# GAC004 Mathematics I: Fundamentals

GAC Mathematics · Vocabulary in context

| Word | Example |
|---|---|
| **in-class test** /ɪn klæs test/ | The **in-class test** is held during a normal lesson. |
| **projects** /ˈprɒdʒekts/ | The course has two **projects** and one exam. |
| **examination** /eg,zæmɪˈneɪʃn/ | The final **examination** lasts two hours. |
| **coursework** /ˈkɔːsjuːɜːk/ | The **coursework** counts towards your final grade. |
| **terminology logbook** /ˌtɜːmɪˈnɒlədʒi ˈlɒgbʊk/ | Keep a **terminology logbook** of new maths words. |
| **command word** /kəˈmænd wɜːd/ | “Calculate” is a **command word**: it asks for a number.<br>“Calculate” |
| **integer** /ˈɪntɪdʒə/ | An **integer** is a whole number, which can be positive, negative or zero. |
| **rational number** /ˈræʃənl ˈnʌmbə/ | 3/4 is a **rational number**.<br>3/4 |
| **irrational number** /ɪˈræʃənl ˈnʌmbə/ | $\pi$ is an **irrational number**.<br>$\pi$ |
| **prime number** /praɪm ˈnʌmbə/ | 7 is a **prime number**: its only factors are 1 and 7.<br>7 1 7 |
| **order of operations** /ˈɔːdə ɒv ˌɒpəˈreɪʃnz/ | The **order of operations** says multiply before you add. |
| **factor** /ˈfæktə/ | 3 is a **factor** of 12.<br>3 12 |
| **multiple** /ˈmʌltɪpl/ | 12 is a **multiple** of 3.<br>12 3 |



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| **highest common factor (HCF)** /ˈhaɪst ˈkɒmən ˈfæktə/ | The **highest common factor (HCF)** of 12 and 18 is 6.<br>12 18 6 |
| **lowest common multiple (LCM)** /ˈləʊɪst ˈkɒmən ˈmʌltɪpl/ | The **lowest common multiple (LCM)** of 4 and 6 is 12.<br>4 6 12 |
| **percentage** /pəˈsentɪdʒ/ | Prices rose by five **percentage** points this year. |
| **significant figures** /sɪgˈnɪfɪkənt ˈfɪgəz/ | The number 0.0450 has three **significant figures**.<br>0.0450 |
| **standard form** /ˈstændəd fɔːm/ | $3 \times 10^4$ is in **standard form**.<br>$3 \times 10^4$ |
| **expression** /ekˈspreʃn/ | 2 + 3 - 1 is an **expression** with the value 4.<br>2 + 3 - 1 4 |
| **terms** /tɜːmz/ | $3x + 2y - 5$ has three **terms**.<br>$3x + 2y - 5$ |
| **coefficient** /ˌkəʊɪˈfɪʃənt/ | The number in front of the letter is the **coefficient**. |
| **constant** /ˈkɒnstənt/ | In $y = 2x + 5$, 5 is a **constant**.<br>$y = 2x + 5$ 5 |
| **equation** /ɪˈkweɪʒn/ | $2x + 3 = 7$ is an **equation**.<br>$2x + 3 = 7$ |
| **identity** /aɪˈdentɪti/ | $2(x + 1) = 2x + 2$ is an **identity**: it is true for every x.<br>$2(x + 1) = 2x + 2$ x |
| **inequality** /ɪniːˈkwɒlɪti/ | $x > 3$ is an **inequality**.<br>$x > 3$ |
| **expand** /ekˈspænd/ | **Expand** 2(x + 3) to get 2x + 6.<br>2(x + 3) 2x + 6 |
| **factorise** /ˈfæktəraɪz/ | **Factorise** 2x + 6 to get 2(x + 3).<br>2x + 6 2(x + 3) |



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| **linear equation** /ˈlɪnɪə ɪˈkweɪʒn/ | $2x + 3 = 7$ is a **linear equation**.<br>$2x + 3 = 7$ |
| **quadratic equation** /kwɒˈdrætɪk ɪˈkweɪʒn/ | $x^2 - 4 = 0$ is a **quadratic equation**.<br>$x^2 - 4 = 0$ |
| **simultaneous equations** /ˌsɪməlˈteɪnɪəs ɪˈkweɪʒnz/ | Solve the **simultaneous equations** to find both x and y.<br>x y |
| **reverses** /rɪˈvɜːsɪz/ | Multiplying by $-1$ **reverses** the inequality sign.<br>$-1$ |
| **gradient** /ˈgreɪdɪənt/ | The **gradient** of a distance-time graph gives the speed.<br>– |
| **parallel** /ˈpærəlel/ | **Parallel** lines have equal gradients and never meet. |
| **perpendicular** /ˌpɜːpənˈdɪkjʊlə/ | The wall is **perpendicular** to the floor. |
| **midpoint** /ˈmɪdpɔɪnt/ | The **midpoint** of (0, 0) and (4, 6) is (2, 3).<br>(0, 0) (4, 6) (2, 3) |
| **distance** /ˈdɪstəns/ | The **distance** from home to school is 2 km.<br>2 km |
| **parabola** /pəˈræbələ/ | A thrown ball follows a **parabola**. |
| **vertex** /ˈvɜːteks/ | The **vertex** of $y = (x - 2)^2 + 3$ is (2, 3).<br>$y = (x - 2)^2 + 3$ (2, 3) |
| **roots** /ruːts/ | The **roots** are where the graph crosses the x-axis.<br>x |
| **graphically** /ˈgræfɪkli/ | Solve the equations **graphically** by finding where the lines cross. |
| **polygon** /ˈpɒlɪgən/ | A **polygon** is a flat shape with straight sides. |
| **congruent** /ˈkɒŋgruːənt/ | **Congruent** shapes are exactly the same size and shape. |



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| Word | Example |
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| **similar** /ˈsɪmɪlə/ | **Similar** shapes have the same shape but different sizes. |
| **Pythagoras' theorem** /paɪˈθægərəs ˈθɪərəm/ | **Pythagoras' theorem** says $a^2 + b^2 = c^2$.<br>$a^2 + b^2 = c^2$ |
| **hypotenuse** /haɪˈpɒtənjuːs/ | The **hypotenuse** is the longest side of a right triangle. |
| **area** /ˈeərɪə/ | The integral gives the **area** under the curve. |
| **volume** /ˈvɒljuːm/ | The **volume** of the box is $2\text{ m} \times 1\text{ m} \times 1\text{ m} = 2\text{ m}^3$.<br>$2\text{ m} \times 1\text{ m} \times 1\text{ m} = 2\text{ m}^3$ |
| **sine rule** /saɪn ruːl/ | Use the **sine rule** to find the missing side. |
| **cosine rule** /ˈkəʊsaɪn ruːl/ | Use the **cosine rule** when you know two sides and the angle between them. |
| **degrees** /dɪˈgriːz/ | Set the calculator to **degrees** before entering a degree angle. |
| **radians** /ˈreɪdɪənz/ | Half a turn is $\pi$ **radians**.<br>$\pi$ |
| **unit circle** /ˈjuːnɪt ˈsɜːkl/ | A **unit circle** has a radius of one. |
| **periodic** /ˌpɪərɪˈɒdɪk/ | The sequence 1, 0, 1, 0, … is **periodic**: it repeats every two terms.<br>1, 0, 1, 0, … |
| **bearing** /ˈbeərɪŋ/ | The ship sails on a **bearing** of 090°, due east.<br>090° |
| **angles of elevation and depression** /ˈæŋglz ɒv ˌelɪˈveɪʃn ænd dɪˈpreʃn/ | Use **angles of elevation and depression** to find the height of a tower. |



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| **exponential function** /ˌekspəˈnenʃl ˈfʌŋkʃn/ | The **exponential function** $e^x$ is its own derivative.<br>$e^x$ |
| **exponent** /ekˈspəʊnənt/ | The **exponent** moves the binary point. |
| **logarithm** /ˈlɒgərɪθəm/ | Take the **logarithm** of both sides. |
| **natural logarithms** /ˈnætʃərəl ˈlɒgərɪθəmz/ | **Natural logarithms** use the base e, written ln.<br>e ln |
| **compound interest** /ˈkɒmpaʊnd ˈɪntrest/ | **Compound interest** is paid on the interest too. |
| **exponential decay** /ˌekspəˈnenʃl dɪˈkeɪ/ | The charge falls by **exponential decay**. |
| **y-intercept** /waɪ ˌɪntəˈsept/ | The line y = 2x + 3 has a **y-intercept** of 3.<br>y = 2x + 3 3 |



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