Practice Task: Number Puzzles

In this task, students solve problems using multiplication and division of decimals and find the answers in a number-search puzzle. After students solve the puzzle on the "Number Puzzle" Recording sheet, they create a number puzzle of their own using problems they make and solve. Students then trade papers allowing other students to find the solutions hidden within their number-search puzzle.

STANDARDS FOR MATHEMATICAL CONTENT

Perform operations with multi-digit whole numbers and with decimals to the hundredths.

MCC5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

All Rights Reserved

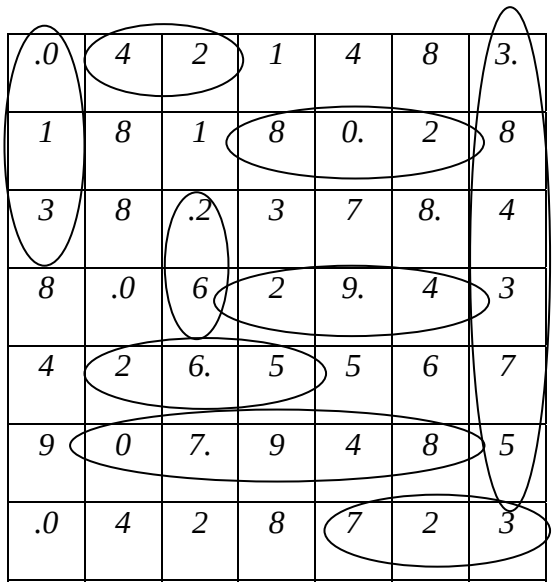
BACKGROUND KNOWLEDGE

If your students are not familiar with this type of activity, you may want to share an example of a word search and/or number search with them prior to assigning the task.

The number puzzle and solutions are shown below.

1. 0.12 • 0.35
2. 0.2 • 1.3
3. 10.5 • 2.8
4. 0.69 • 0.02
5. 19.87 x 0.4
6. 12.3 ÷ 3.2
7. 200.5 ÷ 2.5
8. $\frac{0.120}{3}$
9. $\frac{7.23}{0.01}$
10. 15.9 ÷ 0.6

.0	4	2	1	4	8	3.
1	8	1	8	0.	2	8
3	8	.2	3	7	8.	4
8	.0	6	2	9.	4	3
4	2	6.	5	5	6	7
9	0	7.	9	4	8	5
.0	4	2	8	7	2	3



ESSENTIAL QUESTIONS

- How do we multiply decimals by decimals?
- How does multiplying decimals affect the product?

All Rights Reserved

- How do we divide decimals by decimals?
- How does dividing decimals affect the quotient?

MATERIALS

- "Number Puzzle" recording sheet
- "Create-a-Number Puzzle" recording sheet

GROUPING

Individual/Partner task

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION:

Comments:

Students may use a calculator to check their work before creating their puzzle to ensure accuracy.

TASK

Students will follow the directions below from the "Number Puzzle" and "Create-a-Number Puzzle" Recording Sheets.

Part I

Find the answers to the given problems hidden in the number search.

1. 0.12 • 0.35 =
2. 0.2 • 1.3 =
3. 10.5 • 2.8 =
4. 0.69 • 0.02 =
5. 19.87 x 0.4 =
6. 12.3 ÷ 3.2 =
7. 200.5 ÷ 2.5 =
8. $\frac{0.120}{3}$ =
9. $\frac{7.23}{0.01}$ =
10. 15.9 ÷ 0.6 =

.0	4	2	1	4	8	3.
1	8	1	8	0.	2	8
3	8	.2	3	7	8.	4
8	.0	6	2	9.	4	3
4	2	6.	5	5	6	7
9	0	7.	9	4	8	5
.0	4	2	8	7	2	3

Encourage students to use estimation and mental math to find as many answers as they can.

Part II

Students will create their own number puzzles using the "Create-a-Puzzle" Recording Sheet. Directions are as follows:

All Rights Reserved

1. Make up five multiplication problems and five division problems. All multiplication/division problems must include decimals.
2. Using the forty-nine squares on your game board, make a number search puzzle with the ten answers to your multiplication/division problems. The answers can be hidden horizontally or vertically in the grid. Fill in any unused spaces with random numbers.
3. Switch your number search puzzle with a partner and try to solve each other's number puzzles.

FORMATIVE ASSESSMENT QUESTIONS

- Can you explain your process for computing with decimals?
- What are your strategies for creating your own number puzzle?
- How can you use estimation to help you find the product? Quotient?

DIFFERENTIATION

Extension

Encourage students to try to create overlaps with their hidden solutions so that a given number appears in both a vertical and horizontal solution.

Intervention

Have students work with a partner or in small groups to solve and create the number puzzles.

All Rights Reserved

Name _____ Date _____

Number Puzzle

Find the answers to the given problems hidden in the number search.

11. 0.12 • 0.35 =
12. 0.2 • 1.3 =
13. 10.5 • 2.8 =
14. 0.69 • 0.02 =
15. 19.87 x 0.4 =
16. 12.3 ÷ 3.2 =
17. 200.5 ÷ 2.5 =
18. $\frac{0.120}{3}$ =
19. $\frac{7.23}{0.01}$ =
20. 15.9 ÷ 0.6 =

.0	4	2	1	4	8	3.
1	8	1	8	0.	2	8
3	8	.2	3	7	8.	4
8	.0	6	2	9.	4	3
4	2	6.	5	5	6	7
9	0	7.	9	4	8	5
.0	4	2	8	7	2	3

All Rights Reserved

Name _____ Date _____

Create - a - Number Puzzle

1. Make up five multiplication problems and five division problems. All multiplication/division problems must include decimals.
2. Using the forty-nine squares on your game board, make a number search puzzle with the ten answers to your multiplication/division problems. The answers can be hidden horizontally or vertically in the grid. Fill in any unused spaces with random numbers.
3. Switch your number search puzzle with a partner and try to solve each other's number puzzles.

Write your number problems below.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Create your number puzzle below.

All Rights Reserved