

Model Lesson

Unit Name: Number Sense		Unit Length: 45 minutes	
Overview: Finding your place on a number line			
DESIRED RESULTS			
TEKS and Student Expectations (See Appendix A for detailed description.)			
(8.1) Number, operation, and quantitative reasoning. (A)			
Enduring Understandings (Big Ideas) Understand numbers, ways of representing numbers, relationships among numbers and number systems.	Essential Questions 1. How does $\frac{1}{8}$ compare to .25? 2. How does $\frac{n}{2}$ compare to .25n? 3. Why is it important to represent a quantity in various forms? 4. Find patterns among fractions. 5. Represent numbers in fraction form.		Critical Vocabulary Fraction (fracción) Decimal (decimal) Number Line (Linea de numeros)
Learning Goals Content objective: To help develop conceptual understanding of rational numbers and algebraic expressions.		Materials Needed <ul style="list-style-type: none"> • A 24 foot ribbon • Cards 1, 2, 3, 4 (cut out) • Calculators • Sentence strips 	
ASSESSMENT PLAN			
Performance Tasks Problems for practice: Have the students write the following numbers on a chart and convert to a decimal form: $\frac{1}{3}$, $\frac{1}{6}$, $\frac{1}{12}$, $\frac{1}{24}$, $\frac{1}{48}$. Check to determine if students can identify what relationship all the numbers have. Extensions to advanced math: Have the students create a		Other Evidence During the activities from the Learning Plan below, the teacher will observe student understanding and provide assistance as needed. Active participation in the activities by students and proper use of mathematical terms and algebraic symbols will further demonstrate	

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physical line with 0 and n (set 1 and/or 2-expressions): $0, n, \frac{1}{2}n, \frac{1}{4}n, \frac{1}{5}n, \frac{1}{2}$.

student understanding in the concept covered by this lesson.

GENERAL MELL CONNECTIONS THAT APPLY TO ALL LESSONS

(MC-01) - To assist the ELLs, the teacher should avoid speaking too rapidly and when possible use basic words rather than unfamiliar ones to introduce new concepts.

(MC-02) - Teachers should foster trusting relationships with ELLs through informal conversations and presentation of a culturally rich classroom.

(MC-03) - ELLs may need extra opportunities to demonstrate mastery. Grading policies should be flexible enough to provide multiple learning opportunities without severe grade penalties.

(MC-04) - ELLs may work at a slower pace than other students because of limited English language skills and should be provided with shortened assignments, or when appropriate, extra time to work on assignments.

(MC-05) - ELLs should be scheduled in a math class that has students who have some proficiency in both languages. Teachers may need to work with counselors and others to ensure that this happens.

(MC-06) - Teachers should offer tutoring as frequently as possible and encourage ELLs to come in for extra assistance. If possible, the teacher should arrange for an aide or parent volunteer who speaks the language of the ELL to help with translation during the tutoring period on a regular schedule (for example, on Tuesdays and Thursdays, after school).

LEARNING PLAN

After reviewing prerequisite knowledge and skills needed for this lesson, the teacher should guide the students through the following steps, making sure to introduce new concepts with visual aids, modeling, demonstration, guided practice, and independent practice.

1. Pick a student to represent the digit "0" and to hold on to one end of the ribbon. Choose another student to represent the digit "1" and to hold on to the other end of the ribbon. (MC-07), (MC-08), (MCF-10)
2. Pass out cards $1/4$, $1/2$, $1/100$, $1/10$ (set 1). (MC-07), (MC-08)
3. Each student holding a card is to find a reasonable position on the number line. The rest of the class members can assist each student. Students should be encouraged to share their strategy on finding a position on the number line formed with the ribbon. (MC-08), (MC-10), (MC-13)
4. Once each student is positioned, have the rest of the class check each position by converting each of the fractions to decimal form. Students should discuss the relationship between each fraction. (MC-08), (MC-10), (MC-13), (MC-16)
5. Once students have mastered these numbers, try set 2 (0, 1, $1/2$, $1/4$, $1/8$, $1/16$, $1/32$). (MC-08), (MC-10), (MC-13), (MC-16)
6. Set 2 can be physically illustrated like set 1 or the teacher can choose to use a sentence strip. A sentence strip is recommended because students can fold the strip as they find the relationship between each fraction. (MC-07), (MC-08), (MC-10)
7. On one end of the sentence strip write a "0". On the other end, write a "1". Fold the strip in half. Write a fraction to

MELL
Connections

(MC-07) - New concepts should first be presented to ELLs in a concrete manner, followed by a semi-concrete manner, and finally an abstract manner.

(MC-08) - Hands-on activities involving math manipulatives are typically helpful to ELLs because the lesson involves multiple learning modalities and does not require the student to rely solely upon his/her ability to understand verbal instruction.

(MC-10) - ELLs should be provided with or assisted in developing a learning aid that shows math vocabulary in both English and their native language and should be allowed to use this tool when working on

represent it ($1/2$). Fold the half in half. Write a fraction to represent this new section ($1/4$). Continue the folding process and write a fraction to represent each. (MC-07), (MC-08), (MC-10)

8. Have students represent each of the fractions in decimal form. It will help the student to write the fraction and its decimal form on a chart to discuss relationships between them. (MC-08), (MC-10)
9. The same activity can be repeated with the negative fraction and decimal cards in (sets 4 and 5).

Closure:

Being able to represent numbers in various forms gives the student the advantage of solving problems quickly. The situation usually dictates the representation form. Have students think of two situations where a number written in fraction form serves as a better representation than in decimal form, and vice versa.

assignments. Student-made glossaries, word walls, and compare and contrast charts help ELLs learn mathematics vocabulary.

(MC-13) - Before asking ELLs to speak on a mathematics topic or problem in class, give the student time to practice what they will say with a peer tutor or partner. Without this technique, ELLs may tend to just say "I don't know" when asked a question to avoid possible embarrassment over language deficiencies.

(MC-16) - When monitoring ELLs during instruction, the teacher should make a special effort to assist, re-explain and demonstrate again, if necessary. Encouragement and positive reinforcement should be used

	frequently.
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English Language Proficiency Standards Quick Reference. (Chapter 74. Curriculum Requirements Subchapter A. Required Curriculum, §74.4. English Language Proficiency Standards). The standards checked here are merely examples for the teacher's consideration for inclusion in this lesson.

Cross-curricular second language acquisition/ listening. The ELL listens to a variety of speakers including teachers, peers, and electronic media to gain an increasing level of comprehension of newly acquired language in all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in listening. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language

- [X] (c)(2)(A) - distinguish sounds and intonation patterns of English with increasing ease;
- (c)(2)(B) - recognize elements of the English sound system in newly acquired vocabulary such as long and short vowels, silent letters, and consonant clusters;
- [X] (c)(2)(C) - learn new language structures, expressions, and basic and academic vocabulary heard during classroom instruction and interactions;
- [X] (c)(2)(D) - monitor understanding of spoken language during classroom instruction and interactions and seek clarification as needed;
- [X] (c)(2)(E) - use visual, contextual, and linguistic support to enhance and confirm understanding of increasingly complex and elaborated spoken language;
- (c)(2)(F) - listen to and derive meaning from a variety of media such as audio tape, video, DVD, and CD ROM to build and reinforce concept and language attainment;
- [X] (c)(2)(G) - understand the general meaning, main points, and important details of spoken language ranging from situations in which topics, language, and contexts are familiar to unfamiliar;
- (c)(2)(H) - understand implicit ideas and information in increasingly complex spoken language commensurate with grade-level learning expectations; and
- [X] (c)(2)(I) - demonstrate listening comprehension of increasingly complex spoken English by following directions, retelling or summarizing spoken messages, responding to questions and requests, collaborating with peers, and taking notes commensurate with content and grade-level needs.

<p>proficiency. The student is expected to:</p>	
<p><i>Cross-curricular second language acquisition/speaking.</i> The ELL speaks in a variety of modes for a variety of purposes with an awareness of different language registers (formal/informal) using vocabulary with increasing fluency and accuracy in language arts and all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in speaking. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language</p>	<p>[X] (c)(3)(A) - practice producing sounds of newly acquired vocabulary such as long and short vowels, silent letters, and consonant clusters to pronounce English words in a manner that is increasingly comprehensible;</p> <p>[X] (c)(3)(B) - expand and internalize initial English vocabulary by learning and using high-frequency English words necessary for identifying and describing people, places, and objects, by retelling simple stories and basic information represented or supported by pictures, and by learning and using routine language needed for classroom communication;</p> <p>(c)(3)(C) - speak using a variety of grammatical structures, sentence lengths, sentence types, and connecting words with increasing accuracy and ease as more English is acquired;</p> <p>[X] (c)(3)(D) - speak using grade-level content area vocabulary in context to internalize new English words and build academic language proficiency;</p> <p>[X] (c)(3)(E) - share information in cooperative learning interactions;</p> <p>[X] (c)(3)(F) - ask and give information ranging from using a very limited bank of high-frequency, high-need, concrete vocabulary, including key words and expressions needed for basic communication in academic and social contexts, to using abstract and content-based vocabulary during extended speaking assignments;</p> <p>(c)(3)(G) - express opinions, ideas, and feelings ranging from communicating single words and short phrases to participating in extended discussions on a variety of social and grade-appropriate academic topics;</p> <p>[X] (c)(3)(H) - narrate, describe, and explain with increasing specificity and detail as more English is acquired;</p> <p>[X] (c)(3)(I) - adapt spoken language appropriately for formal and informal purposes; and</p> <p>[X] (c)(3)(J) - respond orally to</p>

<p>proficiency. The student is expected to:</p>	<p>information presented in a wide variety of print, electronic, audio, and visual media to build and reinforce concept and language attainment.</p>
<p><i>Cross-curricular second language acquisition/reading.</i> The ELL reads a variety of texts for a variety of purposes with an increasing level of comprehension in all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in reading. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. For Kindergarten and Grade 1, certain of these student expectations apply to text read aloud for students not</p>	<p>(c)(4)(A) - learn relationships between sounds and letters of the English language and decode (sound out) words using a combination of skills such as recognizing sound-letter relationships and identifying cognates, affixes, roots, and base words; (c)(4)(B) - recognize directionality of English reading such as left to right and top to bottom; [X] (c)(4)(C) - develop basic sight vocabulary, derive meaning of environmental print, and comprehend English vocabulary and language structures used routinely in written classroom materials; [X] (c)(4)(D) - use prereading supports such as graphic organizers, illustrations, and pretaught topic-related vocabulary and other prereading activities to enhance comprehension of written text; [X] (c)(4)(E) - read linguistically accommodated content area material with a decreasing need for linguistic accommodations as more English is learned; [X] (c)(4)(F) - use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language; [X] (c)(4)(G) - demonstrate comprehension of increasingly complex English by participating in shared reading, retelling or summarizing material, responding to questions, and taking notes commensurate with content area and grade level needs; (c)(4)(H) - read silently with increasing ease and comprehension for longer periods; [X] (c)(4)(I) - demonstrate English comprehension and expand reading skills by employing basic reading skills such as demonstrating understanding of supporting ideas and details in text and graphic sources, summarizing text, and</p>

<p>yet at the stage of decoding written text. The student is expected to:</p>	<p>distinguishing main ideas from details commensurate with content area needs;</p> <p>[X] (c)(4)(J) - demonstrate English comprehension and expand reading skills by employing inferential skills such as predicting, making connections between ideas, drawing inferences and conclusions from text and graphic sources, and finding supporting text evidence commensurate with content area needs; and</p> <p>[X] (c)(4)(K) - demonstrate English comprehension and expand reading skills by employing analytical skills such as evaluating written information and performing critical analyses commensurate with content area and grade-level needs.</p>
<p><i>Cross-curricular second language acquisition/writing.</i> The ELL writes in a variety of forms with increasing accuracy to effectively address a specific purpose and audience in all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in writing. In order for the ELL to meet grade-level learning expectations across foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated</p>	<p>(c)(5)(A) - learn relationships between sounds and letters of the English language to represent sounds when writing in English;</p> <p>(c)(5)(B) - write using newly acquired basic vocabulary and content-based grade-level vocabulary;</p> <p>(c)(5)(C) - spell familiar English words with increasing accuracy, and employ English spelling patterns and rules with increasing accuracy as more English is acquired;</p> <p>(c)(5)(D) - edit writing for standard grammar and usage, including subject-verb agreement, pronoun agreement, and appropriate verb tenses commensurate with grade-level expectations as more English is acquired;</p> <p>[X] e(c)(5)(E) - employ increasingly complex grammatical structures in content area writing commensurate with grade-level expectations, such as:</p> <ul style="list-style-type: none"> (i) using correct verbs, tenses, and pronouns/antecedents; (ii) using possessive case (apostrophes) correctly; and (iii) using negatives and contractions correctly; <p>[X] (c)(5)(F) - write using a variety of grade-appropriate sentence lengths, patterns, and connecting words to combine phrases, clauses, and sentences in increasingly accurate ways as more English is acquired; and</p>

(communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. For Kindergarten and Grade 1, certain of these student expectations do not apply until the student has reached the stage of generating original written text using a standard writing system. The student is expected to:

(c)(5)(G) - narrate, describe, and explain with increasing specificity and detail to fulfill content area writing needs as more English is acquired.

Appendix 1
EKS and Student Expectations

(8.1) **Number, operation, and quantitative reasoning.** The student understands that different forms of numbers are appropriate for different situations.

The student is expected to:

(A) compare and order rational numbers in various forms including integers, percents, and positive and negative fractions and decimals.