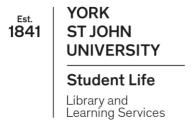## Converting decimals to fractions

1. Look at the decimal you are trying to convert. Count how many values there are after the decimal point. We write the number of values as 'a'.

    – For example, 0.15 has 2 values after the decimal point, 0.005 has 3 values after the decimal point, and $0.\dot{3}$ has an infinite amount of values after the decimal point, so we cannot use this method on $0.\dot{3}$.

2. Write the fraction as: $\dfrac{\text{decimal} \times 10^a}{10^a}$.

    – For example, 0.15 written as a fraction is $\dfrac{0.15 \times 10^2}{10^2} = \dfrac{15}{100}$, and 0.005 written as a fraction is $\dfrac{0.005 \times 10^3}{10^3} = \dfrac{5}{1000}$.

3. If you can, cancel down the fraction until it is in its simplest form.

    – For example, $0.15 = \dfrac{15}{100} = \dfrac{3}{20}$, and $0.005 = \dfrac{5}{1000} = \dfrac{1}{200}$.

4. If there are an infinite number of (non-zero) values after the decimal point, we cannot use this method. Some decimals convert exactly into fractions, and you will need to remember some of these.

    – For example, $0.\dot{3} = \dfrac{1}{3}$, $0.\dot{6} = \dfrac{2}{3}$, $0.1\dot{5} = \dfrac{1}{6}$.

    – Otherwise, sometimes we must settle for rounding the number and then converting it to a close, but slightly inaccurate fraction. For example, 0.14253… could be rounded to 0.1425, and then converted to give $\dfrac{1425}{10000} = \dfrac{57}{400}$.

Converting decimals to percentages

1. Multiply the decimal by 100.

   – For example, 0.23 can be written as 0.23 x 100 = 23%, 1.5 can be written as 1.5 x 100 = 150%, and 0.5245 can be written as 0.5245 x 100 = 52.45%.

Converting percentages to decimals

1. Divide the percentage by 100.

   – For example, 55% can be written as 55 ÷ 100 = 0.55, 187% can be written as 187 ÷ 100 = 1.87, and 0.5% can be written as 0.5 ÷ 100 = 0.005.

Converting percentages to fractions

1. Write the percentage as the numerator in a fraction over 100.

   – For example, write 86% as $\frac{86}{100}$.

2. Cancel down the fraction if possible.

   – For example, $\frac{86}{100} = \frac{43}{50}$.

Converting fractions to decimals

1. Divide the numerator by the denominator. This may require a calculator.

   - For example, $\frac{2}{5} = 2 \div 5 = 0.4$.

Converting fractions to percentages

1. Convert the fraction into a decimal.
2. Convert the decimal into a percentage.

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