Edward Peake Church of England Middle School
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Topic: Indices

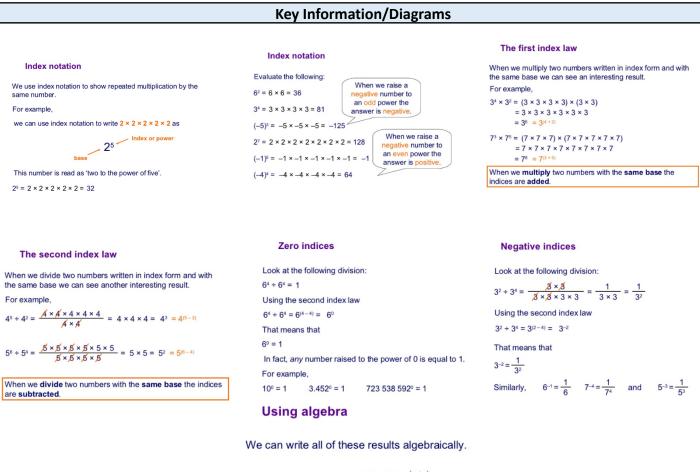
Year: 8

NC Strand: Algebra

	What should I already know?		
•	I can use diagrams and letters to generalise number operations		
•	I can use diagrams and letters with single function machines		
•	I can find the function machine given a simple expression		
•	I can use diagrams and letters with a series of of two function machines		

What will I know by the end of the unit?

- How to add and subtract expressions with indices
- How to simplify algebraic expressions by multiplying indices
- How to simplify algebraic expressions by dividing indices
- How to use the addition law for indices
- How to use the subtraction law for indices
- How to use the addition and subtraction laws for indices
- How to explore powers of powers



 $a^m \times a^n = a^{(m+n)}$ $a^m \div a^n = a^{(m-n)}$ $a^0 = 1$ $a^{-1} = \frac{1}{a}$ $a^{-n} = \frac{1}{a^n}$

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Key Questions			
What is the difference between a term and an expression?	What is the difference between a base and an index?		
When are terms 'like terms'?	How can you simplify the multiplication of two terms involving indices if they have the same base?		
When can/can't an expression be simplified?	Can you use the same rule if the bases are different? Why is e.g. $a^6 \times a = a^7$ when there is no index on the		
Why don't we usually write ' $1x$ ' or ' $0x$ '?	second term?		
What does the word 'index' mean? What is the result of multiplying x^2 by x ? And then multiplying by x again? And again? What is your strategy for multiplying e.g. $3a^2b$ and $5ab^3$? What do you look at first? Then what?	What is the difference between a base and an index? How can you simplify the multiplication of two terms involving indices if they have the same base? Can you use the same rule if the bases are different? Why is (e.g.) $a^6 \div a = a^5$ when there is no index on the second term?		
What is the difference between a term and an expression?	How would you start solving an index question that involves more than one operation?		
When can/can't an expression be simplified?	Will $(a^b)^c$ be the same as, or different from $(a^c)^b$? Why? Why do we need to be careful with expressions like $(5x^4)^3$?		

Vocabulary			
Expression	Term	Simplify	Simplify
Simplify	Power	Numerator	Base
Term	Multiply	Denominator	Power
Coefficient	Product	Factor	Exponent
Index	Power	Common factor	
Indices	Expand	Coefficient	

Investigate/Homework tasks

- Homework will be set by your teacher using google classroom
- You should complete at least 30 minutes of maths tasks using the website and log in provided by your teacher. Please attend help sessions if you do not have access to the internet at home
- Additional work you could complete:
 - Find out more about the meaning of the vocabulary list using <u>http://www.amathsdictionaryforkids.com/</u>
- To challenge yourself: Answer the key questions to deepen your knowledge

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