Algebra and graphs

IGCSE Mathematics · Vocabulary in context

Word	Example
algebra /ˈældʒɪbrə/	In **algebra**, letters stand for numbers.
variable /ˈveərɪəbl/	A **variable** stores a value that can change.
substitute /ˈsʌbstɪtjuːt/	**Substitute** $x = 2$ into the equation to check whether it is a solution. $x = 2$
term /tɜːm/	In $3x + 2$, $3x$ is a **term**. $3x + 2$ $3x$
expression /ekˈspreʃn/	$3x + 2$ is an **expression**. $3x + 2$
like terms /laɪk tɜːmz/	$3x$ and $5x$ are **like terms**. $3x$ $5x$
coefficient /ˌkəʊɪˈfɪʃənt/	The number in front of the letter is the **coefficient**.
expand /ekˈspænd/	**Expand** $2(x + 3)$ to get $2x + 6$. $2(x + 3)$ $2x + 6$
brackets /ˈbrækɪts/	Remove the **brackets** by multiplying.
factorise /ˈfæktəraɪz/	**Factorise** $2x + 6$ to get $2(x + 3)$. $2x + 6$ $2(x + 3)$
common factor /ˈkɒmən ˈfæktə/	2 is a **common factor** of $2x$ and 6. 2 $2x$ 6
difference of two squares /ˈdɪfrəns ɒv tuː skweəz/	$x^2 - 9$ is a **difference of two squares**. $x^2 - 9$
perfect square /ˈpɜːfekt skweə/	$x^2 + 6x + 9$ is a **perfect square**. $x^2 + 6x + 9$
quadratic /kwɒˈdrætɪk/	$x^2 + 5x + 6 = 0$ is a **quadratic** equation. $x^2 + 5x + 6 = 0$

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completing the square /kəmˈpliːtɪŋ ðə skweə/	Use **completing the square** to read a quadratic's turning point.
algebraic fraction /ˌældʒɪˈbreɪɪk ˈfrækʃn/	$1/x + 2/x$ is an **algebraic fraction** sum. $1/x + 2/x$
rational expression /ˈræʃənl ekˈspreʃn/	$(x + 1)/(x - 2)$ is a **rational expression**. $(x + 1)/(x - 2)$
indices /ˈɪndɪsiːz/	The rules of **indices** say $x^2 \times x^3 = x^5$. $x^2 \times x^3 = x^5$
base /beɪs/	In $\log_2 8 = 3$, the **base** is 2. $\log_2 8 = 3$ 2
equation /ɪˈkweɪʒn/	$2x + 3 = 7$ is an **equation**. $2x + 3 = 7$
linear /ˈlɪnɪə/	$y = 2x + 1$ is a **linear** equation: its graph is a straight line. $y = 2x + 1$
unknown /ʌnˈnəʊn/	In $2x + 3 = 7$, x is the **unknown**. $2x + 3 = 7$ x
fractional equation /ˈfrækʃənl ɪˈkweɪʒn/	$x/2 + 1 = 4$ is a **fractional equation**. $x/2 + 1 = 4$
simultaneous equations /ˌsɪməlˈteɪnɪəs ɪˈkweɪʒnz/	Solve the **simultaneous equations** to find both x and y. x y
quadratic formula /kwɒˈdrætɪk ˈfɔːmjʊlə/	The **quadratic formula** solves any quadratic equation.
change the subject /tʃeɪndʒ ðə ˈsʌbdʒekt/	**Change the subject** of $v = u + at$ to make t the subject. $v = u + at$ t
inequality /ɪniːˈkwɒlɪti/	$x > 3$ is an **inequality**. $x > 3$

Word	Example
number line /ˈnʌmbə laɪn/	Show $x > 2$ on a **number line**. $x > 2$
region /ˈriːdʒn/	The inequality $y > x^2$ describes a **region** above the curve. $y > x^2$
sequence /ˈsiːkwəns/	A **sequence** places its terms in a particular order.
term-to-term rule /tɜːm tə tɜːm ruːl/	The **term-to-term rule** is "add 3". " 3"
cubic /ˈkjuːbɪk/	$x^3 + 2x$ is a **cubic** expression. $x^3 + 2x$
exponential sequence /ˌekspəˈnenʃl ˈsiːkwəns/	2, 4, 8, 16 is an **exponential sequence**. 2, 4, 8, 16
direct proportion /daɪˈrekt prəˈpɔːʃn/	If y is in **direct proportion** to x, doubling x also doubles y. y x x y
constant /ˈkɒnstənt/	In $y = 2x + 5$, 5 is a **constant**. $y = 2x + 5$ 5
inverse proportion /ɪnˈvɜːs prəˈpɔːʃn/	If y is in **inverse proportion** to x, doubling x halves y. y x x y
gradient /ˈgreɪdɪənt/	The **gradient** of a distance-time graph gives the speed. –
rate of change /reɪt ɒv tʃeɪndʒ/	The **rate of change** is 5 metres per second. 5 metres per second
travel graph /ˈtrævl græf/	A **travel graph** shows distance against time.
conversion graph /kənˈvɜːʃn græf/	A **conversion graph** changes pounds into kilograms.
acceleration /əkˌseləˈreɪʃn/	The car speeds up quickly, so its **acceleration** is large.

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deceleration /dɪˌselə'reɪʃn/	The car brakes with a **deceleration** of 4 m/s^2. 4 m/s^2
area /ˈeərɪə/	The integral gives the **area** under the curve.
distance /ˈdɪstəns/	The **distance** from home to school is 2 km. 2 km
table of values /ˈteɪbl ɒv ˈvæljuːz/	Make a **table of values** before drawing the graph.
coordinates /kəʊˈɔːdɪnəts/	The **coordinates** of the point are (3, 4). (3, 4)
axis /ˈæksɪs/	Label each **axis** of the graph.
roots /ruːts/	The **roots** are where the graph crosses the x-axis. x
intersection point /ˌɪntəˈsekʃn pɔɪnt/	Find the **intersection point** where the two curves meet.
exponential growth /ˌekspəˈnenʃl grəʊθ/	A population that doubles every year shows **exponential growth**.
exponential decay /ˌekspəˈnenʃl dɪˈkeɪ/	The charge falls by **exponential decay**.
symmetry /ˈsɪmətri/	A parabola has a line of **symmetry**.
intercept /ˌɪntəˈsept/	The line crosses the y-axis at the **intercept**. y
parabola /pəˈræbələ/	A thrown ball follows a **parabola**.
turning point /ˈtɜːnɪŋ pɔɪnt/	The **turning point** is the top or bottom of the curve.
asymptote /ˈæsɪmptəʊt/	The graph of $y = e^x$ has a horizontal **asymptote** at $y = 0$. $y = e^x$ $y = 0$

Word	Example
differentiation /ˌdɪfəˌrenʃɪˈeɪʃn/	**Differentiation** finds how a function changes at each input.
tangent /ˈtændʒənt/	Draw a **tangent** to the curve to find the gradient at one point.
derivative /dɪˈrɪvətɪv/	Use the **derivative** to find the curve's slope at this point.
stationary point /ˈsteɪʃənəri pɔɪnt/	The tangent is horizontal at a **stationary point**.
maximum /ˈmæksɪməm/	Find the **maximum** mark in the class.
minimum /ˈmɪnɪməm/	Find the **minimum** mark in the class.
function /ˈfʌŋkʃn/	A **function** returns a value.
domain /dəˈmeɪn/	Leave zero out of the **domain** when x is on the bottom of a fraction. $\frac{}{x}$
range /reɪndʒ/	The **range** is the largest value minus the smallest.
inverse function /ɪnˈvɜːs ˈfʌŋkʃn/	The **inverse function** undoes the original function.
composite function /ˈkɒmpəzɪt ˈfʌŋkʃn/	A **composite function** fg(x) means f(g(x)): apply g first. fg(x) f(g(x)) g

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