MathsBox

0580

QUESTION GENERATOR OVERVIEW

Question structures for Cambridge IGCSE.

Every question structure available for Cambridge IGCSE in the Mathsbox Question Generator, organised by topic so you can find exactly what you need.

Number | Algebra and graphs | Coordinate geometry | Geometry | Mensuration | Trigonometry | Transformations and vectors | Probability | Statistics

2,381 question structures

203 topics

9 strands

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01 CAMBRIDGE IGCSE Number

66 topics
749 structures

Types of number

Natural numbers 3

- Words to figures up to 1,000,000
- Words to figures up to 1 billion in figures
- Mixture - Natural numbers

Integers, odd and even 6

- Identifying Positive Integers
- Identifying Negative Integers
- Identifying Integers
- Listing even numbers
- Listing odd numbers
- Mixture - Integers, odd and even

Factors, multiples and primes 14

- Finding factors
- Finding common factors
- Finding the HCF
- Listing multiples - mixture
- Finding common multiples
- Finding the lowest common multiple
- Finding LCM using prime factors
- Mixture - Finding LCM or HCF
- Listing prime numbers
- Product of prime factors (10-100)
- Product of prime factors
- Product of primes, LCM and HCF
- Mixture
- Mixture - Factors, multiples and primes

Factors, multiples and primes · Using prime factorisation EXTENDED 9

- Number of positive factors
- Using prime factors
- Exponents for a given number of factors
- Smallest number with two remainders
- Factors that are multiples with a restriction
- LCM divided by HCF from prime factors
- Smallest number divisible by three numbers
- Values of k with a given HCF
- Mixture -Using prime factorisation

Reciprocals 1

- Finding the reciprocal

Reciprocals EXTENDED 8

- Reciprocal of a product of fractions
- Finding N from $1/N$
- Solving $x - \frac{1}{x} = a$
- Solving $x + \frac{1}{x} = a$
- Reciprocal of a difference of surds
- Finding x from a difference of fractions
- Reciprocal of a sum of unit fractions
- Mixture - Reciprocals

Sets

Set notation and Venn diagrams · (1) 7

- Intersection of two sets
- Union of two sets
- Union and intersection from inequalities

Set notation and Venn diagrams · (1) *continued*

- Set membership true or false
- Listing from a universal set
- Shaded region in set notation
- Mixture - Sets Venn diagrams (1)

Set notation and Venn diagrams · (2) EXTENDED 7

- Three sets of multiples
- Operations on three listed sets
- Three-set shaded region
- Unknown region in a two-set Venn
- Elements in a subset
- Possible values of x
- Mixture - Sets Venn diagrams (2)

Powers and roots

Squares, cubes, roots and other powers 10

- Listing square numbers
- Cube numbers
- Finding square and cube numbers
- Cube and square numbers
- Finding square and cube roots
- Finding square, cubes and roots - mixture
- Square roots and intervals
- Power multiplied by a root
- Calculations with indices
- Mixture - Power and roots

Fractions, decimals and percentages

Equivalence 11

- Fraction as decimal
- Decimal as a fraction
- Decimal as a percentage less than 100
- Decimal as a percentage greater than 100
- Percentage as a decimal less than 100
- Percentage as a decimal greater than 100
- Fraction as a percentage
- Percentage as a fraction
- Percentage as a fraction (2)
- Ordering mixture
- Mixture - Equivalence

Fractions - mixed - improper 4

- Simplifying fractions
- Mixed numbers to improper fractions
- Improper fractions to mixed numbers
- Mixture - Fractions - mixed/improper

Recurring decimals EXTENDED 14

- Recurring decimals $0.a\dot{b}$
- Recurring decimals $0.\dot{a}\dot{b}$
- Recurring decimals $0.a\dot{b}\dot{c}$
- Recurring decimals as mixed numbers
- Recurring decimals as improper fractions
- Solve x plus a recurring decimal
- Subtract recurring decimals
- Multiply by a recurring decimal
- Divide recurring decimals
- Terminating plus recurring
- Ratio of recurring decimals
- Linear equation with a recurring decimal

Recurring decimals *continued*

Square of a recurring decimal
Mixture - Recurring decimals

Ordering

Inequality symbols and ordering 9

Comparing numbers up to 100,000
Comparing numbers up to 1,000,000
Order numbers up to 10,000,000
Order numbers up to 100,000,000
Comparing directed numbers
Ordering temperatures
Order numbers in standard form
Compare numbers in standard form
Mixture - Inequality symbols/ordering

The four operations

Integers · Arithmetic 15

Addition
Subtraction
Inverse operations - addition
Inverse operations - subtraction
Multiply a 3 digit by a 1 digit number
Multiply by 10,100 or 1,000
Multiply - 2 digit by 2 digit
Multiply - 3 digit by 2 digit
Multiply - 4 digit by 2 digit
Dividing by 10, 100 or 1,000
Division - by multiples of 10, 100, 1,000
Division - 3 or 2 digit by 1 digit
Division - 3 or 4 digit by 2 digit numbers
Use known facts - multiplication
Mixture - Integers - Arithmetic

Integers · Order of operations 26

Order of operations $a - b + c \times d$
Order of operations $a + b + c \times d$
Order of operations $a + b \times c$
Order of operations $a - b \times c$
Order of operations $a + b \div c$
Order of operations $a - b \div c$
Order of operations $a \times b - c \times d$
Order of operations $a \times b + c \times d$
Order of operations $a + (b + c) \times d$
Order of operations $(a + b) \times c$
Order of operations $(a - b) \times c$
Order of operations $a - (b + c) \times d$
Order of operations $a \times (b - c)$
Order of operations $(a - b) \times c$
Order of operations $(a + b) \div c$
Order of operations $a \div (b + c)$
Order of operations $(a - b) \div c$
Order of operations $a \div (b - c)$
Order of operations $a(b - c) + d$
Order of operations $a(b + c) + d$
Order of operations $a \times (b - c)^2$
Order of operations $(a - b)^2$
Order of operations $(a + b)^2$
Order of operations $a \times (b - c) \times d$
Order of operations mixture
Mixture Integer BIDMAS

Decimals · Arithmetic 14

Add decimals (up to 3 d.p)
Subtract decimals (up to 3 d.p.)
Multiplying by 10, 100, 1,000 missing values

Decimals · Arithmetic *continued*

Multiplying a decimal by an integer
Multiplying by multiples of 10 or decimals
Multiplying decimals
Multiplying decimals (written methods)
Multiplying 2 decimals
Dividing by powers dividing by 10, 100, 1,000
Dividing a decimal by an integer
Division - Integer by a decimal
Division - by integers or decimal
Division - Decimal by a decimal
Mixture Decimals - Arithmetic

Decimals · Order of operations 26

Order of operations $a - b + c \times d$
Order of operations $a + b + c \times d$
Order of operations $a + b \times c$
Order of operations $a - b \times c$
Order of operations $a + b \div c$
Order of operations $a - b \div c$
Order of operations $a \times b - c \times d$
Order of operations $a \times b + c \times d$
Order of operations $a + (b + c) \times d$
Order of operations $(a + b) \times c$
Order of operations $(a - b) \times c$
Order of operations $a - (b + c) \times d$
Order of operations $a \times (b - c)$
Order of operations $(a - b) \times c$
Order of operations $(a + b) \div c$
Order of operations $a \div (b + c)$
Order of operations $(a - b) \div c$
Order of operations $a \div (b - c)$
Order of operations $a(b - c) + d$
Order of operations $a(b + c) - d$
Order of operations $a \times (b - c)^2$
Order of operations $(a - b)^2$
Order of operations $(a + b)^2$
Order of operations $a \times (b - c) \times d$
Order of operations mixture
Mixture - decimals - BIDMAS

Directed numbers · Arithmetic 11

Addition crossing zero
Directed numbers a + -b
Subtraction crossing zero
Directed numbers a - -b
Directed numbers $+$ and $-$
Directed numbers $\pm a \times \pm b$
Directed numbers $\pm a \div \pm b$
Directed numbers $\times$ and $\div$
Directed numbers - Mixed Arithmetic
Missing numbers mixture
Mixture directed no. Arithmetic

Directed numbers · Order of operations 25

Order of operations $a - b + c \times d$
Order of operations $a - (b + c) \times d$
Order of operations $a + b + c \times d$
Order of operations $a + (b + c) \times d$
Order of operations $a \times (b - c)^2$
Order of operations $a - b^2$
Order of operations $a + b^2$
Order of operations $a \times (b - c) \times d$
Order of operations $a \times b - c \times d$
Order of operations $a \times b + c \times d$
Order of operations $(a + b) \times c$
Order of operations $a \times (b - c)$
Order of operations $(a - b) \times c$

Directed numbers · Order of operations *continued*

- Order of operations $a \div (b + c)$
- Order of operations $a \div (b - c)$
- Order of operations $a + b \times c$
- Order of operations $a - b \times c$
- Order of operations $a + b \div c$
- Order of operations - Mixture
- Order of operations $a \times b + c$
- Order of operations $a + b \times c$
- Order of operations $a \times b - c$
- Order of operations $a - b \times c$
- Order of operations mixture
- Mixture directed no. BIDMAS

Fractions · Arithmetic 16

- Add any two proper fractions
- Adding mixed numbers
- Subtract fractions
- Fraction from a mixed number
- Subtract mixed numbers
- Multiply - fraction by an integer
- Find the product of a pair of proper fractions
- Multiply - mixed number by an integer
- Multiply mixed numbers
- Divide an integer by a fraction
- Dividing a fraction by an integer
- Divide any pair of fractions
- Divide mixed numbers
- Proper fractions - mixed arithmetic
- Mixed Numbers - Mixed arithmetic
- Mixture - Fractions - Arithmetic

Indices

Evaluating indices 5

- Positive integer powers (1)
- Positive integer powers (2)
- Negative integer powers
- Negative integer powers and reciprocals
- Mixture - integers indices

Evaluating indices EXTENDED 5

- Fractional powers $\frac{1}{2}$ and $\frac{1}{3}$
- Fractional powers $\frac{n}{m}$
- Negative fractional powers $\frac{1}{2}$ and $\frac{1}{3}$
- Negative fractional powers $\frac{n}{m}$
- Mixture fractional - indices

Laws of indices 12

- Multiplying $a^n \times a^m$
- Multiplying $a^n \times a^{-m}$
- Multiplying $a^{-n} \times a^{-m}$
- Multiplying $a^{\frac{m}{n}} \times a^{\frac{p}{q}}$
- Dividing $a^n \div a^m$
- Dividing $a^n \div a^{-m}$
- Dividing $a^{-n} \div a^{-m}$
- Dividing $a^{\frac{m}{n}} \div a^{\frac{p}{q}}$
- Power $(a^n)^m$
- Power $(a^{\pm n})^{\pm m}$
- Multiply and dividing (positive integers)
- Mixture - Laws of indices

Solving equations involving indices 7

- Solving $\boxed{?}^{\frac{n}{2}} = \frac{1}{m}$
- Solving $\boxed{?}^{\frac{n}{2}} = m$
- Solving $\boxed{?}^{\frac{n}{3}} = \frac{1}{m}$
- Solving $\boxed{?}^{\frac{n}{2}} = m$

Solving equations involving indices *continued*

- Solving $\boxed{?}^{-\frac{n}{2}} = m$
- Solving $\boxed{?}^{-\frac{n}{3}} = m$
- Solving $a^m \times b^{\boxed{?}} = m$

Standard form

Expressing in standard form 14

- Multiplying positive powers of 10
- Dividing positive powers of 10
- Multiplying and Dividing powers of 10
- Negative powers of 10 as a decimal
- Writing in standard form $0 < n < 1$
- Writing in ordinary form $0 < n < 1$
- Mixture for $0 > n < 1$
- Writing in standard form $n > 1$
- Writing in ordinary form $n > 1$
- Mixture for $n > 1$
- Writing in ordinary form - mixture
- Writing in standard form - mixture
- Writing in standard form
- Mixture Expressing in standard form

Arithmetic · Calculator EXTENDED 7

- Standard form - addition
- Standard form - subtraction
- Standard form - multiplication
- Standard form - division
- Standard form - $\times$ and $\div$
- Standard form - mixed arithmetic
- Mixture S.F. Arithmetic Calculator

Arithmetic · Non-calculator 16

- Addition (decimals) same power
- Addition (integers) same power
- Subtraction (decimals) same power
- Subtraction (integers) same power
- Multiply numbers in standard form
- Addition - (decimals)>1
- Addition - (integers)>1
- Subtraction - (decimals)>1
- Subtraction - (integers)>1
- Mixture + and - (decimals)>1
- Mixture + and - (integers)>1
- Multiply by an integer
- Divide by an integer
- Multiply numbers in standard form
- Multiply and divide numbers in standard form
- Mixture S.F. Arithmetic Non-calculator

Problem solvdig 13

- How many times heavier
- Time from distance and speed
- Distance from speed and time
- Total after an increase
- Power per square metre
- Total charge of a sample
- How many times greater
- Total volume of droplets
- Increase by a percentage
- Decrease by a percentage
- Percentage increase of two readings
- Volume after evaporation
- Mixture - Problem solving in standard form

Estimation

Rounding 21

Mixed Rounding up to 10,000
Mixed rounding up to 10,000,000
Rounding to 1 significant figure (integers)
Rounding to 1 significant figure (decimals)
Rounding to 1 significant figure
Rounding to 2 significant figure (integers)
Rounding to 2 significant figure (decimals)
Rounding to 2 significant figures
Rounding to 1 or 2 significant figures
Rounding to 3 significant figure (integers)
Rounding to 3 significant figure (decimals)
Rounding to 3 significant figures
Rounding-significant figures (integers)
Rounding-significant figures (decimals)
Rounding significant figures - mixture
Rounding to 1 decimal place
Rounding to 2 decimal places
Rounding to 1 or 2 decimal places
Rounding s.f. or d.p. mixture
Rounding - Mixture - all
Mixture - Rounding)

Estimating calculations 17

Estimation : $\frac{a+b}{c}$
Estimation : $\frac{a-b}{c}$
Estimation $\frac{a \times b}{c}$
Estimation $a \times b$
Estimation $a + b$
Estimation $a - b$
Estimation - Mixture
Estimation $a \div b$
Estimation $a \times b \times c$
Estimation $\frac{a \times b}{c \times d}$
Estimation $\sqrt{a}$
Estimation a^2
Estimation $(a + b) \times c$
Estimation $\frac{a}{b+c}$
Estimation $\sqrt{a \times b}$
Estimation - Mixture of all types
Mixture -Estimating calculations-

Limits of accuracy

Error intervals 24

Error intervals - measures - nearest integer
Error intervals - measures - 1 d.p.
Error intervals - measures - nearest 10
Error intervals - measures - nearest 100
Error intervals - measures - nearest 1,000
Error intervals - mixture
Error intervals - numbers - nearest integer
Error intervals - numbers - 1 d.p.
Error intervals - numbers - 2 d.p.
Error intervals - mixture
Truncating to thousands
Truncating to hundreds
Truncating to tens
Truncating to an integer
Error intervals - truncating mixture
Truncating to 1 d.p.
Truncating to 2 d.p.
Error intervals - truncating mixture (d.p.)
Truncating to 1 s.f (integers)
Truncating to 1 s.f (decimals)
Truncating to 2 s.f (integers)
Truncating to 2 s.f (decimals)

Error intervals *continued*

Error intervals - truncating mixture (s.f.)
Mixture - Error intervals

Upper and lower bounds of calculations EXTENDED 13

Lower Bounds for rounded measures
Upper Bounds for rounded measures
Min/max radius
Min/max perimeter
Min/max containers
Calculations involving bounds -mixture
Min/max $\frac{A \times B}{C}$
Min/max $\frac{A}{B \times C}$
Min/max $A + B - C$
Min/max $C(A - B)$
Min/Max mixture - formula
Min/Max mixture
Mixture - bounds of calculations

Ratio and proportion

Simplifying ratios 10

Using ratio language
Using the ratio symbol
Completing equivalent ratios
Simplifying ratios
Simplifying ratios (mixed units)
Expressing in the form 1:n
Expressing in the form 1:n or n:1
Expressing a ratio as a fraction
Expressing a fraction as a ratio
Mixture - Simplifying ratios

Dividing in a ratio 17

Dividing in a given ratio (1)
Dividing in a given ratio (1a)
Dividing in a given ratio (2)
Dividing in a given ratio (2a)
Dividing in a given ratio (3)
Dividing in a given ratio (3a)
Find the larger share (1)
Find the larger share (1a)
Find the smaller share (1)
Find the smaller share (1a)
Find the larger share (2)
Find the larger share (2a)
Find the smaller share (2)
Find the smaller share (2a)
Mixed questions
Mixed questions (a)
Mixture - Dividing in a ratio

Combined ratios 6

a:b and b:c - find a:c
a:b and b:c - express as a fraction
a:b and b:c -calculate a quantity
na =mb and b:c - find a:b:c
na =mc and b:c - find a:c
Mixture - Combined ratios

Proportion problems 24

Solve problems involving scaling
Solve problems involving rates
Direct Proportion problems (£s)
Direct Proportion problems €
Direct Proportion problems
Direct Proportion problems €
Direct Proportion - mixture

Proportion problems *continued*

Direct Proportion - mixture €
Solving recipe problems
Calculating wages
Calculating wages €
Wages and overtime
Wages and overtime €
Wages mixture
Wages mixture €
Solving best buy problems
Solving best buy problems €
UK currency for foreign currency
Foreign currency to UK currency
Exchange rates - non calculator
Exchange rates - comparing prices
Inverse proportion problems
Direct and inverse proportion problems
Mixture - Proportion problems

Rates

Speed, distance and time · Non calculator 7

Speed Distance Time - speed
Speed Distance Time - distance
Speed Distance Time - time
Speed Distance Time - time or distance
Speed Distance Time (full hours) - Mixture
Speed Distance Time - Mixture
Mixture - Non calculator)

Speed, distance and time · Calculator 6

Speed Distance Time - speed
Speed Distance Time - distance
Speed Distance Time - time
Speed Distance Time - Mixture
Average speed problems
Mixture - Speed,distance,time

Speed, distance and time · Conversions 7

Converting m/s to km/h
Converting km/h to m/s
Converting (1)
Converting km/h to mph
Converting mhp to km/h
Converting (2)
Mixture - Speed Conversions

Density and pressure · Density 5

Density mass volume - density
Density mass volume - mass
Density mass volume - volume
Density mass volume - Mixture
Mixture - Densit)

Flow rates 9

Converting units of rates of flow
Amount of water from a constant rate
Time to fill a container (seconds)
Time to empty a tank (minutes and seconds)
Two identical taps filling a container
Two pipes filling a tank together
Pump emptying a pool with a leak
Flow rates - mixture
Mixture - Flow rate)

Population density 9

Population density
Population

Population density *continued*

Population density (rounded)
% increase in population density
Comparing density of two areas
Total population
Population growth and area change
Population density - mixture
Mixture - Population densit)

Percentages

Non-calculator · Percentage of a quantity 9

Understanding percentages
10% of a quantity
20% of a quantity
5% of a quantity
Multiples of 5%
Percentage of a quantity - money
Percentage of a quantity €
Percentages - missing values
Mixture - Percentage of a quantity

Non-calculator · Increasing and decreasing by a given percentage 11

Increasing by 10% £
Increasing by 10% €
Increasing by multiples (5%) £
Increasing by multiples (5%) €
Decreasing by 10% £
Decreasing by 10% €
Decreasing by multiples (5%) £
Decreasing by multiples (5%) €
Increase/Decreasing £
Increase/Decreasing €
Mixture - Increasing and decreasing

Non-calculator · Expressing as a percentage 4

Expressing as a percentage
Expressing as a percentage
Expressing as a percentage - mixture
Mixture - Expressing as a percentage

Non-calculator · Calculate the percentage change 9

Calculate a percentage increase £
Calculate a percentage increase €
Calculate a percentage decrease £
Calculate a percentage decrease €
Non calculator mixture £
Non calculator mixture €
Calculate a percentage change £
Calculate a percentage change €
Mixture - percentage change

Non-calculator · Reverse percentages EXTENDED 4

Finding the original
Finding the original £
Finding the original €
Mixture - Reverse percentages

Calculator · Percentage of a quantity 5

Percentage of a quantity £
Percentage of a quantity €
Percentage > 100% £
Percentage > 100% €
Mixture - Percentage of a quantity

Calculator · Increasing and decreasing by a given percentage 10

- Multipliers for percentage increases
- Multipliers for percentage decreases
- Multipliers mixture
- Increasing by a given percentage £
- Increasing by a given percentage €
- Decreasing by a given percentage £
- Decreasing by a given percentage €
- Increasing and decreasing £
- Increasing and decreasing €
- Mixture - Increasing and decreasing

Calculator · Percentage change 10

- Calculate the percentage increase £
- Calculate the percentage increase €
- Calculate the percentage decrease £
- Calculate the percentage decrease €
- Calculate the percentage change £
- Calculate the percentage change €
- Calculate a percentage change £
- Calculate a percentage change €
- Expressing as a percentage
- Mixture - Percentage change

Calculator EXTENDED 7

- Finding the original < 100% £
- Finding the original < 100% €
- Finding the original > 100% £
- Finding the original > 100% €
- Finding the original mixture £
- Finding the original mixture €
- Mixture - reverse percentages

Calculator · Compound interest 9

- Calculating compound interest £
- Calculating compound interest €
- Compound interest - years £
- Compound interest - years €
- Compound interest - total £
- Compound interest - total €
- Calculate depreciation - car £
- Calculate depreciation - car €
- Mixture - Compound interest

Calculator · Simple interest, profit, hire purchase and tax 17

- Hire Purchase £
- Hire Purchase €
- Simple interest - calculating the total £
- Simple interest - calculating the total €
- Simple interest - calculating the interest £
- Simple interest - calculating the interest €
- Simple interest mixture £
- Simple interest mixture €
- Calculating the price including VAT £
- Calculating the price including VAT €
- Calculating the price before VAT £
- Calculating the price before VAT €
- Working with VAT - mixture £
- Working with VAT - mixture €
- Calculating Income tax £
- Net Pay £
- Mixture - profit, hire purchase and tax

Calculator · Mixed contexts 10

- Percentage profit on mugs
- Percentage more paid for a car

Calculator · Mixed contexts *continued*

- Matching holiday discounts
- Sharing money using percentages
- Repeated percentage change of a house
- Percentage increase in savings
- Comparing two bank accounts
- Percentage profit on books
- Profit on loaves of bread
- Mixture - mixed percentage contexts

Using a calculator

Efficient calculator use 43

- Products, sums and differences
- Inverse operations (1)
- Inverse operations (2)
- Expressing a fraction as a decimal
- Finding the reciprocal
- Comparing fractions and decimals
- Simplify a ratio
- Arithemetic with decimals
- Order of operations
- Using a calculator : $a \times \sqrt{b}$
- Using a calculator : $a \times \sqrt{b} + \sqrt{c}$
- Using a calculator $a \times b^2 + \sqrt{b}$
- Using a calculator $a \times b^2 + \sqrt{c \times d}$
- Using a calculator $\sqrt{a} \times b + c \times \sqrt{d}$
- Using a calculator $\sqrt{a \times b^2} + c \times \sqrt{d}$
- Using a calculator $a \times \sqrt{b} - \sqrt{c}$
- Using a calculator $a \times b^2 - \sqrt{c}$
- Using a calculator $a \times b^2 - \sqrt{c \times d}$
- Using a calculator $\sqrt{a \times b} - c \times \sqrt{d}$
- Using a calculator $\sqrt{a \times b^2} - c \times \sqrt{d}$
- Using a calculator $a - \frac{b}{c}$
- Using a calculator $\sqrt{a - b} + c$
- Using a calculator $\sqrt{a^2 - b} - \sqrt{c}$
- Using a calculator $\sqrt[3]{a + \frac{c}{b}}$
- Using a calculator $\sqrt[3]{\frac{a}{b}} + c^3$
- Using a calculator $a^2 + b^3 + c^4$
- Using a calculator $\frac{b}{a} \times 10^3$
- Using a calculator $\frac{a}{b+c}$
- Squares and roots
- Squares and square roots mixture
- Evaluating roots
- Evaluating indices
- Indices and roots
- Indices and directed numbers
- Powers and root mixture
- Directed numbers :$-a \times -b - c$
- Directed numbers : $-a + -b + c$
- Directed numbers $-(a)^2 + -b + c$
- Directed numbers $(-a)^2 + -b + c$
- Directed numbers $(-a)^2 - -b + -c$
- Directed numbers $(-a)^2 - -b - -c$
- Mixture - Directed numbers
- Mixture - Efficient calculator use

Time

Conversions 10

- Time from a digital clock
- am and pm when comparing times
- Understanding the order of the months
- Converting : years months days
- Converting : weeks days hours
- Converting hours minutes
- Converting time mixture
- Minutes and seconds as seconds

Conversions *continued*

- Seconds as minutes and seconds
- Mixture - Time conversions

Time calculations · 12 hour clock 13

- Comparing time intervals
- Calculate the time after - minutes
- Calculate the time - before
- Calculate the time Mixture
- Calculating time intervals (5 minutes)
- Calculating time intervals
- Working out end times
- Working out start times
- Mixture -start/end times mixture
- Decimal hours to hours and minutes
- Hours and minutes to decimals hours
- Using a calendar
- Mixture - 12 hour clock

Time calculations · 24 hour clock 10

- Convert 12 hour to 24 hour time
- Convert 24 hour to 12 hour time
- Duration of a journey (24 hour clock)
- Duration overnight (12 hour clock)
- End time after a given number of minutes
- Arrival time in 24 hour format
- Flight duration with a time difference
- Departure time from duration and arrival
- Working hours with a lunch break
- Mixture - 24 hour clock

Money

Money calculations 17

- Addition and Subtraction
- Addition and Subtraction €
- Calculating change - multiple spent
- Calculating change - multiple spent €
- Finding the difference
- Finding the difference €
- Multiplication
- Multiplication €
- Multiplication
- Multiplication €
- Division
- Division €
- Multiplication and division - money
- Multiplication and division - money €
- Multiplication and division - money
- Multiplication and division - money €
- Mixture - Money calculations

Problems in context EXTENDED 11

- Multiplication problems
- Multiplication problems €
- Totals and change
- Totals and change €
- Tickets and change
- Tickets and change €
- Multiply and divide in context
- Multiply and divide in context €
- Problem solving with money
- Problem solving with money €
- Mixture - Problems in context

Currency Problems EXTENDED 6

- Convert using a unit exchange rate
- Convert back to the unit currency
- Two-step currency conversion
- Change money and find the amount left
- Change money spend and convert back
- Mixture - Currency Problems

Exponential growth and decay

Formula EXTENDED 5

- Stating a formula for % increase
- Stating a formula for % decrease
- Identifying the interest rate
- Identifying the rate of depreciation
- Mixture - Exponential growth and decay

Using exponential formulae EXTENDED 16

- Formula for percentage growth
- Formula when a quantity doubles
- Formula for percentage decay
- Formula for monthly depreciation
- Formula for monthly depreciation €
- Percentage increase after t years
- Percentage decrease after t years
- Percentage decrease after t years €
- Repeated doubling or tripling
- Years - growing quantity to reach a target
- Years - to fall below target
- Years - to fall below target €
- Two-stage percentage growth
- Different rates
- Different rates €
- Mixture - Using exponential formulae

Surds

Simplifying EXTENDED 10

- Simplifying :$\sqrt{a}$
- Simplifying :$\sqrt{a} \pm b + \sqrt{a} \pm c$
- Simplifying $n\sqrt{a} \pm b + m\sqrt{a} \pm c$
- Simplifying $n\sqrt{a} + \sqrt{b}$
- Simplifying $n\sqrt{a} \times m\sqrt{a}$
- Simplifying $\sqrt{a} \times \sqrt{b}$
- Simplifying $m\sqrt{a} \times n\sqrt{b}$
- Simplifying and multiplying mixture
- Simplifying expressions involving surds
- Mixture - surds - simplifying

Expanding brackets EXTENDED 8

- Expanding brackets :$\sqrt{a}(a\sqrt{b} \pm c)$
- Expanding brackets : $\sqrt{a}(b \pm \sqrt{a})$
- Single bracket mixture
- Expanding brackets $a\sqrt{b}(c\sqrt{d} \pm e)$
- Expanding brackets $(\sqrt{a} \pm b)(\sqrt{a} \pm c)$
- Expanding brackets $(a\sqrt{b} \pm c)(d\sqrt{b} \pm e)$
- Expanding brackets - Mixture
- Mixture - surds - expanding brackets

Rationalising the denominator EXTENDED 5

- Rationalising the denominator :$\frac{a}{\sqrt{b}}$
- Rationalising the denominator :$\frac{a}{c \pm \sqrt{b}}$
- Rationalising the denominator $\frac{a \pm \sqrt{b}}{c \pm \sqrt{b}}$
- Rationalising the denominator mixture
- Mixture - Rationalising the denominator

Introduction to algebra

Notation and collecting like terms 20

Simple expressions
Collecting like terms-addition
Collecting like terms - Single variable
Collecting like terms $ax+b+cx+d$
Collecting like terms $ax+b+cx-d$
Collecting like terms $ax+b-cx+d$
Collecting like terms $ax-b+cx+d$
Collecting like terms $ax+b-cx-d$
Collecting like terms $ax-b+cx+d$
Collecting like terms $ax-b-cx+d$
Collecting like terms $ax-b-cx-d$
Collecting like terms - mixture
Collecting like terms - Two variables
Collecting like powers of a variable
Multiplying terms $x \times a$
Multiplying terms $a \times x \times b \times x$
Multiplying terms $ax \times bx$
Dividing terms $x \div a$
Dividing terms $ax \div b$
Mixture - Notation and like terms

Substitution · Positive integers 39

Substitution : $x+a$
Substitution : $x-a$
Substitution ax
Substitution $\frac{a}{x}$
Substitution Mixture
Substitution $y=ax+b$
Substitution $y=ax-b$
Substitution $y=b-ax$
Substitution $y=\frac{x}{a}+b$
Substitution $y=\frac{x+a}{b}$
Substitution $y=\frac{x-a}{b}$
Substitution $y=\frac{ax+b}{c}$
Substitution $y=\frac{ax-b}{c}$
Substitution Mixture - linear
Substitution $y=ax^2$
Substitution $y=x^2 \pm b$
Substitution $y=ax^2+b$
Substitution $y=ax^2-b$
Substitution $y=b-ax^2$
Substitution $y=(ax)^2+b$
Substitution $y=\frac{ax^2}{b}$
Substitution $y=\frac{ax^2}{b}+c$
Substitution $y=\frac{ax^2}{b}-c$
Substitution $y=x^2 \pm x$
Substitution $y=ax^2 \pm x$
Substitution $y=x^2 \pm ax$
Substitution $y=ax^2 \pm bx$
Substitution $y=x^2 \pm bx+c$
Substitution $y=bx-ax^2 \pm c$
Substitution Mixture - quadratic
Substitution $y=\sqrt{b-ax}$
Substitution $y=a\sqrt{x}+b$
Substitution $y=b-a\sqrt{x}$
Substitution $y=\sqrt{\frac{x+a}{b}}$
Substitution $y=\sqrt{\frac{x-a}{b}}$
Substitution $y=\sqrt{b(ax+c)}$

Substitution · Positive integers *continued*

Substitution $y=\frac{a}{\sqrt{x+b}}$
Substitution $y=ax^3 \pm bx^2 \pm cx \pm d$
Mixture - substitution - Positive integers

Substitution · Directed Numbers 41

Substitution $y=x+a$
Substitution $y=x-a$
Substitution $y=a-x$
Substitution $y=ax$
Substitution $y=\frac{x}{a}$
Substitution $y=\frac{a}{x}$
Substitution $y=ax+b$
Substitution $y=ax-b$
Substitution $y=b-ax$
Substitution $y=\frac{x}{a}+b$
Substitution $y=\frac{x+a}{b}$
Substitution $y=\frac{x-a}{b}$
Substitution $y=\frac{ax+b}{c}$
Substitution $y=\frac{ax-b}{c}$
Substitution $y=x^2 \pm b$
Substitution $y=ax^2+b$
Substitution $y=ax^2-b$
Substitution $y=b-ax^2$
Substitution $y=(ax)^2+b$
Substitution $y=\frac{ax^2}{b}$
Substitution $y=\frac{ax^2}{b}+c$
Substitution $y=\frac{ax^2}{b}-c$
Substitution $y=x^2 \pm x$
Substitution $y=ax^2 \pm x$
Substitution $y=x^2 \pm ax$
Substitution $y=ax^2 \pm bx$
Substitution $y=x^2 \pm bx \pm c$
Substitution $y=bx-ax^2 \pm c$
Substitution Quadratic Mixture
Linear / Quadratic Mixture
Substitution $y=\sqrt{ax+b}$
Substitution $y=\sqrt{b-ax}$
Substitution $y=\sqrt{\frac{x+a}{b}}$
Substitution $y=\sqrt{b(x-a)}$
Substitution $y=\frac{a}{\sqrt{x+b}}$
Substitution $y=ax^3 \pm bx^2$
Substitution $y=ax^3 \pm bx^2 \pm cx \pm d$
Substitution one-step mixture + -
Substitution mixture inc quadratic + -
Substitution cubic formula + -
Mixture - substitution directed Numbers

Substitution · Fractions 8

Substitution $y=ax+b$
Substitution $y=b-ax$
Substitution $y=a(x \pm b)$
Substitution $y=ax^2 \pm b$
Substitution $y=ax^2 \pm bx$
Fractions mixture
Substitution fractional and negative values
Mixture - substitution Fractions

Algebraic manipulation

Expanding single brackets — 37

Expanding : $a(bx+c)$
Expanding : $a(bx-c)$
Expanding $a(b-cx)$
Expanding mixture
Expanding $ax(bx+c)$
Expanding $ax(bx-c)$
Expanding $ax(b-cx)$
Expanding mixture
Expanding $a(bx+c)+d$
Expanding $a(bx+c)-d$
Expanding $a(bx+c)+dx$
Expanding $a(bx+c)-dx$
Expanding $a(bx-c)+d$
Expanding $a(bx-c)-d$
Expanding $a(bx-c)+dx$
Expanding $a(bx-c)-dx$
Expanding $a+b(cx+d)$
Expanding $a+b(cx-d)$
Expanding $ax+b(cx+d)$
Expanding $ax+b(cx-d)$
Expanding $a-b(cx+d)$
Expanding $a-b(cx-d)$
Expanding $ax-b(cx+d)$
Expanding $ax-b(cx-d)$
Single brackets - expanding and factorising
Expanding : $a(bx+c)+d(ex+f)$
Expanding : $a(bx-c)+d(ex+f)$
Expanding $a(bx+c)+d(ex-f)$
Expanding $a(bx-c)+d(ex-f)$
Expanding Mixture (1)
Expanding $a(bx+c)-d(ex+f)$
Expanding $a(bx-c)-d(ex+f)$
Expanding $a(bx+c)-d(ex-f)$
Expanding $a(bx-c)-d(ex-f)$
Expanding Mixture (2)
Expanding Mixture (3)
Mixture - Expanding single brackets

Expanding two and three brackets — 21

Expanding : $(x+a)(x+b)$
Expanding : $(x-a)(x-b)$
Expanding $(x+a)(x-b)$
Expanding $(x-a)(x+b)$
Expanding $(x+a)^2$
Expanding $(x-a)^2$
Expanding $(x\pm a)^2$
Expanding $(x-a)(x+a)$
Expanding Mixture - double brackets
Expanding $(x^2\pm a)(x\pm b)$
Expanding $(ax+b)(cx+d)$
Expanding $(ax-b)(cx+d)$
Expanding $(ax+b)(cx-d)$
Expanding $(ax-b)(cx-d)$
Expanding $(ax+b)^2$
Expanding $(ax-b)^2$
Expanding Mixture (1)
Expanding Mixture (2)
Expanding 3 brackets
Expanding $(x\pm a)(x\pm b)^2$
Mixture - Expanding 2 or 3 brackets

Factorising — common factors — 11

Factorising : $ax+b$
Factorising : $ax-b$
Factorising $a-bx$

Factorising — common factors *continued*

Factorising Mixture (1)
Factorising ax^2+bx
Factorising ax^2-bx
Factorising $bx-ax^2$
Factorising Mixture (2)
Factorising Mixture (3)
Factorising : $ax\pm bx\pm kay\pm kby$
Mixture - Factorising — common factors

Factorising quadratics — EXTENDED — 17

Factorising : x^2+bx+c
Factorising : $x^2\pm bx-c$
Factorising x^2-bx+c
Factorising $x^2\pm 2ax+a^2$
Factorising Mixture - double brackets
Factorising : x^2-b^2
Factorising : $a^2x^2-b^2$
Factorising Difference of 2 squares
Factorising ax^2+bx+c
Factorising $ax^2\pm bx-c$
Factorising ax^2-bx+c
Factorising to $(ax+b)^2$
Factorising to $(ax-b)^2$
Factorising Mixture (1)
Factorising Mixture (2)
Factorising : $ax^3\pm bx^2\pm c$
Mixture - Factorising quadratics

Completing the square — EXTENDED — 4

Expressing in the form : $(x\pm a)^2\pm b$
Expressing in the form : $(ax\pm b)^2\pm c$
Completed square form mixture
Mixture - Completing the square

Algebraic fractions

Simplifying and arithmetic — EXTENDED — 16

Simplify : $\frac{x}{a}+\frac{x}{b}$
Simplify : $\frac{x}{a}-\frac{x}{b}$
Simplify $\frac{ax}{b}+\frac{cx}{d}$
Simplify $\frac{ax}{b}-\frac{cx}{d}$
Simplify $\frac{x+a}{b}+\frac{x+c}{d}$
Simplify $\frac{x+a}{b}-\frac{x+c}{d}$
Simplify $\frac{x+a}{b}-\frac{x-c}{d}$
Simplify $\frac{x-a}{b}-\frac{x+c}{d}$
Simplify $\frac{x-a}{b}-\frac{x-c}{d}$
Simplify $\frac{x-a}{b}+\frac{x-c}{d}$
Simplify $\frac{x+a}{b}-\frac{x-c}{d}$
Simplify Mixture
Multiply algebraic fractions
Divide algebraic fractions
Rational expressions
Mixture - algebraic fractions

Indices II

Simplifying algebraic indices — 13

Simplify $a\times a\times a\times a$
Simplify $a^3\times a\times a^4$
Multiplying terms $ax^m\times bx^n$
Dividing terms $a^n\div a^m$
Dividing terms $ax^ny^m\div cx$
Simplifying $(ax^n)^m$
Simplifying $(a^mb^nc^p)^q$
Simplifying $(ax^2\times bx^4\times cx$
Indices - Addition law - missing power
Indices - Subtraction law - missing power

Simplifying algebraic indices *continued*

Indices - raising to a power - missing power
Missing powers - mixture
Mixture - Simplifying indices

Equations with indices 8

Solving $\boxed{?}^{\frac{n}{2}} = \frac{1}{m}$
Solving $\boxed{?}^{\frac{n}{2}} = m$
Solving $\boxed{?}^{\frac{n}{3}} = \frac{1}{m}$
Solving $\boxed{?}^{\frac{n}{2}} = m$
Solving $\boxed{?}^{-\frac{n}{2}} = m$
Solving $\boxed{?}^{-\frac{n}{3}} = m$
Solving $a^m \times b^{\boxed{?}} = m$
Mixture - Equations with indices

Solving Equations

Linear Equations · Forming equations 7

Forming single step expressions
Forming equations 1 step
Forming equations 2 step
Forming and solving equations
Find an expression for the output
Find the function
Mixture - Forming equations

Linear Equations · One and two step 15

One step equations $x + a = b$
One step equations $x - a = b$
One step equations $a - x = b$
One step equations $ax = b$
One step equations $\frac{x}{a} = b$
One step equations Mixture
Positive solutions $ax + b = c$
Positive solutions $ax - b = c$
Positive solutions $a - bx = c$
Negative solutions $ax + b = c$
Negative solutions $ax - b = c$
Negative solutions $a - bx = c$
Positive mixture
Negative Mixture
Mixture - equations 1 and 2 step

Linear Equations · Brackets 13

Solving $a(bx + c) = d$
Solving $a(bx - c) = d$
Solving $a(c - bx) = d$
Solving Mixture (1)
Solving Mixture (2)
Solving $a(bx + c) + d = e$
Solving $a(bx - c) + d = e$
Solving $a(bx + c) - d = e$
Solving $a(bx - c) - d = e$
Solving $a(b - cx) + d = e$
Solving $a(b - cx) - d = e$
Equations with brackets mixture
Mixture - equations - Brackets

Linear Equations · Unknown on both sides 20

Both sides $ax + b = x + c$
Both sides $ax - b = x + c$
Both sides $ax + b = x - c$
Both sides $ax - b = x - c$
Both sides $ax + b = c - x$
Both sides $ax - b = c - x$
Both sides $ax + b = cx + d$

Linear Equations · Unknown on both sides *continued*

Both sides $ax - b = cx + d$
Both sides $ax + b = cx - d$
Both sides $ax - b = cx - d$
Both sides $ax + b = d - cx$
Both sides $ax - b = d - cx$
Both sides mixture
Both sides $a(bx + c) = dx + e$
Both sides $a(bx - c) = dx + e$
Both sides $a(bx + c) = dx - e$
Both sides $a(bx - c) = dx - e$
Both sides $a(c - bx) = dx + e$
Both sides $a(c - bx) = dx - e$
Mixture - Unknown on both sides

Fractional Equations · One sided linear EXTENDED 8

Equations with fractions $\frac{x}{a} - b = c$
Equations with fractions $\frac{x}{a} + b = c$
Equations with fractions $\frac{x+a}{b} = c$
Equations with fractions $\frac{x-a}{b} = c$
Equations with fractions $a - \frac{x}{b} = c$
Equations with fractions $\frac{x-a}{b} = x \pm c$
Equations with fractions mixture
Mixture - equations - fractions

Fractional Equations · Unknown on both sides EXTENDED 21

Equations with fractions $\frac{x}{a} + b = cx + d$
Equations with fractions $\frac{x}{a} - b = cx + d$
Equations with fractions $\frac{x}{a} + b = cx - d$
Equations with fractions $\frac{x}{a} - b = cx - d$
Equations with fractions $b - \frac{x}{a} = cx + d$
Equations with fractions $b - \frac{x}{a} = cx + d$
Equations with fractions $\frac{x}{a} + b = \frac{x}{c} + d$
Equations with fractions $\frac{x}{a} - b = \frac{x}{c} + d$
Equations with fractions $\frac{x}{a} + b = \frac{x}{c} - d$
Equations with fractions $\frac{x}{a} - b = \frac{x}{c} - d$
Equations with fractions $\frac{x}{a} + b = d - \frac{x}{c}$
Equations with fractions $\frac{x}{a} - b = d - \frac{x}{c}$
Equations with fractions $\frac{x}{a} + \frac{x}{b} = c$
Equations with fractions $\frac{x}{a} - \frac{x}{b} = c$
Equations with fractions $\frac{x}{a} + \frac{x}{b} = cx + d$
Equations with fractions $\frac{x}{a} - \frac{x}{b} = cx + d$
Equations with fractions $\frac{x}{a} + \frac{x}{b} = cx - d$
Equations with fractions $\frac{x}{a} - \frac{x}{b} = cx - d$
Equations with fractions $\frac{x}{a} + \frac{x}{b} = e - dx$
Equations with fractions $\frac{x}{a} - \frac{x}{b} = e - dx$
Mixture - equations - fractions

Fractional Equations · Quadratic – calculator EXTENDED 9

Equation - fractions $\frac{a}{x} + \frac{b}{x+c} = d$
Equation - fractions $\frac{a}{x} - \frac{b}{x+c} = d$
Equation - fractions $\frac{a}{x} + \frac{b}{x-c} = d$
Equation - fractions $\frac{a}{x-c} - \frac{b}{x} = d$
Equation - fractions $\frac{a}{x+b} + \frac{b}{x+d} = e$
Equation - fractions $\frac{a}{x+b} - \frac{b}{x+d} = e$
Equation - fractions $\frac{a}{x-b} - \frac{c}{x+d} = e$
Equation - fractions $\frac{a}{x-b} - \frac{c}{x-d} = e$
Mixture - Quadratic - calculator

Fractional Equations · Quadratic – non calculator EXTENDED 9

Equation - fractions $\frac{a}{x} + \frac{b}{x+c} = d$
Equation - fractions $\frac{a}{x} - \frac{b}{x+c} = d$
Equation - fractions $\frac{a}{x-c} + \frac{b}{x} = d$
Equation - fractions $\frac{a}{x-c} - \frac{b}{x} = d$

Fractional Equations · Quadratic - non calculator *continued*

Equation - fractions $\frac{a}{x+b}+\frac{c}{x+d}=e$
Equation - fractions $\frac{a}{x+b}-\frac{c}{x+d}=e$
Equation - fractions $\frac{a}{x-b}-\frac{c}{x+d}=e$
Equation - fractions $\frac{a}{x-b}-\frac{c}{x-d}=e$
Mixture - Quadratic - non calculator

Quadratic equations · Single bracket EXTENDED 5

Factorise and solve : $x^2-ax=0$
Factorise and solve :$ax^2+bx=0$
Factorise and solve $ax^2-bx=0$
Factorise and solve Mixture
Mixture - solving - Single bracket

Quadratic equations · Double Bracket EXTENDED 16

Factorise and solve $x^2+bx+c=0$
Factorise and solve $x^2\pm bx-c=0$
Factorise and solve $x^2\pm bx+c=0$
Factorise and solve $x^2\pm 2ax+a^2=0$
Factorise and solve mixture (8 - 11)
Factorise and solve $x^2-b^2=0$
Factorise and solve $a^2x^2-b^2=0$
Factorise and solve $ax^2+bx+c=0$
Factorise and solve $ax^2\pm bx-c=0$
Factorise and solve $ax^2-bx+c=0$
Factorise and solve $ax^2\pm 2abx+b^2=0$
Factorise and solve mixture (13-18)
Factorise and solve mixture (8 - 19)
Rearrange and solve
Rearrange and solve
Mixture - solving double brackets

Quadratic equations · Completing the square EXTENDED 3

Solve $x^2\pm bx\pm c=0$
Solve $ax^2\pm bx\pm c=0$
Mixture - Completing the square

Quadratic equations · Using the formula EXTENDED 4

Find the discriminant
Solve $x\pm bx\pm c=0$
Solve $ax\pm bx\pm c=0$
Mixture - Using the formula

Quadratic equations · Forming and solving EXTENDED 10

Rectangle area
Ball height
Profit
Numbers differing by 1
Square and rectangle
Journey time
Circle areas
Quadratic sequence
Triangle area
Mixture - Form and solve

Simultaneous equations · Forming equations 5

Forming equations - tickets
Forming equations - pens and pencils
Forming equations - two numbers
Forming simultaneous equations - rectangle
Mixture - Forming simultaneous equations

Simultaneous equations · Linear equations 18

Finding pairs of values
Solve problems with two unknowns
$x-by=r$ and $cx+dy=s$

Simultaneous equations · Linear equations *continued*

$x+by=r$ and $cx-dy=s$
$x-by=r$ and $cx-dy=s$
$ax+y=r$ and $cx+dy=s$
$ax-y=r$ and $cx+dy=s$
$ax+y=r$ and $cx-dy=s$
$ax-y=r$ and $cx-dy=s$
Mixture - simultaneous equations (1)
$ax+by=r$ and $ax-y=s$
$ax+by=r$ and $ax+y=s$
$ax-by=r$ and $ax-y=s$
$ax+by=r$ and $x-by=s$
$ax-by=r$ and $x-by=s$
$ax+by=r$ and $x+by=s$
Simultaneous Equations Mixture (2)
Mixture - Simultaneous Equations

Simultaneous equations · Linear and non-linear simultaneous EXTENDED 9

$x+y=s$ and $xy=p$
$ax+y=c$ and $x^2+by=d$
$y=mx$ and $y=x^2\pm c$
$y=x\pm a$ and $y=x^2\pm b$
$x^2+y^2=r^2$ and $y=x\pm c$
$x^2+y^2=r^2$ and $y=ax\pm c$
$x^2\pm axy^2\pm by=c$ and $x+y=d$
$ax^2\pm by^2=c$ and $x+y=d$
Mixture - non-linear simultaneous

Changing the subject

One step 7

Change the subject - $y=x+a$
Change the subject - $y=x-a$
Change the subject - $y=ax$
Change the subject - $y=\frac{a}{x}$
Change the subject - $y=\frac{x}{a}$
Change the subject - $y=a-x$
Change the subject - mixture

Two step 8

Rearrange : $y=ax+b$
Rearrange : $y=ax-b$
Rearrange : $y=b-ax$
Rearrange : $y=\frac{x}{a}+b$
Rearrange : $y=\frac{x}{a}-b$
Rearrange : $y=\frac{x+a}{b}$
Rearrange : $y=\frac{x-a}{b}$
Rearrange : mixture

Powers and roots EXTENDED 12

Rearrange complex : - $y=\sqrt{x+a}$
Rearrange complex : $y=\sqrt{x-a}$
Rearrange complex : $y=\sqrt{a-x}$
Rearrange complex : $y=\frac{\sqrt{x}}{a}$
Rearrange complex : $y=\frac{a}{\sqrt{x}}$
Rearrange complex : $y=\sqrt{\frac{a}{x}}$
Rearrange complex : $y=\sqrt{\frac{x}{a}}$
Rearrange complex : $y=\sqrt{x}+a$
Rearrange complex : $y=\sqrt{x}-a$
Rearrange complex : $y=-\sqrt{x}$
Rearrange complex formula :mixture (1)
Rearrange complex formula :mixture (2)

Subject appears twice EXTENDED 16

Subject appears twice $ax=bx+c$
Subject appears twice $ax=c-bx$
Subject appears twice $ax+b=cx+d$

Subject appears twice *continued*

- Subject appears twice $ax - b = cx + d$
- Subject appears twice $ax - b = d - cx$
- Subject appears twice $ax + b = d - cx$
- Subject appears twice $\frac{x+a}{x+b} = c$
- Subject appears twice $\frac{x-a}{x+b} = c$
- Subject appears twice $\frac{x+a}{x-b} = c$
- Subject appears twice $\frac{x-a}{x-b} = c$
- Subject appears twice $\frac{x}{x-b} = c$
- Subject appears twice $\frac{x}{x+b} = c$
- Subject appears twice $\frac{ax+b}{cx+d} = e$
- Subject appears twice $\frac{ax-b}{cx+d} = e$
- Subject appears twice $\frac{ax-b}{cx-d} = e$
- Subject appears twice - mixture

Inequalities

Linear inequalities · Listing and defining solutions 10

- Inequalities : $a < x < b$
- Inequalities : $a \leq x < b$
- Inequalities $a < x \leq b$
- Inequalities $a \leq x \leq b$
- Inequalities mix
- Inequality from a number line $a < x < b$
- Inequality from a number line $a \leq x < b$
- Inequality from a number line $a < x \leq b$
- Inequality from a number line $a \leq x \leq b$
- Mixture - Listing and defining

Linear inequalities · Finding smallest or largest integer 6

- Integers Smallest value $ax + b > c$
- Integers Smallest value $ax - b > c$
- Integers Largest value $ax - b < c$
- Integers Largest value $ax + b < c$
- Integer solutions - mixture
- Mixture - smallest/largest integer

Linear inequalities · Solving – unknown on one side 20

- Solving : $x + a <> b$
- Solving : $x - a <> b$
- Solving $x \pm a <> b$
- Solving $ax + b <> c$
- Solving $ax - b <> c$
- Solving $ax \pm b <> c$
- Solving $\frac{x}{a} - b <> c$
- Solving $\frac{x}{a} + b <> c$
- Solving $\frac{x+a}{b} <> c$
- Solving $\frac{x-a}{b} <> c$
- Solving $a(bx + c) <> d$
- Solving $a(bx - c) <> d$
- Solving $a(bx \pm c) <> d$
- Mixture (1)
- Solving $a(b - cx) <> d$
- Solving $a - \frac{x}{a} <> d$
- Solving $\frac{a-x}{b} <> d$
- Solving mixture (2)
- Solving mixture (3)
- Mixture - unknown on one side

Linear inequalities · Solving – unknown on both sides 15

- Solving $ax + b < cx + d$
- Solving $ax - b < cx + d$
- Solving $ax + b < cx - d$
- Solving $ax - b < cx - d$
- Solving $ax + b < d - cx$
- Solving $ax - b < d - cx$
- Solving Mixture (4)

Linear inequalities · Solving – unknown on both sides *continued*

- Solving Mixture (5 inc negative solutions)
- Solving $a < bx + c < d$
- Solving $a < bx - c < d$
- Solving $a < b - cx < d$
- Solving Mixture (6)
- Equations and inequalities mixture
- Equations and inequalities mixture
- Mixture - unknown on both sides

Inequalities in two variables · Defining inequalities for regions EXTENDED 15

- Representing $y \geq a$ or $y > a$
- Representing $y \leq a$ or $y < a$
- Representing $x \geq a$ or $x > a$
- Representing $x \leq a$ or $x < a$
- Representing $ax + by \geq c$
- Representing $ax + by \leq c$
- Representing $ax + by \geq c$ and axes
- Representing $ax + by \leq c$ and axes
- Representing $ax + by \geq c, x \leq p, y \leq 0$
- Representing $ax + by \leq c, x \geq p, y \geq 0$
- Representing $ax + by \geq c, x \leq 0, y \leq p$
- Representing $ax + by \leq c, x \geq 0, y \geq p$
- Representing $ax + by \leq c, x \geq p, y \geq q$
- Representing $ax + by \geq c, x \leq p, y \leq q$
- Mixture - Defining inequalities

Sequences

Continuing and missing terms 15

- Continue a linear sequence (integers)
- Directed numbers
- Sequence given the first term and rule (+)
- Sequence given the first term and rule (-)
- Sequence given the first term and rule
- Geometric given the first term and rule
- Sequence (fractions) - nth term
- Sequence iterative formula
- Fibonacci sequence
- Continue a geometric sequence
- Specific terms in a geometric sequence
- Next term of a non-linear sequence
- Fractions and sequences
- Algebraic sequences
- Mixture - sequences

nth term 12

- Generate a linear sequence - nth term
- Find the nth term linear - inc
- Find the nth term linear - dec
- Find the nth term linear - mixture
- Find the nth term fractions
- Find and use the nth term linear
- Generate a quadratic sequence - nth term
- Find the nth term quadratic
- Find the 10th term - quadratic
- Find the nth term - linear/quadratic
- Find the nth term - linear/quadratic/fractions
- Mixture - nth term

Proportion

Direct and inverse proportion formulae EXTENDED 20

- Direct proportion : $y \propto kx$
- Direct proportion : $y \propto kx^2$
- Direct proportion $y \propto k\sqrt[3]{x}$

Direct and inverse proportion formulae *continued*

- Direct proportion $y \propto kx^3$
- Direct proportion $y \propto k\sqrt{x}$
- Direct proportion - formula - mixture
- Inverse proportion : $y \propto \frac{k}{x}$
- Inverse proportion : $y \propto \frac{k}{x^2}$
- Inverse proportion $y \propto \frac{k}{\sqrt{x}}$
- Inverse proportion - mixture
- Proportion - mixture
- Direct and inverse proportion
- Square root and direct proportion
- Square root and inverse square proportion
- Square and inverse square proportion
- Inverse and square proportion
- Inverse root and square proportion
- Inverse and square root proportion
- Inverse square and square root proportion
- Mixture - Direct/inverse proportion

Graphs in practical situations

Travel and conversion graphs 8

- Distance time - questions
- Conversion graph - currency
- Conversion graph - miles and kilometres
- Conversion graph - cost
- Rate graph - filling a tank
- Rate graph - burning candle
- Rate graph - cooling
- Mixture - conversion graphs

Estimating speed and acceleration EXTENDED 5

- Estimate speed (cyclist)
- Estimate speed (vehicle)
- Estimate acceleration
- Estimate deceleration
- Mixture - Estimating speed/acceleration

Graphs of functions

Linear graphs · Points on graphs 6

- Complete a coordinate for $y = x \pm c$
- Complete a coordinate for $y = mx$
- Complete a coordinate for $y = mx \pm c$
- Complete a coordinate mixture
- Complete a coordinate $y = x^2 \pm bx \pm c$
- Mixture - Points on graphs

Sketching Graphs

Solving graphically 8

- Linear equal to a constant
- Two linear graphs
- Quadratic equal to a constant
- Quadratic and linear
- Reciprocal and linear
- $a + b\sqrt{x}$ and linear
- $a \times b^x$=c
- Mixture - Solving graphically

Quadratic Graphs 8

- Quadratic graphs - points to plot
- Symmetry $y = (x \pm a)(x \pm b)$
- Symmetry $y = x^2 \pm bx \pm c$
- Symmetry $y = ax^2 \pm bx \pm c$
- Roots $y = x^2 \pm bx \pm c$
- Roots $y = ax^2 \pm bx \pm c$
- Identify the roots from a graph

Quadratic Graphs *continued*

- Mixture - Quadratic Graphs

Finding the vertex EXTENDED 6

- State the vertex of a quadratic graph
- Complete the square and find the vertex
- Complete the square and find the vertex
- Identify the vertex from a graph
- Solve $x^2 \pm ax \pm b = \pm c$ from a graph
- Mixture - Finding the vertex

Differentiation

Estimating gradients of curves EXTENDED 5

- Estimating a gradient - quadratic
- Estimating a gradient - cubic
- Estimating a gradient - reciprocal
- Estimating a gradient - exponential
- Mixture - Estimating gradients

Differentiating polynomials EXTENDED 18

- Finding the gradient function ax^n
- Finding the rate of change ax^n
- Differentiation : $y = mx \pm c$
- Differentiation : $y = mx^2 \pm c$
- Differentiation : $y = ax^2 \pm bx$
- Differentiation : $y = ax^2 \pm bx \pm c$
- Differentiation : $y = ax^3 \pm c$
- Differentiation : $y = ax^3 \pm bx$
- Differentiation : $y = ax^3 \pm bx \pm c$
- Differentiation : $y = ax^3 \pm bx^2$
- Differentiation : $y = ax^3 \pm bx^2 \pm d$
- Differentiation : $y = ax^3 \pm bx^2 \pm cx$
- Differentiation : $y = ax^3 \pm bx^2 \pm cx \pm d$
- Differentiation : $y = (x \pm a)(x \pm b)$
- Differentiation : $y = (ax \pm c)(bx \pm d)$
- Differentiation : $y = ax^3 + bx^2 + cx + d$
- Differentiation : $y = ax^4 + bx^3$..
- Mixture - Differentiating polynomials

Gradient at a point EXTENDED 11

- Find the gradient : $y = ax^2 \pm c$
- Find the gradient : $y = ax^2 \pm bx$
- Find the gradient : $y = ax^2 \pm bx \pm c$
- Find the gradient : $y = ax^3 \pm c$
- Find the gradient : $y = ax^3 \pm bx$
- Find the gradient : $y = ax^3 \pm bx \pm c$
- Find the gradient : $y = ax^3 \pm bx^2$
- Find the gradient : $y = ax^3 \pm bx^2 \pm c$
- Find the gradient : $y = ax^3 \pm bx^2 \pm cx$
- Find the gradient : $y = ax^3$.... $\pm d$
- Mixture - Gradient at a point

Stationary points EXTENDED 4

- Stationary points of $y = x^3 + .. + d$
- Stationary points of a cubic - max or min
- Stationary points of a quartic - max or min
- Mixture - Stationary points

Functions

Evaluating functions EXTENDED 18

- Evaluating functions : $ax^2 - b$
- Evaluating functions : $b - ax^2$
- Evaluating functions $(ax)^2 + b$
- Evaluating functions $\frac{ax^2}{b}$
- Evaluating functions $\frac{ax^2}{b} + c$

Evaluating functions *continued*

Evaluating functions $\frac{ax^2}{b} - c$
Evaluating functions $\sqrt{ax + b}$
Evaluating functions $\sqrt{b - ax}$
Evaluating functions $\sqrt{\frac{x+a}{b}}$
Evaluating functions $x^2 + x$
Evaluating functions $ax^2 \pm x$
Evaluating functions $x^2 \pm ax$
Evaluating functions $ax^2 \pm bx$
Evaluating functions $ax - bx^2 \pm c$
Evaluating functions $ax^3 \pm bx^2$
Evaluating functions $ax^3 \pm bx^2 \pm cx \pm d$
Evaluating functions Mixture
Mixture - Evaluating functions

Evaluating functions · Function notation

EXTENDED 18

Evaluating functions : $ax^2 - b$
Evaluating functions : $b - ax^2$
Evaluating functions $(ax)^2 + b$
Evaluating functions $\frac{ax^2}{b}$
Evaluating functions $\frac{ax^2}{b} + c$
Evaluating functions $\frac{ax^2}{b} - c$
Evaluating functions $\sqrt{ax + b}$
Evaluating functions $\sqrt{b - ax}$
Evaluating functions $\sqrt{\frac{x+a}{b}}$
Evaluating functions $x^2 + x$
Evaluating functions $ax^2 \pm x$
Evaluating functions $x^2 \pm ax$
Evaluating functions $ax^2 \pm bx$
Evaluating functions $ax - bx^2 \pm c$
Evaluating functions $ax^3 \pm bx^2$
Evaluating functions $ax^3 \pm bx^2 \pm cx \pm d$
Evaluating functions Mixture
Mixture - Function notation

Inverse functions

EXTENDED 45

$f(x) = x - a$
$f(x) = x + a$
$f(x) = a - x$
$f(x) = ax$
$f(x) = \frac{x}{a}$
$f(x) = \frac{a}{x}$
$f(x) = ax + b$
$f(x) = b - ax$
$f(x) = ax - b$
$f(x) = \frac{x+b}{a}$
$f(x) = \frac{x-b}{a}$
$f(x) = \frac{b-x}{a}$
$f(x) = \frac{a}{x+b}$
$f(x) = \frac{a}{x-b}$
$f(x) = \frac{x}{a} + b$
$f(x) = \frac{x}{a} - b$
$f(x) = \sqrt{x}$
$f(x) = a\sqrt{x}$
$f(x) = \sqrt{x + a}$
$f(x) = \sqrt{x - a}$
$f(x) = \sqrt{a - x}$
$f(x) = \frac{\sqrt{x}}{a}$
$f(x) = \frac{a}{\sqrt{x}}$
$f(x) = \sqrt{\frac{a}{x}}$
$f(x) = \sqrt{\frac{x}{a}}$
$f(x) = \sqrt{x} + a$
$f(x) = \sqrt{x} - a$
$f(x) = a - \sqrt{x}$
$f(x) = a\sqrt{x + b}$

Inverse functions *continued*

$f(x) = a\sqrt{x - b}$
$f(x) = a + \sqrt{x - b}$
$f(x) = a - \sqrt{x - b}$
$f(x) = a - \sqrt{x + b}$
$f(x) = \frac{\sqrt{x+b}}{a}$
$f(x) = \sqrt{\frac{x-b}{a}}$
$f(x) = \sqrt{\frac{x+b}{a}}$
$f(x) = \frac{\sqrt{x}}{a} + b$
$f(x) = \frac{\sqrt{x}}{a} - b$
$f(x) = b - \frac{\sqrt{x}}{a}$
$f(x) = \sqrt{ax + b}$
$f(x) = \sqrt{ax - b}$
$f(x) = \sqrt{b - ax}$
$f(x) = \frac{\sqrt{x}}{a} + b$
mixture
Mixture - Inverse functions

Composite functions

EXTENDED 12

$fg(x)\ f(x) = ax \pm b\ g(x) = cx \pm d$
$gf(x)\ f(x) = ax \pm b\ g(x) = cx \pm d$
$fg(x)\ f(x) = x^2\ g(x) = ax \pm b$
$g(x)\ f(x) = x^2\ g(x) = ax \pm b$
$fg(x)\ f(x) = ax^2\ g(x) = bx \pm c$
$gf(x)\ f(x) = ax^2\ g(x) = bx \pm c$
$fg(x)\ f(x) = x^2 \pm a\ g(x) = x \pm b$
$gf(x)\ f(x) = x^2 \pm a\ g(x) = x \pm b$
$fg(x)\ f(x) = a \pm bx\ g(x) = cx \pm d$
$gf(x)\ f(x) = a \pm bx\ g(x) = cx \pm d$
Mixture - composite functions
Inverse and composite mixture

Composite functions · Composite functions – Function notation

EXTENDED 13

$fg(x)\ f : x \mapsto ax \pm b\ g : x \mapsto cx \pm d$
$gf(x)\ f : x \mapsto ax \pm b\ g : x \mapsto cx \pm d$
$fg(x)\ f : x \mapsto x^2\ g : x \mapsto ax \pm b$
$gf(x)\ f : x \mapsto x^2\ g : x \mapsto ax \pm b$
$fg(x)\ f : x \mapsto ax^2\ g : x \mapsto bx \pm c$
$gf(x)\ f : x \mapsto ax^2\ g : x \mapsto bx \pm c$
$fg(x)\ f : x \mapsto x^2 \pm a\ g : x \mapsto x \pm b$
$gf(x)\ f : x \mapsto x^2 \pm a\ g : x \mapsto x \pm b$
$fg(x)\ f : x \mapsto a \pm bx\ g : x \mapsto cx \pm d$
$gf(x)\ f : x \mapsto a \pm bx\ g : x \mapsto cx \pm d$
Mixture - composite functions
Inverse and composite mixture
Mixture - Function notation

Domain and range

EXTENDED 16

Domain of $\sqrt{x \pm a}$
Domain of $\sqrt{a - x}$
Domain of $\frac{a}{x \pm b}$
Domain of $\frac{a}{\sqrt{x} \pm b}$
Find the range of $y = ax + b$
Find the range of $y = b - ax$
Find the range of $y = ax + b$
Find the range of $y = b - ax$
Find the range of $y = x^2$
Find the range of $y = x^2 \pm c$
Find the range of $y = a - x^2$
Find the range of $y = ax^2 \pm c$
Find the range of $y = b - ax^2$
Find the range of $y = ax^2 \pm bx$
Find the range of $y = bx - ax^2$
Mixture - Domain and range

03 CAMBRIDGE IGCSE Coordinate geometry

6 topics
45 structures

Coordinates

Coordinates in two dimensions 5

1st quadrant
2nd Quadrant
3rd Quadrant
4th Quadrant
All 4 Quadrants

Gradient and Intercept

Gradient 7

Determine which is the steeper line
Identify the gradient (diagram)
Identify the gradient of $y = mx \pm c$
Identify the gradient after rearranging
Gradient of the line through (0,a) and (b,c)
Gradient of the line through (a,b) and (c,d)
Mixture - Gradient

Intercept · Finding the intercept 7

$y, axis$ intercept for $y = x \pm a$
$x, axis$ intercept for $y = x \pm a$
$y, axis$ intercept for $y = mx \pm c$
Intercept after rearranging
Gradient or intercept
Gradient or intercept after rearranging
Mixture - Finding the intercept

Length and midpoint

Length and midpoint of a line segment EXTENDED 4

Length of a line segment (1 d.p.)

Length and midpoint of a line segment *continued*

Length of a line segment (exact)
Finding the midpoint
Mixture - midpoint/line segment

Equations of linear graphs

Linear graphs · Finding the equation of a line 11

Equation of a straight line
Equation of a line - 2 function machines
Equation of a line - through (a,b) and (0,c)
Equation of a line - through (a,b) and (c,d)
Equation of a line - gradient and y-intercept
Equation of a line - gradient and (a,b) given
Equation of a line $y = mx \pm c$ (grad >0)
Equation of a line $y = mx \pm c$ (grad < 0)
Equation of a line $y = mx \pm c$
Equation of a line $ax + by = c$
Mixture - equation of a line

Linear graphs · Parallel and perpendicular lines EXTENDED 11

Parallel line - through (0,a) (1)
Parallel line - through (0,a) (2)
Parallel line - through (a,b) (1)
Parallel line - through (a,b) (2)
Parallel lines mixture
Perpendicular line - through (0,a) (1)
Perpendicular line - through (0,a) (2)
Perpendicular line - through (a,b) (1)
Perpendicularline - through (a,b) (2)
Perpendicular lines mixture
Mixture - Parallel/perpendicular

04 CAMBRIDGE IGCSE Geometry

13 topics
120 structures

Geometrical constructions

Constructions 14

Draw shapes accurately
Draw shapes accurately
Triangle SSS
Net of a cuboid - volume
Net of a square box - height
Net of a cuboid - height
Net of a cylinder - rectangle
Net of a triangular prism - length
Net of a cuboid - surface area
Net of a square box - height from SA
Net of a cuboid - height from SA
Net of a cylinder - rectangle from SA
Net of a triangular prism - length from SA
Mixture - nets -constructions

Scale drawings

Scale drawings and bearings · Maps and scale 8

Using scale drawings
Interpret scale diagrams - model to real
Interpret scale diagrams - real to model
Interpret maps - map to real
Interpret maps - real to map
Maps - mixed questions
Mixed questions
Mixture - Maps and scale

Scale drawings and bearings · Bearings 7

Compass directions and right angles
Bearings - words
Bearings - from A to B
Bearings - from B to A
Bearings - from A to B
Bearings - from B to A
Mixture - Bearings

Similarity

Similar lengths 9

- Using scale factors - simple
- Missing lengths - similar rectangles (1)
- Missing lengths - similar rectangles (2)
- Calculating missing sides in similar shapes
- Enlargement - lengths mixture
- Enlargement - finding the new length
- Enlargement - finding the original length
- Enlargement - mixture - length
- Mixture - Similar lengths

Area and volume scale factors EXTENDED 10

- Enlargement - area - mixture
- Enlargement - finding the new area
- Enlargement - finding the original area
- Enlargement - area mixture
- Enlargement - finding the new volume
- Enlargement - finding the original volume
- Enlargement - volume mixture
- Enlargement - area and volume mixture
- Enlargement - mixture
- Mixture - Area/volume scale factors

Symmetry

Line and rotational symmetry · 2D 10

- Reflecting A
- Reflecting B
- Reflecting C
- Reflecting D
- Rotational symmetry order 2
- Rotational symmetry order 4
- Reflections - x - axis
- Reflections - y - axis
- Reflecting Coordinates
- Mixture - 2D

Line and rotational symmetry · 3D 4

- Planes of symmetry - 3D solids
- Rotational symmetry - 3D solids
- Order of rotational symmetry - 3D shapes
- Mixture - 3D

Angles

Angle facts 11

- Classifying angles
- Angles clock hands 5 mins intervals
- Angles on a straight line
- Angles on a straight line
- Angles at a point
- Angles at a point
- Vertically Opposite Angles
- Angles Mixture
- Basic facts and triangles mixture
- Basic facts/triangles/parallel lines mixture
- Mixture - Angle facts

Parallel lines 10

- Corresponding angles
- Allied/co-interior angles
- Alternate angles
- Parallel lines Mixture (1)
- Parallel lines (1)
- Parallel lines (2)
- Parallel lines (3)
- Parallel lines (4)
- Parallel lines mixture (2)
- Mixture - Parallel lines

Angles in polygons · Angles in polygons (1) 14

- Angles in a triangle
- Angles in an isosceles triangle
- Angles in an isosceles triangle
- Angles in a right angled triangle
- Angles triangles - mixture
- Calculate missing angles triangles
- Calculate angles in a quadrilateral
- Quadrilateral and triangle - mixture
- Interior angles - polygons
- Interior angles - polygons
- Exterior angles - polygons
- Angles in polygons - with diagrams
- Angles in polygons - mixed questions
- Mixture - Angles in polygons

Angles in polygons · Angles in polygons (2) 7

- Interior angles in an arithmetic sequence
- Largest angle in a trapezium
- Decreasing arithmetic sequence of angles
- Three regular polygons at a point
- Area of part of a regular octagon
- Isosceles triangle angle
- Mixture - angles in polygons

Circle theorems I

Semicircle and tangents 8

- Angle in a semicircle
- Angles in the same segment
- Cyclic quadrilateral
- Tangent–radius
- Angle at circumference (centre given)
- Angle at the centre (circumference given)
- Alternate segment theorem
- Mixture - Semicircle and tangents

Circle theorems II

Further circle theorems EXTENDED 8

- Equal chords equidistant from the centre
- Perpendicular bisector of a chord
- Tangents from an external point
- Intersecting chords theorem
- Intersecting secants theorem
- Further circle theorems mixture
- Circle theorems mixture
- Mixture - Further circle theorems

05 CAMBRIDGE IGCSE Mensuration

20 topics
272 structures

Units of measure

Metric units 18

- Equivalence - m and cm
- Equivalence - m and cm (decimals)
- Equivalence - cm and mm
- Equivalence - cm and mm (decimals)
- Equivalence - length mixture
- Equivalence ml and litres
- Equivalence ml ,cl and litres
- Mixed Equivalence - kg and km
- Mixed Equivalence - ml and mm
- Equivalence - mixed measures
- Equivalence - mixed measures
- Metric units of area - mm^2 and cm^2
- Metric units of area - cm^2 and m^2
- Metric units of area - mixture
- Metric units of volume - mm^3 and cm^3
- Metric units of volume - cm^3 and m^3
- Metric units of volume - mixture
- Mixture - Metric units

Area and perimeter

Perimeter · Non Calculator 15

- Perimeter of a square
- Squares - area - perimeter known
- Squares - perimeter - area known
- Squares - side length - perimeter known
- Rectangle - perimeter
- Rectangle - area - perimeter known
- Rectangle - perimeter - area known
- Rectangle - side length - area known
- Rectangle - perimeter
- Rectangle - side length
- Rectangle - perimeter
- Perimeter mixture
- Regular polygons - perimeter
- Regular polygons - side length
- Mixture - Perimeter - Non Calculator

Perimeter · Calculator 12

- Squares - perimeters
- Squares - perimeter - area known
- Squares - side length - perimeter known
- Rectangle - perimeter of a rectangle
- Rectangle - perimeter - area known
- Rectangle - side length - perimeter known
- Rectangle - rectangle - no diagram
- Rectangle - side length
- Perimeter mixture
- Perimeter of regular polygons
- Side length - perimeter known
- Mixture - Perimeter Calculator)

Area · Non calculator with diagrams 22

- Square - Area
- Square - side length - area known
- Square - area - perimeter known
- Rectangle - area
- Rectangle - side length
- Rectangle - area - perimeter known
- Right angled triangle - area

Area · Non calculator with diagrams *continued*

- Right angled triangle - base - area known
- Right angled triangle - height - area known
- Non right-angled triangle - area
- Non right-angled triangle - base
- Non right-angled triangle - height
- Obtuse-angled triangle - area
- Obtuse-angled triangle - base
- Obtuse-angled triangle - height
- Parallelogram area
- Parallelogram - base - area known
- Parallelogram - height - area known
- Trapezium - area
- Trapezium - base - area known
- Trapezium - height - area known
- Mixture - Area (1)

Area · Non calculator no diagrams 10

- Area of a rectangle
- Height of a rectangle
- Area of a rectangle mixture
- Area of a triangle
- Area of a triangle - missing length
- Area of a triangle - mixture
- Area of a parallelogram
- Area of a parallelogram - missing length
- Area of a trapezium
- Mixture - Area (2)

Area · Calculator with diagrams 23

- Squares - area
- Squares - the side length - area known
- Squares - calculate the area - perimeter known
- Rectangle - area
- Rectangle - calculate the side length
- Rectangle - calculate the area - perimeter known
- Rectangle - calculate the perimeter - area known
- Right angled triangle - area
- Right angled triangle - base area known
- Right angled triangle - height area known
- Non right-angled triangle - area
- Non right-angled triangle - base
- Non right-angled triangle - height
- Obtuse-angled triangle area
- Obtuse-angled triangle - base
- Obtuse-angled triangle - height
- Parallelogram - area
- Parallelogram - base - area known
- Parallelogram - height - area known
- Trapezium - area
- Trapezium - base - area known
- Trapezium - height - area known
- Mixture - Area (3)

Area · Calculator no diagrams 7

- Area of a rectangle
- Height of a rectangle
- Area of a rectangle mixture
- Area of a triangle
- Area of a triangle - missing length
- Area of a triangle - mixture
- Mixture - Area (4)

Circles, arcs and sectors

Circumference and arcs 27

- Circles - circumference - radius known
- Circles - circumference - diameter known
- Circles - circumference - mixture
- Semi-circle - perimeter
- Sector - arc length
- Sector - radius - arc length known
- Sector - angle - arc length known
- Sector - mixture
- Circles - circumference - radius known
- Circles - circumference - diameter known
- Circles - circumference - mixture
- Sector - arc length
- Circle - circumference - radius known
- Circle - circumference - diameter known
- Circle - circumference - mixture
- Semi-circle - perimeter
- Sectors - arc length
- Sector - radius - arc length known
- Sectors - angle - arc length known
- Sectors - radius
- Sectors - mixtures
- Area and circumference of circle - mixture
- Circle - circumference - radius known
- Circle - circumference - diameter known
- Circle - circumference - mixture
- Sectors - arc length
- Mixture - Circumference and arcs

Area of circles and sectors 16

- Circle - area - radius known
- Circle - area - diameter known
- Circle - area - mixture
- Circle - area - mixture - no diagram
- Semi-circle - area
- Area of a circle - radius known
- Area of a circle - diameter known
- Area of a circle - mixture
- Area of a semi-circle
- Circle - area - radius known
- Circle - area- diameter known
- Circle area - mixture
- Area of a circles and semi circles
- Area of a circle - radius known
- Area of a circle - diameter known
- Area of a circle mixture

Area of circles and sectors · Sectors 14

- Sector - area
- Sector - radius - area known
- Sector - angle - area known
- Sector - area
- Sector - radius - area known
- Sector - angle - area known
- Sector - mixture
- Area of a sector
- Radius of a sector - area known
- Angle of a sectors - area known
- Area of a sector - calc
- Area of a sector - radius
- Area of a sector - angle
- Area of a sector - mixture

Area of circles and sectors · Shaded problems 9

- Shaded Area 1
- Shaded Area 2
- Shaded Area 3

Area of circles and sectors · Shaded problems *continued*

- Shaded Area 4
- Shaded Area 5
- Shaded Area 6
- Area and circumference of circle - non- calc
- Area and circumference of circles - calc
- Mixture - Area - circles/sectors

Area of a segment EXTENDED 8

- Segment area from radius and angle
- Major segment (unshaded)
- Radius from a shaded segment
- Perimeter of a shaded segment
- Perimeter of a shaded ring sector
- Perimeter of a major sector
- Perimeter of sector AOC
- Sector area twice a circle

Surface area and volume

Volume · Polyhedra 12

- Cuboid - volume
- Cuboid - missing lengths
- Triangular prism - volume
- Triangular prism - missing lengths
- Triangular prism - missing lengths
- Triangular prism - volume
- Trapezoid prism -volume
- Prisms - volume - mixture
- Square based pyramid - volume
- Square based pyramid - height
- Square based pyramid - base length
- Mixture - Volume (1)

Volume · Cylinders, cones and spheres 22

- Cylinder - volume - radius known
- Cylinder - volume - diameter known
- Cylinder - radius - volume known
- Cylinder - height - volume
- Cone - volume - height known
- Cone - volume - slant height known
- Cone - radius - volume known
- Cone - height - volume known
- Sphere - volume - diameter known
- Sphere - radius - volume known
- Sphere - diameter - volume known
- Cuboid - volume
- Cylinder - volume - diameter known
- Cylinder - volume - radius known
- Cylinder - volume - diameter known
- Cylinder - mixture
- Cones - volume - radius and slant height known
- Cone - volume - mixture
- Sphere - volume
- Sphere - volume - radius
- Sphere - mixture
- Mixture - Volume (2)

Surface area · Polyhedra 7

- Surface Area - Cuboid
- Cuboid
- Surface Area - Triangular prism
- Triangular prism
- Surface Area - Trapezoid prism
- Surface Area - Prisms mixture
- Mixture - Surface area (1)

Surface area · Cylinders, cones and spheres 19

- Curved SA - cylinder - radius

Surface area · Cylinders, cones and spheres *continued*

- Curved SA - cylinder - diameter
- Total SA - cylinder - radius
- Total SA - cylinder - diameter
- Cone - height known
- Cone - slant height known
- Sphere - radius known
- Sphere - diameter known
- Sphere - find radius
- Sphere - find diameter
- Cylinder - radius known
- Cylinder - diameter known
- Cylinder - surface area - non calculator
- Cylinder Curved surface area - radius known
- Cylinder Curved surface area - diameter known
- Sphere
- Find the radius of a sphere
- Sphere mixture
- Mixture - - Surface area (2)

Compound shapes and parts of shapes

Compound area and perimeter 8

- Compound shapes - missing length
- Compound shapes - area - 1 missing length
- Compound shapes - area - 2 missing lengths
- Compound shapes - area - mixture
- Compound shapes - missing length
- Compound shapes - area
- Compound shapes - Area
- Mixture - Area (3)

Hemispheres 9

- Hemisphere - volume - radius known
- Hemisphere - volume - diameter known
- Hemisphere - radius - volume known
- Hemisphere - diameter - volume known
- Hemisphere - radius known
- Hemisphere - diameter known
- Hemisphere - find radius
- Hemisphere - find diameter
- Mixture - Hemispheres

Volume and Surface area · Volume 7

- Cylinder and hemisphere - volume
- Cuboid with cylindrical hole - volume
- Cylinder and cone - volume
- Frustum - volume
- Spherical bowl - volume of water
- Cube with hemisphere removed - volume
- Mixture - Volume(3)

Volume and Surface area · Surface area 7

- Cylinder and hemisphere - curved surface area
- Cuboid with cylindrical hole - surface area
- Cylinder and cone - curved surface area
- Frustum - total surface area
- Spherical bowl - surface area of water
- Cube with hemisphere removed
- Mixture - Surface area (3)

06 CAMBRIDGE IGCSE Trigonometry

14 topics
145 structures

Pythagoras' theorem

With Diagrams 12

- Pythagoras - hypotenuse
- Pythagoras - shorter side
- Pythagoras - any side
- Pythagoras - any side - non calculate
- Height - equilateral triangle
- Slant height - isosceles triangle
- Height - isosceles triangle
- Perimeter - isosceles triangle
- Area - isosceles triangle
- Length of a diagonal
- Distance between 2 points
- Mixture - Pythagoras (1)

No diagrams 7

- Calculating c in $a^2 + b^2 = c^2$
- Calculating a in $a^2 + b^2 = c^2$
- Calculating b in $a^2 + b^2 = c^2$
- Compass directions and distance
- Calculating any side - exact
- Distance between 2 points
- Mixture - Pythagoras (2)

Trigonmetry - Right-angled triangles

Identifying sides and ratios 13

- Identifying the sine ratio of an angle

Identifying sides and ratios *continued*

- Identifying the sine ratio of an angle
- Identifying the sine ratio mix
- Identifying the cosine ratio of an angle
- Identifying the cosine ratio of an angle
- Identifying the cosine ratio mix
- Identifying the tangent ratio of an angle
- Identifying the tangent ratio of an angle
- Identifying the tangent ratio mix
- Identifying mixed ratios of angles
- Identifying mixed ratios of angles
- Identifying mixed ratios of angles mix
- Mixture - Identifying ratios

Sine, cosine and tangent · Using the sine ratio 16

- Sine ratio - calculating the opposite (1)
- Sine ratio - calculating the opposite (2)
- Sine ratio - calculating the opposite mix
- Sine ratio - calculating the hypotenuse (1)
- Sine ratio - calculating the hypotenuse (2)
- Sine ratio - calculating the hypotenuse mix
- Sine ratio - calculating sides (1)
- Sine ratio - calculating sides (2)
- Sine ratio - calculating sides mix
- Sine ratio - calculating the angle (1)
- Sine ratio - calculating the angle (2)
- Sine ratio - calculating the angle mix
- Sine ratio - calculating angles/sides (1)
- Sine ratio - calculating angles/sides (2)
- Sine ratio - calculating angles/sides mix

Sine, cosine and tangent · Using the sine ratio *continued*

Mixture - sine ratio

Sine, cosine and tangent · Using the cosine ratio 16

Cosine ratio - calculating the adjacent (1)
Cosine ratio - calculating the adjacent (2)
Cosine ratio - calculating the adjacent mix
Cosine ratio - calculating the hypotenuse (1)
Cosine ratio - calculating the hypotenuse (2)
Cosine ratio - calculating the hypotenuse mix
Cosine ratio - calculating sides (1)
Cosine ratio - calculating sides (2)
Cosine ratio - calculating sides mix
Cosine ratio - calculating the angle (1)
Cosine ratio - calculating the angle (2)
Cosine ratio - calculating the angle mix
Cosine ratio - calculating angles/sides (1)
Cosine ratio - calculating angles/sides (2)
Cosine ratio - calculating angles/sides mix
Mixture - cosine ratio

Sine, cosine and tangent · Using the tangent ratio 19

Tangent ratio - calculating the opposite (1)
Tangent ratio - calculating the opposite (2)
Tangent ratio - calculating the opposite mix
Tangent ratio - calculating the adjacent (1)
Tangent ratio - calculating the adjacent (2)
Tangent ratio - calculating the adjacent mix
Tangent ratio - calculating sides (1)
Tangent ratio - calculating sides (2)
Tangent ratio - calculating sides mix
Tangent ratio - calculating the angle (1)
Tangent ratio - calculating the angle (2)
Tangent ratio - calculating the angle mix
Tangent ratio - calculating angles/sides (1)
Tangent ratio - calculating angles/sides (2)
Tangent ratio - calculating angles/sides mix
Mixed ratios - calculating angles (1)
Mixed ratios - calculating sides (2)
Mixed ratios - calculating angles/sides mix
Mixture - tangent ratio

Angles of depression and elevation EXTENDED 11

Angle of elevation to a building
Angle of depression from a cliff
Two angles of elevation - tower
Angle of elevation to a balloon
Angle of elevation from a boat
Two angles of elevation - tree
Angle of depression to a car
Flagpole on a platform
Two-level observation deck
Angles of elevation and depression - mixture
Mixture - depression / elevation

Exact trigonometric values

Exact values EXTENDED 12

Stating Exact Trig Values
Using Exact Trig Values
Simplify : $a\sin A + b\cos B$
Evaluate : $\sin A / \cos B$
Exact value : tan and sine
Exact value : tan and cosine

Exact values *continued*

Opposite side from an exact angle
Ladder against a wall
Solve $\sin x = k$ exactly
Evaluate : $\cos A \times \sin B$
Hypotenuse of a 45° triangle
Mixture - Exact values

Trigonometric functions

Graphs of sine, cosine and tangent EXTENDED 10

Using the sine graph
Using the cosine graph
Using the tangent graph
Solve $a\sin\theta = \pm b$, $(0^o \leq \theta \leq 360^o)$
Solve $a\cos\theta = \pm b$, $(0^o \leq \theta \leq 360^o)$
Solve $atan\theta = \pm b$, $(0^o \leq \theta \leq 360^o)$
Solve $a\cos x = b$
Solve $a\cos x + b = c$
Solve $(\cos x)^2 = k$
Mixture - trig graphs

Non-right-angled triangles

Sine rule EXTENDED 8

Sine rule - calculating an angle
Sine rule - calculating an angle
Sine rule - calculating an angle mix
Sine rule - calculating sides
Sine rule - calculating sides
Sine rule - calculating sides mix
Sine rule - calculating angles and sides mix
Mixture - Sine rule

Cosine rules EXTENDED 4

Cosine rule - calculating an angle
Cosine rule - calculating sides
Cosine rule - calculating angles and sides
Mixture - Cosine rules

Sine and Cosine rules EXTENDED 4

Sine and cosine rules calculating sides
Sine and cosine rules calculating an angle
Sine and cosine rules mixture
Mixture - Sine/Cosine

Area of a triangle EXTENDED 7

Calculating the area
Calculating the area
Calculating the area mixture
Calculating an angle
Calculating a side
Side and angle mixture
Mixture - Area of a triangle

Pythagoras' theorem and trigonometry in 3D

3D Pythagoras and trigonometry EXTENDED 6

Space diagonal of a cuboid
Pyramid slant height
Trigonometry in 3D - Cuboid Problems
Trigonometry in 3D - Pyramid Problems
Trigonometry in 3D - mixed Problems
Mixture - 3D Pythagoras and trigonometry

07 CAMBRIDGE IGCSE Transformations and vectors

10 topics
69 structures

Transformations

Reflection 9

- Reflection x = a
- Reflection y = a
- Reflection mix (1 & 2)
- Reflection y = x
- Reflection y = -x
- Reflection mix (1 - 4)
- Image after reflection in $x = a$ or $y = a$
- Image after reflection in $y = x$
- Mixture - Reflection

Translation 5

- Translation - x direction
- Translation - y direction
- Translation
- Image after a translation by a vector
- Mixture - Translation

Enlargement · Positive and fractional scale factors 6

- Enlargement : scale factor 2
- Enlargement : scale factor 2
- Enlargement scale factor 0.5
- Enlarge from the origin
- Enlarge from $(\pm 1, \pm 1)$
- Mixture - enlargement (1)

Enlargement · Negative scale factors EXTENDED 6

- Enlargement scale factor -2
- Enlargement scale factor -0.5
- Enlargement - negative scale factor
- Enlarge from the origin (negative)
- Enlarge from $(\pm 1, \pm 1)$ (negative)
- Mixture - enlargement (2)

Rotation 6

- Rotation : $90°$ Clockwise
- Rotation : $90°$ Clockwise
- Rotation : $180°$ Anti-clockwise
- Image after rotation about the origin
- Image after a $270°$ rotation about the origin
- Mixture - Rotation

Combined transformations 1

- Image after two combined transformations

Vectors in two dimensions

Column vectors EXTENDED 9

- Column vectors - sum and difference
- Column vectors - missing values
- Column vectors mixture
- Writing as a column vector
- Vectors Simplifying
- Vectors: Simplifying
- Vectors: finding missing values
- Vectors: finding missing values
- Mixture - Column vectors

Magnitude of a vector

Magnitude of a vector EXTENDED 5

- Magnitude of a column vector
- Vector between two points and magnitude
- Magnitude of $\overrightarrow{BC}$ in a triangle
- Movement as a vector and magnitude
- Mixture - Magnitude

Vector geometry

(1) EXTENDED 14

- Vector geometry
- Parallel vectors
- Ratio division on a line
- Position vector and magnitude
- Collinear points
- Vector $\overrightarrow{BC}$ in a triangle
- Resultant vector path
- Position vector in terms of $\mathbf{a}$ and $\mathbf{b}$
- Parallelogram position vector
- Ratio on a vector
- Midpoint position vector
- Midpoint vector $\overrightarrow{AM}$ or $\overrightarrow{MB}$
- Vector geometry mixture
- Mixture - Vector geometry

(2) EXTENDED 8

- Ratio $AP : PM$
- Vector $\overrightarrow{ON}$ in a trapezium
- Vector $\overrightarrow{OP}$ at an intersection
- Ratio $CD : DE$
- Ratio $AQ : QC$
- Vector $\overrightarrow{AC}$
- Vector $\overrightarrow{AN}$
- Mixture - vector geometry

08 CAMBRIDGE IGCSE Probability

7 topics
132 structures

Introduction to probability

Single events and complementary probability 29

- Spinners P(shaded)
- Spinner P(unshaded)
- Words P(vowel)
- n sided dice P(n > m)
- n sided dice P(multiples/squares/primes)
- Numbered counters P(multiples/primes..)
- Picking counters - P(single colour)
- Picking counters - P(single colour)
- Picking counters - P(colour A or B)
- Picking counters - P(colour A or B)
- Sports choices - P(A or B)
- Probability mixture
- Vowels in words P(not a vowel)
- n sided dice P(not an even number)
- n sided dice P(not a square number)
- Picking counters -P(not A)
- Picking counters — P(not A or B)
- Sports choices
- Biased coin
- Biased game
- Sandwich choices
- Spinner
- Sports game
- Biased coin
- Biased game
- Sandwich choices
- Spinner
- Sports game
- Mixture - Single events

Relative and expected frequencies

Relative frequency and expected outcomes 11

- Biased dice
- Seeds
- Sweet flavours
- Test questions
- Coin — relative frequency
- Coin — relative frequency/expected
- Bus late — relative frequency
- Bus late — relative frequency/expected
- Spinner — relative frequency
- Spinner — relative frequency/expected
- Mixture - Relative frequency/expected outcomes

Probability of combined events

Listing outcomes and sample spaces · Listing 11

- Drinks machine
- Drinks machine — different drinks
- Pizza — 2 toppings
- Pizza — 3 toppings
- 2-letter codes (repeat allowed)
- 2-letter codes (no repeat)
- 3-letter codes (no repeat)
- Sports matches (3)
- Sports matches (4)
- Sports matches (5)
- Mixture - Listing

Listing outcomes and sample spaces · Sample Spaces 23

- Two 4-sided dice - sum
- Two 4-sided dice - difference
- Two 4-sided dice - product
- Two 6-sided dice - sum
- Two 6-sided dice - difference
- Two 6-sided dice - product
- 6 and 4-sided dice- sum
- 6 and 4-sided dice - product
- 6 and 4-sided dice - difference
- Coin and spinner — double / half score
- Coin and die — multiply by n or m
- Two 4-sided dice - sum
- Two 4-sided dice - difference
- Two 4-sided dice - product
- Two 6-sided dice - sum
- Two 6-sided dice - product
- Two 6-sided dice - difference
- 6 and 4-sided dice - sum
- 6 and 4-sided dice - product
- 6 and 4-sided dice - difference
- Coin and spinner
- Coin and die
- Mixture - Sample Spaces

Venn diagrams · Probability 11

- Venn probability - two sports
- Venn probability - pens
- Venn probability - cars
- Venn probability - reading and glasses
- Venn probability - subjects
- Venn with probabilities - find P (words)
- Venn with probabilities - find P (set notation)
- Venn Diagrams : Mixture
- Three-set Venn diagram from a survey
- Two-set Venn diagram from a survey
- Mixture - venn

Tree diagrams — independent events 25

- Probability Trees (1) - compeleted diagram
- Probability Trees (1) - blank diagram
- Probability Trees (1) - no diagram
- Probability Trees (2) - completed diagram
- Probability Trees (2) - blank diagram
- Probability Trees (2) - no diagram
- Probability Trees (3) - completed diagram
- Probability Trees (3) - blank diagram
- Probability Trees (3) - no diagram
- Probability Trees (1) - compeleted diagram
- Probability Trees (1) - blank diagram
- Probability Trees (1) - no diagram
- Probability Trees (2) - completed diagram
- Probability Trees (2) - blank diagram
- Probability Trees (2) - no diagram
- Probability Trees (3) - completed diagram
- Probability Trees (3) - blank diagram
- Probability Trees (3) - no diagram
- Probability Trees (4) - completed diagram
- Probability Trees (4) - blank diagram
- Probability Trees (4) - no diagram
- Probability Trees (5) - completed diagram
- Probability Trees (5) - blank diagram

Tree diagrams — independent events *continued*

Probability Trees (5) - no diagram
Mixture - Tree diagrams

Conditional probability

Dependent events and conditional probability EXTENDED 22

Sampling without replacement - diagram
Sampling without replacement - blank
Sampling without replacement - no diagram
Quiz team - completed diagram
Quiz team - blank diagram
Quiz team - no diagram
Socks in a drawer - completed diagram

Dependent events and conditional probability *continued*

Socks in a drawer - blank diagram
Socks in a drawer - no diagram
School bus - completed diagram
School bus - blank diagram
School bus - no diagram
Late for work - completed diagram
Late for work - blank diagram
Late for work - no diagram
Conditional probability - Venn (1)
Conditional probability - Venn (2))
Conditional probability - Venn mixture
Two-way table - conditional probability (2×2)
Two-way table - conditional probability (3×2)
Two-way table - probabilities
Mixture - Dependent/conditional

09 CAMBRIDGE IGCSE Statistics

11 topics
85 structures

Classifying statistical data

Tally charts, frequency tables and two-way tables 8

Complete a tally table
Draw and complete a tally table
Discrete Data - tally and frequency
Grouped Data - tally and frequency
2 way tables - completing
2 way tables - completing
2 way tables - completing mixture
Mixture - tables

Interpreting statistical data

Reading and comparing data 7

Reading tables
Reading tables - footballers
Reading a temperature table
2 way tables - reading
Timetables
Using a calendar
Mixture - Reading - tables

Averages and range

Averages from a list 10

Calculate the range
Calculate the mean - from a list
Mean given - find a missing value
Calculate the median
Calculate the range and median
Calculate the mean,median or range
Find the mode
Find the mode,mean or median
Find the min/max - range given
Mixture - Averages (1)

Averages from a table 5

Calculate the mean
Calculate the median
Calculate the range
Estimate the mean
Mixture - Averages (2)

Statistical charts and diagrams

Pictograms and bar charts 12

Interpret pictograms
Complete pictograms
Draw pictograms
Bar charts - reading
Bar charts - drawing - grid with axes
Bar charts - drawing - grid
Bar charts - drawing
Dual Bar charts - reading
Dual Bar charts - drawing - grid with axes
Dual Bar charts - drawing - grid
Dual Bar charts - drawing
Mixture - Pictograms/bar charts

Pie charts and line graphs · Pie charts 10

Pie Charts - drawing
Pie Charts - drawing - multiples of 10%
Pie Charts - reading
Pie Charts - reading
Pie Charts - reading
Pie Charts - reading
Pie Charts - reading
Pie Charts - reading
Pie Charts - calculating angles
Mixture - Pie charts

Pie charts and line graphs · Line Graphs 6

Line Graphs - reading
Line Graphs - drawing - grid with axes
Line graphs - drawing - grid
Line graphs - drawing
Line graphs - (reading 2 lines)
Mixture - Line Graphs

Stem-and-leaf and frequency polygons 6

Median from a stem-and-leaf diagram
Range from a stem-and-leaf diagram
Draw an ordered stem-and-leaf diagram
Midpoints for a frequency polygon
Modal class from a frequency polygon table
Mixture - Stem-and-leaf/frequency polygons

Scatter diagrams

Scatter diagrams 5

- Plot and line of best fit (positive correlation)
- Plot and line of best fit (negative correlation)
- Line of best fit and estimate (positive)
- Line of best fit and estimate (negative)
- Mixture - Scatter diagrams

Cumulative frequency diagrams

Cumulative frequency EXTENDED 6

- Plot a cumulative frequency graph
- Plotting and extracting information
- Reading quartiles
- Reading other information
- Reading other information (%)

Cumulative frequency *continued*

- Mixture - Cumulative frequency

Histograms

Histograms EXTENDED 10

- Calculate frequency density
- Frequency from density and width
- Read frequency from a histogram
- Draw a histogram
- Draw a histogram from a table
- Find the total from a histogram
- Frequency in a range (scale omitted)
- Frequency in a range (total given)
- Estimate from a histogram
- Mixture - Histograms