

Operations with Decimals

Adding and Subtracting

- Be sure to line up your decimal points
- Change whole numbers into decimals
- Add zeroes as place holders

Line up the decimal points...

$$\begin{array}{r} 3.21 + 4.5 \\ \hline 7.71 \end{array}$$

↑ and just drag that decimal point straight down!

Add as usual!

$$\begin{array}{r} 7.88 - 6.5 \\ \hline 1.38 \end{array}$$

Adding Decimal Numbers

$$12.6 + 4 + 0.24 + 100$$

Whole numbers	
12	.60
4	.00
0	.24
100	.00
<hr/>	
116	.84

- Keep **decimal points** in line
- Line up **whole numbers** carefully
- Fill up spaces with **zeros**



Adding Decimals

Example:

$$0.32 + 12.965 + 1.1$$

Line up
the
decimal
points

$$\begin{array}{r} 0.320 \\ 12.965 \\ + 1.100 \\ \hline 14.385 \end{array}$$

'Pad'
with
zeros

Example:

$$51 + 14.02 + 2.1$$

$$\begin{array}{r} 51.00 \\ 14.02 \\ + 2.10 \\ \hline 67.12 \end{array}$$

Change
whole
number to
decimal

Multiplying Decimals

1. Multiply like whole numbers.
2. Count decimal places in the problem.
3. Put the same number of places behind the decimal in the product.

$$\begin{array}{r} 2.34 \\ \times 1.2 \\ \hline 2.808 \end{array}$$

$$\begin{array}{r} 2 \text{ decimal places} \\ + 1 \text{ decimal place} \\ \hline 3 \text{ decimal places} \end{array}$$

$$\begin{array}{r}
 0.3 \leftarrow 1 \text{ decimal place} \\
 \times 7 \leftarrow + 0 \text{ decimal place} \\
 \hline
 2.1 \leftarrow 1 \text{ decimal place}
 \end{array}$$

$$\begin{array}{r}
 0.64 \leftarrow 2 \text{ decimal places} \\
 \times 9 \leftarrow + 0 \text{ decimal place} \\
 \hline
 5.76 \leftarrow 2 \text{ decimal places}
 \end{array}$$

$$3.77 \times 2.8 = ?$$

$$\begin{array}{r}
 3.77 \text{ (2 decimal places)} \\
 \times 2.8 \text{ (1 decimal place)} \\
 \hline
 3016 \\
 +754 \\
 \hline
 10.556 \text{ (3 decimal places)} \\
 \text{RRR}
 \end{array}$$

Multiplying with Decimals

$$\begin{array}{r} 4.25 \\ \times 2 \\ \hline 850 \end{array} \quad \longrightarrow \quad \begin{array}{r} 4.25 \times 2 \\ \uparrow \quad \uparrow \\ \text{Decimal Places } 2 \quad 0 \end{array} \quad \longrightarrow \quad 850 = 8.50$$

2 places over

So, $4.25 \times 2 = 8.50$

Multiplying with Two Decimals

$$\begin{array}{r} 2.2 \\ \times 1.2 \\ \hline 264 \end{array} \quad \longrightarrow \quad \begin{array}{r} 2.2 \times 1.2 \\ \uparrow \quad \uparrow \\ \text{Decimal Places } 1 \quad 1 \end{array} \quad \longrightarrow \quad 264 = 2.64$$

2 places over

So, $2.2 \times 1.2 = 2.64$

Dividing Decimals

Dividing Decimals Poster

$$0.5 \overline{) 4.5}$$

$$05 \overline{) 45.}$$

$$\begin{array}{r} 90. \\ 05 \overline{) 45.} \\ - 45. \\ \hline 0 \end{array}$$

Steps:

1. If the divisor has a decimal, move it as many places to the right as necessary to make it a whole number.
2. Move the decimal in the dividend the same amount of times to the right as you did the divisor.
3. Divide.
4. Place the decimal in the same spot as the decimal in the dividend.

Divide Decimals

$$\begin{array}{r} \text{divisor } 1.4 \overline{) 3.64} \text{ dividend} \end{array}$$



$$\begin{array}{r} 2.6 \text{ quotient} \\ 14 \overline{) 36.4} \text{ dividend} \\ \underline{28} \\ 84 \\ \underline{84} \\ 0 \end{array}$$

1. Make the divisor a whole number by moving the decimal point.

2. Move the decimal point in the dividend the same number of places.

3. Divide

4. Line up decimal point in the quotient with decimal point in the dividend.

$$3.64 \div 1.4 = 36.4 \div 14 = 2.6$$

Find the quotient.

$$55.318 \div 3.4 \longrightarrow 3.4 \overline{)55.318}$$

Write in *standard form*.

$$3.4 \overline{)55.318}$$

Move *decimal point* in divisor and dividend.

$$16.27$$

$$3.4 \overline{)55.318}$$

Keep dividing until quotient repeats or comes out evenly.

$$\underline{-34}$$

$$213$$

$$\underline{-204}$$

$$91$$

$$\underline{-68}$$

$$238$$

$$\underline{-238}$$

$$0$$

Add zeros on right of dividend as needed.

The quotient is 16.27.