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| Lesson Plan Title/Info: | Lesson Plan - Unit 1: Lesson 01: Line Up (Comparing and Ordering Fractions, Decimals, and Whole Numbers) Is Number 1 Of 13 In Unit Plan - Unit 1: Health and Fitness (Number Operations and Data Collection) |
| Creator: | Jeremy Knight: jknight@access.k12.wv.us |
| Subject: | Mathematics |
| Grade Level: | Seventh Grade |
| Essential Questions: | <ol style="list-style-type: none"> 1. How can understanding the concepts of greater than and less than aid in achieving a healthy lifestyle? 2. What are the benefits of being able to compare and order numbers of differing types (integers, decimals) in the real world? |
| Launch/Introduction (suggested time 15-25 m): | <p>This lesson is meant to be a review of whole numbers, decimals, and integers. Lesson 07 focuses on the review of fractions. The activities are for review and practice. If after this lesson major deficiencies are noted in some area, hold off on continuing the unit until some remediation is done.</p> <p>Launch</p> <p>If you have an interactive whiteboard, pull up Unit 0's activity for Unit 01. It is called "Position" and is located in the executable file you download in unit 0. This activity should help you assess the base level of understanding of these values with your students. If you don't have an interactive whiteboard or can not get to the computer lab, create laminated sets of cards (1 to 20; -10 to 10; 1 to 20 with tenths -- such as 1.6, 2.0, 3.3, etc), and ask the students to arrange themselves from lowest value to highest. The goal is the same: to assess the base level of knowledge.</p> <p>I've postponed ordering fractions until Lesson 07, since that probably involves a more detailed review. However, there are fractions in the Unit 0 activity and you could include a set of fraction cards for ordering and should review how to change a fraction into a decimal.</p> |
| Activating Prior Knowledge: | <p>Review the idea of whole numbers, decimals, integers, and fractions. What do they look like? What do they have in common? Each group should create a Venn diagram to compare two types of numbers given by the teacher and then report out to the class. For instance, one group may compare/contrast whole numbers and decimals, another may do integers and fractions, another fractions and decimals, etc.</p> <p>After the reporting, all of the following reviewed vocabulary should be placed in the vocabulary book they will make in this lesson: place value, thousands, hundreds, tens, ones, tenths, hundredths, thousandths, fractions, numerator, denominator, integers.</p> |
| Specialized Vocabulary Development: | <p>Students will need a notebook to record vocabulary, data results conclusions, and examples. Suggested is the interlocking folding book (burrito book). Use about 6 pieces of paper and include some graph paper. Vocabulary: place value, thousands, hundreds, tens, ones, tenths, hundredths, thousandths, fractions, numerator, denominator, integers, greater than, less than, equal to, equivalent, positive, negative. These vocabulary words will be developed throughout the lesson.</p> <p>Specifically: before beginning the Activating Prior Knowledge Venn Diagram activity, do a vocabulary review. Have each group of four make a Frayer Model of either: whole number, integer, decimal number, or fraction. Go over the results; then do the Venn activity. Be sure to post on the wall the Frayer models and the Venn Diagrams for daily visual reinforcement.</p> <p>For further emphasis of place value, students could make a foldable with a hotdog fold and 8 tabs. On the outside could be the number 3587.952, one number (and the decimal) on the outside flap. Underneath the flap, put the place value name -- thousand, hundred, etc.</p> <p>Teachers may want to keep a word wall with all of the vocabulary words from this unit listed. It should be hung in the classroom where it would be visible to all students.</p> |

Investigate/Explore
(suggested time
from
30-40 m):

Students should be comfortable comparing and ordering within each classification: whole to whole, integer to integer. They may be rusty on decimal to decimal or fraction to fraction. The main investigation is designed to address that.

One difficulty of decimals is that students do not remember/understand the tenth place, hundredth place, etc. The following is an activity to use after reviewing and taking notes on place value. (This concept is also addressed in Lesson 5 of this unit. Break students into groups of five or six. Each group should have 20 notecards with the numbers 0-9 on them twice (0,0,1,1, would be the first four cards) and one index card with a decimal point on it. Call out, write out, or flash on the overhead a decimal number. For example, say two thousand, one hundred three and thirty-two thousandths. In designated areas the teams assemble as quickly as possible into the given number. A competition can be set up if desired.

After the place value review:

Students have previously learned that fractions can be converted to decimals by treating the fraction as a division problem ($\frac{3}{4}$ equals 3 divided by 4 or 0.75). For the purpose of this lesson the fractions will be compared by being changed into decimals. Calculators would be useful to assist in this activity.

Students have difficulty distinguishing which is more: 0.4 or 0.32. Pass out graph paper. To save time the graph paper could already have boxes of 100 delineated on them. Ask the students to divide the 100 square into 10 congruent rectangles. Have someone read 0.4 as a "number." You are looking for the answer "four-tenths." Have them color in three rectangles of ten boxes. This represents four-tenths. Now have them count how many grid squares they colored (40). This is forty-hundredths. In a different hundred square box, have them shade 32-hundredths. Is this more, less, or equal to four-tenths? Do a few more examples such as this. To differentiate for students who aren't challenged with this idea, try question such as "Which is bigger: 0.21 or 0.2?" or Which is bigger: 0.207 or 0.27?

After the examples, the teacher should be leading the students to see how to compare decimals that end in different place values. The concept of "annexing the zero" -- putting a zero at the end of a decimal that ends at an earlier place value is useful.

In notes, the teacher may want to give some guide lines for ordering numbers. 1) All numbers should either be integers or decimals. If a fraction is given, convert it to a decimal. 2) Use your knowledge of hundred squares to help you compare decimals of differing place value.

Greater than/Less than: the symbols $>$ and $<$. Ask students to offer ways to remember which means what. (Students often say the alligator's mouth goes to the bigger number, but that doesn't mean they know what the symbols mean. Some might say the $<$ looks a little like an "L" and therefore stands for less than. Solicit good ideas.

Summarize/Debrief
the Lesson
(suggested time
from
30-40 m):

Using the whiteboard or going to the computer lab, use the Unit 0 applet activity again and have them discuss any improvement they have noticed.

Students can create ordering problems for their classmates to complete.

Reflection:

Students: In a journal, describe two real world situations, involving health and fitness where you would have to compare amounts to make a decision.

Teachers: The student reflection is setting them up for lesson two when the theme of healthy lifestyles is introduced.

Differentiated Instruction: Students who have already mastered this material could be used as subject matter experts and either teamed with struggling students or put in charge of a group of four as a subject matter expert.

Students who are struggling should be allowed to use a number line, calculator, multiplication charts, and graph paper with 100 boxes at all times during the lesson.

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| | paper with 100 boxes at all times during the lesson. |
| Materials: | Whiteboard computers Card sets for ordering (optional) |
| Duration: | 90 minutes |
| Files Uploaded | |
| Date Created: | March 17, 2008 |
| Date Modified: | July 14, 2008 |