Finding Equivalent Forms For Positive Rational Numbers

Summary

Find equivalent forms for positive rational numbers. Divide numerator by denominator of a fraction to find a decimal.

Materials

- TI-73 calculators
- Colored paper and scissors for student Foldables
- Transparencies and worksheets for: " Representing Equivalent Rational Numbers" " Fractions, Decimals, and Percents With Candy"
- Transparencies for: Finding Equivalent Rational Number Forms song and Converting Rational Numbers Concentration Game

Background for Teachers

Enduring Understanding (Big Ideas):
Equivalency Rational numbers
Essential Questions:

- How can I represent equivalent forms for decimals, fractions and percents?
- How can a rational number be converted to a different form?
- How does the fraction a/b relate to a divided by b?

Skill Focus:
Convert positive rational numbers to fraction, decimal or percent form.
Vocabulary Focus:
Convert, equivalent number forms, repeating decimal, terminating decimal.
Ways to Gain/Maintain Attention (Primacy):
Technology, Journaling (Foldable), Sketching, Cooperative group discussion, game.

Instructional Procedures

Starter: Sketch each of the following and tell where you might use that rational number form.

- ¾
- 25%
- 0.6

Lesson Segment 1: How can I represent equivalent forms for decimals, fractions and percents?
Put the "Representing Equivalent Rational Numbers", and "Fractions, Decimals, and Percents With Candy" on transparencies, so you can discuss with the class.
As a class discuss and work to complete "Representing Equivalent Rational Numbers"
Apply: Have students work to complete "Fractions, Decimals, and Percents With Candy" one question at a time. Use a Board Talk protocol.
Board Talk Protocol
Students discuss a problem with team members or a partner without writing anything on their papers. Two or three students are randomly selected to come to the board to individually sketch and show reasoning for the first problem. The students work in separate spaces on the board, so the seated class members will be able to see and compare separate responses.
While the three students are working at the board, the remaining students work in their seats to complete the first item on their individual papers. Teacher selects a student at the board to explain to the class what they have done. The class is told they must each write one GOOD QUESTION about the explanation the student at the board is giving. A good question starts with how, why, what if, or

can you clarify… Write these GOOD QUESTION starters on the board. Students must write their good question on their assignment paper as the student is explaining.
After the explaining student finishes, the teacher selects one or two from the class to ask their GOOD QUESTION to the explaining student.
The teacher may select a second or third student at the board to then explain their approach, especially if they have a different response. The seated students again write a GOOD QUESTION for that explaining student. Or, the teacher may ask the class members to look at all responses on the board and prepare to describe how they are similar or different.
We know from our last lesson that there are times when one form for a rational number is better than another. For example, we wouldn't want to use the percent form for ½ in a recipe, and we wouldn't want to use the fraction form for $1.35 at the store.
Lesson Segment 2: How can a rational number be converted to a different form? How does the fraction a/b relate to a divided by b?
Q. Why would we want to be able to convert from one rational number form to another?
There are many procedures for converting rational numbers. One of these is to use the decimal form for a rational number as the "Middle Man". That is, that percents and fractions are first converted to the decimal form, and then can be converted to another form.
Sketch this graphic on the board. The idea here is that fractions can be converted to decimals by dividing denominator into numerator, and percents can be converted to a decimal by moving the decimal two places to the left.
Ask students if they have ever had to go through a "middle man". For example, when I was younger, I always went to my mother to ask her to get something I wanted from my father because she was easier to work with.
Fraction to Decimal: Demonstrate using the TI-73 to write a fraction as a decimal by dividing the denominator into the numerator. Use common fractions such as ½, , , , , ¼, ¾, and the fifths. Discuss the repeating decimals for and for pointing out that the calculator rounds the last digit for .
Percent to Decimal: Show students how to use the calculator to divide any number written in percent form by 100 to get a decimal.
Once the number is written in decimal form, we can use the Decimal Conversion Procedures:
Decimal to fraction: Write decimal as a fraction using, 10ths, 100ths, 100ths, as the denominator depending on the last place value of the number
Decimal to percent: Move decimal to the right two places.
Help students make a Three-Flap Foldable for their journal that looks like this. Clip on the dotted lines up to the fold line.
Write the decimal conversion procedure under the center flap. Write the procedures for converting fractions and percents to decimal form under the two designated flaps.
Sing the Equivalent Forms of Rational Numbers Song with them (attached)
Another way to finding equivalent rational numbers is to use the feature on the TI-73.Show the students how to use the key on the TI-73.
Fraction to Decimal and Decimal to Fraction: Type number then push and .
Percent to Fraction: Type the number then push
Fraction to percent: Type in the fraction then push 100.
Percent to Decimal: Type the number then push
Having more than one strategy for finding equivalent rational numbers will be helpful.
Lesson Segment 3: Practice Game:
Play Converting Rational Numbers Concentration (attached). Put the game on a transparency. Cover the squares with little post-its. Divide the class into two teams and have them guess to find a matching pair - two equivalent numbers in different forms.
Assign any text practice as needed.

Assessment Plan

Observation, student performance tasks.

Bibliography

This lesson plan was created by Linda Bolin.

Authors

Utah LessonPlans