# Introduction to Logarithm laws

## Year 10A Maths

### Australian curriculum Learning objectives

* [ACMNA265](http://www.australiancurriculum.edu.au/Elements/3250b248-bcb7-4aa8-8234-9e4600a25367)[[1]](#footnote-1): Use the definition of a [logarithm](http://www.australiancurriculum.edu.au/Glossary?a=M&t=logarithm)[[2]](#footnote-2) to establish and apply the laws of logarithms

### Resources required

* Suitable facilities for showing captioned YouTube clips on screen to class including access to the Internet
* Student worksheets x class set

Lesson outcome: Students learn about logarithm laws and accurately implement their use.

#### Lesson outline:

1. Commence class by reviewing students understanding of exponents. Explain that learning about logarithms in this class will provide students with another way to express what they can currently only express as an exponent.
2. Students view [first clip from the Khan Academy](http://www.youtube.com/watch?v=mQTWzLpCcW0&feature=relmfu)[[3]](#footnote-3) which provides a basic overview of the definition of a logarithm (10 mins)
3. Provide students with two example logarithms to solve. Explain that now that they have a basic understanding of what a logarithm is they will learn about logarithmic laws.
4. Students view [second clip from the Khan Academy](http://www.youtube.com/watch?v=PupNgv49_WY)[[4]](#footnote-4) (9 mins)
5. Review the properties of logarithms, as outlined in the clip from the Khan Academy. Work through multiple examples with the assistance of students.
6. Provide students with [worksheet](http://www.eowyn.org/teaching/AdvAlgebra/Logarithms_01.pdf)[[5]](#footnote-5) and time to work through the exercises which draw on their understanding of logarithms and exponents. Review answers to worksheet as a class with demonstrations of worked examples on board.

### Homework/extension

Students should visit the Khan Academy YouTube channel and consider the clips which focus on the proofs for the logarithm properties.

### Opportunity for further activity

* Students can begin to work through these [logarithm problems](http://maths.mq.edu.au/numeracy/web_mums/module2/Worksheet27/module2.pdf)[[6]](#footnote-6). Students who are mastering the basic logarithm content may be directed to working ahead on to the natural logarithm including the use of *e*.

The following webpages are valuable for revision of key concepts:

* [Maths Is Fun – working exponents and logarithms](http://www.mathsisfun.com/algebra/exponents-logarithms.html)[[7]](#footnote-7)
* [Maths Is Fun – Introduction to logarithms](http://www.mathsisfun.com/algebra/logarithms.html)[[8]](#footnote-8)
1. http://www.australiancurriculum.edu.au/Elements/3250b248-bcb7-4aa8-8234-9e4600a25367 [↑](#footnote-ref-1)
2. http://www.australiancurriculum.edu.au/Glossary?a=M&t=logarithm [↑](#footnote-ref-2)
3. <http://www.youtube.com/watch?v=mQTWzLpCcW0&feature=relmfu> [↑](#footnote-ref-3)
4. http://www.youtube.com/watch?v=PupNgv49\_WY [↑](#footnote-ref-4)
5. <http://www.eowyn.org/teaching/AdvAlgebra/Logarithms_01.pdf> [↑](#footnote-ref-5)
6. <http://maths.mq.edu.au/numeracy/web_mums/module2/Worksheet27/module2.pdf> [↑](#footnote-ref-6)
7. <http://www.mathsisfun.com/algebra/exponents-logarithms.html> [↑](#footnote-ref-7)
8. <http://www.mathsisfun.com/algebra/logarithms.html> [↑](#footnote-ref-8)