

PRIMARY MATHEMATICS

Maths

5th Class · Student Activity Book



NAME

CLASS

SCHOOL



Where to find each lesson

01 Place value and the decimal number system **NUMBER**

1	What we already know — place value to millions	8
2	One whole, ten parts — introducing tenths	9
3	Reading decimals to tenths and hundredths	10
4	Decimals on a number line	11
5	Comparing two decimals	12
6	Ordering a set of decimals	13
7	Decimals to thousandths	14
8	Rounding decimals to the nearest whole, tenth, hundredth	15
9	Money is decimal — €1.20 and €1.02 are not the same	16
10	Percent as "out of one hundred"	17
11	Equivalent fractions, decimals, percents — first walk	18
12	Equivalent fractions, decimals, percents — independent	19
13	Negative numbers — first encounter	20
14	Comparing positive and negative numbers	21
15	Real-life decimals — class survey	22
16	Module assessment — "What's my number?"	23

02 Operations and computational fluency **NUMBER**

17	Mental addition strategies — partitioning and compensating	25
18	Written addition — multi-digit whole numbers	26
19	Adding decimals — line up the points	27
20	Subtraction strategies — counting on, take away, decomposition	28
21	Subtracting decimals	29
22	Multiplication facts — unfinished business	30
23	Multiplying by 10, 100, 1000	31
24	Multiplying a multi-digit number by a single digit	32
25	Multiplying two two-digit numbers	33
26	Dividing by a single digit — the bus-stop method	34
27	Division with decimal answers — sharing what's left	35
28	Order of operations — brackets, division, multiplication, addition, subtraction	36
29	Factors, multiples, prime and composite numbers	37
30	Module assessment — operation toolbox in a class-trip plan	38

03 Fractions, decimals and percentages **NUMBER**

31	What is a fraction? — review part-whole	40
32	Equivalent fractions	41
33	Simplifying fractions	42
34	Comparing two fractions	43
35	Ordering a set of fractions	44
36	Adding and subtracting fractions with the same denominator	45
37	Adding and subtracting fractions with different denominators	46
38	Fraction of a quantity	47
39	Decimals and fractions — they're the same thing	48
40	Percent of a quantity — 10%, 25%, 50%	49
41	Discount and increase — €30 reduced by 20%	50
42	Ratio — the basic idea	51
43	Sharing in a ratio	52
44	Proportion — scale up the recipe	53
45	Module assessment — fraction shop	54

04 Measures – length, mass, capacity, area, volume **NUMBER**

46	Estimating then measuring – length	56
47	Reading scales – to the nearest mm	57
48	Converting length units	58
49	Perimeter – adding sides up	59
50	Area of rectangles	60
51	Area of triangles – half a rectangle	61
52	Composite shapes – break it into rectangles and triangles	62
53	Mass – weighing in g and kg	63
54	Converting mass units	64
55	Capacity – measuring juvs	65
56	Converting capacity units	66
57	Volume of cuboids	67
58	Estimation across attributes	68
59	Solving real measurement problems	69
60	Module assessment – design a class garden bed	70

05 Time and money **NUMBER**

61	Reading the analog clock – to the nearest minute	72
62	24-hour time	73
63	Elapsed time within an hour	74
64	Elapsed time across hours and across midnight	75
65	Reading a real timetable – Irish Rail Cork to Dublin	76
66	Money – review of euro and cent	77
67	Adding and subtracting money – written and mental	78
68	Making change	79
69	Comparing prices – best value	80
70	Building a class budget	81
71	Sale prices in a shop – multi-step money problems	82
72	Module assessment – plan a school trip	83

06 2D and 3D shape, angles, symmetry

SHAPE & SPACE

73	Naming and sorting 2D and 3D shapes	85
74	Nets – flat to 3D and back	86
75	Angles – what is an angle?	87
76	Measuring angles with a protractor	88
77	Drawing angles with a protractor	89
78	Angle sums in triangles and quadrilaterals – 180° and 360°	90
79	Parts of a circle – centre, radius, diameter, circumference	91
80	Drawing circles with a compass	92
81	Circumference – measuring round things and meeting π	93
82	Construction – triangles from sides, bisecting lines and angles	94
83	Symmetry – lines and rotational	95
84	Isometric drawing – drawing a cuboid on dot paper	96
85	Transformations – translation, reflection, rotation and enlargement	97
86	Module assessment – tessellate a quilt block	98

07 Data, chance and the co-ordinate plane

SHAPE & SPACE

87	Posing a question and tallying the data	100
88	Scale drawings and scale maps – small drawings of big things	101
89	Bar charts – drawing and reading	102
90	Bar charts – choosing a scale	103
91	Pie charts – first encounter	104
92	Mean, median, mode, range – measures of centre and spread	105
93	Class survey – pose, collect, summarise, present	106
94	Chance – likely, unlikely, certain, impossible	107
95	Probability as a fraction – out of total outcomes	108
96	Probability as a decimal and percentage	109
97	First quadrant of the co-ordinate plane	110
98	All four quadrants – first walk	111
99	Drawing a shape from a list of co-ordinates	112
100	Module assessment – what does our class look like?	113

08 Algebra – patterns, expressions and equations

ALGEBRA

101	Continuing a pattern – what comes next?	115
102	Describing a rule in words	116
103	Tables of values – input → output	117
104	Finding the rule from a table	118
105	Letter-symbols – using a letter for an unknown	119
106	Equality and the balance	120
107	Solving simple equations – find the missing value	121
108	Forming an equation from a story	122
109	Two-step equations – informal solving	123
110	Investigation – the staircase pattern	124
111	Properties of operations – commutative, associative, distributive	125
112	Module assessment – pattern hunt	126

09 Mathematical modeling and end-of-year review

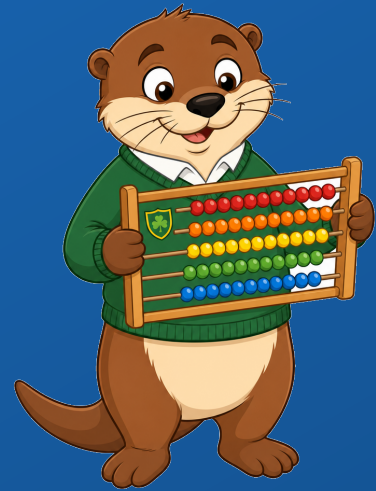
REVIEW

113	End-of-year strands recap – five-strand IWB tour	128
114	Big investigation – how tall is the school?	129
115	Class-shop modeling – designed by pupils	130
116	Plan our class trip – Glendalough or Newgrange?	131
117	Design our 6th Class welcome poster	132
118	Predict next year's school enrolment	133
119	Maths journal review and self-assessment	134
120	Class maths fair	135

NUMBER

01

Place value and the decimal number system



- L1 What we already know — place value to millions
- L2 One whole, ten parts — introducing tenths
- L3 Reading decimals to tenths and hundredths
- L4 Decimals on a number line
- L5 Comparing two decimals
- L6 Ordering a set of decimals
- L7 Decimals to thousandths
- L8 Rounding decimals to the nearest whole, tenth, hundredth
- L9 Money is decimal — €1.20 and €1.02 are not the same
- L10 Percent as "out of one hundred"
- L11 Equivalent fractions, decimals, percents — first walk
- L12 Equivalent fractions, decimals, percents — independent
- L13 Negative numbers — first encounter
- L14 Comparing positive and negative numbers
- L15 Real-life decimals — class survey
- L16 Module assessment — "What's my number?"

What we already know – place value to millions

MODULE 1 · PLACE VALUE AND THE DECIMAL NUMBER SYSTEM NUMBER

Each digit in a whole number sits in a **place**. Reading from the right: **Units, Tens, Hundreds, Thousands**. Each place is **ten times** the one to its right.

→ **3 482** → 3 thousands, 4 hundreds, 8 tens, 2 units.

→ **70 050** → 7 ten-thousands, 0 thousands, 0 hundreds, 5 tens, 0 units.

HOW TO ANSWER TODAY

- **Expanded form.** Write the number as a sum of its place values. Skip any part that is 0.
 $3,482 = 3,000 + 400 + 80 + 2$ · $70,050 = 70,000 + 50$
- **Value of a digit.** Find which place the digit sits in, then write what it is worth there as a number (not the place name).
 In 3,742 the digit 7 sits in the hundreds place. Its value is 700.

TRY IT ON THE LINE

Write each number into the HTh/TTh/Th/H/T/U mat – one digit per cell. Read each one aloud after you write it.

HTh	TTh	Th	H	T	U

1. Build **3,072** in the first row.
2. Build **70,309** in the second row (note the embedded zeros in the Th and T columns).
3. Build **105,008** in the third row.
4. Build **800,070** in the fourth row.

PRACTICE

- 1 The Cumann na mBunscol website reports that **485,708** pupils have taken part in school blitzes across the country since the competition began. Write **485,708** in expanded form.
- 2 The school library catalogue shows that **377,265** books have been borrowed across all the primary schools in the county this year. Write **377,265** in expanded form.

CHALLENGE

- 1 5th class are decorating a World Book Day display board with the total number of words read by all the pupils in the school this term: **6,204,109**. What is the value of the digit **2** in this number?
 In 6,204,109, what is the value of the digit 2? (Each zero still holds a place.)
- 2 On the 5th class tour to Glendalough, the coach's odometer logged **19.103 km** on the drive from the school to the M50, then **75.29 km** from the M50 to the car park at the lakes. How many kilometres did the coach travel in total?

Reading decimals to tenths and hundredths

MODULE 1 · PLACE VALUE AND THE DECIMAL NUMBER SYSTEM NUMBER

Each digit in a decimal sits in a place. Reading from the decimal point: tens, units, **then tenths, hundredths, thousandths.**

→ **12.45** → 1 ten, 2 units, 4 tenths, 5 hundredths.

→ **0.07** → 0 units, 0 tenths, 7 hundredths.

HOW TO ANSWER TODAY

- **Decimal places.** Tenths is the first digit after the point, hundredths the second, thousandths the third.

In 4.82 the digit in the tenths place is 8. · In 0.345 the hundredths digit is 4.

- **Expanded form (decimals).** Write the decimal as a sum of its parts: ones, tenths, hundredths. Skip any part that is 0.

$4.52 = 4 + 0.5 + 0.02$ · $0.07 = 0.07$

TRY IT ON THE LINE

Write each decimal into the U/t/h mat — one digit per cell. The dot between U and t is the decimal point.

U	t	h

1. Build **0.27**.
2. Build **1.05** (note the zero in the tenths column).
3. Build **2.30** (note the trailing zero in the hundredths column).
4. Build **0.06**.
5. Build **0.43**.

PRACTICE

- 1 At the Cumann na mBunscol blitz in the county grounds, Tadhg records that his team's average score per match is **6.96** points. Write **6.96** in expanded form, showing the ones, tenths and hundredths parts.

- 2 On the 5th class tour to the Cliffs of Moher, Oisín walks **8.32 km** along the cliff path during the day. Write **8.32** in expanded form, showing the ones, tenths and hundredths parts.

CHALLENGE

- 1 Ms Murphy marks the 5th class sprint times on a number line on the board before the pupils line up at the door for yard. Cian's time was **3.387 seconds** over the class average. Between which two whole numbers does **3.387** sit on the number line, and which whole number is it closer to?

- 2 On the coach trip to the Burren, Cian's GPS app shows the bus has travelled **4.191 km** since the last stop. Between which two whole kilometres does **4.191** sit on the number line, and which whole kilometre is it closer to?

Glossary

MEASURES 24-hour time A way of writing the time using a single number from **00:00 to 23:59** instead of am/pm. 17:30 means half-five in the afternoon.

SHAPE & SPACE angle The **opening between two arms** that meet at a vertex. Measured in degrees.

MEASURES area How much **surface a 2-D shape covers**. Measured in square units (cm^2 , m^2).

DATA & CHANCE average Another word for the **mean** — add the values together and divide by how many there are.

DATA & CHANCE axis A **number line** along the edge of a chart or coordinate plane. The horizontal one is the ***x*-axis**; the vertical one is the ***y*-axis**.

DATA & CHANCE bar chart A chart that shows **how often each category occurs** using rectangular bars whose heights match the frequencies.

ALGEBRA BIDMAS The order to do operations: **B**rackets, **I**ndices, **D**ivision and **M**ultiplication, **A**ddition and **S**ubtraction.

MEASURES budget A plan for **how much money** you can spend on each thing.

MEASURES capacity How much liquid a container can **hold**. Measured in millilitres (ml) and litres (l). 1 l = 1 000 ml.

MEASURES centimetre A unit of **length**, written **cm**. 100 cm = 1 m. A fingernail is about 1 cm wide.

MEASURES change The money you get back when you pay **more than the price**.

SHAPE & SPACE cone A 3-D shape with a **circular base** and a single point (apex) at the top. An ice-cream cone is one.

DATA & CHANCE coordinate A **pair of numbers (x, y)** that pinpoints a place on the coordinate plane. ***x*** moves across, ***y*** moves up or down.

SHAPE & SPACE cube A 3-D shape with **6 square faces**, all the same size. Every face meets the next at a right angle.

MEASURES cubic centimetre A cube that is **1 cm × 1 cm × 1 cm**. Used to measure volume — written cm^3 .

SHAPE & SPACE cuboid A 3-D shape with **6 rectangular faces** — a box. Opposite faces are always equal.

DATA & CHANCE data The **information collected** by counting, measuring, or asking — written as numbers, words, or marks ready to be summarised or charted.

NUMBER decimal A number with a **decimal point** separating whole units from parts of a unit (tenths, hundredths, thousandths).

NUMBER decimal point The dot that separates whole units from parts of a unit. In 4.75 the decimal point sits between the **4** and the **7**.

NUMBER denominator The **bottom number** of a fraction. It says how many equal parts make up one whole.

NUMBER digit Any of the symbols **0, 1, 2, 3, 4, 5, 6, 7, 8, 9** used to write numbers.

MEASURES discount An amount taken **off the original price**. A 20 % discount on €30 means €6 off, paying €24.

SHAPE & SPACE edge A **line where two faces meet** on a 3-D shape. A cube has 12 edges.

MEASURES elapsed time The **time that has passed** between a start and an end. From 9:15 to 11:50 is 2 h 35 min elapsed.

ALGEBRA equation A statement that **two expressions are equal**, with an = sign in the middle. Both sides must always balance.

NUMBER equivalent Worth the **same value** even though they look different — e.g. $\frac{1}{2}$, 0.5, and 50 % are all equivalent.

MEASURES estimation A **sensible guess** about a measurement before checking — e.g. 'I think this jug holds about 500 ml.'

ALGEBRA expression A **piece of maths** with numbers and/or letters but no equals sign — e.g. $3x + 4$.

SHAPE & SPACE face A **flat surface** of a 3-D shape. A cube has 6 faces.

NUMBER factor A whole number that **divides exactly** into another. Factors of 12: 1, 2, 3, 4, 6, 12.

NUMBER fraction A number that names **part of a whole**, written as numerator over denominator (e.g. $\frac{3}{4}$).

DATA & CHANCE frequency **How many times** a value appears in a data set.

MEASURES gram A unit of **mass**, written **g**. 1 000 g = 1 kg. A €1 coin weighs about 7.5 g.

SHAPE & SPACE hexagon A polygon with **6 straight sides**. Honeycomb cells are hexagons.

NUMBER hundredth **One part in 100**. Two places after the decimal point: 0.07 means 7 hundredths.

NUMBER improper fraction A fraction whose **numerator is bigger than its denominator**, e.g. $\frac{7}{4}$. It can be rewritten as a whole number plus a fraction ($1\frac{3}{4}$).

ALGEBRA input The number you put **into** a function machine or a table of values.

MEASURES kilogram A larger unit of **mass**, written **kg**. $1\text{ kg} = 1\,000\text{ g}$. A bag of sugar is usually 1 kg.

MEASURES kilometre A unit of **length**, written **km**. $1\text{ km} = 1\,000\text{ m}$. A 20-minute walk is about 1 km.

ALGEBRA letter-symbol A **letter that stands for an unknown number**, like x or n . Whatever value makes the equation true is the answer.

SHAPE & SPACE line of symmetry A line that divides a shape into **two halves that match exactly** when folded along it.

MEASURES litre A unit of **capacity**, written **l**. $1\text{ l} = 1\,000\text{ ml}$. A school milk carton is usually 200 ml — five make a litre.

NUMBER lowest terms A fraction is in lowest terms when its numerator and denominator share **no common factor** (other than 1). $\frac{6}{8}$ simplifies to $\frac{3}{4}$ in lowest terms.

MEASURES mass How much **matter** an object contains — what you measure on a weighing scale, in grams or kilograms.

DATA & CHANCE mean The **average**: add all the values and divide by how many there are.

DATA & CHANCE median The **middle value** when the data is put in order from smallest to largest.

MEASURES metre A unit of **length**, written **m**. $1\text{ m} = 100\text{ cm}$. The height of a school door is about 2 m.

MEASURES millilitre A small unit of **capacity**, written **ml**. $1\,000\text{ ml} = 1\text{ l}$. A teaspoon holds about 5 ml.

MEASURES millimetre A small unit of **length**, written **mm**. $10\text{ mm} = 1\text{ cm}$. A €1 coin is about 2 mm thick.

DATA & CHANCE mode The value that appears **most often** in a data set.

NUMBER multiple A number you reach by counting in steps of another. Multiples of 4: 4, 8, 12, 16, 20...

NUMBER negative number A number **less than zero**, written with a minus sign (-3 , -7). Used for temperatures, debts, and below-sea-level depths.

SHAPE & SPACE net What you get if you **unfold a 3-D shape** so it lies flat. A cuboid's net has 6 rectangles.

NUMBER numerator The **top number** of a fraction. It says how many of the equal parts you have.

SHAPE & SPACE octagon A polygon with **8 straight sides**. Stop signs are usually octagons.

ALGEBRA operation One of the **four basic actions** on numbers: addition, subtraction, multiplication, division. BIDMAS gives the order to do them in.

DATA & CHANCE origin The point **(0, 0)** where the ***x*-axis** and ***y*-axis** cross on the coordinate plane.

DATA & CHANCE outcome One of the **possible results** of a chance event. Rolling a die has six possible outcomes: 1, 2, 3, 4, 5, 6.

ALGEBRA output The number that **comes out** of a function machine after the rule is applied.

ALGEBRA pattern A sequence that follows a **rule**. Each term is found by applying the rule to the term before it (or to its position).

SHAPE & SPACE pentagon A polygon with **5 straight sides**.

NUMBER percent Out of 100. The symbol % stands for 'per hundred', so $25\% = \frac{25}{100} = 0.25$.

MEASURES perimeter The **total distance around the edge** of a 2-D shape. Add up all the side lengths.

NUMBER place value The value a digit has because of its position. In 3,406 the **4** sits in the hundreds place, so it stands for 400.

SHAPE & SPACE polygon A **closed 2-D shape with straight sides**. Triangles, squares, and hexagons are all polygons.

NUMBER positive number A number **greater than zero**. Whole numbers without a minus sign — 1, 2, 3 — are positive.

DATA & CHANCE prediction A **sensible guess** about what will happen, based on what you already know about the chance of each outcome.

DATA & CHANCE probability How **likely** an outcome is, written as a fraction, decimal, or percent between 0 (impossible) and 1 (certain).

NUMBER proportion Two amounts are **in proportion** when they grow at the same rate. If **2 buns cost €1**, then **6 buns cost €3** — same rate, so the amounts are in proportion.

SHAPE & SPACE protractor A semicircular tool marked with degrees from **0° to 180°**, used to measure or draw angles.

DATA & CHANCE quadrant One of the **four regions** of the coordinate plane formed by the ***x*-axis** and ***y*-axes**.

SHAPE & SPACE quadrilateral A polygon with **four straight sides** — square, rectangle, rhombus, parallelogram, trapezium.

DATA & CHANCE range The **difference between the highest and lowest** values in a data set.

NUMBER ratio A way of comparing two amounts by **how many times one fits into the other**, written with a colon ($3 : 1$).

SHAPE & SPACE reflection A **flip**. Every point of the shape moves across a line of symmetry to make a mirror image.

NUMBER remainder What's **left over** after a division when the division doesn't come out exactly. $17 \div 5 = 3$ remainder 2.

SHAPE & SPACE rhombus A quadrilateral with **all four sides equal length** but corners that aren't right angles. Like a slanted square.

SHAPE & SPACE right angle An angle of **exactly 90°** — the corner of a square. Marked with a small square.

SHAPE & SPACE rotation A **turn**. Every point of the shape moves around a fixed centre by the same angle.

SHAPE & SPACE rotational symmetry A shape has rotational symmetry if it **lands on itself** when rotated less than a full turn. The **order** counts how many times it does so in one full turn.

ALGEBRA rule A **short description** of how a pattern grows or how the input of a table becomes the output (e.g. 'add 5'; 'multiply by 2 then add 1').

MEASURES sale price The price **after a discount** has been taken off.

MEASURES scale A line of **evenly-spaced marks** for measuring or reading values — on a ruler, a weighing scale, or the side of a chart.

NUMBER set A **collection of objects or numbers** grouped together. The set of even numbers from 1 to 10 is **{2, 4, 6, 8, 10}**.

NUMBER simplify Rewrite a fraction in its **lowest terms** by dividing the top and bottom by their highest common factor.

NUMBER square A number **multiplied by itself**, written with a small 2 — e.g. $5^2 = 25$. (Also: the four-equal-sided polygon with right-angle corners.)

MEASURES square centimetre A square that is **1 cm × 1 cm**. Used to measure area — written cm^2 .

SHAPE & SPACE symmetry A shape has symmetry when **part of it matches another part exactly** — either after a fold (line of symmetry) or a turn (rotational symmetry).

DATA & CHANCE tally A **counting mark** — usually four vertical strokes with a fifth crossing them. Used to keep count quickly.

NUMBER tenth **One part in 10**. The first place after the decimal point: 0.4 means 4 tenths.

ALGEBRA term **One number, letter, or product of them** in an expression — e.g. $3x$ and 4 are both terms in $3x + 4$.

SHAPE & SPACE tessellation A pattern of shapes that fits together with **no gaps and no overlaps**.

NUMBER thousandth **One part in 1 000**. The third place after the decimal point: 0.025 includes 2 hundredths and 5 thousandths.

MEASURES timetable A list showing **start times** for trains, buses, classes, etc.

SHAPE & SPACE transformation A change to a shape's position. The three transformations you meet in 5th class are **reflection** (flip), **rotation** (turn), and **translation** (slide).

SHAPE & SPACE translation A **slide**. Every point of the shape moves the same distance in the same direction. The shape doesn't turn or flip.

SHAPE & SPACE triangle A polygon with **3 straight sides** and 3 angles. The three angles always add up to **180°** .

MEASURES unit A **standard amount** used for measuring. Centimetres, kilograms, and litres are all units.

ALGEBRA variable A **quantity that can change**, usually shown by a letter. The variable x might stand for any number.

SHAPE & SPACE vertex A **corner** of a shape — where two edges (or arms of an angle) meet. Plural: vertices.

MEASURES volume How much **space a 3-D shape takes up**. Measured in cubic units (cm^3 , m^3).

PRIMARY MATHEMATICS · STAGE 4

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