Maths - activities you can do from home!

What are the laws of indices? Write an algebraic example for each one. **10 POINTS**	What is the difference between a factor and a multiple? Give an example of when you use both of these in A level maths. **10 POINTS**	Write 5 keys terms and their definition for pure maths. **10 POINTS**	Write an end of topic test for someone in your class on your most recent topic. **10 POINTS**	Write a question where the answer is $5\sqrt{3}$ **10 POINTS**	Prove that the product of two odd numbers is even. **10 POINTS**	Demonstrate Pythagoras Theorem using physical objects. **10 POINTS**	Multiply out $(2x+3)(x-4)(3x+1)$ **10 POINTS**	Write a maths dictionary with 20 words from your A level course so far. **10 POINTS**	Explain how to convert between centigrade and Fahrenheit. **10 POINTS**
Write 5 things you would like to do differently in Year 13. **10 POINTS**	Design a lesson with all the materials to deliver on differentiation. **10 POINTS**	How long would it take for you to walk to the moon? **10 POINTS**	Choose any topic. Make a set of cards of key words and a second set of definitions. Mix them up and find the matching pairs. **10 POINTS**	Write three "always, sometimes never" sentences for A level maths. **10 POINTS**	How many grains of rice would you need to fill your house? **10 POINTS**	Write a list of 5 common mistakes you might find In an exam paper. **10 POINTS**	Design a revision poster on 3 topics you have done so far. **10 POINTS**	Why do we complete the square? What does it tell us? What happens when $a \neq 1$? **10 POINTS**	What are the different types of average? Give examples of where one Is more useful than the others. **10 POINTS**
Write a question with a mark scheme in which you have to explain your answer. **10 POINTS**	How many footballs would you need to go around the equator of the earth. **10 POINTS**	Condense a topic onto one revision card. **10 POINTS**	Choose one piece of marked work in your book and re-do it, responding to feedback and making improvements where necessary. **10 POINTS**	How do you expand 3 brackets? Write an explanation of how to do this. **10 POINTS**	What advice would you give Year 11 about to start A Levels **10 POINTS**	Write a revision card to explain how negative and fractional powers work. **10 POINTS**	Make Cornell notes on 'Forces'. **10 POINTS**	Complete a 'Thinking Hard Revisit' mat on Inequalities. **10 POINTS**	Write a list of 5 definitions of words about probability. **10 POINTS**
How many seconds have you been alive? **10 POINTS**	Pick a profession or career and try and list as many ways maths might be used In that job. **10 POINTS**	How could you calculate the volume of your brain? **10 POINTS**	What are the key points to remember when drawing boxplots/using them to compare distributions? Write a revision card. **10 POINTS**	Using up to four 4s and any of the 4 operations, how many numbers can you make? **10 POINTS**	How many ways can you solve a quadratic? List them with clear explanations of each. **10 POINTS**	Watch a TED-Ed talk and complete the follow up tasks **10 POINTS**	Explain the difference between significant figures and decimal places. **10 POINTS**	Give an example to show when "two minus make a plus" Is false. **10 POINTS**	Find out where a Venn diagram gets its name from. **10 POINTS**
The average person uses 27 sheets of toilet paper a day. A toilet roll has 100 sheets. How many toilet rolls does a family of 4 need In a week? **10 POINTS**	How many rice krispies In a box? How could you estimate this without counting them? **10 POINTS**	Investigate the London Eye. How may rotations does It make? How far does It travel each day? **10 POINTS**	How long would It take for you to walk around the UK? **10 POINTS**	Explain what a negative number Is. **10 POINTS**	How do you factorise a quadratic where $a \neq 1$? Write a step by step guide. **10 POINTS**	What is a surd? Convince me that they are useful! **10 POINTS**	Write a revision tool for graph transformations. Use diagrams. An online graph drawing tool may be useful! **10 POINTS**	What are the different ways to sample? What are the pros and cons of each method? **10 POINTS**	What is the definition of an outlier? (using quartiles) **10 POINTS**
What are the exact values for trig that you need to know? Write a revision card for these. **10 POINTS**	Make Cornell notes on 'Histograms. **10 POINTS**	Draw diagrams of Venn diagrams to show the union, intersection and complement. **10 POINTS**	Prove that $\sin^2\theta + \cos^2\theta = 1$ **10 POINTS**	Draw diagrams for some of the most common forces you have encountered so far, e.g. friction, gravity etc. **10 POINTS**	Write down the binomial expansion formula from memory. **10 POINTS**	What is the difference between a scalar and a vector? Write a revision card to remind you. **10 POINTS**	How do you know whether to use the Sine Rule, Cosine rule or trig ratios? Write a flow chart to help you decide when faced with a problem. **10 POINTS**	Write down the 5 kinematics formulae and define what all the variable are and an example of units for each. **10 POINTS**	Write a question that would require a Venn diagram with 3 sections to answer it. **10 POINTS**
What is Newtons first law of motion? **10 POINTS**	Research – where are trig graphs used/seen in real life? **10 POINTS**	Prove from first principals that the derivative of x^5 is $5x^4$ **10 POINTS**	How do you know how many solutions a quadratic has? **10 POINTS**	How do you know if a function is increasing or decreasing over a given interval? Can you think of a way to remember this? **10 POINTS**	Define the domain and range of a function. How could you explain this to a Year 7 student? **10 POINTS**	Think of a situation where a quadratic could be used to model the outcome. **10 POINTS**	Draw a mind map for Vectors showing how any rules can be linked. Include diagrams. **10 POINTS**	Make Cornell notes on 'Integration'. **10 POINTS**	Can you think of a real-life example that could be modelled by an exponential function? Research this. **10 POINTS**
Draw a flow diagram to show how to rationalise a surd. **10 POINTS**	Create a flow diagram to switch between radians and degrees. **10 POINTS**	Describe 5 ways to effectively revise. **10 POINTS**	Look for data in a newspaper or TV report, explain why it might be misleading. **10 POINTS**	Find a button on your calculator you don't know how to use and see If you can find what it is for. **10 POINTS**	Write a tree diagram question that uses conditional probability. **10 POINTS**	Write 10 quick questions to remind someone of some GCSE skills that you need in Y12. **10 POINTS**	Research – how did 'completing the square' get its name? **10 POINTS**	Find 5 exam style questions and rank them in order of difficulty then decide which order to answer them in. **10 POINTS**	What Is Newton's second law of motion? **10 POINTS**
Draw a mind map to show the different types of data. **10 POINTS**	Write from memory the trig identities you have learnt so far. **10 POINTS**	There are lots of statistics in the news at the minute. Find 3 ways in which they are misleading. **10 POINTS**	Make Cornell notes on 'Hypothesis testing'. **10 POINTS**	What is Newton's third law? **10 POINTS**	What are the laws of logarithms? **10 POINTS**	Research - what are parametric equations? Send an email to your teacher to explain what they are. **10 POINTS**	Write detailed instructions of how to find the equation of the normal to a curve at a point. **10 POINTS**	Explore the equation or a circle using Desmos. **10 POINTS**	Make Cornell notes on 'Natural Logarithms'. **10 POINTS**
Explore circle theorems using Geogebra. **10 POINTS**	Where did the Fibonacci sequence originate and where can examples of it be seen? **10 POINTS**	Write a guide for simplifying algebraic fractions. Include examples and common misconceptions. **10 POINTS**	Divide x^4+3x^3-2x+7 by $(x+4)$. What Is the remainder? **10 POINTS**	Prove that $n^2 - n$ Is always even. **10 POINTS**	Make a poster which shows where the binomial expansion comes from and how it can be used. **10 POINTS**	A sheet of toilet paper is 10cm x 15cm. How many sheets would it take to cover Big Ben? **10 POINTS**	What's the same, what's different? What's new at A level about scatter graphs? **10 POINTS**	Research - 3 - D vectors. If add an extra dimension, does anything change? **10 POINTS**	What Is the factor? Show how you can use this to factorise a cubic function. **10 POINTS**