Edward Peake Church of England Middle School		
Topic: Brackets, Equalities and Inequalities	**Year: 8**	**NC Strand: Algebra**

What should I already know?

- How to write equations correctly
- How to explain if an equation is true
- How to write and use fact families numerically
- How to write and use fact families algebraically
- How to solve one-step linear equations involving addition and subtraction by using inverse operations
- How to solve one-step linear equations involving multiplication and division by using inverse operations
- How to recognise and explain if terms are like terms or unlike terms
- How to recognise equivalent expressions and demonstrate they are equivalent
- How to collect like terms and use the symbol for equivalence

What will I know by the end of the unit?

- How to form algebraic expressions
- How to use directed numbers with algebra
- How to multiply out a single brackets
- How to factorise into a single bracket
- How to expand multiple single brackets and simplify
- How to expand a pair of binomials
- How to solve equations, including with brackets
- How to form and solve equations with brackets
- How to solve simple inequalities
- How to form and solve inequalities
- How to solve equations and inequalities with unknowns on both sides
- How to form and solve equations and inequalities with unknowns on both sides
- How to identify and use formulae, expressions, identities and equations

Vocabulary

Expression	Simplify	Factorise Fully	Side
Substitute	Expand	HCF	Check
Simplify	Bracket	Expression	Form
Coefficient	Multiply out	Unlike Terms	Inequality
Term	Identify	Like Terms	Satisfy
Equivalent	Coefficient	Binomial	Solution set
Positive	Product	Quadratic	Greater/Less than (or equal)
Substitute	Factor	Solve	balance
Negative	Common	Equation	Identify
Solve	Factorise	Unknown	Formula
Directed	Common Factor	Solution	Variable

Investigate/Homework tasks

- Homework will be set by your teacher using google classroom
- You should complete at least 30 minutes of maths tasks on Maths Whizz (not games). 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 http://www.amathsdictionaryforkids.com/
- To challenge yourself: Answer the key questions to deepen your knowledge

Diagram/ Key Information

Explain how these representations show that $3(2x + 5) = 6x + 15$

$2x + 5$	$2x + 5$	$2x + 5$
x x 5	x x 5	x x 5
$6x + 15$		

	$2x$	5
3	$3 \times 2x$ $= 6x$	3×5 $= 15$
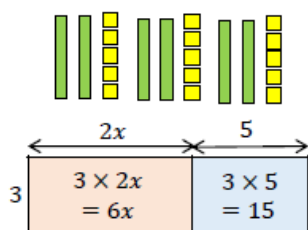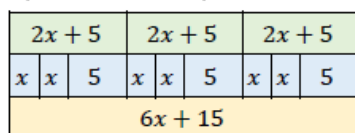
Here is Tommy's method for working out 62×43 by thinking of the calculation as $(60 + 2) \times (40 + 3)$
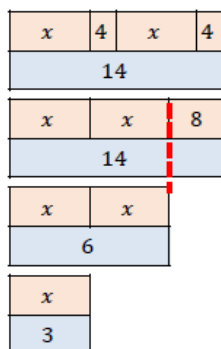
×	60	2
40	2400	80
3	180	6

$2400 + 180 + 80 + 6 = 2666$

Complete this adaptation of Tommy's method to work out $(a + 3)(b + 4)$

×	a	3
b	ab	$3b$
4	___	___

$ab + 3b + ...$

Whitney uses bar models to solve $2(x + 4) = 14$
She explains her steps on the right hand side.

x	4	x	4
14			

x	x	8
14		

x	x
6	

x
3

$2(x + 4) = 14$
Expand brackets

$2x + 8 = 14$
$-8 \quad -8$

$2x = 6$
$\div 2 \quad \div 2$

$x = 3$

Use the bar model to help you complete the workings to find the value of y.
$5y = 3y + 15$
$-3y \quad -3y$
$2y = 15$
etc.

y	y	y	y	y
y	y	y	15	

Which of the inequalities does the number 7.5 satisfy?

$x > 7$ $7 < x$ $7 \leq x$ $x < 8$ $x \geq 8$

What's the same and what's different about the inequalities?

Key Questions

What is the difference between a term and an expression?
When can/can't an expression be simplified?
Spot the mistake(s) in this expression e.g. $6ff$, $3a4b$.
Why are e.g. $q - 4$ and $4 - q$ not equivalent?

What is different about $2x + 3$ and $2(x + 3)$?
What is the first step you need to think about when forming an equation from a worded problem?
How can we check if the answer to the equation is correct?

How can we check our solution to an equation is correct?
When solving a four-term equation, why is it better to deal with the letters before the numbers?
Do we always start solving equations by subtracting something from both sides? Why or why not?

What does expand mean when we are working with brackets?

Why do you get four terms when you multiply two binomials?
Why can you simplify some quadratic expressions to three or fewer terms, but not others?
Do simplified quadratics always have three terms?

What's the same and what's different about solving an equation or an inequality?
How many solutions does an inequality have?
How can we check our solution to an inequality is correct?
What values would be useful to test with?

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