Lesson 23: Divide Whole Numbers by Decimals

Standards Alignments

Addressing 5.NBT.B.7, 5.OA.A.2

Teacher-facing Learning Goals

- Divide whole numbers by decimals to the hundredths using strategies based on place value.

Student-facing Learning Goals

- Let's divide whole numbers by decimals.

Lesson Purpose

The purpose of this lesson is for students to divide a whole number by a decimal less than 1 by reasoning about the number of groups of one tenth or one hundredth in one whole.

In the previous lesson, students divided whole numbers by one tenth and one hundredth and made generalizations about how to divide any whole number by those units. The purpose of this lesson is for students to extend that work to divide whole numbers by any number of tenths or hundredths (with total value less than 1). Consistent divisors are used in repetition to highlight relationships between the dividends and the quotients (MP8). Students evaluate expressions with larger divisors such as $12 \div 0.2$ in order to encourage them to use the relationship between multiplication and division. Rather than drawing 12 unit squares and dividing all of them into groups of 2 tenths, students may draw a single whole divided into 2 tenths and then use multiplication.

Access for:

Students with Disabilities

- Action and Expression (Activity 2)

Instructional Routines

MLR1 Stronger and Clearer Each Time (Activity 2), True or False (Warm-up)

Materials to Copy

- Small Grids (groups of 1): Activity 1
- Small Grids (groups of 1): Activity 2

Lesson Timeline

Warm-up	10 min
Activity 1	15 min
Activity 2	20 min
Lesson Synthesis	10 min
Cool-down	5 min

Teacher Reflection Question

What aspects of today's lesson allowed each of your students to see themselves as productive mathematical reasoners?

Cool-down (to be completed at the end of the lesson)

5 min

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Student-facing Task Statement

Find the value of each expression. Explain or show your reasoning.

1. $12 \div 0.5$
2. $13 \div 0.02$

Student Responses

1. 24. Sample response: There are 2 groups of 0.5 in 1 whole and $12 \times 2 = 24$.
2. 650. Sample responses:
   - There are 50 groups of 0.02 in 1. Since there are 13 wholes, that means there will be 13 times as many 0.02s which is the same as 13 groups of 50.
   - $50 \times 0.02 = 1$, $500 \times 0.02 = 10$, $100 \times 0.02 = 2$ and $50 \times 0.02 = 1$ so $(500 + 100 + 50) \times 0.02 = 10 + 2 + 1 = 13$