

Maths Summer Homework

Below are some of the essential GCSE skills that are required for the A level Maths course.

You need to be able to use algebraic skills like this quickly and confidently.

If you require some help, please use the web address below to access very useful video tutorials. These are typically between 5 and 10 minutes long.

TLMaths website <https://sites.google.com/site/tlmaths314/>

Then click on "GCSE to A-Level Maths Bridging the Gap"

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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$y = 5x + 3$ 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 though 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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