

Converting Fractions to Decimals (and vice versa)

It is easy to change a fraction to a decimal and a decimal to a fraction. You just need to understand that fractions and decimals are just numbers and/or parts of numbers expressed in different ways.

DECIMAL REVIEW

The Decimal System is another way of expressing a part of a whole number. A decimal is simply a fraction with a denominator of 10, 100, 1 000 or 10 000 etc. The number of decimal places refers to how many zeros will be in the denominator.

The first decimal place refers to tenths $2.3 = 2\frac{3}{10}$

The second decimal place refers to hundredths $2.31 = 2\frac{31}{100}$

The third decimal place refers to thousandths $2.319 = 2\frac{319}{1000}$

Similarly, six decimal places would be a fraction with a denominator of 1 000 000 (millionths). The most common usage of decimals is in our monetary system where 100 cents (2 decimal places) make up one dollar. For example, \$2.41 is really two dollars and forty-one hundredths ($\frac{41}{100}$) of a dollar.

Changing Decimals into Fractions

Example 1: Change 7.95 into a fraction

To change this decimal into a fraction, write down the whole number first:

7 is a whole number

Now look at the numbers after the decimal point (.95). This is a fraction of a whole number: 95 ‘somethingths’.

To work out what those ‘somethingths’ are, look at how many decimal places are being used: The number 9 is in the **tenths** column, and the 5 is in the **hundredths** column.

This means that we have 95 hundredths or $\frac{95}{100}$
So, $7.95 = 7\frac{95}{100}$ (you can simplify this to make $\frac{95}{100} = \frac{19}{20}$)

Examples:

1. **Change 2.30 to a fraction**
Notice that 2.30 is the same as 2.3
In fact, $2.30 = 2.300 = 2.3000$ etc.

$$2.30 = 2 \frac{30}{100} = 2 \frac{3}{10}$$

2. **Change 0.791 to a fraction**
Notice that $0.791 = .791$
The zero in front of the decimal place is not needed.

$$0.791 = \frac{791}{1000}$$

3. **Change .003 to a fraction**
Notice that the zeros in this example are important.

$$.003 = \frac{3}{1000}$$

4. **Simplify 0.0024000**
Notice that zero at the end or zero as a whole number (to the left of the decimal) is not needed.

$$0.0024000 = .0024$$

Changing Fractions into Decimals

Changing fractions into decimals is even easier than changing decimals into fractions. It is just a matter of remembering the line in a fraction actually means.



$\frac{1}{2}$ ← This line means **DIVIDE**. So, $\frac{1}{2} = 1 \div 2 = 0.5$

Examples:

1. **Change $\frac{9}{13}$ to a decimal**

$$9 \div 13 = 0.692 \text{ (or } 0.7)$$

2. **Change $3 \frac{2}{8}$ to a decimal**

3 is a whole number, so we leave it unchanged.

$$2 \div 8 = 0.25. \text{ So the answer is } 3.25$$

3. **Change $4 \frac{6}{7}$ to a decimal**

4 is a whole number, so we leave it unchanged.

$$6 \div 7 = 0.857 \text{ (or } 0.9). \text{ So the answer is } 3.25$$

Practice 1: Converting Fractions to Decimals

1) $\frac{1}{5}$

2) $\frac{3}{5}$

3) $\frac{2}{9}$

4) $3\frac{3}{4}$

5) $5\frac{1}{9}$

6) $12\frac{3}{8}$

Practice 2: Converting Decimals to Fractions

1) 0.5

2) 0.9

3) 0.45

4) 2.6

5) 3.25

6) 1.75

7) 7.324

8) 0.231

9) 0.01

10) 5.065

Answers on the next page

Answers:

Remember that your answers may be slightly different from those given below, because of rounded decimals and the route you took to reach your answer.

If you find any errors on the study material, please email assessments@viu.ca

Practice 1:

1) 0.2 2) 0.6 3) 0.22 4) 3.75 5) 5.11 6) 12.375

Practice 2:

1) $\frac{1}{2}$ 2) $\frac{9}{10}$ 3) $\frac{45}{100}$ or $\frac{9}{20}$ 4) $2\frac{6}{10}$ or $2\frac{3}{5}$ 5) $3\frac{1}{4}$ 6) $1\frac{3}{4}$

7) $7\frac{324}{1000}$ or $7\frac{81}{250}$ 8) $\frac{231}{1000}$ 9) $\frac{1}{100}$ 10) $5\frac{65}{1000}$ or $5\frac{13}{200}$