

Subject	Year	Month	
Mathematics	9	March	

Topic:

STRAIGHT LINES AND QUADRATIC GRAPHS 8 LESSONS

Content (Intent)

<p>Prior Learning</p> <p>Y8 May</p> <ul style="list-style-type: none"> Plot straight-line graphs Interpret gradients and intercepts of linear functions Recognise, sketch and interpret linear graphs <p>Plot and interpret graphs involving distance and speed</p>	<p>Future Learning</p> <p>KS4 Higher Tier</p> <ul style="list-style-type: none"> Linear Graphs and Coordinate Geometry Simultaneous equations Inequalities Perpendicular Lines <p>KS4 Foundation Tier</p> <ul style="list-style-type: none"> Equations Inequalities Straight Line Graphs Simultaneous Equations
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<p>Objectives</p> <p>Use the form of $y=mx+c$</p> <ul style="list-style-type: none"> Identify and interpret gradients of linear functions algebraically Gradients of parallel lines Identify and interpret intercepts of linear functions algebraically Find the equation of a line through one point with a given gradient Find the equation of a line through two given points <p>Quadratic graphs</p> <ul style="list-style-type: none"> Recognise and interpret quadratic graphs Understand quadratic graphs <ul style="list-style-type: none"> ✓ Intercept ✓ Symmetry ✓ Positive or negative coefficient a ✓ Roots of quadratics and HIGHER SETS from factorising quadratics learnt earlier in October 	<p>For teaching purposes</p> <p>Possible Questions</p> <ul style="list-style-type: none"> Convince me the lines $y = 3 + 2x$, $y - 2x = 7$, $2x + 6 = y$ and $8 + y - 2x = 0$ are parallel to each other. What is the same and what is different: $y = x$, $y = x^2$, $y = x^3$ and $y=1/x$? Show me a sketch of a quadratic graph. And another. And another ... <p>Misconceptions</p> <ul style="list-style-type: none"> Some students do not rearrange the equation of a straight line to find the gradient of a straight line. E.g. they think that $y - 2x = 6$ has a gradient of -2. may think that gradient = (change in x) / (change in y) when trying to equation of a line through two given points. may incorrectly square negative values of x when plotting graphs of quadratic functions.
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Pedagogical notes (implementation)	How will understanding be assessed & recorded (Impact)
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<p><i>'Monter' and 'commencer' are shared as the reason for 'm' and 'c' in $y = mx + c$ and links to $y = ax + b$.</i></p>	<p>BAM task 9 Gradient</p> <p>BAM task 6 Quadratic Functions</p> <p>Exams in May</p>
	<p>How can parents help at home?</p>
	<p>MathsWatch clips (Qualification GCSE)</p> <p>96, 159a, 159b, 98</p>

Further reading/discussion

<p>KM: Screenshot challenge</p> <p>KM: Stick on the Maths: Quadratic and cubic functions</p> <p>KM: Stick on the Maths: Algebraic Graphs</p> <p>KM: Stick on the Maths: Quadratic and cubic functions</p> <p>NRICH: Diamond Collector</p> <p>NRICH: Fill me up</p> <p>NRICH: What's that graph?</p> <p>NRICH: Speed-time at the Olympics</p> <p>NRICH: Exploring Quadratic Mappings</p> <p>NRICH: Minus One Two Three</p>	<p>Literacy</p> <p>Function, equation</p> <p>Quadratic, cubic, reciprocal</p> <p>Gradient, y-intercept, x-intercept, root</p> <p>Sketch, plot</p> <p>Linear, non-linear</p> <p>Parabola, Asymptote</p>	<p>Numeracy Links</p>	<p>Careers Links</p> <p>Medicine – identify links</p> <p>Economist</p> <p>Meteorologists</p> <p>Actuaries graph risks</p> <p>Scientist</p>
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