Unit 3: Operations of Decimals

Learning Targets:
- LT1. Add decimals to the hundredths place value.
- LT2. Subtract decimals to the hundredths place value.
- LT3. Multiply decimals to the hundredths place value.
- LT4. Divide decimals to the hundredths place value.
- LT5. Use concrete models or drawings and strategies based on place value, operations, and/or the relationship between addition and subtraction.
- LT6. Relate the strategy to a written method and explain the reasoning used.

Key Words to Know
- Quotient
- Product
- Sum
- Difference
- Decimal
- Tenths
- Hundredths
- Thousandths

Conversation Starters:
- How can we draw a picture to solve problems when using decimals?
- Explain how you can use the model you drew and put it into a written method.
Add Decimals

Students will add 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. They will also relate the strategy to a written method and explain the reasoning used.

Important Steps

- When asked to add or subtract decimals, the most important step is to **line up the decimal points**.
- Add the digits together that are lined up.
- If the numbers do not have the same number of digits after the decimal point, you can use "filler zeros" to help you line up the numbers.

How can I support this strategy at home?

Practice
http://www.math.com/school/subject1/practice/S1U1L4/S1U1L4Pract.html

Interactive Games
Subtract Decimals

Students will subtract decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtractions. They will also relate the strategy to a written method and explain the reasoning used.

What does Subtracting Decimals look like?

- Write down the two numbers, one under the other, with the decimal points lined up.
- Add zeros so the numbers have the same length.
- Then subtract normally, remembering to put the decimal point in the answer.

Important Steps

How can I support this strategy at home?

Practice Problems!
https://www.khanacademy.org/math/pre-algebra/decimals-pre-alg/adding-decimals-pre-alg/e/subtracting_decimals

Games
Multiply Decimals

Students will multiply decimals to hundredths, using concrete models or drawings and strategies based on place value, and or properties of operations. They will relate the strategy to a written method and explain the reasoning used.

What do Multiplying Decimals look like?

Multiplying Decimal Numbers

Multiplying Decimal Numbers is very easy and simple. Just follow these three simple steps:

Step 1: Rewrite decimal numbers without decimal points.
Step 2: Multiply normally as we multiply the regular whole numbers.
Step 3: Count the number of decimal places for both numbers.

In other words, count how many digits are after the decimal point in both the numbers you are multiplying. Then add those number of decimal points to the answer.

Now, let's multiply 1.2 x 0.3 = ?

Step 1: 
1 2
x 0.3
3 6

Step 2: 1.2 has 1 decimal place, and 0.3 has 1 decimal place.

So, answer will have 2 decimal places

1.2 x 0.3 = 0.36

Now let's multiply 0.25 x 0.3 = ?

Step 1: 
2 5
x 3
7 5

Step 2: 0.25 has 2 decimal places, and 0.3 has 1 decimal place.

So, answer will have 3 decimal places.

0.25 x 0.3 = 0.075

Why is this strategy important?

- Multiply the numbers just as if they were whole numbers.
- Line up the numbers on the right - do not align the decimal points.

Starting on the right, multiply each digit in the top number by each digit in the bottom number, just as with whole numbers.
- Add the products.
- Place the decimal point in the answer by starting at the right and moving a number of places equal to the sum of the decimal places in both numbers multiplied.

How can I support this strategy at home?

Practice Problems!

Games
http://www.math-play.com/multiplying-decimals-game.html
Divide Decimals

Students will divide decimals to hundredths, using concrete models or drawings and strategies based on place value, and/or properties of operations. They will relate the strategy to a written method and explain the reasoning.

What does Dividing Decimals look like?

**DIVIDING DECIMALS**

Here’s the strategy:

1. Make the divisor a whole number
2. Move the decimal point in dividend
3. Divide as usual
4. Put decimal point directly above decimal pain
5. Check your answer

Important Steps

Dividing decimals is similar to dividing whole numbers.
- Divide as usual
- Place the decimal point from dividend directly above in quotient.
- Add zeros at the end of dividend if remainder to keep on dividing.

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Games
http://www.funbrain.com/football/