Craigieburn Secondary College

Best Practice #1

AusVels- 9.0:
Students will be able to express numbers in scientific notation
Students will be able solve problems involving very small numbers
Students will be able solve problems involving very big numbers

	Define Scientific Notation	Scientific notation is used to express very large and very small numbers as: (a number between 1 and 10) × 10^{power} **Must always be to a base 10** It may also be *called* standard notation or standard form.
	Expressing a Very Small number	A very small number is expressed to a negative power **(a number between 1 and 10) × $10^{negative\ power}$**
	Expressing a Very Big Number	A very small number is expressed to a positive power **(a number between 1 and 10) × $10^{positive\ power}$**
Step 1 (ii)	**Task:** **A piece of dust is 0.000 000 000 753 kg, express this number in scientific notation.**	**Step 1:** Begin at the decimal point and jump to the right and then position the decimal point after the first significant digit. This is because the co-efficient must be less than 10. **0.000 000 000 753 kg**
	The amount of jumps made indicate what the power will be	**Step 2:** Count how many jumps you made. 1 2 3 4 5 6 7 8 9 10 **0.000 000 000 753kg**
		Step 3: Re-write the number. **7.53×10^{-10}** **Note: it is to a negative power**

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Step 1 (iii)	**Task:** **A red blood cell is 8.0×10^{-6} metres long. What is this as a basic numeral?**	A negative power indicates the number is very small **8.0×10^{-6}**
	1. Explain that we "jump" to the left because the power is negative. **Show that jumping to the right would make the number Bigger.**	We jump to the left because the power is negative and we start jumping from the decimal point. **8.0×10^{-6}**
	2. The power indicates how many times we need to jump	6 5 4 3 2 1 **8.0×10^{-6}** We jump 6 times because the power is 6. When you finish jumping ADD a decimal point
	3. For each jump– that results in an empty space replace with a zero.	6 5 4 3 2 1 **$0.000008.0 \times 10^{-6}$** Add a zero in front of the decimal point
	4. Rewrite is 8.0×10^{-6} as a basic numeral	**A basic numeral is a normal number** **A red blood cell is 0.000008 metres long**

Step 1 (iv)	**Convert 5.792×10^7 to a basic numeral**	Positive powers mean this number is BIG number we therefore jump top the right **5.792×10^7**
	5. The power indicates how many times we need to jump **A positive power means we move the decimal point to the RIGHT**	The amount of times we "jump" is dictated by the power. Starting at the decimal point **$5 .792 \times 10^7$** 1 2 3 4 5 6 7 **5.7 9 2**
	6. Rewrite is 8.0×10^{-6} as a basic numeral	**$5 .792 \times 10^7$** 1 2 3 4 5 6 7 **5.7 9 2 0 0 0 0** For each jump– that results in an empty replace with a zero. When you finish jumping re-position the decimal point after the last jump **Both $5 .792 \times 10^7$ and 57920000 have the same value but is just shown differently**