



Solving equations and inequalities ABE

Number of weeks (between 6&8)	Content of the unit:	Assumed prior learning (tested at the beginning of the unit)
4	<ul style="list-style-type: none"> Solve linear equations with the unknown on both sides of the equation Find approximate solutions to linear equations using a graph Understand and use the concepts and vocabulary of inequalities Solve linear inequalities in one variable Represent the solution set to an inequality on a number line 	<ul style="list-style-type: none"> Choose the required inverse operation when solving an equation Solve linear equations by balancing when the solution is a whole number or a fraction
Assessment points and tasks	Written feedback points	Learning Outcomes (tested at the end and related to subject competences)
<ul style="list-style-type: none"> Show me an (one-step, two-step) equation with a solution of -8 (negative, fractional solution). And another. And another ... Show me a two-step equation that is 'easy' to solve. And another. And another ... What's the same, what's different: $2x + 7 = 25$, $3x + 7 = x + 25$, $x + 7 = 7 - x$, $4x + 14 = 50$? Convince me how you could use graphs to find solutions, or estimates, for equations. Show me an inequality (with unknowns on both sides) with the solution $x \geq 5$. And another. And another ... Convince me that there are only 5 common integer solutions to the inequalities $4x < 28$ and $2x + 3 \geq 7$. What is wrong with this statement? How can you correct it? $1 - 5x \geq 8x - 15$ so $1 \geq 3x - 15$. 	<ul style="list-style-type: none"> Some pupils may think that you always have to manipulate the equation to have the unknowns on the LHS of the equal sign, for example $2x - 3 = 6x + 6$ Some pupils think if $4x = 2$ then $x = 2$. When solving equations of the form $2x - 8 = 4 - x$, some pupils may subtract 'x' from both sides. Some pupils may think that it is possible to multiply or divide both sides of an inequality by a negative number with no impact on the inequality (e.g. if $-2x > 12$ then $x > -6$) Some pupils may think that a negative x term can be eliminated by subtracting that term (e.g. if $2 - 3x \geq 5x + 7$, then $2 \geq 2x + 7$) Some pupils may know that a useful strategy is to multiply out any brackets, but apply incorrect thinking to this process (e.g. if $2(3x - 3) < 4x + 5$, then $6x - 3 < 4x + 5$) 	<ul style="list-style-type: none"> Solve linear equations with the unknown on one side Solve linear equations with the unknown on both sides Explore connections between graphs and equations Understand the meaning of the four inequality symbols Choose the correct inequality symbol for a particular situation Represent practical situations as inequalities Recognise a simple linear inequality Find the set of integers that are solutions to an inequality Use set notation to list a set of integers Use a formal method to solve an inequality Use a formal method to solve an inequality with unknowns on both sides Use a formal method to solve an inequality involving brackets Know how to show a range of values that solve an inequality on a number line Know when to use an open circle at the end of a range of values shown on a number line Know when to use a filled circle at the end of a range of values shown on a number line Use a number line to find the set of values that are true for two inequalities



Lesson	Clear learning intentions	Clear success criteria	Hook	Presentation of content	Guided practice	Independent practice (homework)	Closure
1 & 2	Solve linear equations with the unknown on one side	Can I IDENTIFY INVERSE operations that are needed? In fractional values- what should I start with? How do evaluate equations that contain brackets? What does it mean to balance? Can I check the solution to an equation by substitution?	Foundation Book Page 121-Prior knowledge check	Boardworks: A2:1	Foundation Book Page 122		Traffic lights
3 & 4	Solve linear equations with the unknown on both sides	Does it matter which side I choose to start with? What is the difference between unknowns being on one side and both sides? Can I recognise when applications of these equations are made in geometry/ solving number problems?	Foundation Book Page 122-Fluency & warm up	Boardworks: A2:2	Foundation Book Page: 125		Mini whiteboards
5 & 6	Explore connections between graphs and equations	Can I read values of the graph? What is directly proportional? Can I recognise that the point of intersection of two graphs corresponds to the solution of a connected equation?	Foundation Book Page 243-Prior knowledge check Q1 & Q2 only	Boardworks A2:2 , A2: 3	Foundation Book Page 243-244 Q3-9		Traffic lights
7	TEST YOURSELF Revision Lesson	INDEPENDENT TASK-TEST CONDITIONS	INDEPENDENT TASK-TEST CONDITIONS	INDEPENDENT TASK-TEST CONDITIONS	Foundation Book Page 141 Q 1 -12	My maths-solving equations	Self-feedback
	Homework Review lesson						



8 & 9	Do I understand the different signs for inequalities? Do I understand how to represent inequalities on a number line?	<ul style="list-style-type: none"> Use correct notation for inequalities. <p>The inequality symbols: < (less than), > (greater than), \leq (less than or equal to), \geq (more than or equal to)</p> <ul style="list-style-type: none"> Represent inequalities on a number line <p>Notation: The number line to represent solutions to inequalities. An open circle represents a boundary that is not included. A filled circle represents a boundary that is included.</p>	<p>Fluency Page 129: Which ones are inequalities</p> <p>Key Point 5: Page 129</p>	<p>https://www.activeteachonline.com/product/view/id/384/page/128/mode/dps</p> <p>Mathswatch Clip New curriculum A20 (A) https://www.mathswatchvle.com/video/keystage3/mw-ks3-clip.php</p>	<p>New GCSE Foundation textbook – Page 129 Questions: Warm & 1, 6 & 7</p> <p>New GCSE Foundation textbook – Page 129-130 Questions: 2-5</p>	<p>MINI WHITEBOARDS- TESTING SYMBOL NOTATION</p> <p>Connect the inequality</p>
10	Am I able to solve linear inequalities?	<ul style="list-style-type: none"> Solve simple linear inequalities 	<p>Fluency Possible values of x Page 131</p>	<p>https://www.activeteachonline.com/product/view/id/384/page/130/mode/dps</p>	<p>New GCSE Foundation textbook – Page 131 Questions 1-3</p>	<p>Traffic lights</p>
11	<ul style="list-style-type: none"> Can I Use a formal method to solve an inequality? 	<p>a. Unknowns on both sides? b. solve an inequality involving brackets</p>	<p>Pair Discussion Key Point 8 Example 5 Page 131</p>	<p>Mathswatch Clip New curriculum A20 (b) https://www.mathswatchvle.com/video/keystage3/mw-ks3-clip.php</p>	<p>New GCSE Foundation textbook – Page 132 Questions: 4 & 5 https://www.activeteachonline.com/product/view/id/384/page/132/mode/dps</p>	<p>Mymaths-solving INEQUALITIES Exam question: PAGE 130/131</p>
12	Homework Review Lesson					
13	Revision of objectives learnt throughout the topic.	INDEPENDENT TASK-TEST CONDITIONS OR PEER COLLABORATION			<p>Foundation Book Page142-144 Q 1-8</p>	<p>Teacher feedback opportunity</p>
14. Test						