

Mathematics Summer Homework

1) There are many GCSE skills, particularly related to algebra, which are essential before you can start to study A level Mathematics successfully. Please watch the following 19 videos, making notes on each video on lined paper. Your notes should include at least one example from each video and be in a format you could show your teacher in September, including the title of each topic and your name. You may wish to pause the videos while making notes.

<https://sites.google.com/view/tlmaths/home/gcse-to-a-level-maths-bridging-the-gap>

2) Now please answer the following questions. If you have access to a printer than you may print this document. Alternatively, please answer on lined paper.

We look forward to seeing you, with your completed work, in September. You should bring your Summer work to your first Mathematics lesson at SSFC.

Multiplying two brackets

Multiply out these brackets:

1. $(x-5)(x-6)$

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2. $(2x-5)(3x-2)$

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Factorising a quadratic expression

Factorise the following expressions:

1. $x^2 + 5x + 6$

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2. $2x^2 + 5x - 3$

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Solving quadratic equations using the formula

Solve the following equations using the quadratic formula, giving your answers in exact form:

1. $x^2 - 6x + 4 = 0$

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2. $x^2 + 3x = 1$

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Simultaneous equations

Solve the following simultaneous equations:

1. $y = x + 3$ and $y = 3x + 7$

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2. $y = 5x + 3$ and $7x + y = 11$

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Laws of indices

Without using a calculator, find the value of these numbers. Give your answer as a fraction or an integer.

1. 4^{-1}

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2. $8^{\frac{1}{3}}$

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Straight line graphs

a) What are the equations of the following lines?:

1. gradient is -1, passing through the point $(0,4)$

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2. gradient is 4, passing through the point $(0,-1)$

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b) What is the gradient of the line passing through the following pairs of points? What is the equation of each line?:

1. $(0,4)$ and $(6,6)$

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2. $(0,3)$ and $(2,7)$

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Rearranging

Make y the subject of each formula.

1. $k = y^2 + a$

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2. $x = \frac{y}{y-5}$

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