vector maths & science

Let's Start!

Maths

sample pages catalogue

Let's Start!

Maths

VECTOR M & S Publishing Let's Start! Maths is a six-level series for primary students. Its objective is to teach maths in a systematic way and to build a strong understanding of the fundamentals.

Let's Start! Maths is a robust series, which uses effective learning and teaching methodologies in order to smoothly ease primary learners into the exciting world of maths. Aimed at the development of problem-solving skills in young learners, the series introduces a variety of word problems to challenge them. The main goal of the series is the improvement of students' deductive skills in order to help them achieve mathematical proficiency.

The six-level curriculum of Let's Start! Maths is based mainly on the Singapore Maths method and follows international standards. The series adopts the model drawing approach which helps students develop a wide range of problem-solving strategies. Let's Start! Maths encourages students' creative and critical thinking and enables them to develop basic mathematical skills such as analysing, reasoning and justifying, making good use of the three-step transition 'concrete–pictorial–abstract' which is crucial to the Singapore methodology of mathematics.

KEY FEATURES

FOR STUDENTS:

- cover pages in the first two levels, with high-quality illustrations to attract the interest of young learners
- visual and pictorial representations that facilitate learning
- colour-defined frames with detailed theory
- graded activities to enable students to comprehend core mathematical concepts and processes and to ensure the gradual development of mathematical knowledge
- a 'Solve the problems' section that aims to help students strengthen essential problem-solving skills in context, with the help of model drawings
- numerous activities to reinforce students' understanding of mathematical concepts and processes, and develop their problem-solving skills
- a glossary with visual representations, age-appropriate definitions and examples that ensure the gradual development of students' vocabulary
- supplementary theory frames assisting students to further understand and complete activities

FOR TEACHERS:

- a detailed map of the Student's Book, Workbook and Teacher's Book that helps the teacher understand the structure of each book
- a cover page with a list of the learning objectives, thinking skills, key concepts and warm-up questions in each unit
- step-by-step lesson plans for each unit
- thought-provoking questions that promote exploration of mathematical concepts and processes
- a Mid-Year and an End-of-Year Test with activities to assess students' attainment of knowledge and skills
- revision activities to monitor students' progress
- the key to all Student's Book and Workbook activities
- a pictorial tool (Bar Model Method) to organise and visualise relationships between known and unknown quantities in word problems is introduced in the 2nd level
- consistency of the mathematical content throughout the series

THINKING SKILLS IN MATHEMATICS

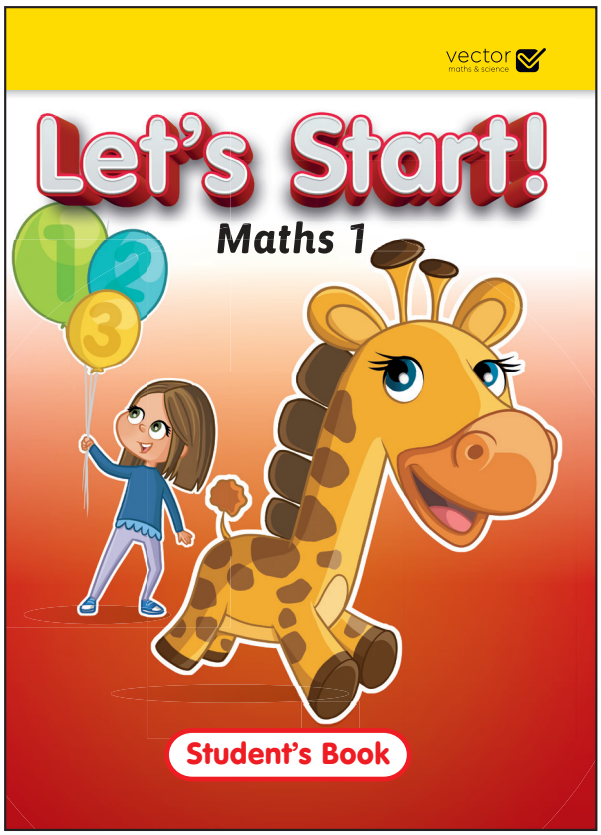
One of the main aims of primary school education is to promote the development of thinking skills linked to the mental strategies used when we process information, make decisions, solve a problem, etc.

We have summarised the major thinking skills found throughout the series.

- Sequencing – the ability to create and identify patterns
- Comparing – the ability to identify similarities and differences among objects
- Classifying – the ability to sort objects into groups based on specific attributes
- Identifying relationships – the ability to identify how objects relate to each other
- Analysing – the ability to break down information into smaller parts in order to gain a better understanding
- Deducing – the ability to extract conclusions by organising and interpreting data
- Solving problem sums – the ability to apply appropriate strategies (e.g. model drawing) to solve different types of problems

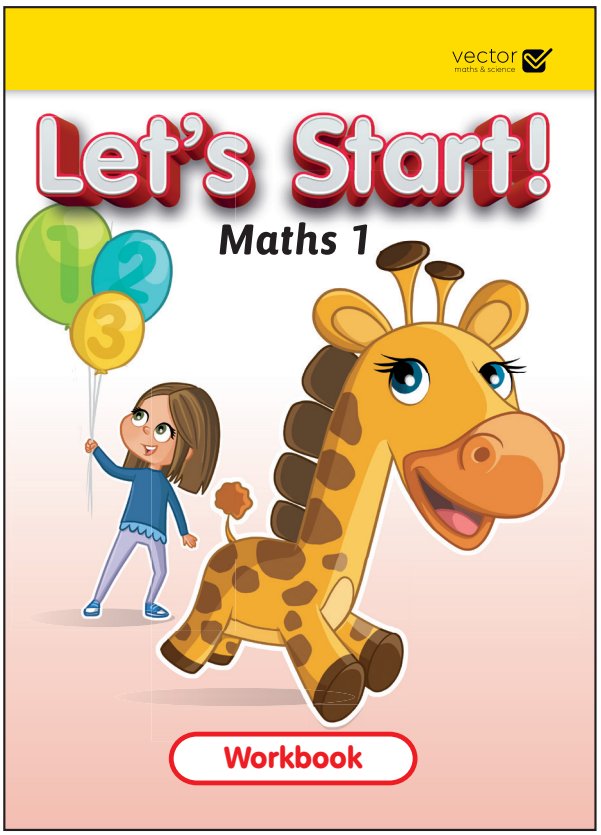
COMPONENTS

For students



STUDENT'S BOOK

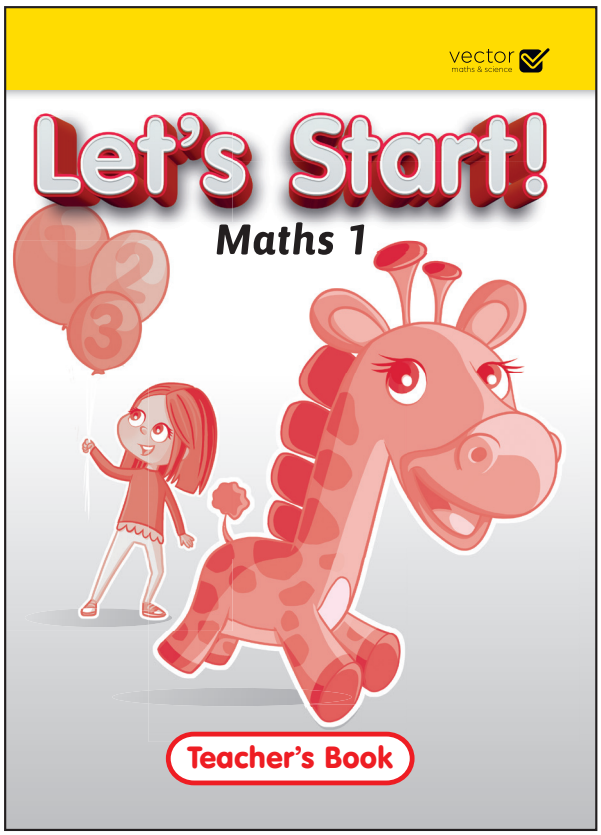
The Student's Book contains thematic units, enabling students to build their knowledge of different mathematical domains such as numbers and operations, geometry, measurement and data. Each unit involves several theory sections, where the main mathematical ideas are presented through pictorial representations. A wide variety of activities aim to enhance the consolidation of concepts and processes taught as well as the gradual development of mathematical skills.
In the section 'Solve the problems' students are given the opportunity to apply their knowledge in context.



WORKBOOK

The Workbook provides a range of activities for each unit. These activities offer students the opportunity to apply the acquired knowledge in practice and to improve their mathematical skills. The Workbook is enriched with a variety of challenging tasks that support the transfer of learning and the expansion of knowledge in different contexts. Review pages provide an opportunity for students to recall important facts, gain experience through practice and repetition and improve upon their own performance.
A Mid-Year Test and an End-of-Year Test are included, allowing the teacher to effectively check the students' level of understanding and reflect on their own teaching.

For teachers



TEACHER'S BOOK

The Teacher's Book is designed to support the use of the corresponding Student's Book in the Let's Start! Maths series. It contains a reduced version of the Student's Book and provides teachers with step-by-step lesson plans for the theory sections as well as the key for the activities in each unit. An additional page is also included at the beginning of each unit to inform the teacher about the forthcoming unit, accompanied by a list of the learning objectives to be covered, the key concepts to be taught, the thinking skills to be developed as well as a list of warm-up questions to assist the teacher in triggering whole class discussion and build on students' prior experience. At the back of the Teacher's Book, the key for all the activities in the Workbook is included.

1 Numbers 0 to 10
- Count to 10
- Compare numbers up to 10

2 Addition
- Add pictures
- Count forwards
- Addition with number pairs
- Addition with number line
- Solve the problems

3 Subtraction
- Subtract pictures
- Cross out to subtract
- Count backwards
- Subtraction with number line
- Subtraction with number pairs
- Solve the problems

4 Numbers 11 to 20
- Count to 20
- Make groups of 10 to count
- Place value
- Compare numbers up to 20
- Order numbers

5 Addition and subtraction up to 20
- Count forwards
- Make groups of 10
- Groups of 10 and number pairs
- Place value and addition
- Place value and subtraction
- More than
- Less than
- Solve the problems

6 Length
- Compare lengths
- Measure length

7 Mass
- Compare masses
- As heavy as, heavier than, lighter than
- Measure mass

8 Capacity
- Full, half full, empty
- Compare capacities

9 Numbers to 100
- Tens and ones
- Place value
- Compare numbers up to 100

10 Shapes, solids and patterns
- Lines
- Shapes
- Solids
- Patterns

11 Time
- Times of the day
- Tell the time – o'clock
- Tell the time – half past

12 Addition and subtraction up to 100
- Add 2-digit and 1-digit numbers
- Add 2-digit numbers
- Regroup to add (1)
- Regroup to add (2)
- Subtract 1-digit from 2-digit numbers
- Subtract 2-digit numbers
- Regroup to subtract (1)
- Regroup to subtract (2)
- More than (1)
- More than (2)
- Less than
- Solve the problems

13 Position
- Ordinals
- Position

14 Money
- Coins
- Order coins
- Exchange money
- Count money

15 Data
- Tables
- Pictograms

NUMBERS AND CALCULATION

- Read and write numbers up to 100 in numerals.
- Write the numbers up to 20 in words.
- Count forwards in 1s or 10s.
- Count backwards between 0-20.
- Memorise all number pairs to 10 and use them to complete addition and subtraction facts.
- Recognise the place value of each digit in two-digit numbers.
- Find the number that is 1 or 10 more/less than any given number up to 100.
- Partition numbers up to 100 into tens and ones.
- Compare numbers up to 100 using one-by-one matching or place value and put them in order.
- Read and write ordinal numbers up to 10th in words or using appropriate notation.
- Perceive addition as the act of combining sets of objects or counting forwards.
- Recognise that addition can be done in any order.
- Add single-digit and/or two-digit numbers.
- Perceive subtraction as the act of taking away or counting backwards.
- Subtract a single-digit or a two-digit number from a two-digit number.

MEASUREMENT

- Characterise objects as short or long/tall, light or heavy, empty, half full or full.
- Compare objects by length/height, mass and capacity directly or using uniform non-standard units.
- Rank objects according to length/height, mass and capacity.
- Recognise and put key times of the day in order.
- Read and write the time from an analogue clock (at o'clock and the half hour).
- Place the minute and hour hands to show o'clock and half hour times on a clock face.
- Identify all coins and their values.
- Exchange coins according to their value.
- Work out totals using coins.

GEOMETRY

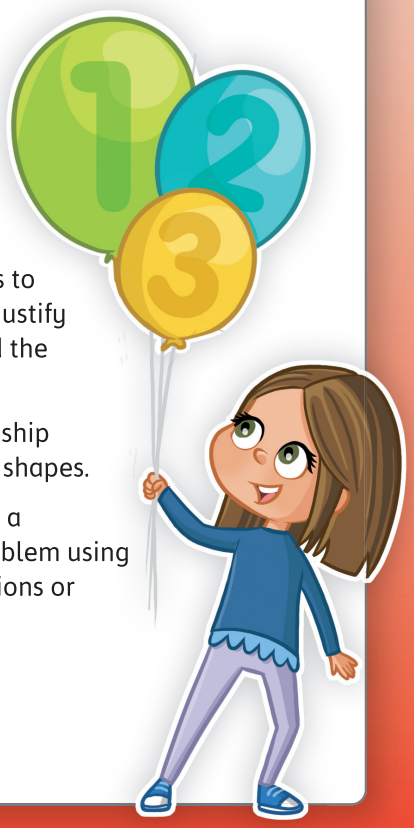
- Distinguish between straight and curved lines.
- Name and recognise common shapes and solids.
- Identify common shapes and solids in a picture or a model.
- Identify and continue patterns with shapes.
- Describe position using appropriate vocabulary.

DATA

- Read and interpret data from tables and pictograms.
- Answer questions according to data provided in tables and pictograms.

PROBLEM SOLVING

- Use known strategies to calculate easily and justify the reasoning behind the process.
- Describe the relationship between numbers or shapes.
- Model an addition or a subtraction word problem using pictorial representations or everyday objects.



1 Numbers to 1000
- Count to 1000
- Place value
- Numbers in words
- Number patterns – count in ones
- Number patterns – count in tens
- Number patterns – count in hundreds
- Compare numbers up to 1000
- Order numbers up to 1000
- More than
- Less than
- Odd and even numbers

2 Addition and subtraction up to 100
- Add 2-digit numbers
- Regroup to add (1)
- Add three numbers
- Subtract 1-digit from 2-digit numbers
- Regroup to subtract (1)
- Word problems – addition
- Word problems – subtraction
- Solve the problems

3 Length
- Measure length in centimetres
- Measure length in metres
- Compare lengths
- Word problems – length
- Solve the problems

4 Addition and subtraction up to 1000
- Add 3-digit and 1-digit numbers
- Add 3-digit and 2-digit numbers
- Add 3-digit numbers
- Regroup to add (2)
- Regroup to add (3)
- Subtract 2-digit from 3-digit numbers
- Subtract 3-digit numbers
- Regroup to subtract (2)
- Regroup to subtract (3)
- Subtraction with zero
- Solve the problems

5 Mass
- Measure mass in kilograms
- Measure mass in grams
- Compare masses
- Word problems – mass
- Solve the problems

6 Multiplication
- Multiplication
- 2-times table
- 3-times table
- 4-times table
- 5-times table
- Solve the problems

7 Division
- Divide equally into 2
- Make groups to divide
- Solve the problems

8 Time
- Clocks
- Read the time
- a.m. and p.m.
- Read the minute hand
- Hours in a day
- Minutes in an hour
- Solve the problems

9 Money
- Notes
- Order notes
- Exchange money

10 Volume
- Volume
- Measure volume
- Compare volumes
- Word problems – volume
- Solve the problems

11 Shapes and solids
- Shapes
- Semicircle
- Quarter circle
- Solids
- Parts of solids
- Patterns

12 Data
- Venn diagram
- Carroll diagram

NUMBERS AND CALCULATIONS

- Read and write numbers up to 1000 in numerals and in words.
- Count forwards and backwards in 1s, 10s and 100s.
- Recognise the place value of each digit in three-digit numbers.
- Find the number that is 1, 10 or 100 more/less than any given number up to 1000.
- Identify and continue number patterns with up to three-digit numbers.
- Compare numbers up to 1000 using place value and put them in order.
- Identify odd and even numbers.
- Add and subtract a single-digit number to/from a two-digit or a three-digit number.
- Add and subtract two-digit and/or three-digit numbers.
- Add more than two numbers.
- Perceive multiplication as a process of repeated addition and as an array of objects.
- Memorise the multiplication tables of 2, 3, 4 and 5 and derive their corresponding facts.
- Perceive division as a process of grouping and sharing.
- Derive the division facts given an array or a multiplication.

MEASUREMENT

- Measure and record length, mass and volume using appropriate tools and notation.
- Recognise the standard units of length, mass and volume measurement (metre/centimetre, kilogram/gram, litre).
- Compare length, mass and volume measurements using standard units.
- Read and write the time from an analogue clock (to the nearest 5 minutes) and a digital clock (to o'clock and the half hour).
- Refer to everyday activities using a.m. and p.m. notation.
- Recognise that 1 day has 24 hours and 1 hour has 60 minutes.
- Calculate simple time intervals using an analogue clock.
- Identify all coins, all notes and their values.
- Work out totals using coins, notes or both.
- Provide different combinations of notes or coins to pay a specific amount of money.

GEOMETRY

- Identify common shapes and solids in different orientations or sizes.
- Use mathematical terminology to describe shapes and solids.
- Recognise patterns with shapes.
- Identify the pattern group in patterns with shapes.

DATA

- Sort objects or shapes in Venn diagrams and Carroll diagrams.
- Answer questions according to data provided in Carroll diagrams and Venn diagrams.

PROBLEM SOLVING

- Choose the appropriate operations or methods to solve a problem and justify the reasoning behind the choice.
- Understand an up to 2-step word problem and represent the answer using pictorial representations, everyday objects or a number line.
- Solve word problems including measurement.

1 Numbers to 10 000
- Count to 10 000
- Number patterns (1)
- Place value
- Compare numbers up to 10 000
- Number patterns (2)
- Round to the nearest ten
- Solve the problems

2 Addition and subtraction
- Addition and sum
- Add 4-digit numbers
- Regroup to add (1)
- Regroup to add (2)
- Regroup to add (3)
- Subtraction and difference
- Subtract 4-digit numbers
- Regroup to subtract (1)
- Regroup to subtract (2)
- Regroup to subtract (3)
- Regroup to subtract (4)
- Subtraction with zero
- Solve the problems

3 Data
- Pictograms
- Bar graphs

4 Length
- Units of length
- Metres and centimetres
- Kilometre
- Kilometres and metres
- Add lengths
- Subtract lengths
- Solve the problems

5 Time
- Time facts
- Tell the time
- Hours and minutes
- a.m. or p.m.
- Duration
- Add time
- Subtract time
- Solve the problems

6 Mass
- Units of mass
- Read the scales
- Compare masses
- Add masses
- Subtract masses
- Solve the problems

7 Volume
- Units of volume
- Capacity
- Compare volumes
- Litres and millilitres
- Add volumes
- Subtract volumes
- Solve the problems

8 Multiplication
- 6 times-table
- 7 times-table
- 8 times-table
- 9 times-table
- 10 times-table
- Multiply (1)
- Multiply (2)
- Regroup to multiply (1)
- Regroup to multiply (2)
- Regroup to multiply (3)
- Solve the problems

9 Division
- Quotient
- Division with remainders (1)
- Divide 2-digit numbers
- Divide 3-digit numbers
- Division with remainders (2)
- Division with remainders (3)
- Regroup to divide (1)
- Regroup to divide (2)
- Solve the problems

10 Fractions
- Equal parts and fractions
- Make a whole
- Compare fractions
- Order fractions
- Equivalent fractions
- Find equivalent fractions

11 Money
- Count money
- Change cents and dollars
- Add money
- Subtract money
- Solve the problems

12 Shapes and solids
- Shapes
- Quadrilaterals
- Polygons
- Symmetry
- Solids

13 Angles
- Angle
- Right angle
- Other types of angles

NUMBERS AND CALCULATIONS

- Read and write numbers up to 10 000 in numerals and in words.
- Count forwards and backwards in 1s, 10s, 100s and 1000s.
- Recognise the place value of each digit in four-digit numbers.
- Identify and continue number patterns with up to four-digit numbers.
- Compare numbers up to 10 000 using place value and put them in order.
- Round any up to four-digit number to the nearest ten.
- Add and subtract two four-digit numbers.
- Memorise the multiplication tables of 6, 7, 8, 9 and 10 and derive their corresponding facts.
- Multiply a single-digit number by a single-digit, a two-digit or a three-digit number.
- Recognise that some divisions may have a remainder.
- Divide a two-digit or a three-digit number by a single-digit number.
- Recognise fractions as parts of a given whole.
- Identify the parts of a fraction.
- Represent one-half, one-quarter and three-quarters using fractions.
- Compare fractions with the same denominator and put them in order.
- Recognise and generate equivalent fractions.
- Make a whole from fractions.

MEASUREMENT

- Measure and record length, mass, capacity and volume using appropriate tools and notation.
- Identify the relationships between centimetres, metres and kilometres, grams and kilograms, millilitres and litres.
- Use intervals and divisions on partially numbered scales to read and record mass and capacity measurements.
- Read and write the time from an analogue clock (to the nearest 5 minutes) using the words 'past' and 'to'.
- Use a.m. and p.m. notation to express time in 12-hour form.
- Identify the relationships between seconds, minutes, hours, days, weeks, months and years.
- Calculate simple time intervals given the starting and the ending time.
- Calculate the starting or the ending time
- Work out totals using coins, notes or both.
- Convert between dollars and cents.

GEOMETRY

- Identify common shapes and solids in different orientations or sizes.
- Use mathematical terminology to describe shapes and solids.
- Recognise reflective symmetry in shapes, images and patterns.
- Identify and draw the line of symmetry in shapes and images.
- Identify acute, right and obtuse angles.
- Compare different types of angles with a right angle.

DATA

- Read and interpret data from pictograms and bar graphs (in different intervals or units) to answer questions.
- Complete pictograms and bar graphs according to data provided.

PROBLEM SOLVING

- Choose appropriate mental strategies to carry out calculations.
- Solve multi-step word problems in different contexts including measurement.
- Explain and justify the reasoning behind the choice of a strategy or a method.
- Determine whether the outcome of a problem is reasonable or not.

1 Numbers to 100 000
- Count to 100 000
- Place value
- Compare numbers up to 100 000
- Order numbers
- Round a number

2 Addition and subtraction
- Add 5-digit numbers
- Regroup to add
- Add three numbers
- Subtract 5-digit numbers
- Regroup to subtract
- Word problems
- Solve the problems

3 Geometry
- Types of angles
- Turns and angles
- Clockwise and anti-clockwise
- Perpendicular lines
- Parallel lines
- Square
- Rectangle
- Symmetrical figures

4 Multiplication
- Regroup to multiply
- Multiply by a 2-digit number (1)
- Multiply by a 2-digit number (2)
- Factors
- Common factors
- Multiples
- Common multiples
- Solve the problems

5 Division
- Divide 4-digit numbers
- Word problems - division
- Multiply and divide by 1, 10, 100

6 Data
- Tally charts and tables
- Pictograms
- Complete a pictogram
- Bar graphs
- Complete a bar graph

7 Length
- Units of length
- Millimetres

8 Area and perimeter
- Area (1)
- Square centimetre
- Square metre
- Area of a rectangle
- Area (2)
- Perimeter
- Solve the problems

9 Word problems
- Word problems
- Solve the problems

10 Fractions
- Numerator and denominator
- Equivalent fractions
- Simplify the fractions
- Compare like fractions
- Compare unlike fractions
- Order like fractions
- Order unlike fractions
- Mixed numbers
- Addition of like fractions
- Addition of unlike fractions
- Subtraction of like fractions
- Subtraction of unlike fractions

11 Time
- Analogue clock
- Digital clock
- 24-hour clock
- Convert 12-hour clock into 24-hour clock
- Convert 24-hour clock into 12-hour clock
- Solve the problems

12 Decimals
- Tenths
- Place value for tenths
- Compare the decimals
- Order the decimals
- Mixed numbers and decimals
- Hundredths
- Tenths and hundredths
- Place value for hundredths
- Expanded form of decimals

13 Combined operations
- Brackets (1)
- Brackets (2)
- Combined operations
- Solve the problems

NUMBERS AND CALCULATIONS

- Read and write numbers up to 100 000 and decimals with one or two decimal places.
- Count forwards and backwards in 1s, 10s, 100s, 1000s and 10 000s.
- Recognise the place value of each digit in five-digit numbers or decimals with one or two decimal places.
- Identify and continue number patterns with up to five-digit numbers.
- Compare numbers up to 100 000 or decimal numbers with up to one decimal place and put them in order.
- Round any up to five-digit number to the nearest ten or hundred.
- Add and subtract five-digit numbers.
- Multiply and divide a four-digit number by a single-digit number.
- Multiply and divide a whole number by 10 or 100.
- Explore multiples and factors of two or more numbers.
- Recognise multiples up to the 10th multiple.
- Generate equivalent fractions and simplify fractions.
- Identify the parts of a mixed number.
- Distinguish like fractions, unlike fractions and mixed numbers.
- Compare like and unlike fractions and put them in order.
- Add and subtract like and unlike fractions.
- Convert between mixed numbers, decimals and fractions.
- Use brackets to show the order of operations when calculating.

MEASUREMENT

- Identify the relationships between millimetres, centimetres, metres and kilometres.
- Use intervals and divisions on a partially numbered ruler to record length measurements.
- Compare length measurements expressed in mixed units.
- Read and write the time from an analogue clock (to the nearest 5 minutes) and a digital clock (to the nearest minute).
- Convert between a 24-hour and a 12-hour clock.
- Calculate time intervals and the starting or the ending time using an analogue and a digital clock.

GEOMETRY

- Estimate the size of angles as less than, equal to or greater than a right angle.
- Relate angles to turns.
- Describe direction of movement using the words 'clockwise' and 'anti-clockwise'.
- Identify parallel and perpendicular lines.
- Describe a square and a rectangle by its properties.
- Recognise symmetrical shapes, images and patterns.
- Recognise the units of area measurement (square centimetre/square metre).
- Calculate the perimeter and the area of a square and a rectangle.

DATA

- Read and extract data from tables, tally charts, pictograms and bar graphs (in different intervals or units) to answer questions.
- Complete tables, tally charts, pictograms and bar graphs according to data provided.

PROBLEM SOLVING

- Solve multi-step word problems by posing sub-questions to be answered.
- Explain and justify the reasoning behind the choice of a strategy or a method.
- Make a model drawing to understand and solve word problems.

1 Numbers up to 10 000 000

- Count to 10 000 000
- Place value
- Expanded form
- Count in hundred thousands
- Count in millions
- Compare numbers
- Order numbers
- Rounding

2 Operations

- Addition
- Subtraction
- Multiply or divide by 10, 100, 1000 and their multiples
- Multiplication
- Combined operations
- Solve the problems

3 Angles

- Name an angle
- Measure angles
- Draw angles
- Angles on a straight line
- Angles at a point
- Vertically opposite angles

4 Data and probability

- Bar graphs
- Line graphs
- Probability

5 Fractions

- Fractions and mixed numbers
- Convert an improper fraction into a mixed number
- Convert a mixed number into an improper fraction

6 Operations with fractions

- Add like fractions
- Add unlike fractions
- Subtract like fractions
- Subtract unlike fractions
- Add mixed numbers
- Subtract mixed numbers
- Multiplication and fractions
- Division and fractions
- Solve the problems

7 Decimals

- Convert a fraction into a decimal
- Convert a decimal into a fraction
- Compare decimals
- Order decimals

8 Operations with decimals

- Add tenths
- Add hundredths
- Subtract tenths
- Subtract hundredths
- Multiply decimals by a whole number
- Multiply decimals by 10 or 100
- Divide decimals by 10 or 100

9 Percentage

- Percent
- From fraction to percentage
- From decimal to percentage
- Word problems
- Percentage of quantities
- Solve the problems

10 Quadrilaterals

- Types of quadrilaterals
- Draw a square
- Draw a rectangle
- Perimeter and area of a square
- Perimeter and area of a rectangle
- Solve the problems

11 Triangles

- Types of triangles
- Sum of angles in a triangle
- Draw a triangle
- Perimeter and area of a triangle

12 Solids and volume

- Solids
- Volume of cube and cuboid
- Volume of liquids
- Solve the problems

13 Ratio

- Ratio
- Equivalent ratios
- Word problems

14 Measurement

- Add and subtract lengths
- Add and subtract masses

NUMBERS AND CALCULATIONS

- Read, write and compare numbers up to 10 000 000 or decimals with one or two decimal places.
- Continue number patterns by counting forwards and backwards in hundred thousands and millions.
- Recognise the place value of each digit in six-digit and seven-digit numbers or decimals with two decimal places.
- Round any up to seven-digit number to the nearest ten, hundred or thousand.
- Add and subtract six-digit and seven-digit numbers.
- Multiply a three-digit or a four-digit number by a two-digit number.
- Multiply and divide whole or decimal numbers by 10, 100 or 1000 and by multiples of 10, 100 or 1000.
- Find the ratio of two quantities.
- Recognise equivalence of fractions and ratios.
- Simplify fractions and ratios.
- Add and subtract fractions or mixed numbers.
- Add and subtract a decimal to/from a decimal or whole number.
- Multiply and divide a fraction by a fraction or a whole number.
- Perceive percentages as the number of equal parts in a hundred.
- Convert between mixed numbers, decimals, fractions and percentages.
- Calculate the fractions and percentages of quantities.
- Use brackets to show the order of operations when calculating.

MEASUREMENT

- Identify the relationship between millimetres, centimetres, metres and kilometres, grams and kilograms.
- Use intervals and divisions on a partially numbered ruler to read and record length measurements.
- Measure, record and compare length and mass measurements expressed in mixed metric units.
- Add and subtract length and mass measurements expressed in mixed units.
- Comprehend measurement systems applied in everyday life.

GEOMETRY

- Identify and name acute, obtuse and right angles using three letters.
- Measure and draw angles.
- Recognise the relationship between angles on a straight line, angles at a point, vertically opposite angles and angles in a triangle.
- Draw triangles, squares and rectangles.
- Name, recognise and describe different types of triangles and quadrilaterals using mathematical terminology.
- Calculate the perimeter and the area of a square, a rectangle and a triangle.
- Recognise the units of volume measurement (cubic centimetre/cubic metre).
- Calculate the volume of a cube and a cuboid.

DATA AND PROBABILITY

- Read and interpret data from bar graphs and line graphs (in different intervals or units) to answer questions.
- Complete bar graphs and line graphs according to data provided.
- Characterise an event as certain, impossible, likely, unlikely or equally likely to happen.

PROBLEM SOLVING

- Understand and solve word problems, with all four operations and one or more steps.
- Use model drawings to solve problems involving fractions, percentages or ratios.

1 Numbers and operations
- Order and round numbers
- Number patterns
- Add and subtract
- Multiply and divide by 10, 100, 1000 and their multiples
- Multiply by 2-digit numbers
- Divide by 2-digit numbers
- Combined operations
- Word problems
- Solve the problems

2 Algebra
- Algebraic expressions
- Simplify algebraic expressions
- Equation
- Solving equations

3 Factors and multiples
- Factors
- Common factors
- Prime numbers
- Prime factors
- Multiples
- Common multiples

4 Direction
- Direction
- The 4-point compass
- The 8-point compass

5 Fractions
- Fractions
- Equivalent fractions
- Add and subtract fractions
- Add and subtract mixed numbers
- Multiply fractions
- Divide fractions
- Word problems
- Solve the problems

6 Decimals
- Thousandths
- Place value for thousandths
- Expanded form
- Compare decimals
- Convert decimals into fractions or mixed numbers
- Convert fractions and mixed numbers into decimals
- Rounding decimals

7 Operations with decimals
- Add thousandths
- Subtract thousandths
- Multiply by a decimal
- Division with decimals
- Multiply by 10, 100 or 1000
- Divide by 10, 100 or 1000
- Solve the problems

8 Angles and quadrilaterals
- Angles of a triangle
- Quadrilaterals
- Draw a parallelogram
- Perimeter and area of composite figures

9 Circles
- Radius and diameter
- Circumference of a circle
- Area of a circle

10 Percentage
- Percentage of quantities
- Find the percentage
- Word problems (1)
- Word problems (2)

11 Solids, nets and volume
- Solids
- Nets
- Volume of a cuboid
- Volume of liquids

12 Data and probability
- Pie charts
- Probability

13 Ratio
- Ratio
- Ratio and proportion
- Word problems

14 Convert measurements
- Convert greater units into smaller units
- Convert smaller units into greater units
- Convert to add or subtract measurements
- Solve the problems

NUMBERS AND CALCULATIONS

- Order six-digit or seven-digit numbers.
- Round a number to the nearest ten, hundred or thousand.
- Multiply and divide a four-digit number by a two-digit number.
- Multiply and divide by 10, 100 or 1000 and by multiples of 10, 100 or 1000.
- Work out combined operations involving brackets.
- Use letters to denote the unknown in algebraic expressions or equations.
- Solve different types of equations and check the solution.
- Identify the common factors and the common multiples of two or more numbers.
- Identify the prime numbers up to 20.
- Add, subtract, multiply and divide fractions.
- Recognise the place value of each digit in three-place decimals and round them to the nearest whole number, tenth or hundredth.
- Add and subtract three-place decimals.
- Convert between fractions, mixed numbers, decimals and percentages.
- Calculate the discount, the selling price, the original price and the percentage increase or discount of an item.
- Recognise the equivalence of two or more fractions and ratios.
- Perceive proportion as a fraction of the total quantity.

MEASUREMENT

- Identify the relationships between the different units of length, mass or volume measurements.
- Convert greater units into smaller units and vice versa.
- Add and subtract length, mass or volume measurements expressed in mixed units or decimals.

GEOMETRY

- Recognise the compass as a tool which shows direction.
- Follow and give directions using a 4-point and an 8-point compass.
- Identify that the sum of the angles in a triangle is 180° and the sum of the angles in a quadrilateral is 360°.
- Describe the properties of a square, a rectangle, a parallelogram, a rhombus, a trapezium and a kite.
- Draw parallelograms.
- Calculate the perimeter and the area of rectilinear shapes.
- Identify the centre, the radius, the diameter and the circumference of a circle.
- Calculate the circumference and the area of a circle and a semicircle.
- Recognise solids given their drawings or nets.
- Recognise that the millilitre (ml) is a unit to measure the volume of a liquid.
- Calculate the volume of a cube and a cuboid.

DATA AND PROBABILITY

- Extract, interpret and represent data in pie charts.
- Express what each part of a pie chart represents in the form of a percentage or fraction.
- Express probability as the fraction of the number of desired outcomes to the total number of possible outcomes.
- Relate the chance of an event to its probability.

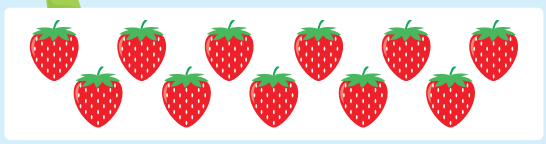
PROBLEM SOLVING

- Make a model drawing to solve word problems with one or more steps using all four operations.
- Derive new data from existing data to come up with new conclusions.
- Solve word problems by writing and solving the appropriate equation.

This is the theory section where the mathematical concepts are presented through pictorial representations and meaningful examples that serve as a reference point throughout the unit.

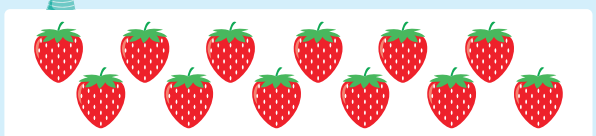
Order numbers

Michael has 11 .



Jenny has 15 strawberries.

James has 12 strawberries.



Jenny has the **greatest** number of strawberries.
Michael has the **smallest** number of strawberries.

15 → is the greatest number.

11 → is the smallest number.

We arrange the numbers from the smallest to the greatest.

11 12 15

smallest greatest

50

4

8 Look at the numbers and answer the questions.

a. Which number is the smallest? ☐

b. Which number is the greatest? ☐

c. Arrange the numbers from the smallest to the greatest.

☐ ☐ ☐

smallest

9 Write the missing numbers and answer the questions.

a.

Which number is the greatest? ☐ Which number is the smallest? ☐

b.

Which number is the smallest? ☐ Which number is the greatest? ☐

51

Various activities for students to apply and consolidate their newly acquired knowledge of concepts and processes. The activities are specifically targeted to cover the learning objectives of each unit. Where necessary, examples are given to enable students to work on the activities independently.

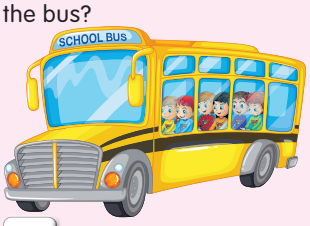
Solve the problems

a. There are 9 birds in the tree. 3 birds fly away. How many birds are left in the tree now?

9 – 3 = ☐

There are ☐ birds left in the tree now.

b. There are 7 students sitting in the bus. 1 student gets off the bus. How many students are left in the bus?



7 – 1 = ☐

☐ students are left in the bus.

c. ! There are 10 cakes. There are 6 girls. How many more cakes than girls are there?

☐ – ☐ = ☐

There are ☐ more cakes than girls.

d. ! There are 9 bowls and 5 cats. How many more bowls than cats are there?

☐ – ☐ = ☐

There are ☐ more bowls than cats.

The Solve the problems section contains various word problems where students are intended to apply their knowledge in different contexts. The aim of this section is to enable students to develop their problem solving skills, such as choosing the appropriate operation and strategy, justifying their decision, etc. Notice that the problems marked with an exclamation mark ! can be characterised as challenging and are mostly recommended for higher-performing students.

This is the Glossary. It contains the critical mathematical terms at each level to ensure the gradual development of mathematical vocabulary. All definitions are age-appropriate and often accompanied by examples or illustrations.

Glossary

add	to put numbers or groups of objects together
addition sentence	a number sentence that shows adding *e.g. 3 + 3 = 6*
afternoon	the part of the day between 12 o'clock and about 6 o'clock
as heavy as	*The orange is as heavy as the apple.*
cent (¢)	a unit of money *1 cent*
circle	a shape with one curved side
coin	a small piece of metal that we use as money
compare (for numbers)	to decide if a number is greater or smaller than another
cone	a solid with one flat face in the shape of a circle and one curved face
container	something we use to put things in
count	to find out how many things there are
count backwards	to count back from a greater to a smaller number
count forwards	to count on from a smaller to a greater number
cube	a solid with six flat square faces
cuboid	a solid shape with six flat faces
curved line	*curved line*
cylinder	a solid with two flat faces in the shape of a circle and one curved face
digit	0, 1, 2, 3, 4, 5, 6, 7, 8 and 9
dollar ($)	a unit of money *1 dollar*

11 Complete with the words in the box.

greater	smaller

a. 17 is _____ than 13.
b. 12 is _____ than 14.
c. 20 is _____ than 18.
d. 16 is _____ than 19.
e. 19 is _____ than 20.
f. 19 is _____ than 11.
g. 15 is _____ than 17.
h. 18 is _____ than 16.

12 Put < or > in the boxes to compare.

a. 19 ☐ 20
b. 18 ☐ 17
c. 19 ☐ 16
d. 17 ☐ 19
e. 11 ☐ 10
f. 14 ☐ 18

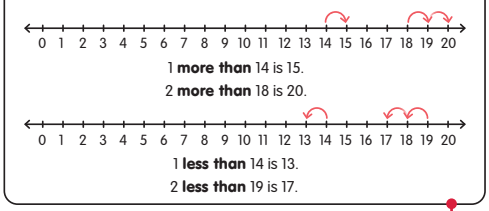
13 Circle the correct numbers.

a. greater than 15: 17 12 16 15 20
b. smaller than 13: 18 11 15 12 10
c. smaller than 19: 18 20 15 16 10
d. greater than 18: 17 12 20 13 19

14 Write the numbers.

a. ☐ is between 15 and 17.
b. ☐ comes just after 18.
c. ☐ comes just after 19.
d. 13 is between ☐ and ☐.
e. 12 comes just before ☐.
f. 17 comes just after ☐.

More than, less than



1 **more than** 14 is 15.
2 **more than** 18 is 20.

1 **less than** 14 is 13.
2 **less than** 19 is 17.

15 Write the numbers.

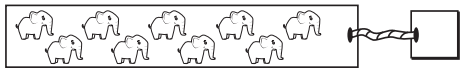
a. ☐ is 1 less than 15.
b. ☐ is 2 less than 17.
c. ☐ is 1 more than 11.
d. ☐ is 2 more than 16.
e. 13 is 1 more than ☐.
f. 16 is 1 more than ☐.
g. 14 is 1 less than ☐.
h. 19 is 1 less than ☐.

There is often a supplementary section with theory and examples assisting students to further understand and complete activities.

Revision

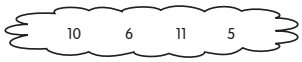
1 Count and write the numbers.

a. ☐

b.  ☐

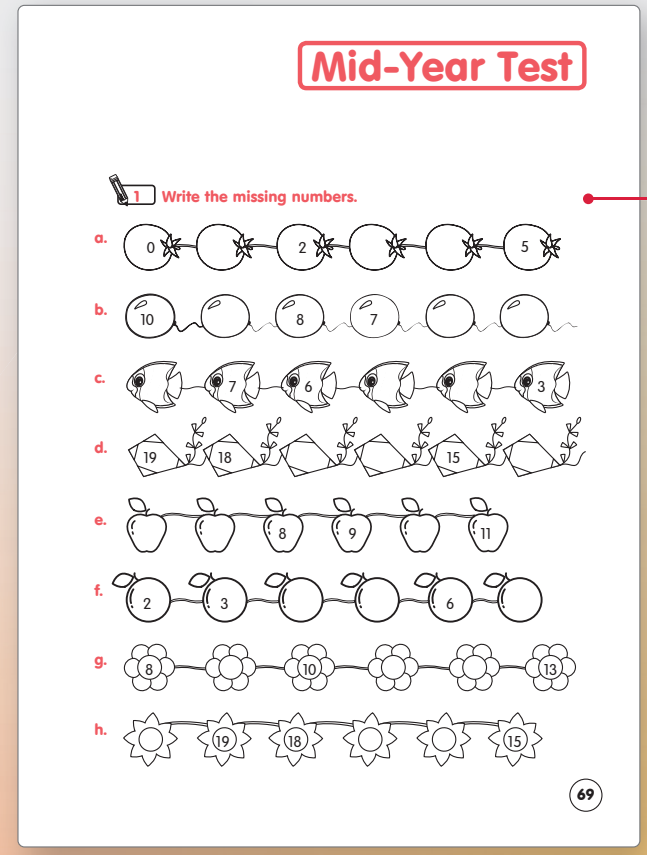
2 Circle the correct number.

a. the greatest number



b. the smallest number

The Workbook also includes a Revision section. These pages are designed to provide the students with an opportunity to review and consolidate the main mathematical concepts and processes taught in the series during the first half of the school year.



Mid-Year Test

1 Write the missing numbers.

a. 0 2 5

b. 10 8 7

c. 7 6 3

d. 19 18 15

e. 8 9 11

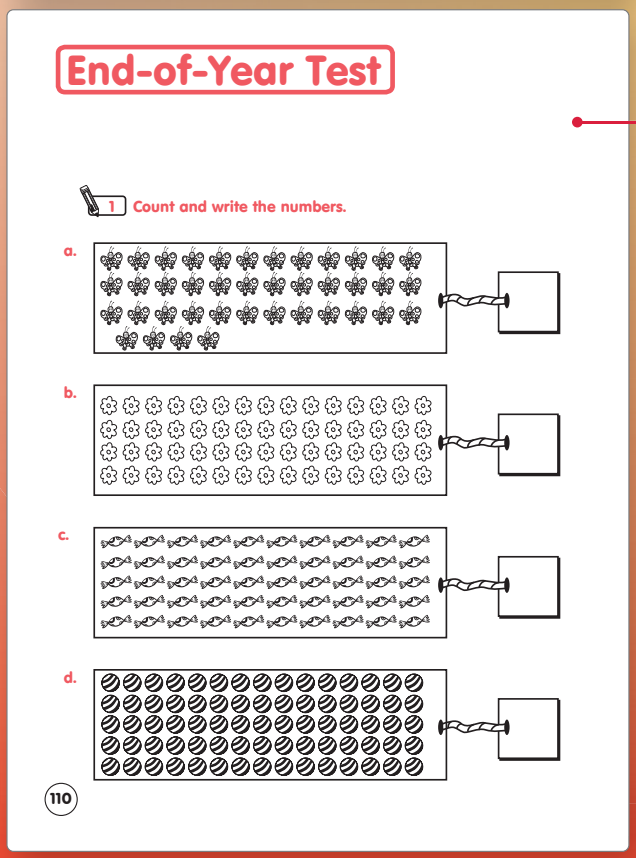
f. 2 3 6

g. 8 10 13

h. 19 18 15

69

The Mid-Year Test is planned for the middle of the school year and is aimed at enabling students to monitor their progress and evaluate what they have learnt during the first half of the school year. It also serves as a useful tool for teachers in order to assess their students' knowledge and reflect on the effectiveness of their own teaching.



End-of-Year Test

1 Count and write the numbers.

a.

b.

c.

d.

110

The End-of-Year Test is planned for the end of the school year. It is designed to provide an overview of the key concepts, processes and skills taught in the form of consolidation activities. All mathematical domains that students have been introduced to throughout the school year are assessed in this test.

It is recommended that teachers should rank the students' performance as 'Excellent' for a success rate greater than 85%, as 'Very good' for a success rate of 60-85% and as 'Good' for under 60%. The evaluation of students' progress through this ranking system is introduced in level 3.

Subtraction 3

LEARNING OBJECTIVES

- Perceive subtraction as the act of taking away.
- Perceive subtraction as the act of counting backwards.
- Subtract by counting backwards starting from the greater number.
- Use the subtraction (–) and equals (=) signs to denote subtraction in number sentences.
- Respond to questions such as 'How many more?'.
- Use number pairs to complete subtraction facts.
- Model a subtraction word problem using pictorial representations or everyday objects.
- Use known strategies to calculate easily and justify the reasoning behind the process.

KEY CONCEPTS

In this Unit Ss will learn how to:

- Subtract by taking away objects from sets.
- Subtract using number pairs for numbers up to 10.
- Subtract by counting backwards.
- Subtract using a number line.

THINKING SKILLS

- Classifying
- Analysing parts and a whole

WARM UP QUESTIONS

- How many fish are there in the pond now?
- How many ants are on the tree now?
- How many birds are left on the tree now?
- How many ducks are left in the lake now?

21

This is a brief introduction of the unit to inform the teacher about the mathematical content that is to be taught, the **learning objectives** to be achieved as well as the **key concepts** involved. It also informs the teacher about the **thinking skills** that students should develop throughout the unit. Finally, a list of **warm-up questions** is provided in order to trigger whole-class discussion and assist the teacher in monitoring students' prior knowledge or possible misconceptions.

4 How many tens and ones? Write the numbers.

a. 17 = ☐ ten and ☐ ones

b. 14 = ☐ ten and ☐ ones

c. 19 = ☐ ten and ☐ ones

5 Write the numbers.

a. 10 and ☐ is 11.

b. 10 and ☐ is 16.

c. 10 and ☐ is 12.

6 How many tens and ones? Complete the place value tables.

a. 18

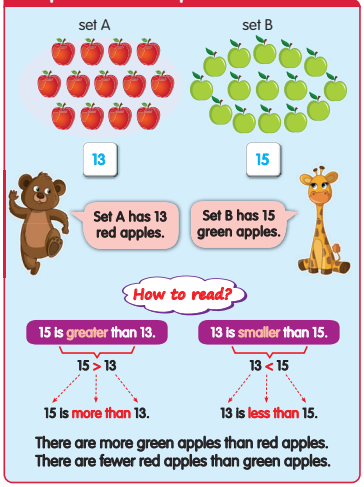
Tens	Ones

b. 12

Tens	Ones

4

Compare numbers up to 20



The key to each activity of the Student's Book is included.

Activity 4

a. 17 = 1 ten and 7 ones
b. 14 = 1 ten and 4 ones
c. 19 = 1 ten and 9 ones

Activity 5

a. 10 and 1 is 11.
b. 10 and 6 is 16.
c. 10 and 2 is 12.

Activity 6

a.

Tens	Ones
1	8

b.

Tens	Ones
1	2

Compare numbers up to 20

- Draw Ss' attention to the theory section.
- Draw Ss' attention to the picture.
- Have Ss count the red and the green apples.
- Explain to Ss that there are 13 red apples in set A and 15 green apples in set B.
- Write '13' and '15' on the board.
- Explain to Ss that to compare these numbers, first we compare the tens.
- Point out to Ss that both numbers have 1 ten, so we have to compare the ones.
- Explain to Ss that 15 is greater than 13 or 15 is more than 13, because 5 is greater than 3.
- Write '15 > 13' on the board.
- Explain to Ss that we can also say that 13 is smaller than 15 or that 13 is less than 15.
- Write '13 < 15' on the board.
- Ask Ss ***Which is more, 16 or 12? Why?*** (16 is more than 12 as both numbers have 1 ten but 6 is greater than 2.).
- Allow Ss some time to think about their answers.

31

In this section, step-by-step guidelines are given for the corresponding theory section in the Student's Book. Well organised and clear instructions facilitate the teaching of new concepts and processes. In this section, the teacher finds a more detailed and enriched presentation of the mathematical content. At the end of this section, students have a more active role as they are asked thought provoking questions in order to better explore the mathematical ideas that have been taught. The correct answers to these questions are given in brackets.

This is the theory section where the mathematical concepts are presented through pictorial representations and meaningful examples that serve as a reference point throughout the unit.

Number patterns (2)

+50 +50 +50 +50

1150 1200 1250 1300 1350

We add 50 to get the next number.

+1000 +1000 +1000 +1000

6000 7000 8000 9000 10 000

We add 1000 to get the next number.

18

1

15 Complete the number patterns.

a. 4000, 5000, 6000, 7000, ____

b. 2120, 2220, ____, 2420, 2520

c. 6855, 6755, 6655, ____, 6455

d. 3021, ____, 5021, 6021, 7021

e. 7060, 7050, 7040, ____, 7020

Various activities for students to apply and consolidate their newly acquired knowledge of concepts and processes. The activities are specifically targeted to cover the learning objectives of each unit. Where necessary, examples are given to enable students to work on the activities independently.

7 Volume

LEARNING OBJECTIVES

- Recognise that litre (*l*) is the basic unit of capacity measurement and equals 1000 millilitres (*ml*).
- Estimate capacity and volume using appropriate units (*l* or *ml*).
- Comprehend systems of measurement and use appropriate units of measurement.
- Use appropriate tools and notation to measure and record capacity and volume measurements.
- Solve simple word problems by conducting calculations in the context of measurement.
- Use intervals and divisions on partially numbered scales to read and record capacity measurement.
- Decide which strategy to follow to solve problems involving addition or subtraction and justify the decision.

KEY CONCEPTS

In this Unit Ss will learn how to:

- Recognise standard units of volume (litres and millilitres).
- Read the scales to measure and record volume and capacity measurement.
- Convert litres into millilitres and millilitres into litres and millilitres.
- Record volume or capacity in mixed units (e.g. 2500 *ml* is 2 *l* 500 *ml*.).
- Use appropriate tools and units of measurement to measure capacity and volume.
- Compare capacities expressed in mixed units.
- Add or subtract volume measurements expressed in mixed units.
- Solve word problems in the context of volume measurement.

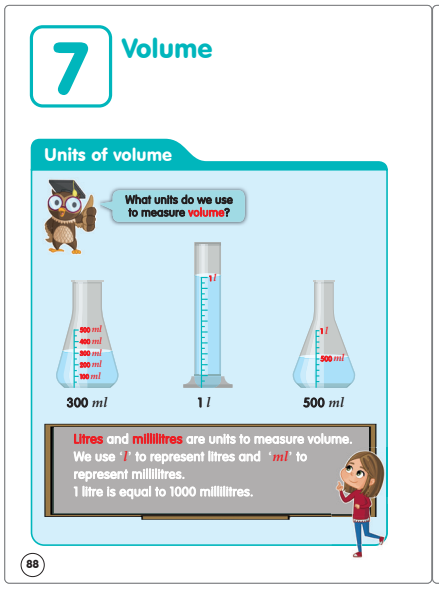
THINKING SKILLS

- Identifying relationships
- Sequencing
- Comparing
- Deducing

WARM UP QUESTIONS

- Is the capacity of your bottle more or less than 5 *l*?
- Will you measure the capacity of a teaspoon in litres or millilitres?
- Will you measure the capacity of a fish tank in litres or millilitres?
- Can you see any containers in the classroom?

This is a brief introduction of the unit to inform the teacher about the mathematical content that is to be taught, the **learning objectives** to be achieved as well as the **key concepts** involved. It also informs the teacher about the **thinking skills** that students should develop throughout the unit. Finally, a list of **warm-up questions** is provided in order to trigger whole-class discussion and assist the teacher in monitoring students' prior knowledge or possible misconceptions.


7 Volume

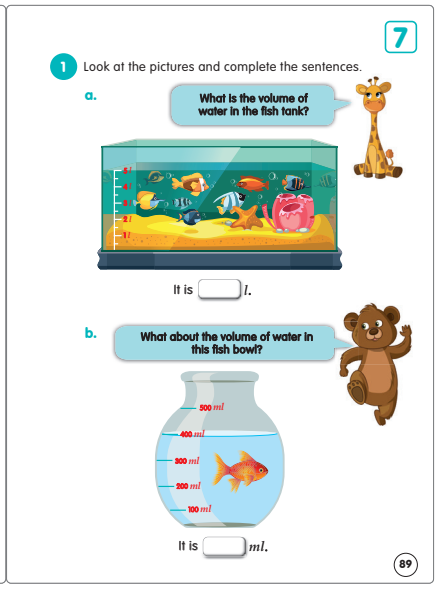
Units of volume

What units do we use to measure volume?

300 ml 1 l 500 ml

Litres and millilitres are units to measure volume.
We use 'l' to represent litres and 'ml' to represent millilitres.
1 litre is equal to 1000 millilitres.

88


7

1 Look at the pictures and complete the sentences.

a. What is the volume of water in the fish tank?

It is ____ l.

b. What about the volume of water in this fish bowl?

It is ____ ml.

89

Units of volume

- Draw Ss' attention to the theory section.
- Explain to Ss that litres and millilitres are units to measure volume. We use 'l' to represent litres and 'ml' to represent millilitres.
- Explain to Ss that 1 litre is equal to 1000 millilitres.
- Focus Ss' attention on the containers.
- Explain to Ss that we call these containers measuring containers as we can use them to measure the volume of water that each of them contains.
- Point out to Ss that when we measure volume we find how much water (or any other liquid) a container holds at the time of measurement.
- Explain to Ss that in the first measuring container the volume of water is 300 ml but this container can hold 500 ml.
- Point out to Ss that there are marks on this container every 100 ml. We can use this container to measure volumes up to 500 ml.
- Explain to Ss that in the second measuring container the volume of water is 1 l or 1000 ml.
- Explain to Ss that in the third measuring container the volume of water is 500 ml.
- Point out to Ss that we can see that from 0 to 1 l there are 10 equal parts, 100 ml for each part. We can use this container to measure amounts of liquid up to 1 l or 1000 ml.
- Have Ss count in hundreds pointing to the unnumbered marks one by one until they get to the fifth mark showing 500 ml.
- Ask Ss ***How much more water can the first container hold?*** (The first container can hold 200 ml more water.), ***How much more water can the third container hold?*** (The third container can hold 500 ml more water.).
- Allow Ss some time to think about their answers.

Activity 1

a. It is 5 l.
b. It is 400 ml.

The key to each activity of the Student's Book is included.

In this section, step-by-step guidelines are given for the corresponding theory section in the Student's Book. Well organised and clear instructions facilitate the teaching of new concepts and processes. In this section, the teacher finds a more detailed and enriched presentation of the mathematical content. At the end of this section, students have a more active role as they are asked thought provoking questions in order to better explore the mathematical ideas that have been taught. The correct answers to these questions are given in brackets.

This is the theory section where the mathematical concepts are presented through pictorial representations. Meaningful examples and various methods are often presented that serve as a reference point throughout the unit.

From decimal to percentage

How can we write 0.12 as a percentage?

Method 1 We multiply the decimal by 100%.

$0.12 \times 100\% = 12\%$

Remember, when we multiply a decimal by 100 we move the decimal point 2 places to the right.
0.12 → 1.2 → 12

Method 2

Step 1 Change the decimal to a fraction with a denominator of 100.

Step 2 Write the fraction as a percentage.

$0.12 = \frac{12}{100} = 12\%$

Example 1 Write 0.4 as a percentage.

$0.4 \times 100\% = 40\%$

OR

$0.4 = 0.40 = \frac{40}{100} = 40\%$

Example 2 Write 0.07 as a percentage.

$0.07 \times 100\% = 7\%$

OR

$0.07 = \frac{7}{100} = 7\%$

5 Write the decimals as percentages.

a. 0.5 = ____ **b.** 0.9 = ____ **c.** 0.1 = ____

d. 0.23 = ____ **e.** 0.28 = ____ **f.** 0.37 = ____

g. 0.01 = ____ **h.** 0.02 = ____ **i.** 0.06 = ____

6 Put <, = or > in the boxes to compare.

a. 37% ____ 0.37 **b.** 0.03 ____ 30%

c. 0.68 ____ 86% **d.** 0.8 ____ 8%

e. 12% ____ 0.12 **f.** 0.1 ____ 10%

g. 9% ____ 0.09 **h.** H ____ 95%

7 Complete the table.

Percentage	Fraction	Simplest Form
20%		
45%		
5%		
25%		

Various activities for students to apply and consolidate their newly acquired knowledge of concepts and processes. The activities are specifically targeted to cover the learning objectives of each unit. Where necessary, examples are given to enable students to work on the activities independently.

vector
maths & science

Let's Start!

Maths

Vector Maths & Science
Marketing Department
56 Deligiorgi Str, 17456 Athens, Greece
info@vectormsint.com **www.vectormsint.com**

Place your orders through

104963-1984