Fraction – Decimal Conversions

Decimals and fractions both represent quantities that are parts of a whole

Decimals are most often associated with measurements or scientific notation
Fractions are typically used with ratios of small whole numbers

Converting a decimal to a fraction is particularly relevant to finding Empirical Formulas

Terminating Decimals

These are the most common (and easiest to handle)

They have a finite (fixed) number of digits

Examples: 1.5 6.789 23.1234567 2.01

Non-Terminating Decimals

These are decimals that never end … they have no termination and can be written to the limit of space and patience.

Example: $\pi = 3.14159265$ ...

Repeating Decimals

These are non-terminating decimals that have a sequence of digits that continues to repeat
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Examples: 4.33333333333333333333333333 ➔ $4.3\overline{}$

An overhead bar represents a never-ending repeating decimal sequence.

Converting Decimals to Fractions

Write the decimal: 4.75
Write as "power of ten" fraction: 4 75/100
Reduce, if possible: 4 ¾ (bt dividing numerator and denominator by 25)

0.04 ➔ 4/100 ➔ 1/25
0.24 ➔ 24/100 ➔ 6/25
0.78 ➔ 78/100 ➔ 39/50

Converting Fractions to Decimals

Divide numerator by denominator; either manually or with a calculator

$$\begin{array}{r} 0.75 \\ 4 \overline{)\,3.00} \end{array}$$

¾ ➔ 4 / 3.00