Greenfields Academy (Secondary) - Long Term Planning – MATHS

Academic Year Overview 2020/21 – YEAR 11

Term	Autumn		Spring		Summer	
	1	2	3	4	5	6
TRANSITION FROM Year 9	**Graphs** • Gradients and lines • Non-linear graphs • Using graphs	**Algebra** • Expanding and Factorising • Changing the Subject • Functions	**Reasoning** • Multiplicative • Geometric • Algebraic	**Revision & Communication** • Transforming & Constructing • Listing & describing • Show that….	No students / Revision	No Students

Topic Medium Term Plan Links:

Graphs

1. Gradients and lines
2. Non-linear graphs
3. Using graphs

Algebra

4. Expanding and Factorising
5. Changing the Subject
6. Functions

Reasoning

7. Multiplicative
8. Geometric
9. Algebraic

Revision & Communication

10. Transforming & Constructing
11. Listing & describing
12. Show that….

Term 1

Weekly Sequence	New Learning & Knowledge	Key Question(s)	Whole School Focus (eg. Computing Week, Language Day)
1	• Revisit solving equations • Find and use equations of straight lines • Incorporate proportional reasoning, e.g. conversions	• .Whcih axis is y=4 parallel to? How do you know? • All of the points on the line x=7 have something in common. What is it? • What is the equation of the x-axis? • What is the equation of the y-axis? • What is the minimum number of points needed to plot a straight line graph? • Why is it a good idea to use at least three coordinates when plotting a straight line graph? • How can you tell when you've made a mistake plotting a straight line graph? • In y=mx+c, what fo m and c represent? • In y=mx+c, what fo x and y represent? • What does it mean when two lines have the same gradient? • What does it mean when two lines have the same y-intercept?	
2			

		• How do you know if a straight line has a positive / negative gradient? • How do you know if a straight line has a positive / negative y-intercept? • How do you calculate the gradient of a line? • What is the scale on each axis? • How does the scale affect the gradient? • Does the scale on the axis affect how you find out the y-intercept? • Is the gradient positive or negative? How do you know? • What is the gradient of the line? How do you know? • What is the x coordinate at the y-intercept? How do you know? • Is the point you've been given the y-intercept? • If not, how can you work out the y-intercept? • What does it mean when two lines are parallel? • What is the relationship between the x and y coordinates at any point on the lne y=2x • How do you know if a line passes through a point? • How does drawing the graph elp you decde if a point is above or below the line? Can you tell without a graph? • How many solutions doa pair of linear simultaneous equations have? • How many points of intersection do a pair of linear graphs have? Is this always the case? • How does knowling the coordinates of a point of intersection help you solve a pair of simultaneous equations?	
3	• Plot and read from quadratic curves • Understand and find roots	•	

4	• Plot cubic and reciprocal graphs		
5	• Reflect shapes in a given line • Construct ad interpret speed, distance and time graphs • Construct and interpret real-life graphs	•	
6			
7	• Consolidation and Assessment		

Term 2

Weekly Sequence	New Learning & Knowledge	Key Question(s)	Whole School Focus (eg. Computing Week, Language Day)
1 (8)	• Revisit directed number arithmetic • Link to graphs • Expand single bracket and binomials • Factorise into a single bracket • Factorise quadratics in the form x^2 + bx + c • Solve quadratic equations • Simplify complex algebraic equations including algebraic fractions		
2 (9)			
3 (10)	• Review solving linear equations • Change the subject of a formula, including perimeter, area and volume formulae • Volume of a pyramid		
4 (11)			
5 (12)	• Find inputs and outputs • Show algebraic expressions ae equivalent • Solve problems using the kinematics formulae		
6 (13)			
7 (14)	• Consolidation and Assessment		

Term 3

Weekly Sequence	New Learning & Knowledge	Key Question(s)	Whole School Focus (eg. Computing Week, Language Day)
1 (15)	• Revise non-calculator methods • Review scale and enlargement • Work with direct and inverse proportion • Calculate with pressure and density • Determine whether a problem requires additive or multiplicative reasoning		
2 (16)			
3 (17)	• Construct formal geometric proofs, including the remaining circle theorems • Review angle facts, focusing on the language of reasons and chains of reasoning • Review Pythagoras' Theorem and using trigometric rations		
4 (18)			
5 (19)	• Solve problems involving variation with powers • Construct formal algebraic proofs • Work with complex indices • Review simplification of complex expressions and finding the 'nth' term rule • Justify e.g. why a number is/isn't in a given sequence		
6 (20)			

Term 4

Weekly Sequence	New Learning & Knowledge	Key Question(s)	Whole School Focus (eg. Computing Week, Language Day)
1 (21)	• Revisit transformations of shapes, linking to types of symmetry • Perform standard constructions using ruler and protractor or ruler and compasses • Solve loci problems		
2 (22)			
3 (23)	• Work with organised lists • Sample spaces and probability • Complete and use Venn diagrams • Work with plans and elevations • Use data to compare distributions		
4 (24)			
5 (25)	• Illustrate equivalence, numerically and algebraically • Justify answers • Use the language of angles rules • Use the conditionsfor congruent triangles		
6 (26)			

During this last half-term in the run up to the final examinations, we expect teachers to work with students on past papers and topics that have been identified that need further attention. We will provide some support material to help with key topics including:

- Number work, including multi-step problem solving
- Forming and solving equations and inequalities
- Working with formulae that students are expected to know e.g. area and volume formulae
- Probability

etc.