The Sutton Academy

Knowledge Rich Curriculum Plan

Year 10 Intermediate – Algebra 2

Lesson	Intended Knowledge:	Tiered Vocabulary	Prior Knowledge:	Steps to Success:	Feedback
To learn how to solve two step linear equations.	• Students will know how to solve simple two step linear equations with one unknown using the balancing method e.g. 2x+3 =15. • Students will be able to solve linear equations involving fractions. E.g. $\frac{x}{4} + 3 = 7$ • Students will know how to solve linear equations involving fractions. E.g. $\frac{2x-3}{4} = 15$	**Solve –** find an answer **Equation –** a mathematical statement where two algebraic expressions are equal **Linear Equation –** an equation where the highest power of x is 1 **Inverse** - opposite	• Students need to know how to solve one step linear equations.	**Steps to Success – Solving two step linear equations** **Step 1:** Determine what operation needs to happen first. Do this by going in reverse BIDMAS order. **Step 2:** Carry out the inverse operation across both sides of the equation to keep it balanced. This is usually an addition or subtraction. **Step 3:** Repeat steps one and two until the value of the letter is found.	
To learn how to solve linear equations with brackets and unknowns on both sides.	• Students will know how to solve linear equations involving brackets. E.g $2(x + 4) = 10$ • Students will know how to solve linear equations with unknowns on both sides		• Students need to know how to expand a single bracket. • Students need to know how to solve basic two step linear equations.	**Steps to Success – Solving equations with brackets** **Step 1:** Expand the bracket. **Step 2:** Determine what operation needs to happen first. Do this by going in reverse BIDMAS order. **Step 3:** Carry out the inverse operation across both sides of the equation to keep it balanced. This is usually an addition or subtraction. **Step 4:** Repeat steps two and three until the value of the letter is found. **Steps to Success – Solving equations with unknowns on both sides** **Step 1:** Select the smallest value of x. **Step 2:** Carry out the inverse operation with the smallest x across both sides of the equation to keep it balanced. **Step 3:** Determine what operation needs to happen first. Do this by going in reverse BIDMAS order. **Step 4:** Carry out the inverse operation across both sides of the equation to keep it balanced. This is usually an addition or subtraction. **Step 5:** Repeat steps two and three until the value of the letter is found.	
To learn how to form and solve linear equations from worded problems.	• Students will know how to solve worded problems by forming and solving equations.	**Form –** bring together parts	• Students need to know how to form algebraic expressions. • Students need to know how to solve linear equations.	**Steps to Success – Forming and solving equations** **Step 1:** Read the question carefully. **Step 2:** Form an expression for the question. This may be in parts to begin with. **Step 3:** Form the equation. **Step 4:** Solve the equation. **Step 5:** Double check that you have found what the question is asking for. Sometimes substitution is needed.	
To learn how to form and solve linear equations involving shape.	• Students will know how to solve area and perimeter problems by forming and solving equations. • Students will know how to solve angle problems by forming and solving equations.	**Perimeter –** the distance around the outside of a 2D shape **Area –** the amount of space inside a 2D shape	• Students need to know how to calculate perimeter and area of basic 2D shapes. • Students need to know how to calculate missing angles.	**Steps to Success – Forming and solving equations involving area and perimeter** **Step 1:** Read the question carefully. **Step 2:** Form an expression for the area or perimeter. **Step 3:** Form the equation. **Step 4:** Solve the equation. **Step 5:** Double check that you have found what the question is asking for. Sometimes substitution is needed. **Steps to Success – Forming and solving equations involving shapes** **Step 1:** Read the question carefully. **Step 2:** Form an expression for the total of the angles. **Step 3:** Form the equation with knowledge using angle facts. **Step 4:** Solve the equation. **Step 5:** Double check that you have found what the question is asking for. Sometimes substitution is needed.	

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To learn how to interpret and represent inequalities in different forms.	• Students will know how to use the inequality symbols correctly to compare values. • Students will know that > means greater than, ≤ means less than or equal to, < means less than and ≥ means greater than or equal to. • Students will know how to list integers that satisfy an inequality e.g. -2< x <3. • Students will know how to represent inequalities on number lines. • Students will know how to write linear inequalities to represent a set shown on a number line.	**Integer –** whole number **Inequality –** a symbol which makes a non-equal comparison between two numbers or/and letters e.g. >, <, ≥ and ≤ **Satisfies –** meet the expectations **Represent** - show	• Students need to know how to order negative numbers.	**Steps to Success – Drawing inequalities on a number line with one limit** **Step 1:** Identify the limit of the inequality and draw a circle above this number. **Step 2:** If the limit is **less than or equal to** or a **greater than or equal to**, colour in the circle. **Step 3:** Identify if the inequality is a greater than or less than. If it is a greater than, draw the arrow pointing to the right. If it is a less than, draw the arrow pointing to the left. **Steps to Success – Drawing inequalities on a number line with two limits** **Step 1:** Identify the limits of the inequality and draw a circle above both numbers. **Step 2:** If the first sign is **less than or equal**, colour in the first circle. **Step 3:** IF the second sign is **greater than or equal to**, colour in the second circle. **Step 4:** Connect the circles with a single straight line. **Steps to Success – Writing inequalities from a number line with one limit** **Step 1:** Write down the letter. **Step 2:** If the circle is not coloured in then the limit is **less than** or **greater then**. If the circle is coloured in, then the limit is **less than or equal to** or a **greater than or equal to**. Write the sign to the right of your letter. **Step 3:** Identify the limit of the inequality by looking at the number which the circle is above. Write this number down on the right of your inequality sign. **Step 4:** Double check that your inequality makes sense for the diagram you have. **Steps to Success – Writing inequalities from a number line with two limits** **Step 1:** Write down the letter. **Step 2:** If the first circle is not coloured in then the limit is **less than**. If the first circle is coloured in, then the limit is **less than or equal to**. Write the sign to the left of your letter – pointing it to the left. **Step 3:** If the second circle is not coloured in then the limit is **less than**. If the second circle is coloured in, then the limit is **less than or equal to**. Write the sign to the right of your letter – pointing it to the left. **Step 4:** Identify the limits of the inequality by looking at the numbers which each circle is above. Write these numbers down. The smallest number should be on the left and the biggest number should be on the right. **Step 5:** Double check that your inequality makes sense for the diagram you ha	
To learn how to solve linear inequalities.	• Students will know how to solve one step linear inequalities. • Students will know how to solve two step linear inequalities. • Students will know how to solve simple linear inequalities with one variable and represent the solution set on a number line. **Opportunity for challenge:** • Students will solve an inequality such as –3 < 2x + 1 <7 and show the solution set on a number line. • Students will know how to solve two inequalities in x, find the solution sets and compare them to see which value of x satisfies both.	**Solution set –** the values that satisfy an inequality	• Students need to know how to solve one and two step equations. • Students need to know how to solve one and two step equations.	**Steps to Success – Solving two step linear inequalities** **Step 1:** Determine what operation needs to happen first. Do this by going in reverse BIDMAS order. **Step 2:** Carry out the inverse operation across both sides of the inequality to keep it balanced. This is usually an addition or subtraction. **Step 3:** Repeat steps one and two until the value of the letter is found. **Step 4:** Double check that your answer has the inequality in it.	

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To learn how to rearrange formulae.	• Students will know how to rearrange simple formulae to change the subject. • Students will know how to rearrange simple formulae involving powers and roots. • Students will know how to rearrange formulae using multiple steps to change the subject. **Opportunity for challenge:** • Students will know how to rearrange kinematic formulae.	**Rearrange –** change the position of **Change the subject** - rewrite the equation so that a different letter is isolated on one side of the equal's sign **Formulae –** mathematical relationships or rules expressed in symbols, letter and/or numbers. E.g. $A=\pi r^2$ **Inverse –** opposite	• Students need to know how to solve one and two step equations.	**Steps to Success – Rearranging formulae** **Step 1:** Highlight the letter that you want to isolate. **Step 2:** Determine what operation needs to happen first in order to leave this letter on it own. Do this by going in reverse BIDMAS order. **Step 2:** Carry out the inverse operation across both sides of the formula to keep it balanced. **Step 3:** Repeat steps one and two until the letter is isolated.	
Exam Preparation 8					