

Converting between Fractions and Decimals

PART A: Converting Fractions to Decimals

All fractions (proper, improper and mixed) can be converted to a decimal number.

To convert a proper or improper fraction to a decimal, divide the numerator by the denominator.

Note: proper fractions (and the decimal equivalents) are always greater than zero but less than 1.

Improper fractions (and the decimal equivalents) are always greater than 1.

Example 1:

$$\frac{3}{10} = 3 \div 10 = 0.3$$

Example 2:

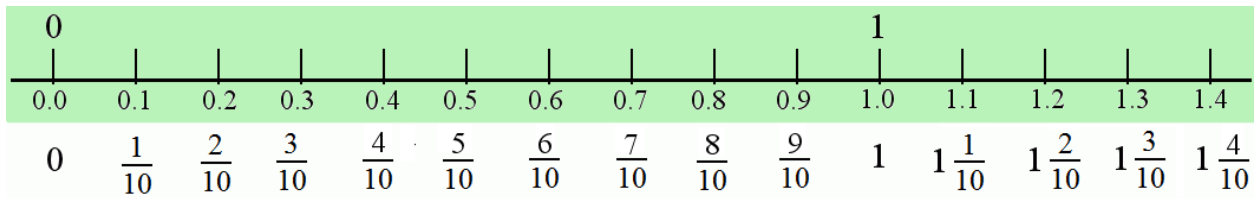
$$\frac{17}{10} = 17 \div 10 = 1.7$$

To convert a mixed number to a decimal, divide the numerator by the denominator of the fraction part and add the whole part.

Note: Mixed numbers (and the decimal equivalents) are always greater than 1.

Example 1:

$$1\frac{40}{100} = 1 + (40 \div 100) = 1.4$$



Exercises:

Convert the following fractions to a decimal number.

- | | |
|--|--|
| a) $\frac{5}{6}$ (to the nearest hundredth) = | b) $\frac{85}{70}$ (to the nearest hundredth) = |
| c) $3\frac{7}{8}$ (to the nearest hundredth) = | d) $\frac{48}{16}$ (exactly) = |
| e) $\frac{1}{25}$ (exactly) = | f) $5\frac{4}{4}$ (exactly) = |
| g) $\frac{7}{2}$ (exactly) = | h) $\frac{72}{13}$ (to the nearest thousandth) = |
| i) $4\frac{1}{3}$ (to the nearest hundredth) = | j) $38\frac{19}{20}$ (exactly) = |

PART B: Converting Decimals to Fractions

All decimals can be converted to a fraction and/or mixed number.

Example 1:

0.3

Step 1:

Write the decimal as a fraction with a denominator of 1.

$$0.3 = \frac{0.3}{1}$$

Step 2:

Multiply the numerator **and** denominator by a power of ten to make the decimal a whole number.

$$\frac{0.3}{1} \cdot \frac{10}{10} = \frac{3}{10}$$

Step 3:

Reduce if possible. Remember to change all improper fractions to a mixed number.

Cannot be reduced

Example 2:

0.96

Step 1:

Write the decimal as a fraction with a denominator of 1.

$$0.96 = \frac{0.96}{1}$$

Step 2:

Multiply the numerator **and** denominator by a power of ten to make the decimal a whole number.

$$\frac{0.96}{1} \cdot \frac{100}{100} = \frac{96}{100}$$

Step 3:

Reduce if possible. Remember to change all improper fractions to a mixed number.

$$\frac{96}{100} = \frac{24}{25}$$

Example 3:

2.35

Step 1:

Write the decimal as a fraction with a denominator of 1.

$$2.35 = \frac{2.35}{1}$$

Step 2:

Multiply the numerator **and** denominator by a power of ten to make the decimal a whole number.

$$\frac{2.35}{1} \cdot \frac{100}{100} = \frac{235}{100}$$

Step 3:

Reduce if possible. Remember to change all improper fractions to a mixed number.

$$\frac{235}{100} = \frac{47}{20}$$
$$\frac{47}{20} = 2\frac{7}{20}$$

Exercises:

Convert the following decimals to a fraction.

- a) 0.79
- b) 2.008
- c) 1.05
- d) 0.02
- e) 0.083
- f) 19.3
- g) 15.34
- h) 0.005
- i) 100.6
- j) 34.54

Solve using long division and write the final answer as a fraction.

a) $5634 \div 25 =$

b) $78523 \div 50 =$

c) $96451 \div 13 =$

d) $10432 \div 89 =$

SOLUTIONS:

Convert the following fractions to a decimal number.

- a) $\frac{5}{6}$ (to the nearest hundredth) = **0.83** b) $\frac{85}{70}$ (to the nearest hundredth) = **1.21**
c) $3\frac{7}{8}$ (to the nearest hundredth) = **3.88** d) $\frac{48}{16}$ (exactly) = **3**
e) $\frac{1}{25}$ (exactly) = **0.04** f) $5\frac{4}{4}$ (exactly) = **6**
g) $\frac{7}{2}$ (exactly) = **3.5** h) $\frac{72}{13}$ (to the nearest thousandth) = **5.538**
i) $4\frac{1}{3}$ (to the nearest hundredth) = **4.33** j) $38\frac{19}{20}$ (exactly) = **38.95**

Convert the following decimals to a fraction. Reduce where possible.

- a) $0.79 = \frac{79}{100}$ b) $2.008 = 2\frac{1}{125}$
c) $1.05 = 1\frac{1}{20}$ d) $0.02 = \frac{1}{50}$
e) $0.083 = \frac{83}{1000}$ f) $19.3 = 19\frac{3}{10}$
g) $15.34 = 15\frac{17}{50}$ h) $0.005 = \frac{1}{200}$
i) $100.6 = 100\frac{3}{5}$ j) $34.54 = 34\frac{27}{50}$

Solve using long division and write the final answer as a fraction.

- a) $5634 \div 25 = 225\frac{9}{25}$ b) $78523 \div 50 = 1570\frac{23}{50}$
c) $96451 \div 13 = 7419\frac{4}{13}$ d) $10432 \div 89 = 117\frac{19}{89}$