<u>'How To' Guide – One Number as a % of</u>

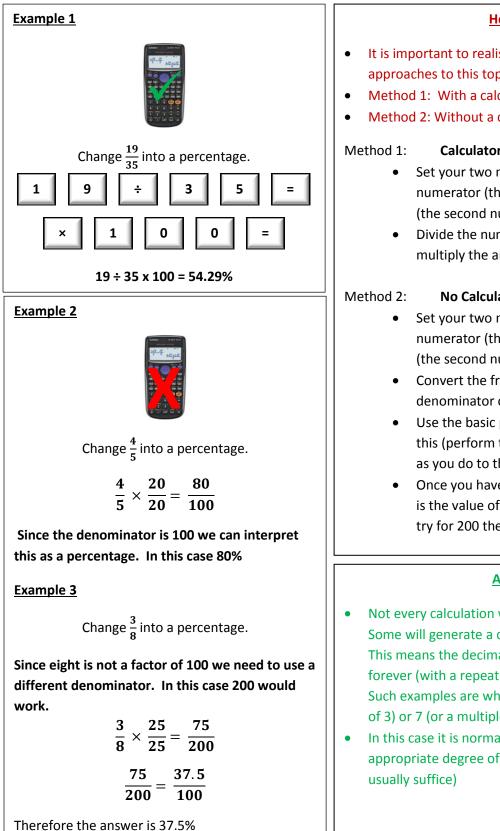
Another Number



Percentages: A proportion based on the number 100. Its symbol is %.

We can use percentages to compare quantities that are presented in different formats; e.g. decimals, fractions and ratios.

Converting one number into a % of another is an excellent way to compare fractions of different denominators.



How we teach it

- It is important to realise that there are two distinct approaches to this topic.
- Method 1: With a calculator
- Method 2: Without a calculator.

Calculator allowed

- Set your two numbers out as a fraction with a numerator (the first number) and a denominator (the second number).
- Divide the numerator by the denominator then multiply the answer by 100.

No Calculator allowed

- Set your two numbers out as a fraction with a numerator (the first number) and a denominator (the second number).
- Convert the fraction into another with a denominator of 100 (if possible).
- Use the basic principles of equivalent fractions to do this (perform the same operation to the numerator as you do to the denominator).
- Once you have the fraction over 100, the percentage is the value of the numerator. If 100 is not available, try for 200 then halve your numerator etc.

Additional info

Not every calculation will result in a 'neat and tidy' answer Some will generate a decimal answer that recurs. This means the decimal part of the answer will continue forever (with a repeating pattern).

Such examples are when the denominator is 3 (or a multiple of 3) or 7 (or a multiple of 7)

In this case it is normal practice to round the decimal to an appropriate degree of accuracy. (2 decimal places will E.g. $\frac{1}{6} = 16.67\%$

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Common mistakes

- Leaving the calculator answer as a decimal forgetting to multiply by 100.
- Not understanding that you can have more than 100%.
- Using an incorrect multiplier to generate a denominator of 100.

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- Forgetting to perform the same operation to the numerator as you do to the denominator, resulting in an answer too small.
- Poor multiplication/numeracy skills .
- Panicking and rejecting an answer when the decimal recurs (in the case of a multiple of 3) and when the decimal looks nasty (in the case of a multiple of 7).
- Not knowing what multiplier to use in the case of a non-calculator question.

What can you do to help?

- Whenever you set a piece of work that can be marked numerically, write the mark as a fraction.
- Ask the students to convert the fractional grade into a percentage.
- If the denominator allows, use the non-calculator method. If not, use the calculator method.