Rules for Decimals

Addition

Subtraction

Multiplication

Division

Rules for Addition

1. Line up your decimal points.
2. Add 0s after the decimal point so that all of the numbers have the same number of places after the decimal.
3. Add as you would with whole numbers.
4. Just move the decimal point down into your answer.

Rules for Addition - Example

1. Line up your decimal points

   1 . 3 8

   +2 . 4

   _____

2. Add 0s after the decimal point so that all of the numbers have the same number of places after the decimal

   1 . 3 8

   +2 . 4 0

   _____

Rules for Addition - Example

3. Add as you would with whole numbers.

```
 1 . 3 8
+2 . 4 0
_____
 3   7 8
```

4. Move the decimal point down into your answer.

```
 1 . 3 8
+2 . 4 0
_____
 3 . 7 8
```

Rules for Subtraction

1. Line up your decimal points.
2. Add 0s after the decimal point so that all of the numbers have the same number of places after the decimal.
3. Subtract as you would with whole numbers.
4. Just move the decimal point down into your answer.

Rules for Subtraction - Example

1. Line up your decimal points.

```
  6 5 . 3
- 4 2 . 4 5
_____
```

2. Add 0s after the decimal point so that all of the numbers have the same number of places after the decimal.

```
  6 5 . 3 0
- 4 2 . 4 5
_____
```

Rules for Subtraction - Example

3. Subtract as you would with whole numbers.

6 5 . 3 0

- 4 2 . 4 5

_____

2 2   8 5

4. Keep the decimal point in your answer in the same spot as in you problem.

6 5 . 3 0

-4 2 . 4 5

_____

2 2 . 8 5

Rules for Multiplication

1. Line up your numbers with the last digits under each other.

2. Multiply as you would with whole numbers.

3. Add the decimal places in each of the numbers being multiplied.

4. Move the decimal point to the left the TOTAL number of places in the numbers being multiplied.

Rules for Multiplication - Example

1. Line up your numbers with the last digits under each other.

```
  1 2 . 3
x   6 . 1 1
_____
```

Rules for Multiplication - Example

2. Multiply as you would with whole numbers.

$$
\begin{array}{r}
1\,2.3 \\
\times \quad 6.1\,1 \\
\hline
1\,2\,3 \\
1\,2\,3\,0 \\
+\,7\,3\,8\,0\,0 \\
\hline
7\,5\,1\,5\,3
\end{array}
$$

Rules for Multiplication - Example

3. Add the decimal places in each of the numbers being multiplied.

1 2.3 **1 decimal place**

x   6.1 1**2 decimal places**

_____

1 2 3

1 2 3 0**NEEDS**

+7 3 8 0 0

_____

7 5 1 5 3**3 decimal places**

Rules for Multiplication - Example

4. Move the decimal point to the left the TOTAL number of places in the numbers being multiplied.

1 2.3   1 decimal place

x   6.1   12 decimal places

_____

1 2 3

1 2 3 0 NEEDS

+7 3 8 0 0

_____

7 5.1 5 33 decimal places

Rules for Multiplication - Example

BIG HINT:

Check your answer using just whole numbers to make sure your answer is reasonable and the decimal point is in the correct place.

12 x 6 = 72 so 75.153 is reasonable

Would 751.53 be reasonable?
Would 7.5153 be reasonable?
Would 7,515.3 be reasonable?

Rules for Division

1. Move the decimal point in the divisor (the number outside the box) to the right to make it a whole number.

2. Move the decimal point in the dividend (the number inside the box) to the right the same number of places.

3. Divide as you would with whole numbers.

4. Move the decimal point into the quotient (your answer) directly above the decimal point you moved in the dividend.

Rules for Division – Example

1. Move the decimal point in the divisor (the number outside the box) to the right to make it a whole number.

1.6 $\overline{)5.76}$ Move the decimal point one point to the right

Becomes

16 $\overline{)57.6}$

Rules for Division – Example

3. Divide as you would with whole numbers

```
         3 6
1 6  5 7.6   Ignore the decimal point for now!
 - 4 8
     9 6
     9 6
       0
```

4. Move the decimal point into the quotient (your answer) directly above the decimal point you moved in the dividend.

```
    3.6
1 6  5 7.6
```

Division – Another Example

What happens to the dividend when there are no more numbers to move the decimal place to?

Example 1: $8 \div 1.6$ OR 1.6   8

Since there is one decimal place in the divisor, we need to move the decimal point in the dividend and the divisor to the right one.

How can we do this?

1.6   8.0 Remember we can add 0s after the decimal point without changing the value of the number.

Division – Another Example

Now we can solve as usual.

1.6   8.0 becomes

5.   Which equals 5

1 6   8 0 .

- 8 0 .

0 .

Division – Another Example

7.15 ÷ 32.5   or 32.5)‾7.15

Move the decimal places one place to the right.

$$\begin{array}{r} .2\,2 \\ 3\,2\,5\,\overline{)\,7\,1.5} \\ -\,6\,5\,0 \\ \hline 6\,5\,0 \\ -\,6\,5\,0 \\ \hline 0 \end{array}$$

Rules for Division - Example

BIG HINT:

Check your answer using just whole numbers to make sure your answer is reasonable and the decimal point is in the correct place.

5 / 1 = 5or

6 / 2 = 3 (if you round to a whole number)

so 3.6 is reasonable

Would .36 be reasonable?

Would 36 be reasonable?