesson, referring them to the visual schedule and directing them to get out a pencil, a calculator (or phone with calculator function) and their "Helpful Reminders" handout from yesterday before going to their assigned tables.</p> <p>Quickly check in with any students that were away, letting them know that I will check in and bring them up to speed after I give the lesson.</p>	Quick transition to lesson; interactive and lively pace. (5 min)

<p><i>thinking and prior knowledge</i></p>	<p>Ensure that the Grade Six students who are not involved in this lesson are doing the tasks assigned to them—Equivalent Fractions &amp; Simplifying Fractions practice questions.</p> <p>When students are organized and ready, inform them that they will be spending the block practicing the concepts they have been introduced to this week: (1) <b>Fractions to Decimals</b> (using base 10 calculations, patterns, predictions, and calculators) as well as the processes required to determine whether a decimal will terminate (terminating decimal) or repeat (repeating decimal)—all concepts covered in Unit 3, Lesson 1.</p> <p>Remind students that practice and review help solidify learning intentions and will prepare them for tomorrow’s quiz (which will be in a similar format).</p>	
<p><b>BODY:</b></p> <ul style="list-style-type: none"> <li>• <i>Best order of activities to maximize learning -- each task moves students towards learning intentions</i></li> <li>• <i>Students are interacting with new ideas, actively constructing knowledge and understanding, and given opportunities to practice, apply, or share learning, ask questions and get feedback</i></li> <li>• <i>Teacher uses learning resources and strategic opportunities for guided practice, direct instruction, and/or modelling</i></li> <li>• <i>Can include: transitions, sample questions, student choices, assessment notes (formative or otherwise), and other applications of design considerations</i></li> </ul>	<p>I DO: Ask students if they have any questions or concerns about the work we have done thus far.</p> <p>Wait for student feedback (<b>allowing sufficient wait time</b>).</p> <p>I DO: Provide answers or comments to student feedback. Speak to any issues I noted when marking yesterday’s work. Tell students that I will hand back their assignments from yesterday while they are working on today’s assignment so that they can ask clarifying questions or do corrections before tomorrow’s quiz.</p> <p>I DO: Display today’s assignment on the Smart Board. Speak to the types of the questions they will be doing (again reminding them that the quiz tomorrow will be very similar, but with less questions).</p> <p>WE DO: As a class, go through one practice question from each side of the worksheet. Ask for students to volunteer answers as we go (to ensure they understand the questions being asked of them).</p> <p><b>Note: Practice my wait time, giving students time to think and respond.</b></p> <p>I DO: Remind students to consult their “Helpful Reminders” handout and, if they forget their place values, they are written on the whiteboard.</p> <p>YOU DO: It is now time for students to practice what they have learned by doing the rest of the practice questions. They have the remainder of the Math block to complete as many questions as possible, and that they must hand in what they complete so that I can gauge understanding and provide feedback. Remind students that they need to have their name clearly indicated. Early finishers are to hand in their practice questions and resume working on their General Knowledge/Math Minute/Daily Language work.</p> <p>I DO: Reassure students that if they get stuck at any time, they can consult their reminder list, a peer, myself, or another adult in the room. They can raise their hand or approach me, and I will happily help them get “unstuck.”</p> <p>I DO: <b>Check in with students that were away yesterday, catch them up on the tasks they missed, and then circulate the room to provide additional support as needed.</b></p>	<p>Interactive, Responsive and lively pace. Redirect students who go off-task as needed. (10-15 min instruction followed by 30 min of practice).</p>

<p><b>CLOSING:</b></p> <ul style="list-style-type: none"> <li>• <i>Closure tasks or plans to gather, solidify, deepen or reflect on the learning</i></li> <li>• <i>review or summary if applicable</i></li> <li>• <i>anticipate what's next in learning</i></li> <li>• <i>"housekeeping" items (e.g. due dates, next day requirements)</i></li> </ul>	<p>2 minutes before the end of Math, cue ALL students that it is nearing the end of their math time and that (1) they should wrap up the question they are working on, and (2) hand in what they have completed (with their name clearly indicated). Let students know that I will return their practice questions tomorrow, prior to the quiz, so that they can ask last minute questions and/or receive last minute clarification.</p> <p>Ask students to <b>relate their level of readiness for the quiz</b> by a show of "thumbs up" (I get it), "thumbs in the middle" (I get some of it), or "thumbs down" (I am confused/do not get it).</p> <p>Cue ALL students (grade six and seven) to move on to the next activity/scheduled task (i.e., Lunch hour).</p>	<p>5 minutes or less to wrap up.</p>
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## 9. REFLECTION

<ul style="list-style-type: none"> <li>• <i>Did any reflection <u>in</u> learning occur, e.g. that shifted the lesson in progress?</i></li> <li>• <i>What went well in the lesson (reflection <u>on</u> learning)?</i></li> <li>• <i>What would you revise if you taught the lesson again?</i></li> <li>• <i>How do the lesson and learners inform you about necessary next steps?</i></li> <li>• <i>Comment on any ways you modelled and acted within the Professional Standards of BC Educators and BCTF Code of Ethics?</i></li> <li>• <i>If this lesson is being observed, do you have a specific observation focus in mind?</i></li> </ul>
<p>*To be completed at the end of the lesson.</p>

## **Fractions to Decimals: Helpful Reminders**

- Multiplication charts and calculators can be used when needed.
- Patterns sometimes occur when we write fractions in decimal form, and we can use these patterns to make predictions.
- For fractions with denominators of 11, the repeating digits are multiples of 9—that is, numerator  $\times 9$  = repeating digits and the repeating digits follow the decimal point (e.g.,  $1/11 = 0.09$  repeating;  $2/11 = 0.18$  repeating;  $3/11 = 0.27$  repeating, etc.).
- For fractions with denominators of 9, 99, 999, etc. the numerator of the fraction is the repeating digit(s) and the repeating digit(s) follow the decimal point (e.g.,  $1/9 = 0.1$  repeating;  $22/99 = 0.22$  repeating;  $333/999 = 0.333$  repeating).
- When patterns are not evident, we can write a fraction as a decimal by changing a fraction to an equivalent fraction with a denominator of 10, 100, 1000, etc. (i.e., use multiplication or division to change fraction to a power of 10/place value number then convert to decimal). Must multiply or divide numerator and denominator by same number.
- Fractions with a denominator of 10, 100, 1000 etc. will convert to decimals that terminate.
- We can also “think money” when we are converting fractions to decimals (i.e., think 4 quarters, 10 dimes, and 20 nickels in a dollar).
- Terminating decimals have a definite number of decimal places.
- Repeating decimals have digit(s) in the decimal that repeat forever.
- If you are unsure of whether a decimal terminates or repeats, you can use long division (a calculator can trick you since it rounds up when the display runs out of space).

# Extra Practice 1

## Lesson 3.1: Fractions to Decimals

1. a) Write each fraction as a decimal.

i)  $\frac{6}{8}$

ii)  $\frac{1}{3}$

iii)  $\frac{3}{5}$

iv)  $\frac{7}{8}$

v)  $\frac{6}{7}$

b) Identify the decimals in part a as terminating or repeating.

2. Write each decimal as a fraction in simplest form.

a) 0.02

b) 0.625

c)  $0.\overline{81}$

d)  $0.\overline{063}$

3. For each fraction, write an equivalent fraction with denominator 10, 100, or 1000. Then, write the fraction as a decimal.

a)  $\frac{4}{5}$

b)  $\frac{3}{50}$

c)  $\frac{7}{20}$

d)  $\frac{19}{200}$

4. Write the first 6 fractions as decimals. What patterns do you see?

Use the patterns to write the remaining fractions as decimals.

Fraction	Decimal
$\frac{1}{22}$	
$\frac{2}{22}$	
$\frac{3}{22}$	
$\frac{4}{22}$	
$\frac{5}{22}$	
$\frac{6}{22}$	
$\frac{7}{22}$	

Fraction	Decimal
$\frac{8}{22}$	
$\frac{9}{22}$	
$\frac{10}{22}$	
$\frac{11}{22}$	
$\frac{12}{22}$	
$\frac{13}{22}$	
$\frac{14}{22}$	



Convert the Fractions to Decimals

Gr 7 Review

math.about.com

1.) $\frac{2}{6}$	2.) $\frac{1}{2}$
3.) $\frac{2}{5}$	4.) $\frac{3}{4}$
5.) $\frac{3}{5}$	6.) $\frac{5}{6}$
7.) $\frac{2}{4}$	8.) $\frac{2}{3}$
9.) $\frac{3}{6}$	10.) $\frac{1}{3}$
11.) $\frac{4}{6}$	12.) $\frac{1}{6}$
13.) $\frac{4}{5}$	14.) $\frac{3}{5}$