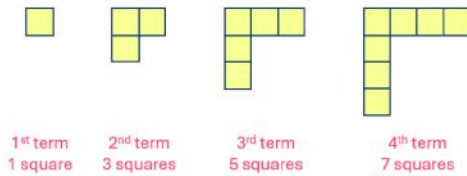




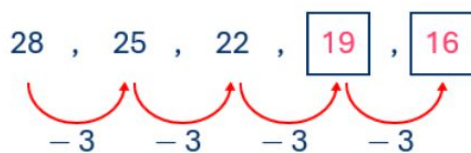
Autumn Block 1

Sequences



definition	characteristics
a sequence with a common difference between consecutive terms	- terms have a common difference - can be ascending or descending
examples 12, 19, 26, 33, 40... 19, 17, 15, 13, 11...	linear sequence 1, 2, 4, 8, 16... 2, 3, 5, 8, 12... 2000, 1000, 500, 250, 125...

Linear sequence



Term-to-term rule

42, 30, 18, 6 ...

Subtract 12 from the previous term.

Geometric sequence



Step 1 Describe and continue sequences

Step 2 Find the next term(s)

Step 3 Linear and non-linear sequences

Step 4 Continue linear sequences

Step 5 Continue non-linear sequences

Step 6 Term-to-term rules

Step 7 Find missing terms **E**

Key vocabulary

sequence	list of items in a given order, usually following a rule
term	number/object that relates to a specific position in a sequence
position	where a number or diagram is located in a sequence
rule	description to generate terms in a sequence
previous term	term immediately before a given term
next term	term immediately after a given term
term-to-term rule	rule that describes how to get from one term of a sequence to the next
common difference	constant value that is added to or subtracted from each term to get the next term of a sequence
linear sequence	sequence with a common difference between consecutive terms
non-linear sequence	sequence with no common difference between consecutive terms
ascending sequence	sequence where each term is greater than the previous term
descending sequence	sequence where each term is smaller than the previous term
second difference	difference between the first differences of a sequence
non-linear sequence	sequence with no common difference between consecutive terms
arithmetic sequence	linear sequence
geometric sequence	sequence where each successive term is found by multiplying or dividing the previous term by the same number
Fibonacci sequence	sequence where the next term is found by adding the previous two terms together



Autumn Block 2

Algebraic notation



Step 1

1-step function machines (number)

Step 2

1-step function machines (algebra)

Step 3

Find a function (one step)

Step 4

Substitution (one step)

Step 5

2-step function machines (number)

Step 6

2-step function machines (algebra)

Step 7

Find a function (two step)

Step 8

Substitution (two step)

function

mathematical relationship between an input and output, written as a rule

input

number, term or expression that goes into a function and results in an output

output

number, term or expression that results from a function being applied to an input

operation

mathematical process such as addition or multiplication

inverse

opposite effect of

variable

symbol, usually a letter, that can represent any value in mathematical expressions, identities and formulae

term

number or variable or any combination of number and variable combined by multiplication or division

expression

collection of terms involving variables and numbers

substitute

replace letters with numerical values

constant

term with no variable



Autumn Block 3

Expressions and equations

7	3
10	

$7 + 3 = 10 \quad 10 - 7 = 3$

$3 + 7 = 10 \quad 10 - 3 = 7$

f				
35	35	35	35	35

$f \div 5 = 35$

$5 \times 35 = f$

$f \div 35 = 5$

$35 \times 5 = f$

Terms:

15

13a

Expressions:

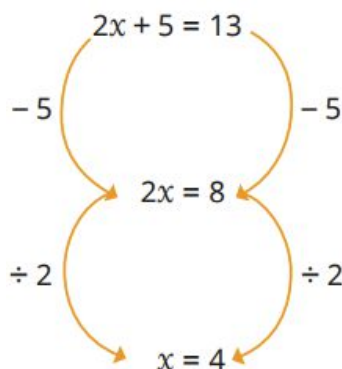
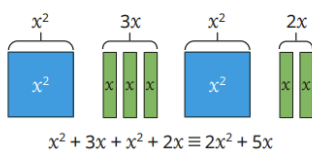
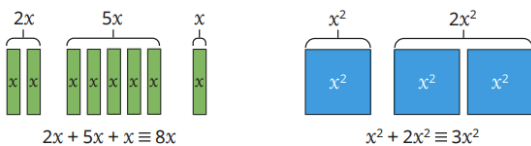
$12a + 15b$

$13p^2j - 4$

Equations:

$4r = 20$

$6y + 1 = 31$



Step 1 Equality and equivalence

Step 2 Related facts

Step 3 Like and unlike terms

Step 4 Collect like terms

Step 5 Solve 1-step equations (+/-)

Step 6 Solve 1-step equations (x/÷)

Step 7 Solve 2-step equations

Key vocabulary

commutative	when an operation gives the same result whatever the order of the terms involved
equation	statement to show that two expressions are equal
expression	collection of terms involving variables (letters) and numbers
term	number or variable or any combination of number and variable combined by multiplication or division
like terms	terms with the same variable(s) and power(s)
unlike terms	terms with different variable(s) or power(s)
coefficient	number in front of a variable indicating the multiple of the variable
equivalent	equal for all values of a given variable
simplify	write an expression in a simpler equivalent form
inverse	opposite effect of
unknown	value not yet known, indicated with a letter and used in an equation or inequality
solve	find the value(s) of an unknown in an equation
solution	value of an unknown that satisfies an equation or inequality



Autumn Block 4

Place value, ordering and rounding

Ones	Tenths	Hundredths
● ●	●	● ● ● ● ●

2.15

Try to fill in the rest of the table!

Power of 10	Calculation	Answer
10^4	$10 \times 10 \times 10 \times 10$	10 000
10^3	$10 \times 10 \times 10$	
10^2		
10^1		
10^{-1}	$1 \div 10$	0.1
10^{-2}	$1 \div 10 \div 10$	
10^{-3}		
10^{-4}		
10^{-5}		

$$8000 = 8 \times 1000$$

$$= 8 \times 10^3$$

$$9000 = 9 \times 1000$$

$$= 9 \times 10^3$$

Number	Calculation	Standard form
0.5	5×0.1	5×10^{-1}
0.05	5×0.01	5×10^{-2}

Step 1

Write integers in numerals and words

Step 2

Intervals on a number line

Step 3

Compare and order integers

Step 4

Place value for decimals

Step 5

Decimals on a number line

Step 6

Compare and order decimals

Step 7

Round to powers of 10

Step 8

Round to the nearest integer

Step 9

Round to decimal places

Step 10

Powers of 10 **E**

Step 11

Numbers greater than 1 in standard form **E**

Step 12

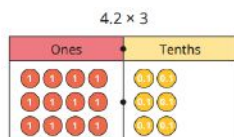
Negative powers of 10 **E**

Step 13

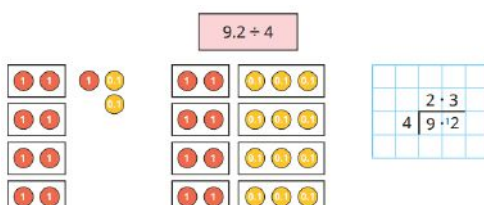
Numbers between 0 and 1 in standard form **E**

Key vocabulary

digit	any numeral from 0 to 9
placeholder	zero that holds a place and changes the value of other digits
place value	value of a digit that relates to its position in a number
integer	whole number that can be positive or negative
interval	space between marks that splits a number line or scale into equal parts
midpoint	halfway between two intervals on a number line or two numbers
estimate	number or result that is not exact, but is suitably close to the actual value
ascending order	ordered from smallest to greatest
descending order	ordered from greatest to smallest
tenth	1 part out of 10 equal parts
hundredth	1 part out of 100 equal parts
thousandth	1 part out of 1000 equal parts
decimal place	position of a digit to the right of the decimal point
round	replace a number with an approximate value
nearest	closest in distance or time
power of 10	repeated multiplication by 10. For example, 100 (10^2 or 10×10) is the second power of 10
power	way to express repeated multiplication of a number using a base and an index
index	small number to the right and above the base number that shows how many times a number or letter has been multiplied by itself
base	number that is multiplied when using an index
standard form	number that is written in the form $A \times 10^n$, where $1 \leq A < 10$ and n is an integer



$$42 \times 3 = 126 \quad 4.2 \times 3 = 12.6$$



Step 10 Order of operations

Key vocabulary

priority measure of importance of something



Autumn Block 6

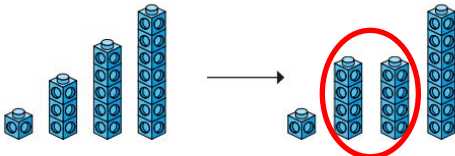
Averages and range

Favourite sport	Tally	Frequency
football		7
rugby		5
boxing		7
tennis		3
athletics		2

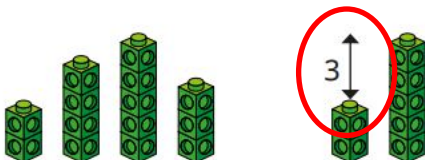
The **modal** sports are football and boxing because they have the highest frequencies. They are the **most common** choices.



The **mean** height of the towers is 2 because if you **share** the blocks out evenly, the towers all have a height of 2.



The **median** height of the towers is 2 because the **middle** two towers have a height of 2.



The **range** of the height of the towers is 3 because the **difference** in height between the largest and smallest tower is 3.

Step 1

Mode

Step 2

Mean

Step 3

Median

Step 4

Range

Step 5

Solve problems with averages and range

Key vocabulary

mode

type of average found by identifying the item that appears most often in a set of data

average

number or item representing the typical value of a set of data

data

information in any form

data set

collection of related information

qualitative data

non-numerical data

quantitative data

numerical data

mean

type of average found by dividing the total of the values by the number of values in the set

median

type of average found by identifying the middle number in an ordered list

ascending order

ordered from smallest to greatest

range

difference between the greatest and smallest pieces of data in a set

spread

distribution of a data set

difference

positive result of subtracting two values



Autumn Block 7

Rounding and estimation



A **significant figure** is a digit that contributes to the accuracy of the number. We start counting significant figures from the first non-zero digit of the number.

$$5.7 \div 1.8 \approx 6 \div 2 = 3$$

An **estimate** is a rough calculation performed to find an approximate answer. We typically round values to 1 significant figures before performing the calculation to find an estimate.

Dan's height is 150cm, to the nearest 10cm. Write an error interval for Dan's actual height, using inequality notation.

$$145 \leq h < 155$$

Dan's height is between 145cm and 155cm. It can be 145cm, but not 155cm.

Step 1

Round to 1 significant figure

Step 2

Round to 2 or more significant figures

Step 3

Estimate answers to calculations

Step 4

Solve problems with estimation

Step 5

Understand and use error interval notation **E**

Key vocabulary

round

replace a number with an approximate value

digit

any numeral from 0 to 9

leading digit

first non-zero digit in a number

approximate

as close to the actual value as possible, but not completely accurate

significant figures

digits in a number starting from the first non-zero digit

estimate

number or result that is not exact, but is suitably close to the actual value

overestimate

estimate that is greater than the actual value

underestimate

estimate that is less than the actual value

upper bound

upper limit of a set of values that rounds to a number that is stated to a given degree of accuracy

lower bound

lower limit of a set of values that rounds to a number that is stated to a given degree of accuracy

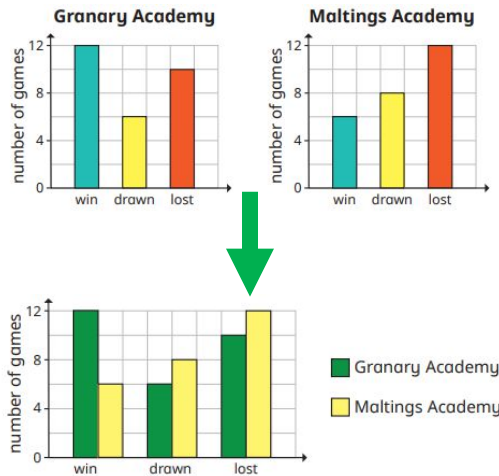
error interval

range of values a number could be, to a given degree of accuracy

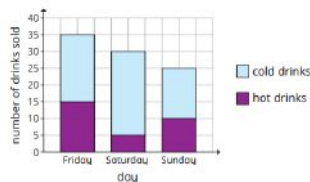


Spring Block 1

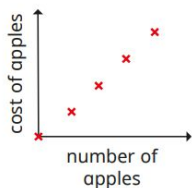
Graphing data



Dual bar chart: good for comparing categories from two or more sets of data.



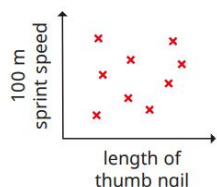
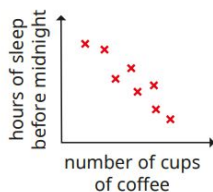
Composite bar chart: good for comparing totals of two or more categories.



More apples cost more money.

Negative correlation: as one quantity increases, the other decreases.

More coffee means less sleep.



Sprint speed doesn't effect nail length.

Key vocabulary

trend	general direction or pattern that data points follow
correlation	relationship between two variables showing how they change in relation to each other
positive correlation	relationship in which, as one variable increases, the other increases
negative correlation	relationship in which, as one variable increases, the other decreases
outlier	data point that significantly differs from the rest
linear relationship	relationship between variables that is represented by a straight-line graph

Step 1 Pictograms

Step 2 Bar charts

Step 3 Dual bar charts

Step 4 Composite bar charts

Step 5 Coordinates in the first quadrant

Step 6 Scatter graphs

Step 7 Correlation

Step 8 Lines of best fit

Step 9 Time series graphs

Step 10 Non-linear relationships

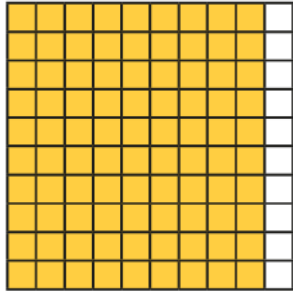
Key vocabulary

pictogram	way to show information using symbols that represent a certain value
frequency	number of times that a value appears in a data set
key	information that shows what a symbol or colour represents
axis	horizontal or vertical line used to mark intervals on a graph
scale	set of numbers, counting in multiples, used to mark intervals on an axis
discrete data	data that can be counted
composite bar chart	chart that represents multiple data sets within a single bar, using segments to represent different sub-categories
coordinates	pair of numbers that shows the horizontal and vertical position of a point
x-axis	horizontal scale on a graph
y-axis	vertical scale on a graph
origin	where the axes of a graph intersect, at
variable	measurable characteristic or attribute that can be plotted on either axis to represent the relationship between two sets of data
axes	two perpendicular lines (horizontal x-axis and vertical y-axis) that define the coordinate plane and are used to plot points and graphs
relationship	pattern or trend observed between two sets of data

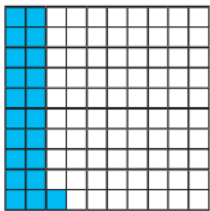


Spring Block 2

Fractions, decimals and percentages



$$\frac{90}{100} = \frac{9}{10}$$

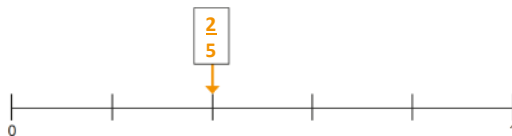


$$\text{fraction} = \frac{11}{100}$$

$$\text{decimal} = 0.11$$

$$\text{percentage} = 11\%$$

Fraction	Decimal	Percentage
$\frac{12}{40}$	$12 \div 40 = 0.3$	$0.3 \times 100 = 30\%$



Count the number of gaps between the lines to find the denominator. Count the number of lines from the left to find the numerator.

$$\frac{2}{3} \xrightarrow{\times 5} \frac{10}{15} \quad \frac{4}{5} \xrightarrow{\times 3} \frac{12}{15} \quad \frac{10}{15} < \frac{12}{15} \quad \text{So } \frac{2}{3} < \frac{4}{5}$$

To compare fractions, we need to establish a common denominator.

Step 1	Represent tenths and hundredths
Step 2	Number lines with fractions and decimals
Step 3	Tenths, hundredths, fifths and quarters
Step 4	Eighths and thousandths
Step 5	Understand percentages
Step 6	Convert simple fractions, decimals and percentages
Step 7	Fractions as diagrams
Step 8	Fractions on a number line
Step 9	Equivalent fractions
Step 10	Compare and order fractions
Step 11	Fractions as division
Step 12	Convert fractions, decimals and percentages
Step 13	Fractions, decimals and percentages greater than 1 E

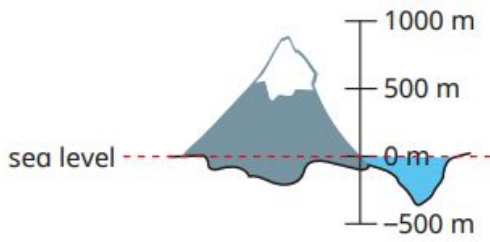
Key vocabulary

place value	value of a digit that relates to its position in a number
digit	any numeral from 0 to 9
fraction	number with a numerator and a denominator that represents a proportion
decimal number	number with a whole and fractional part, for example 3.2, 5.43
equivalent	equal in value
percentage	expressing a part of a whole as a number out of 100
numerator	top number in a fraction that indicates the number of equal parts out of a whole
denominator	bottom number in a fraction that indicates the number of equal parts a whole has been divided into



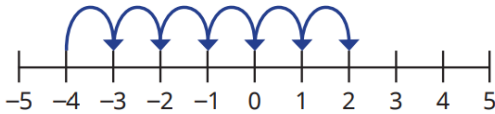
Spring Block 3

Directed number

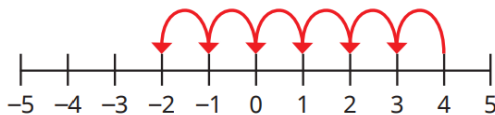


Negative numbers are used when describing something lower than zero. The diagram above shows the elevation of a mountain. Notice that the sea bed has a negative elevation.

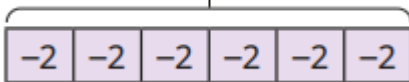
$$-4 + 6 = 2$$



$$4 - 6 = -2$$

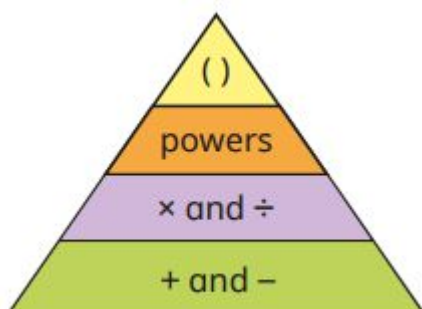


$$-12$$



$$-2 \times 6 = -12 \quad 6 \times -2 = -12$$

$$-12 \div -2 = 6 \quad -12 \div 6 = -2$$



Step 1

Directed numbers and number lines

Step 2

Compare and order directed numbers

Step 3

Calculations that cross zero

Step 4

Directed number and zero pairs

Step 5

Add directed numbers

Step 6

Subtract directed numbers

Step 7

Multiply and divide directed numbers

Step 8

Order of operations with directed numbers

Step 9

Use a calculator with directed numbers

Key vocabulary

directed number number that has a positive or negative sign, indicating its direction or position on a number line

positive number number greater than zero

negative number number less than zero

approximate as close to the actual value as possible, but not completely accurate

estimate number or result that is not exact, but is suitably close to the actual value

ascending order ordered from smallest to greatest

descending order ordered from greatest to smallest

increase make a number greater

decrease make a number smaller

minus both the mathematical operation of subtraction and a negative value

subtract take away one quantity from another or determine the difference between two values

difference positive result of subtracting two values

product result of a multiplication

inverse opposite effect of

order of operations set of rules that prioritises which mathematical operations are performed in a calculation or expression



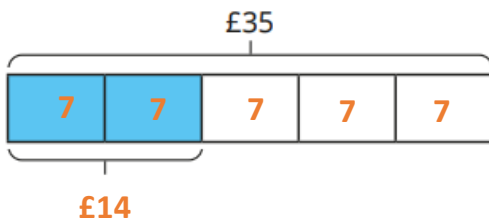
Spring Block 4

Fractions and percentages of amounts

Calculate $\frac{2}{5}$ of £35:

$$£35 \div 5 = £7$$

$$£7 \times 2 = \text{£14}$$



Calculate **32% of 600**:

(Non-calculator)

$$600 \div 10 = \text{60 (10\%)}$$

$$\text{60} \times 3 = \text{180 (30\%)}$$

$$600 \div 100 = \text{6 (1\%)}$$

$$\text{6} \times 2 = \text{12 (2\%)}$$

$$\text{180 (30\%)} + \text{12 (2\%)} = \text{192 (32\%)}$$

Calculate **32% of 600**:

(Calculator)

Finding 1% method

$$600 \div 100 = \text{6 (1\%)}$$

$$\text{6} \times 32 = \text{192 (32\%)}$$

OR

Decimal multiplier method

$$32 \div 100 = \text{0.32}$$

$$\text{0.32} \times 600 = \text{192 (32\%)}$$

Step 1

Fraction of an amount

Step 2

Use a fraction to find the whole

Step 3

Percentage of an amount (non-calculator)

Step 4

Percentage of an amount (calculator)

Step 5

Percentage increase and decrease

Step 6

Use a percentage to find the whole **E**

Step 7

Solve problems with fractions and percentages greater than 1 **E**

Key vocabulary

fraction

number with a numerator and a denominator that represents a proportion

numerator

top number in a fraction that indicates the number of equal parts out of a whole

denominator

bottom number in a fraction that indicates the number of equal parts a whole has been divided into

percentage

expressing a part of a whole as a number out of 100

equivalent fraction

fraction that represents the same value as another fraction with different numerators and denominators

decimal number

number with a whole and fractional part that lies between two consecutive integers, for example 3.2, 5.43

multiplier

number that is multiplied with another number to increase or decrease its value to scale it up or down

increase

make a number greater

decrease

make a number smaller

original scale

initial value or quantity before any changes
relationship between two proportional quantities, showing how many times one quantity is greater or smaller than the other

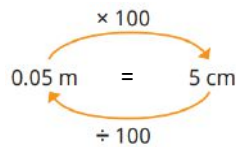
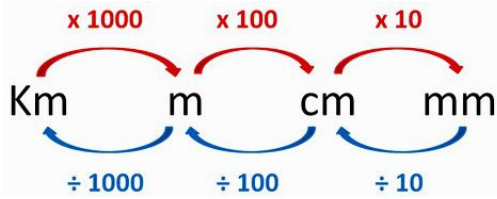
equivalent

equal in value

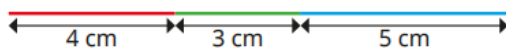
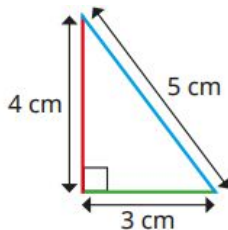


Spring Block 5

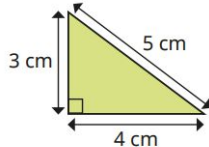
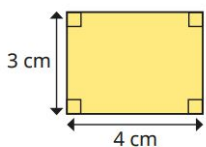
Perimeter and area



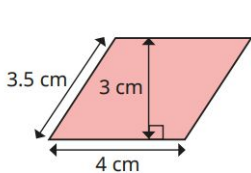
The **perimeter** of a shape is the sum of the side lengths.



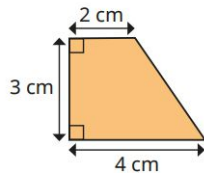
$$\text{Perimeter} = 4 + 3 + 5 = 12\text{cm}$$



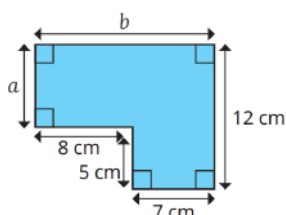
$$\text{area} = \text{length} \times \text{width} \quad \text{area} = \text{base} \times \text{height} \div 2$$



$$\text{area} = \text{base} \times \text{height}$$



$$\text{area} = \frac{a+b}{2} \times h$$



$$a + 5 = 12$$

$$a = 12 - 5$$

$$a = 7\text{cm}$$

$$8 + 7 = b$$

$$b = 15\text{cm}$$

Step 1

Convert metric units of length

Step 2

Perimeter of a polygon

Step 3

Perimeter of a compound shape

Step 4

Area of rectangles and parallelograms

Step 5

Area of a triangle

Step 6

Area of a trapezium

Step 7

Solve problems with perimeter and area

Step 8

Form expressions with perimeter and area **E**

Key vocabulary

convert

change a quantity from one unit or form to another

metric system

system of measurement based on units such as metres, grams and litres, used to quantify length, mass and volume

perimeter

total distance along the boundary of a 2-D shape

polygon

closed 2-D shape made of straight lines

regular polygon

polygon where all the sides are equal in length and all the interior angles are equal

irregular polygon

polygon where all the sides are not equal in length and/or all the angles are not equal

compound shape

2-D or 3-D shape that is made up of two or more shapes

base

side from which a 2-D shape's height is measured

perpendicular height

height of a shape, measured at a right angle from the base to a vertex or edge

parallelogram

quadrilateral with two pairs of parallel sides, where opposite sides are equal in length and opposite angles are equal in size

area

amount of space taken up by a shape or surface, measured in square units

trapezium

quadrilateral that has one pair of parallel sides

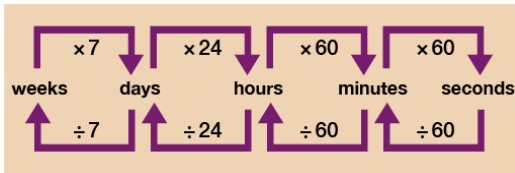
parallel

relationship between two or more objects (such as lines or planes) that remain equidistant from each other and never intersect



Summer Block 1

Speed, distance and time



÷

12 months = 1 year
52 weeks = 1 year
365 days = 1 year

x

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

Speed tells us how quickly an object covers distance. It is a compound unit. We measure it using units like metres per second (m/s) or miles per hour (mph).

$$\text{Distance} = \text{Speed} \times \text{Time}$$

Distance tells us how far apart things are. We can use metric units of length, such as metres (m), kilometres (km), and millimetres (mm). We can also use imperial units, such as miles (mi), feet (ft), or inches (in).

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

Time tells us how long something takes. We measure it using units such as seconds, minutes, hours, days, weeks, months, and years. Some units of time vary; a month can be 28, 29, 30, or 31 days!

Step 1

Convert between milliseconds, seconds, minutes and hours

Step 2

Convert between hours, days, months and years

Step 3

Solve problems with tables and timetables

Step 4

Solve problems with time and the calendar

Step 5

Calculate speed

Step 6

Calculate time and distance

Step 7

Solve problems with speed, distance and time

Step 8

Interpret distance-time graphs

Step 9

Draw distance-time graphs

Step 10

Calculate speed from a distance-time graph **E**

Key vocabulary

speed	rate at which an object moves, measured in units of distance covered per unit of time
average speed	rate at which an object covers a total distance over a period of time
distance	measure of how far apart two points are from each other
compound measure	measure that includes two different units to indicate a rate, for example km/h
stationary	not moving
horizontal	parallel to the horizon (flat or level)
difference	positive result of subtracting two values
sum	result of adding two or more numbers together
row	group of horizontal cells in a table
column	group of vertical cells in a table
cell	where a row and a column meet



Multiples of 10: 10, 20, 30, 40, ...
(numbers in the 10 times table)

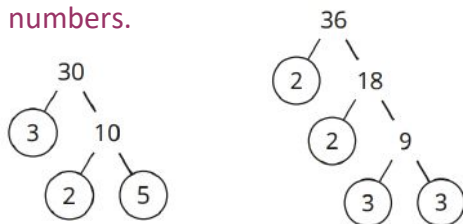
Factors of 10: 1, 2, 5, 10

(numbers that divide into 10 with no remainder)

A **prime** number has two factors, 1 and itself. For numbers up to 100, a number is prime if it can't be divided by 2, 3, 5, or 7 without remainder. The table below shows the primes up to 20 in yellow.

	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

We can write integers as a **product of prime factors** using the method below. Notice how we circle the prime numbers.



$$30 = 2 \times 3 \times 5$$

$$36 = 2^2 \times 3^2$$

Powers are used to express repeated multiplication of the same number.
Roots are the opposite of powers.

$$5^4 = 5 \times 5 \times 5 \times 5 = 625 \quad \sqrt[4]{625} = 5$$

$$5^3 = 5 \times 5 \times 5 = 125 \quad \sqrt[3]{125} = 5$$

$$5^2 = 5 \times 5 = 25 \quad \sqrt{25} = 5$$

$$5^1 = 5$$

Step 1 Multiples

Step 2 Factors

Step 3 Prime numbers

Step 4 Write a number as a product of prime factors

Step 5 Square, cube and triangular numbers

Step 6 Square roots and cube roots

Step 7 Explore higher powers and roots **E**

Step 8 Highest common factor (HCF)

Step 9 Lowest common multiple (LCM)

Step 10 HCF and LCM from a Venn diagram **E**

Step 11 Use factors to simplify calculations **E**

Key vocabulary

factor	integer or term that divides exactly into another integer or term
multiple	result of multiplying a number by an integer
integer	whole number that can be positive or negative
prime number	positive integer that has exactly two factors, 1 and itself
even	integer that can be divided equally by 2
odd	integer that cannot be divided equally by 2
product	result of a multiplication
square root	factor of a number that when multiplied by itself gives the original number, for example 5 is the square root of 25
cube root	factor of a number that when multiplied by itself twice gives the original number, for example 3 is the cube root of 27
power	way to express repeated multiplication of a number using a base and an index
index	small number to the right and above the base number that shows how many times the base is multiplied by itself
highest common factor (HCF)	common factor of two or more integers or terms that has the greatest value or power
lowest common multiple (LCM)	lowest multiple shared by two or more numbers



Summer Block 3

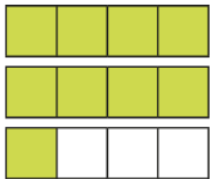
Add and subtract fractions

$$\frac{7}{21} = \frac{1}{3}$$

÷ 7

$$\frac{48}{60} = \frac{24}{30} = \frac{4}{5}$$

÷ 2 ÷ 6



How does the bar model represent both $\frac{9}{4}$ and $2\frac{1}{4}$?

When fractions share a **common denominator**, we can easily add or subtract them.

$$\frac{2}{5} + \frac{2}{5} = \frac{4}{5}$$

$$\frac{5}{7} - \frac{2}{7} = \frac{3}{7}$$

When fractions don't share a **common denominator**, we have to find one before adding or subtracting.

$$\frac{3}{4} = \frac{9}{12}$$

x3

$$\frac{1}{6} = \frac{2}{12}$$

x2

Ideally, we should choose the **lowest common multiple** of our denominators. This makes our calculations as simple as possible.

Step 1

Simplify fractions

Step 2

Convert between mixed numbers and improper fractions

Step 3

Add and subtract fractions with the same denominator

Step 4

Add and subtract with fractions and integers

Step 5

Add and subtract fractions where denominators share a simple common multiple

Step 6

Add and subtract fractions with any denominator

Step 7

Add and subtract improper fractions and mixed numbers

Step 8

Use equivalence to add and subtract decimals and fractions **E**

Step 9

Add and subtract simple algebraic fractions **E**

Step 10

Substitution and solving equations with fractions **E**

Key vocabulary

simplify

write an equivalent fraction by dividing the numerator and denominator by a

numerator

top number in a fraction that indicates the number of equal parts out of a whole

denominator

bottom number in a fraction that indicates the number of equal parts a whole has been divided into

improper fraction

fraction in which the numerator is greater than the denominator

mixed number

integer and a proper fraction represented together to form a number

lowest common multiple (LCM)

lowest multiple shared by two or more numbers

place value

value of a digit that relates to its position in a number

equivalent

equal in value

solve

find the value(s) or set of values of an unknown in an equation or inequality

substitute

replace letters with numerical values

equation

statement to show that two expressions are equal

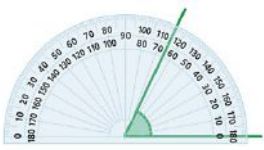
expression

collection of terms involving variables, numbers and/or operations



Summer Block 4

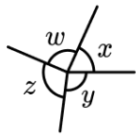
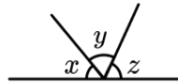
Angles and polygons



We use a **protractor** to measure angles. Make sure you line the crosshair up with the angle you are trying to measure. Always read the scale that starts at zero.

The sum of angles on a straight line is 180° .

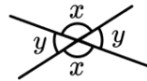
$$x + y + z = 180$$



The sum of angles at a point is 360° .

$$w + x + y + z = 360$$

Vertically opposite angles are equal in size.

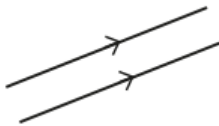


Interior angles in a triangle add to 180° .

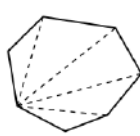
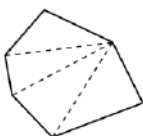
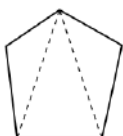


Interior angles in a quadrilateral add to 360° .

Parallel lines travel in the same direction. They never meet/intersect. We show that lines are parallel by drawing arrows on each line.



Perpendicular lines meet/intersect at a 90° degree angle. We show lines are perpendicular using the right angle symbol.



$$\text{interior angle sum} = (n - 2) \times 180^\circ$$

Step 1 Draw and measure line segments and angles

Step 2 Understand and use geometric notation

Step 3 Angles around a point

Step 4 Angles on a straight line

Step 5 Vertically opposite angles

Step 6 Recognise and name polygons

Step 7 Angles in a triangle

Step 8 Angles in a quadrilateral

Step 9 Solve problems with angles

Step 10 Parallel and perpendicular lines

Step 11 Investigate angles in parallel lines **E**

Step 12 Angles in any polygon **E**

Step 13 Simple proofs **E**

Key vocabulary

angle	measure of turn, measured in degrees
degree	unit of measure for angles ($^\circ$)
acute angle	angle less than 90°
obtuse angle	angle greater than 90° and less than 180°
right angle	angle of 90° that can be shown by a square marker
reflex angle	angle greater than 180° and less than 360°
vertex	point at which two or more edges (3-D) or sides (2-D) meet
vertically opposite angles	pairs of equal angles that are opposite each other at a vertex created by two straight intersecting lines
isosceles triangle	triangle with two equal sides and two equal angles
equilateral triangle	triangle with three equal sides and three equal angles
scalene triangle	triangle with no equal sides or angles
parallel lines	lines that maintain a constant distance from each other
perpendicular	where lines, planes or surfaces meet at a right angle