Lesson: Division of Decimal Numbers

Student Notes

Goals:

- Demonstrate division of decimals with drawings and concrete models
- Solve real world problems involving division of decimals

Prerequisite Knowledge

- Understand division as partitioning by groups and partitioning by objects per group
- Familiar with base-ten block representation of decimal numbers
- Know multiplication facts up through 9×9

Activities:

1. Locate either your 1/10 fraction strip or day 10 notes, problem 2, the last number line (the marked 1/10's line).
    a. Using either your fraction strip or notes, solve $1 \div \frac{1}{10}$. (Recall: $1 \div \frac{1}{10}$ means how many ___ are in ____).

    b. How does the problem $1 \div \frac{1}{10}$ relate to the problem $1 \div 0.1$?

    c. How does the problem $1 \div 0.1$ relate to the problem $10 \div 1$? (Hint: You may want to think about or use the rod in the base-ten blocks.)

    d. Solve $1 \div 0.1$ using the long division pencil-and-paper method. Show all work. Be prepared to discuss your work with the class.

e. Whole Class Discussion: How do we solve $1 \div 0.1$ procedurally?

2. Working with a partner, given the problem, $0.1 \div 2$,
   a. Give an estimate for result.

   b. Assume that the flat represents a 1.
      i. What place value would the rod represent?

      ii. How does this relate to our division problem?

      iii. What value would the small cube represent?

      iv. What value would the large cube represent?

   c. Draw the solution to the division problem using base-ten blocks.

d. Solve this problem using the paper-and-pencil long division method. Be prepared to share your results with the class.

3. Working with a partner and given the problem $4 \div 11$
   a. Give a quick estimate for the answer. (For example, the answer is between _____ and ____. These blanks can be natural numbers like 1, 2, 3, 4, etc.)

   b. Solve this division problem using the paper-and-pencil long division method. Be prepared to share your results with the class.

Lesson: Division of Decimal Numbers

Instructor Notes

Goals:

- Demonstrate division of decimals with drawings and concrete models
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Prerequisite Knowledge

- Understand division as partitioning by groups and partitioning by objects per group
- Familiar with base-ten block representation of decimal numbers
- Know multiplication facts up through 9×9

Lesson Materials:

- Student Notes for Day 12
- Fraction strip folded for 1/10 or unfolded strips to hand out

Lesson Breakdown:

Activity	Size of Group	Time in Activity Total Time: 115 minutes
Division using the number line or fraction strip	Individually then whole class	20 minutes
Division with Base-10 blocks	Working with a partner then whole class	20 minutes
$4 \div 11$	Working with a partner then whole class	15 minutes
Break		5 minutes
Post Test	Individually	55 minutes

Activities:

4. Locate either your 1/10 fraction strip or day 10 notes, problem 2, the last number line (the marked 1/10's line).
   a. Using either your fraction strip or notes, solve $1 \div \frac{1}{10}$. (Recall: $1 \div \frac{1}{10}$ means how many $\frac{1}{10}$ are in 1).

There are 10 $\frac{1}{10}$'s in 1

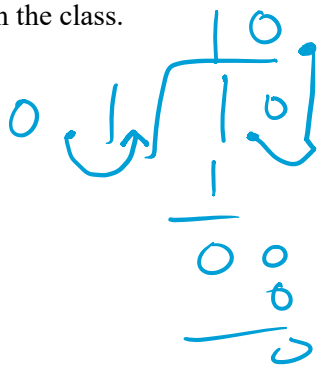
   b. How does the problem $1 \div \frac{1}{10}$ relate to the problem $1 \div 0.1$?

It is the same problem.

   c. How does the problem $1 \div 0.1$ relate to the problem $10 \div 1$? (Hint: You may want to think about or use the rod in the base-ten blocks.)

The two problems have the same result.
There are 10 dimes in a dollar
There are 10 ones in a $10 bill.

   d. Solve $1 \div 0.1$ using the long division pencil-and-paper method. Show all work. Be prepared to discuss your work with the class.



   e. Whole Class Discussion: How do we solve $1 \div 0.1$ procedurally?

We set up the division problem.
We must move the decimal one place to the right in both #s.
We complete the long division

5. Working with a partner, given the problem, 0.1 ÷ 2,
   a. Give an estimate for result.

Varies How many 2's in .1
Better way 1 dime cut into 2 equal amounts.

   b. Assume that the flat represents a 1.
      i. What place value would the rod represent?

Rod is a tenth

      ii. How does this relate to our division problem?

It is what is being divided into 2 equal amounts

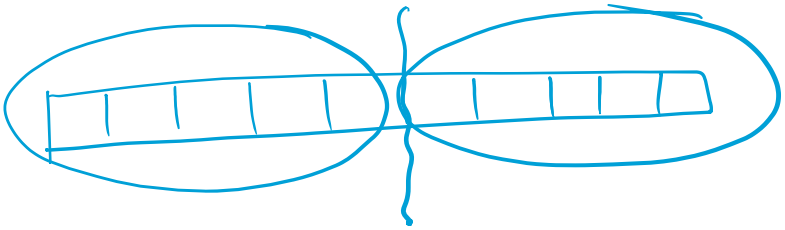
      iii. What value would the small cube represent?

a hundredth or penny.

      iv. What value would the large cube represent?

a Ten

   c. Draw the solution to the division problem using base-ten blocks.



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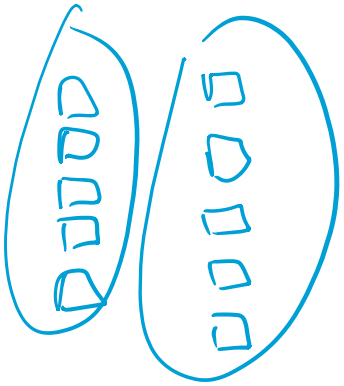

   d. Solve this problem using the paper-and-pencil long division method. Be prepared to share your results with the class.

$$2\overline{)10}\quad 05$$
$$\underline{0}$$
$$10$$
$$\underline{10}$$
$$0$$

.05

6. Working with a partner and given the problem $4 \div 11$
   a. Give a quick estimate for the answer. (For example, the answer is between 0 and 1. These blanks can be natural numbers like 1, 2, 3, 4, etc.)

varies

   b. Solve this division problem using the paper-and-pencil long division method. Be prepared to share your results with the class.