International Primary

Maths

sample pages catalogue
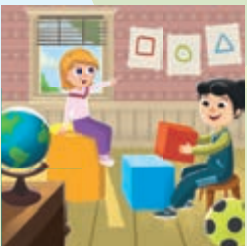

International Primary
Maths 1
Student's Book

International Primary
Maths 2
Student's Book

International Primary
Maths 3
Student's Book

International Primary
Maths 4
Student's Book

International Primary
Maths 5
Student's Book

International Primary
Maths 6
Student's Book

Maths

1

2

3

4

5

6

Vector IPM* is a pioneering series based on the modern principles of maths teaching, which introduces students to the exciting world of maths. The series aims to captivate students' interest, motivate mathematical investigation and assist students in developing and mastering the skills necessary for success.

VECTOR IPM* is a contemporary six-level series for primary students. Responding to the needs of the 21st century, the course aims to reinforce skills such as critical thinking, problem solving and logical reasoning through a balanced and progressive development of learning objectives. The syllabus is structured in a spiral form to promote a holistic view of maths and to enhance the interconnection between different domains. Each lesson is carefully designed to enable students to gain a deep understanding of core mathematical ideas.

Domains

1234 Numbers

Measurement

Problem Solving

Geometry

Data

*International Primary Maths

Course features

FOR STUDENTS:

> **Age-appropriate** mathematical learning objectives
> A **gradual and spiral development** of mathematical knowledge
> Lessons based on the teaching model of **Engage, Explore, Explain, Elaborate and Evaluate (5 Es' Model)**
> Simple and comprehensible **vocabulary to support EAL (English as an Additional Language) students**
> Gradual development of mathematical terminology and literacy
> **Visuals and pictorial representations** that facilitate learning
> Stimulating activities that enhance the consolidation of knowledge and reinforce **critical thinking** and **mathematical reasoning skills**
> A special emphasis on the **development of problem solving skills**
> **Enjoyable games, puzzles, riddles and cross-curricular activities** that enhance a positive attitude towards mathematics
> **Review pages** at the end of each unit
> Workbook/Supplementary activities for individual practice
> **Resource Sheets** to support understanding of mathematical concepts and processes (provided at the back of the Workbook)
> **Glossary** with visual representations, age appropriate definitions and comprehensible examples
> Modern student-friendly layout with high-quality illustration
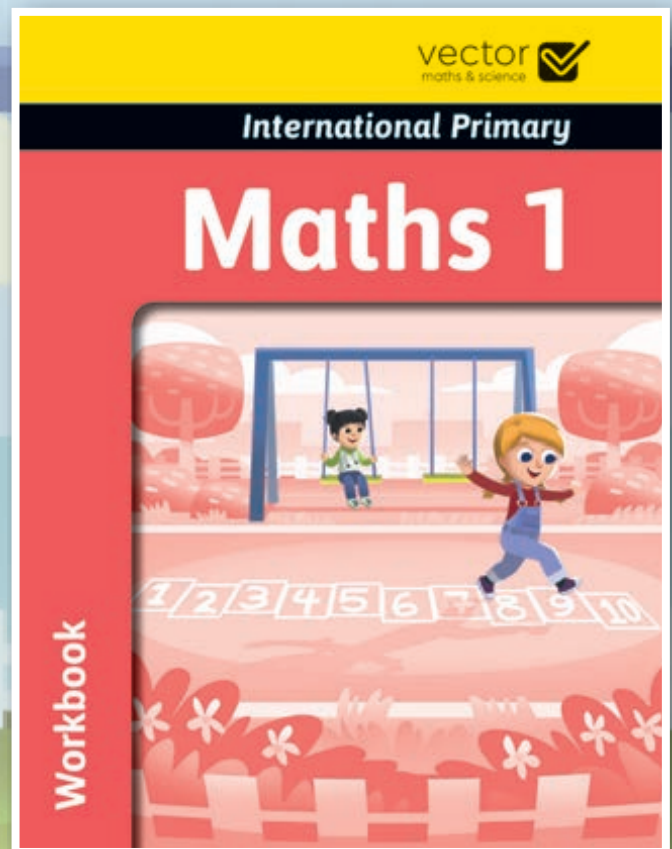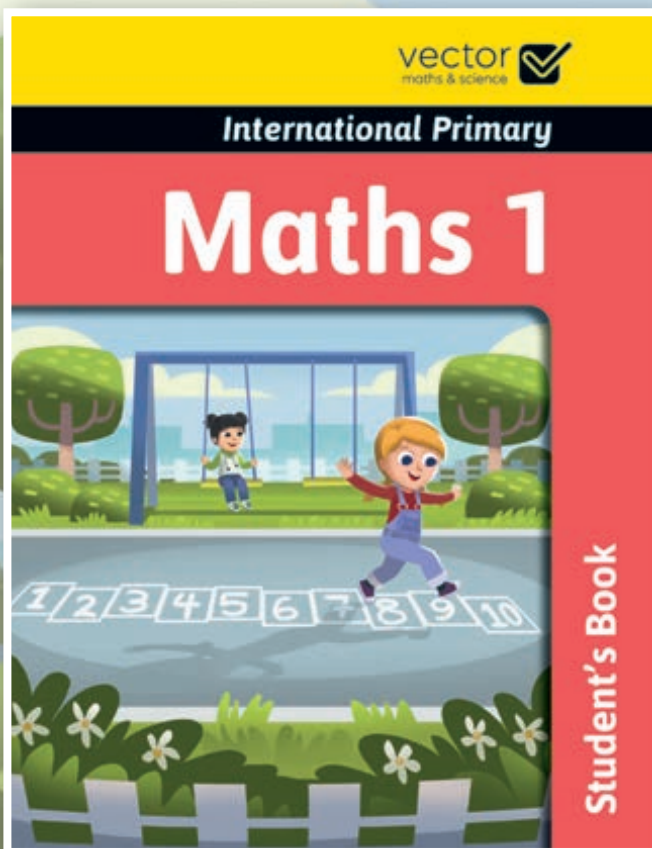> Extension of mathematical concepts in real life context

FOR TEACHERS:

> Specific learning objectives for each lesson
> **Consistency** of the mathematical content throughout the series
> **Unit maps** at the beginning of each unit that provide well-organised information about the mathematical content of each lesson as well as students' prior knowledge
> List of possible **common student preconceptions**
> **Cross-curriculum links**
> **Extensive step-by-step lesson plans** for all lessons and the review section
> **Thought-provoking questions** that involve higher-level thinking to enrich the lesson content and trigger critical thinking
> **Differentiated activities** for students of basic or advanced performance
> Brief description of games, riddles, puzzles and cross-curricular activities
> **EAL (English as an Additional Language) support**
> **Review and Assessment pages** for each unit with detailed guidelines on how to approach and carry out each activity
> **Keys** provided for all the activities
> Safety warnings and guidelines
> Reminders to facilitate the teaching procedure
> **Resources** such as Resource Sheets and Worksheets to support comprehension and extension of knowledge (provided in the Teacher's Resource CD-ROM)
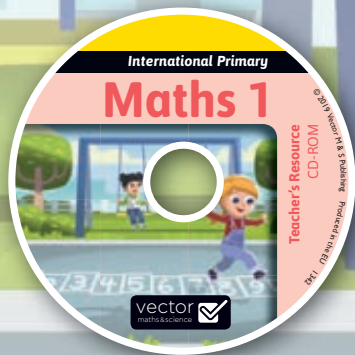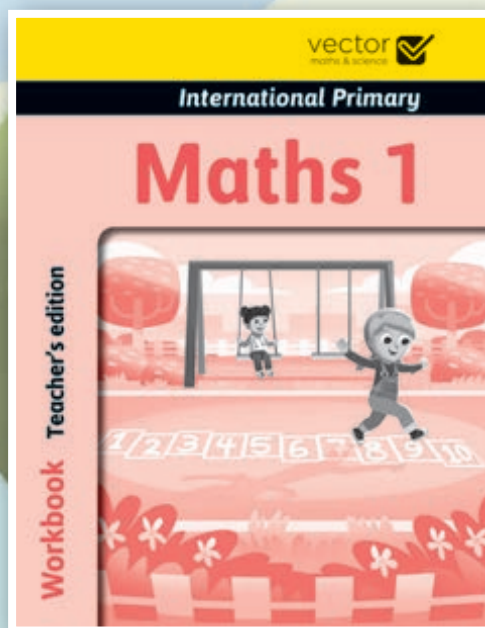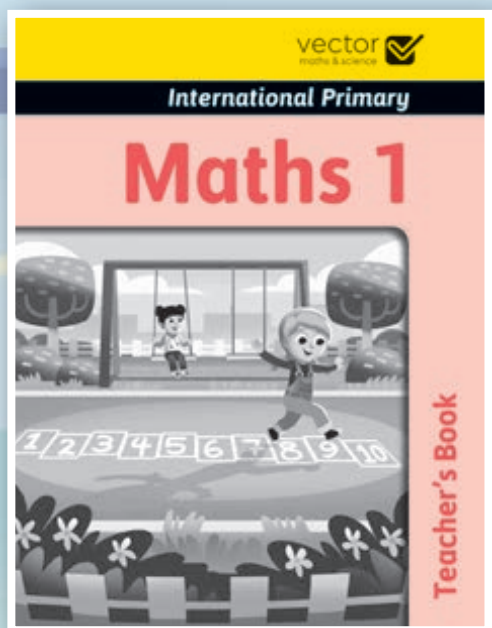
Components

FOR STUDENTS

FOR TEACHERS

vector maths & science
International Primary
Maths 1
Teacher's Book

vector maths & science
International Primary
Maths 1
Workbook   Teacher's edition

International Primary
Maths 1
Teacher's Resource
CD-ROM
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Printed in the EU · 1341
vector maths & science

Maths 1
Learning Objectives

Numbers

- Recognise the 100 square as a tool for depicting numbers.
- Perceive the number line as a tool for ordering numbers.
- Count to 10 aloud.
- Count to 20 aloud.
- Count forwards and backwards between 0-20.
- Count forwards between 0-100.
- Write numbers up to 100.
- Recognise numerals in a real-life context.
- Read and write the numbers up to 10 in numerals and in words.
- Read and write the numbers up to 20 in numerals and in words.
- Count the number of objects between 0-10 in a set of uniform objects.
- Identify zero as the numeral that shows no existence of items.
- Count the number of objects between 10-20 in a set of uniform objects.
- Perceive that the number of objects remains the same even when rearranged.
- Count forwards and backwards in tens starting from any given number.
- Count forwards and backwards in twos starting from any given number.
- Recognise that even and odd numbers are every other number.
- Perceive teen numbers (11-19) as ten and some more.
- Write a teen number (11-19), given its tens and ones.
- Recognise the place value of each digit in two-digit numbers.
- Write a two-digit number as tens and ones and vice versa.
- Find the number that is 1 more/less than any given number up to 100 using the 100 square.
- Compare numbers using comparative vocabulary (more/less/fewer).
- Compare numbers according to place value.
- Find the number that lies between two given numbers on a number line.
- Put numbers in order from the greatest to the smallest and vice versa.
- Put numbers up to 20 in order on a number track.
- Read and write ordinal numbers as words.
- Use appropriate notation for ordinals.
- Differentiate ordinals from numerals.
- Use the (=) sign to indicate equality.
- Estimate the number of objects (up to 50) in a set.
- Estimate the number of objects in a set using groups of ten.
- Calculate halves of small numbers.
- Memorise and write all number pairs to 10.
- Derive all four number facts given a number pair.
- Use number pairs to complete addition and subtraction facts.
- Write all number pairs for each number from 1 to 10.
- Add three single-digit numbers flexibly using number pairs to 10.
- Add two single-digit numbers between 0-20 using partitioning to make number pairs to 10.
- Memorise doubles up to double 5.
- Add using the near doubles strategy.
- Identify multiples of 2 as jumps of 2 starting from zero.
- Identify multiples of 10 as jumps of 10 starting from zero.
- Perceive addition as the act of combining numbers to find the total.
- Perceive addition as the act of counting forwards.
- Perceive subtraction as the act of taking away.
- Perceive subtraction as the act of counting backwards.
- Respond to questions such as 'how many more?'.
- Add a single-digit number by counting forwards.
- Subtract by counting backwards starting from the bigger number.
- Say and write the number that is 2 more/less than any given number to 20 using a number line.
- Find the number that is 10 more/less than any given number using the 100 square and by counting forwards or backwards.
- Use the addition and equals signs (+, =) to denote addition in number sentences.
- Use the subtraction and equals signs (−, =) to denote subtraction in number sentences.
- Recognise that addition can be done in any order and the outcome will always be the same.
- Add two numbers by counting forwards starting from the greatest addend.
- Understand the use of a sign (e.g. ○) in the place of the unknown number in a number sentence.
- Add a two-digit number and a single-digit number.
- Calculate doubles of numbers between 0-10.
- Conclude that finding the double of a number requires adding two of the same numbers.

Geometry

- Distinguish between straight, curved and zig-zag lines.
- Name and recognise common 2D shapes.
- Identify the common 2D shapes that form a picture.
- Describe common 2D shapes referring to the number of their sides and whether they are straight or curved.
- Sort 2D shapes according to their attributes.
- Name and recognise common 3D shapes.
- Identify the common 3D shapes that form a model.
- Distinguish between flat and curved faces.
- Give examples of objects in real life with curved and flat faces.
- Sort 3D shapes according to their attributes.
- Explore the concept of line symmetry using folded paper.
- Distinguish symmetrical from non-symmetrical images by folding.
- Identify line symmetry.
- Match the symmetrical parts of a drawing.
- Recognise which shapes are divided into two equal parts, by folding.
- Describe position using appropriate vocabulary: left, right, in front of, behind, on, under, next to, between.
- Describe position changing the subject of reference.
- Describe a simple route on a map.
- Follow and give simple directions (go forwards/backwards, turn left/right) to reach a destination.

Measurement

- Recognise and name coins (1 cent, 5 cents, 10 cents, 25 cents, 50 cents, 1 dollar) and their values.
- Work out a total using coins.
- Find totals to make a payment.
- Exchange coins according to their value.
- Characterise objects as tall/long or short.
- Directly compare the length/height of two objects.
- Measure the length/height of an object using uniform non-standard units of measurement.
- Compare objects by length using uniform non-standard units.
- Rank objects according to length/height in order to determine which is the longest, the shortest or the tallest.
- Characterise objects as heavy or light.
- Directly compare the weight of two objects.
- Measure the weight of an object using uniform non-standard units of measurement.
- Compare objects by weight using uniform non-standard units.
- Rank objects according to weight in order to determine which is the heaviest or the lightest.
- Characterise containers as full, half full or empty.
- Estimate and directly compare the capacity of two different containers.
- Estimate the capacity of a container using non-standard units of measurement.
- Measure the capacity of a container using uniform non-standard units of measurement.
- Compare containers by capacity according to non-standard units.
- Rank different types of containers according to capacity in order to determine which holds the most or the least.
- Use comparative vocabulary for length (longer than, shorter than, taller than).
- Use comparative vocabulary for weight (heavier than, lighter than).
- Use comparative vocabulary for capacity (holds more, holds less, full, empty, half full).
- Choose appropriate units to express time intervals.
- Refer to the duration of everyday activities (a minute or an hour).
- Compare activities according to their duration.
- Use the words 'day before', 'day after', 'weekday' and 'weekend' to specify a day.
- Read, write and put the months of the year in order.
- Conclude that a year has twelve months.
- Read the time on the hour (o'clock times) using an analogue clock.
- Place the minute and hour hands to show o'clock times on a clock face.
- Recognise and order key times of the day (morning, afternoon, night).
- Connect everyday activities with specific o'clock times and key times of the day.
- Describe activities that take place at key times of the day.
- Read and write the days of the week and put them in order.
- Complete a week planner according to daily activities.

Data

- Answer a question according to data provided in lists or tables.
- Organise data in lists and tables.
- Recognise pictograms and their basic format.
- Obtain information from pictograms to answer questions.
- Organise data in pictograms.
- Find totals for each category of data by counting the images in the pictograms.
- Recognise block graphs and their basic format.
- Obtain information from block graphs to answer questions.
- Organise data in block graphs.
- Find totals for each category of data by counting the blocks in the block graphs.
- Recognise Venn diagrams and their basic format.
- Obtain information from Venn diagrams to answer questions.
- Complete the missing data in Venn diagrams.
- Recognise Carroll diagrams and their basic format.
- Obtain information from Carroll diagrams to answer questions.
- Complete the missing data in Carroll diagrams.
- Sort objects into two groups according to their attributes.
- Sort objects into four groups according to their attributes.

Problem Solving

- Use known strategies to calculate easily and justify the reasoning behind the process.
- Solve number puzzles involving known operations.
- Search for all possible combinations.
- Model an addition or subtraction word problem using pictorial representations or everyday objects.
- Check the outcome of an addition by changing the order of addends.
- Check the outcome of a subtraction using addition.
- Identify the rule in patterns of numbers or shapes.
- Continue simple patterns of numbers or shapes.
- Describe the relationship between numbers or shapes.
- Estimate the outcome of an operation before calculating.
- Check whether the outcome of an operation is reasonable or not.

Maths 2
Learning Objectives

Numbers

- Read and write numbers up to 100 in numerals.
- Count forwards and backwards between 0-100.
- Count sets of objects between 0-100.
- Count on in ones and tens from any given number up to 100 forwards and backwards.
- Count on in twos, fives and tens from any given number up to 100 forwards and backwards.
- Count a large set of objects by making groups of two, five or ten.
- Start counting on in threes and fours starting from zero.
- Identify the place value of digits in a two-digit number.
- Partition and synthesise two-digit numbers in tens and ones.
- Find the number that is 1 more/less than any two-digit number.
- Find the number that is 10 more/less than any two-digit number. Round any given number up to 100 to the nearest ten.
- Find the nearest ten for a given two-digit number.
- Find a number between two tens.
- Put numbers in order on a number line marked in ones or tens.
- Recognise and use ordinal numbers up to the 20th.
- Use the (<, >) signs to express inequality.
- Put numbers to 100 in order from the greatest to the smallest and vice versa.
- Estimate sets of up to 100 objects choosing from multiples of 10, such as 10, 20, 50 or 100.
- Identify odd and even numbers up to 20.
- Recognise that numbers are alternately even-odd.
- Sort numbers according to their properties (e.g. odd/even, multiples of 2, 5 and 10 etc.).
- Name and write a half part as $\frac{1}{2}$ and a quarter part as $\frac{1}{4}$.
- Name and write two quarters as $\frac{2}{4}$ and three quarters as $\frac{3}{4}$.
- Recognise that two halves ($2 \times \frac{1}{2}$) or four quarters ($4 \times \frac{1}{4}$) make a whole.
- Recognise the equivalence between $\frac{1}{2}$ and $\frac{2}{4}$.
- Recognise which shapes are divided in two or four equal parts and which are not.
- Visualise halves and quarters as well as the equivalence between $\frac{1}{2}$ and $\frac{2}{4}$ using shapes divided in two or four equal parts.
- Identify the half or the quarter part of a shape or number of objects.
- Revise all number pairs to 10.
- Memorise and write all number pairs for 20.
- Derive all the related addition and subtraction facts after splitting a number up to 20 into pairs.

- Derive all number pairs for 100 with multiples of 10 and their related addition and subtraction facts.
- Recognise multiples of 2 up to the 10th multiple.
- Recognise multiples of 5 and 10 up to the 10th multiple.
- Complete and memorise the times table of 2 up to the 10th multiple.
- Complete and memorise the times tables of 5 and 10 up to the 10th multiple.
- Derive the division facts given an array or a multiplication.
- Memorise doubles for all numbers up to 10 and also 15, 20, 25 and 50.
- Identify the relationship between counting forwards/backwards in tens and finding 10 more/less than any given number up to 100.
- Identify the relationship between counting forwards/backwards in tens and adding/subtracting multiples of 10.
- Use the (=) sign to indicate equality, e.g. 12 + 4 = 15 + 1.
- Add at least three single-digit numbers.
- Use symbols such as □ and ◇ to represent an unknown number.
- Solve number sentences such as 34 + □ = 40 to find the unknown number, by applying a range of strategies.
- Add a single-digit number to a two-digit number.
- Subtract a single-digit number from a two-digit number.
- Add two two-digit numbers.
- Find the difference between two two-digit numbers.
- Recognise that addition can be done in any order, whereas subtraction cannot.
- Realise that both 'difference' and 'take away' refer to subtraction.
- Record multiplication using the (×) sign.
- Recognise multiplication as a process of repeated addition.
- Depict multiplication as an array of objects.
- Write two multiplications for a given array to show that multiplication can be done in any order.
- Record division using the (÷) sign.
- Recognise division as a process of grouping.
- Recognise division as a process of sharing.
- Solve word problems using repeated addition.
- Calculate doubles of multiples of 5 up to the 10th multiple, and their corresponding halves.
- Find doubles of two-digit numbers.
- Complete the times tables of 3 and 4 and derive multiplication and division facts.
- Understand that in division there can be some left over.

Geometry

- Recall common 2D shapes and their attributes.
- Recognise common 2D shapes in different orientations or sizes.
- Name and identify regular and irregular 2D shapes.
- Recognise that regular shapes have all sides the same length.
- Use mathematical terminology to describe 2D shapes.
- Identify common 2D shapes given the descriptions.
- Draw 2D shapes according to a description provided.
- Sort 2D shapes according to their attributes.
- Recall common 3D shapes and their attributes.
- Recognise common 3D shapes in different orientations or sizes and their 2D drawings.
- Use mathematical terminology to describe 3D shapes.
- Identify common 3D shapes given the descriptions.
- Sort 3D shapes according to their attributes.

- Identify and draw the line of symmetry in images and 2D shapes.
- Recognise reflective symmetry in shapes and patterns.
- Give examples of 2D shapes in real life.
- Give examples of 3D shapes in real life.
- Give examples of images that are symmetrical in real life.
- Follow directions or give instructions with reference to position, direction and movement.
- Give instructions using appropriate vocabulary to describe movement and direction.
- Differentiate between clockwise and anti-clockwise direction.
- Recognise a quarter turn, half turn and whole turn (both clockwise and anti-clockwise).
- Identify a quarter turn as right angle.

Measurement

- Identify all coins and their value.
- Identify all notes and their value.
- Use appropriate notation for coins and notes.
- Find a total amount of money using coins, notes or both.
- Provide different combinations of coins and/or notes to pay a specific amount of money.
- Calculate and give change.
- Estimate, measure and record the length of an object using uniform non-standard units.
- Compare objects by length using uniform non-standard units.
- Estimate, measure and record the weight of an object using uniform non-standard units.
- Compare objects by weight using uniform non-standard units.
- Estimate, measure and record the capacity of a container using uniform non-standard units.
- Compare containers by capacity using uniform non-standard units.
- Estimate the length of an object using uniform standard units (metre and centimetre).
- Choose appropriate standard units to measure length.
- Measure and record the length of an object using appropriate tools and notation.
- Estimate the weight of an object using uniform standard units (kilogram and gram).
- Choose appropriate standard units to measure weight.

- Measure and record the weight of an object using appropriate tools and notation.
- Estimate the capacity of a container using uniform standard units (litre).
- Choose appropriate standard units to measure capacity.
- Measure and record the capacity of a container using appropriate tools and notation.
- Compare objects by length using uniform standard units (metre and centimetre).
- Compare objects by weight using uniform standard units (kilogram and gram).
- Compare containers by capacity using uniform standard units (litre).
- Recognise and use common units of time, such as seconds, minutes, hours, days, weeks, months and years.
- Recognise that 1 minute has 60 seconds.
- Recognise that 1 hour has 60 minutes.
- Read and write the time from analogue and digital clocks (at o' clock and the half hour).
- Estimate and measure the duration of everyday activities in seconds or minutes.
- Name the days of the week and the months of the year.
- Put the days of the week and the months of the year in order starting from any given day or month.

Data

- Record and organise data in lists and tables.
- Answer a question using recorded data from a list or a table.
- Complete a block graph according to the data provided in a table or list.
- Answer a question using recorded data from a block graph.
- Complete a pictogram according to the data provided in a table or list.

- Answer a question using recorded data from a pictogram.
- Sort objects in Venn diagrams with one or two criteria.
- Sort objects in Carroll diagrams with one or two criteria.
- Sort numbers (e.g. odd/even, multiples of 2, 5 and 10 etc.) in Venn and Carroll diagrams with one criterion using the rule 'property or non-property' and justify the reasoning behind the choice.

Problem Solving

- Choose from a variety of mental strategies the most appropriate to perform a calculation and explain how the answer was reached.
- Explain and justify the reasoning behind the process of a strategy or a method.
- Work out problems with numbers or puzzles.
- Understand an up to two-step word problem, choose the appropriate operation and represent the answer using pictorial representations, everyday objects or a number line.
- Create a story using numbers provided.
- Check the result of an addition by using alternative methods, e.g. changing the order of the numbers, choosing a different strategy etc.

- Check the result of a subtraction by adding the result of the subtraction to the subtracted number.
- Observe a pattern and continue a two, three, four or five step number pattern.
- Describe the relationship between numbers or shapes.
- Estimate the outcome of an operation before calculating.
- Judge if a result or an answer to a problem is logical depending on the context.

Maths 3
Learning Objectives

Numbers 🔢

- Count from 100 to at least 200.
- Read and write numbers to 1000 using numerals or number words.
- Count forwards and backwards in ones, tens and hundreds starting from any two-digit or three-digit number.
- Count forwards and backwards in twos, threes, fours, and fives up to 100.
- Represent numbers up to 1000 with pictorial representations and state what each digit represents (ones, tens, hundreds).
- Use an abacus as a tool for displaying place value.
- Find 10 or 100 more/less than any given number to 1000.
- Find 1 more/less than any two-digit or three-digit number.
- Mentally multiply any two-digit number by 10 and understand the underlying rule.
- Round any two-digit number to the nearest ten using a number line.
- Round any three-digit number to the nearest ten using a number line.
- Round any two-digit number to the nearest ten according to the last digit of the number.
- Round any three-digit number to the nearest hundred according to the last digit of the number.
- Place any three-digit number on a number line marked by hundreds.
- Place any three-digit number on a number line marked by tens.
- Compare numbers up to 999 using the comparison symbols (<,>).
- Find a number between two three-digit numbers.
- Compare numbers based on digit to digit (place value) comparison.
- Order numbers up to 999 from the greatest to the smallest and vice versa.
- Estimate a large number of objects giving a range (e.g. 50 - 70) by grouping in tens.
- Use counters to show $\frac{1}{2}$ of even numbers to 40.
- Calculate $\frac{1}{2}$ of even numbers up to 40.
- Calculate $\frac{1}{2}$ of odd numbers up to 40, using mixed numbers to represent.
- Recognise and use fraction notation to represent part of a given whole.
- Verify the equality of fractions $\frac{1}{2}$, $\frac{2}{4}$, $\frac{4}{8}$ and $\frac{5}{10}$.
- Recognise and show mixed numbers in shapes.
- Compare fractions by comparing parts of shapes divided into a different number of parts, using the comparative signs.
- Order fractions (both simple and mixed with the same denominator) on a number line.
- Relate fractions to division.
- Draw the half, quarter, third or tenth of a shape (divided in two, four, three or ten) and write the corresponding fraction.
- Calculate quarters, thirds and tenths of numbers (that can be expressed in proper fractions).
- Memorise all number pairs to 20 and write the corresponding facts.
- Complete number pairs for 1000 using multiples of 100.
- Complete addition and subtraction facts for 1000, using multiples of 100.
- Complete number pairs for 100 using multiples of 5.
- Complete addition and subtraction facts for 100, using multiples of 5.
- Fill in the multiplication table of 2 and complete the corresponding facts up to 20.
- Fill in the multiplication table of 5 and complete the corresponding facts up to 50.
- Fill in the multiplication table of 10 and complete the corresponding facts up to 100.
  Fill in the multiplication table of 3 and complete the corresponding facts up to 30.
- Fill in the multiplication table of 4 and complete the corresponding facts up to 40.
- Recognise that all multiples of 2 finish in 2, 4, 6, 8, or 0.
- Recognise that all multiples of 5 finish in 0 or 5.
- Recognise that all multiples of 10 finish in 0.
- Mentally calculate doubles of numbers up to 20 and their corresponding halves.
- Find the doubles of multiples of 5 or 10 up to 100 and write the corresponding facts.

- Find the doubles of multiples of 50 or 100 up to 1000 and write the corresponding facts.
- Add multiples of 10 to any two-or three-digit number (e.g. 126 + 30).
- Subtract a two-digit number (multiple of 10) from any two- or three-digit number to find the difference.
- Add multiples of 100 to any two- or three-digit number (e.g. 210 + 400).
- Identify and write equivalent number sentences using the (=) sign.
- Calculate the sum of more than two single-digit numbers.
- Complete the missing addend in additions with a total of 100.
- Add two two-digit numbers.
- Subtract a two-digit number from another two-digit number to find the difference.
- Use notes to add a two-digit number to a three-digit number.
- Add two two-digit numbers by partitioning an addend into tens and ones (e.g. 32 + 27 = 32 + 20 + 7 = 52 + 7 = 59).
- Add a single-digit number to a two-digit number.
- Add a single-digit number to a three-digit number.
- Subtract a single-digit number from a two-digit number to find the difference.
- Subtract a single-digit number from a three-digit number to find the difference.
- Subtract a number (up to two-digits) from another number (up to three-digits) using regrouping in ones or tens.
- Use pictorial representation to indicate carries.
- Make jumps of multiples of 10 or 100 forwards and backwards given a three-digit number.
- Perceive that doubling a number requires multiplying by 2 and correspondingly halving a number requires dividing by 2.
- Perceive that halving and doubling are inverse operations.
- Show halving and doubling with pictorial representations.
- Recognise the underpinning rule when multiplying a two-digit number by 10.
- Multiply single-digit numbers by 2.
- Divide single- or two-digit numbers by 2.
- Multiply single-digit numbers by 3.
- Divide single- or two-digit numbers by 3.
- Multiply single-digit numbers by 4.
- Divide single- or two-digit numbers by 4.
- Multiply single-digit numbers by 5.
- Divide single- or two-digit numbers by 5.
- Divide single- or two-digit numbers by 6 and 9.
- Multiply single-digit numbers by 6 and 9.
- Multiply single-digit numbers by 10.
- Divide two-digit numbers by 10.
- Present a multiplication fact of 3 and a teen number using partitioning (e.g. 3 × 14= (3 × 10) + (3 × 4)).
- Present a multiplication fact of 5 and a teen number using partitioning (e.g. 5 × 14= (5 × 10) + (5 × 4)).
- Divide a two-digit number by 3 beyond the 10th multiple.
- Divide a two-digit number by 5 beyond the 10th multiple.
- Divide a two-digit number by 6 or 9 beyond the 10th multiple.
- Combine knowledge from known multiplication tables to multiply or divide a teen number by 2, 3, 4, 5, 6, 9, 10.
- Realise that some divisions have a remainder.
- Relate remainder to left over.
- Present the multiplication of 2 using arrays.
- Present the multiplication of 3 as an array of objects and express multiplication in both ways as 3 × 6 and 6 × 3.
- Present the multiplication of single-digit numbers with 4 as an array of objects.
- Present the multiplication of 5 as an array of objects and express multiplication in both ways as 3 × 5 and 5 × 3.
- Present the multiplication of single-digit numbers with 6 and 9 as an array of objects and express multiplication in both ways as 6 × 7 and 7 × 6.
- Present the multiplication of 10 as an array of objects and express multiplication in both ways as 4 × 10 and 10 × 4.
- Understand and apply the commutative property of multiplication.
- Use pictorial representations to show the relationship between multiplying and dividing, and write the corresponding number sentences.

Geometry

- Recognise known regular and irregular 2D shapes and their attributes.
- Draw regular and irregular shapes, triangles, squares, circles and semi-circles.
- Identify (regular and irregular) pentagons, hexagons, octagons, semi-circles and state their attributes.
- Describe regular and irregular shapes.
- Sort 2D shapes according to their attributes (number of sides, vertices, right angles).
- Identify triangular pyramids and prisms.
- Explore different nets of the same cube.
- Recognise the attributes of triangular pyramids and prisms.
- Recognise known 3D shapes and their attributes.
- Create 3D shapes given their faces.
- Describe 3D shapes.
- Sort 3D shapes according to their attributes (number and shape of faces, vertices and edges).
- Complete a 2D shape on a grid using a line symmetry as a guide.
- Match 3D shapes with their 2D drawings.
- Give examples of line symmetry in the environment.
- Find examples of 2D shapes (regular and irregular) in a given picture.
- Identify right angles in shapes.
- Use mathematical terms to describe position and movement of an object both clockwise and anti-clockwise.
- Find the position of a square on a squared map.
- Describe the position of a square using labelled rows and columns.
- Use a set square to draw a right angle.
- Compare different types of angles with a right angle.
- Perceive that two right angles create a straight angle.

Measurement

- Express an amount of money from groups of coins and notes using appropriate notation.
- Add or subtract to give change from a total of 100.
- Estimate the mass of objects using appropriate units (kg or g).
- Estimate capacity using appropriate units (l or ml).
- Estimate length using appropriate units (m, cm, or km).
- Use appropriate tools and notation to measure and record mass measurements.
- Use appropriate tools and notation to measure and record length measurements.
- Use appropriate tools and notation to measure and record capacity measurements.
- Recognise that kilogram is the basic unit of mass measurement and equals 1000 grams.
- Recognise that litre is the basic unit of capacity measurement and equals 1000 millilitres.
- Recognise that metre is the basic unit of length measurement and equals 100 centimetres.
- Understand the need for larger units of length measurement and name the unit that includes 1000 metres as a kilometre.
- Read a measurement by rounding to the nearest half or quarter division given a complete or half-complete scale.
- Draw a line and measure its length to the nearest centimetre, using a ruler.
- Solve word problems including measurement.
- Choose appropriate units to express time intervals.
- Understand the relationships between days, weeks, months and years.
- Recognise that an hour has 60 minutes and a minute has 60 seconds.
- Read the time on an analogue clock to the nearest 5 minutes using the words 'past' and 'to'.
- Read the time on a digital clock to the nearest minute.
- Calculate simple time intervals using an analogue clock using appropriate units.
- Calculate simple time intervals using a digital clock using appropriate units.
- Use a calendar and calculate time intervals in days, months or years.

Data

- Pose a question, collect and organise data to answer the question reasonably.
- Obtain information and answer questions using frequency tables.
- Extract information from a bar chart where the scale is marked in ones or twos to answer questions.
- Extract information from a pictogram where a picture represents one or two units to answer questions.
- Complete a pictogram with pictures that represent two units according to the data provided.
- Complete a tally chart and a frequency table according to the data provided in a list.
- Complete a bar chart with a scale marked in twos according to the data provided.
- Sort objects and data in a Venn or Carroll diagram using two criteria.

Problem Solving

- Add two two-digit numbers using the near doubles strategy.
- Round a subtrahend to the nearest ten to calculate a subtraction more quickly (e.g. 46 – 31 = (46 - 30) - 1 or 46 – 29 = (46 - 30) +1).
- Round an addend to the nearest ten to calculate addition more quickly.
- Choose from among a variety of known subtraction strategies to subtract up to three-digit numbers.
- Choose from among a variety of known addition strategies to add up to three-digit numbers.
- Comprehend systems of measurement and use appropriate units of measurement.
- Solve one- or two-step problems involving addition and subtraction.
- Solve one-step problems choosing from known operations.
- Check addition by applying different strategies.
- Check subtraction by applying the inverse operation.
- Check multiplication by changing the order.
- Check division by applying the inverse operation.
- Find similarities and differences among 2D shapes.
- Find similarities and differences among 3D shapes.
- Use approximation and estimation in calculations.
- Estimate an answer to a problem before calculating using a variety of strategies.
- Determine whether an answer is reasonable or not.
- Narrate a number story corresponding to a calculation.
- Solve problems including addition or subtraction in the context of money.
- Justify the strategy chosen to solve a problem.
- Work on number puzzles applying different strategies.
- Use data in lists and tables to solve problems.
- Continue or complete the missing elements in patterns.
- Find the rule in patterns including numbers.
- Find how different shapes relate to each other (e.g. same number of lines of symmetry).
- Verify or reject a statement by the use of examples or non-examples.
- Choose the appropriate operations or methods to solve a problem and justify the reasoning behind the choice orally.

Maths 4
Learning Objectives

Numbers

- Read and write numbers to 10 000 given their numerals or number words.
- Write four-digit numbers in words and expanded form.
- Count in ones, tens, hundreds and thousands from any given number to 10 000 forwards and backwards.
- Represent numbers to 10 000 with pictorial representations and state what each digit represents (units, tens, hundreds, thousands).
- Convert amounts of money from mixed units to decimal notation.
- Order amounts of money from the largest to the smallest and vice versa.
- Round an amount of money to the nearest dollar.
- Introduce decimal notation with pictorial representations.
- Recognise the place value of a decimal number for tenths and hundredths.
- Understand and use decimal notation in context, e.g. length, money
- Add or subtract multiples of 10, 100 or 1000 to/from a number with up to four-digits.
- Multiply up to three-digit numbers by 10 and find the corresponding division facts.
- Recall multiples of 5, 10, 50, 100, 1000.
- Round a three-digit number to the nearest 10 or 100.
- Round a four-digit number to the nearest 10, 100 or 1000.
- Order three-digit and four-digit numbers using the (<, >) signs and position them accurately on 0-1000 and 0-10 000 number lines.
- Estimate the position of a three-digit or four-digit number on number lines of 0-1000 and 0-10 000.
- Compare two three-digit numbers and two four-digit numbers using the (<, >) signs.
- Find numbers in between a pair of three-digit numbers.
- Find numbers in between a pair of four-digit numbers.
- Explore examples of negative numbers in everyday life, e.g. in the context of temperature.
- Recognise and extend a number sequence beyond zero by counting backwards.
- Recognise odd and even numbers up to 10 000 based on their last digit.
- Find the rules that apply to the sums and differences of odd and even numbers.
- Compare two or more fractions with the same denominator (halves, quarters, thirds, fifths, eighths and tenths) and order them from the largest to the smallest and vice versa.
- Add two three-digit numbers choosing an appropriate strategy.
- Recognise equivalent fractions of halves, quarters and fifths with denominator up to 10.
- Subtract a two-digit number from a three-digit number.
- Use equivalent fractions to help compare and order non-equivalent fractions e.g. $\frac{3}{4}$ and $\frac{6}{10}$).
- Understand the equivalent relationship between one-place decimals and decimal fractions with a denominator of ten.

- Recognise the equivalence between 0.5, $\frac{1}{2}$ and $\frac{5}{10}$).
- Recognise the equivalence between the decimal fraction and vulgar fraction forms of halves, quarters, tenths and hundredths.
- Perceive, compare and order mixed numbers.
- Relate fractions with the operation of division.
- Calculate parts (halves, thirds, ..., tenths) of shapes or numbers.
- Find number pairs of two-digit numbers that have a sum of 100.
- Add or subtract using number pairs of multiples of 50 with a total of 1000.
- Find and complete the fraction to make a whole, e.g. $\frac{3}{4}$ + ___ = 1.
- Know and fill in multiplication tables for numbers 2, 3, 4, 5, 6, 9, 10 and derive the corresponding facts.
- Recognise multiples of 2, 3, 4, 5 and 10 up to the tenth multiple.
- Add three or four small numbers by finding number pairs with a total of 10 or 20.
- Add two or more multiples of 10 up to 90.
- Subtract near multiples of 10, 100 or 1000 from two-digit, three-digit or four-digit numbers, e.g. 4675 - 58.
- Add two two-digit numbers by choosing an appropriate strategy.
- Subtract two two-digit numbers by choosing an appropriate strategy.
- Add or subtract two three-digit near multiples of 100.
- Add or subtract a single-digit to/from a two-digit or a three-digit near multiple of 10.
- Multiply, using commutativity, if necessary, to calculate the product more easily.
- Multiply a single-digit by a single-digit number.
- Use alternative strategies to check multiplication, e.g. check 9 × 6 by doing 9 × 3 and doubling.
- Understand the effect of multiplying and dividing a number by 10 and 100.
- Find doubles of whole numbers up to 50 and their corresponding halves, as a 2 × operation.
- Add two three-digit numbers by choosing an appropriate strategy.
- Subtract a two-digit number from a three-digit number
- Subtract two three-digit numbers.
- Find the double of two-digit numbers, as a 2 × operation.
- Multiply a single-digit number by a multiple of 10 up to 90.
- Multiply a two-digit number by a single-digit number.
- Divide a single-digit number by a single-digit number.
- Divide a two-digit number by a single-digit number.
- Recognise that some divisions may have a remainder.
- Decide whether to round up or down after division or multiplication to answer a problem and justify the reasoning behind the answer.
- Use fractions to express one part of a set of objects.
- Understand multiplication and division as inverse operations.
- Begin to understand simple ideas of ratio and proportion for length, mass and capacity.

Geometry

- Identify, describe and draw a wider range of 2D shapes including the heptagon.
- Identify, describe and visualize a wider range of 3D shapes including a range of cuboids and the tetrahedron.
- Record results on dot paper.
- Make use of a geoboard to create a wide range of polygons.
- Identify symmetrical from non-symmetrical shapes and regular from irregular shapes and sort them in Venn and Carroll diagram.

- Recognise and draw the symmetry line in patterns or 2D shapes.
- Recall the property of symmetry and the symmetry line in 2D shapes.
- Create 3D shapes from nets and vice versa.
- Search and identify examples of line symmetry in real life and in art.
- Find examples of 2D shapes in real life and in art and describe their attributes.
- Give examples of polygons in real life and in art.
- Give examples of a range of 3D shapes in real life and in art.

- Use a square grid with axes (rows, columns) labelled with numbers or/and letters to indicate and describe the position of a square.
- Use negative numbers to give directions for a new position on a square grid.
- Name the unit for measuring angles as a degree and use the appropriate notation.
- Recognise that a whole turn is 360°.
- Identify a whole turn as four right angles.

- Compare and order angles smaller than 180°.
- Read and describe the angles with 45° and 135° and compare them with right and straight angle.
- Recognise a right angle as an angle of 90°.
- Recognise a straight angle as an angle of 180°.
- Use mathematical vocabulary to give directions for a path on a square grid.
- Propose different paths to reach the same position on a grid.

Measurement

- Use standard metric units of length measurement and their abbreviations (km, m, cm, mm) to estimate measure and record length.
- Use standard metric units of mass measurement and their abbreviations (kg, g) to estimate, measure and record mass.
- Use standard metric units of capacity measurement and their abbreviations (l, ml) to estimate, measure and record capacity.
- Use appropriate standard metric units for estimating, measuring and recording length in mixed units.
- Use appropriate standard metric units for estimating, measuring and recording mass in mixed units.
- Convert mass measurements from mixed units to decimals and vice versa.
- Know the meaning of 'kilo', 'centi', 'milli'.
- Use decimal notation to record mass measurements, where necessary e.g. 1.4 kg.
- Use decimal notation to record capacity measurements, where necessary e.g. 1.8 l.
- Use decimal notation to record length measurements, where necessary e.g. 1.4 m.
- Use intervals and divisions on partially numbered scales to read and record mass measurement.
- Use intervals and divisions on partially numbered scales to read and record capacity measurement.
- Use intervals and divisions on partially numbered scales to read and record length measurement.

- Read the time to the nearest minute on a 12-hour digital clock.
- Read and tell the time to the nearest minute on an analogue clock and place the hands properly.
- Read and write a.m. and p.m. notation on a 12-hour digital clock.
- Refer to everyday activities using a.m. and p.m. notation on a 12-hour digital clock and make the conversion to an analogue clock.
- Make the conversion from an analogue to 12-hour digital clock and vice versa.
- Extract information from a week calendar.
- Create your own week calendar.
- Extract information from a month calendar.
- Extract information from a timetable.
- Create a timetable of your own choosing appropriate time units.
- Calculate the ending time given the starting time and the time intervals across the a.m. and p.m. division.
- Calculate the perimeter of a rectangle with mixed units, e.g. 1 m and 40 cm.
- Draw rectangles, measure and calculate their perimeter using appropriate standard units of length (m, cm).
- Know that the units of measurement for area are square units, e.g. (cm^2).
- Use the appropriate square unit to measure the area of a rectilinear shape.
- Measure the area of a rectilinear shape by counting squares on a square grid.

Data

- Use diagrams, pictograms and bar charts (in different intervals or units) to organise, present, explicate data and answer questions.
- Use tables, frequency tables and tally charts to organise, represent, explicate data and answer questions.

- Use different intervals to reorganise scales and make comparisons.
- Sort data according to two or three criteria using Venn diagrams.
- Sort data according to two or three criteria using Carroll diagrams.

Problem Solving

- Choose and propose the most suitable strategy for addition and subtraction.
- Decide which strategy to follow to solve problems involving addition or subtraction and justify the choice.
- Comprehend common systems of measurement of length, weight, capacity, time and money and use them in real life contexts.
- Check an answer conducting the opposite operation or adding in different order.
- Check the result of subtractions by performing the corresponding addition.
- Use alternative strategies to check multiplication, e.g. check 9 × 6 by doing 9 × 3 and doubling.
- Check the result of a division by applying multiplication.
- Identify differences, similarities or relationships between 3D shapes.
- Identify differences, similarities or relationships between 2D shapes.

- Make general estimations while calculating and then check the answers.
- Create a number story for addition and subtraction given the numbers.
- Decide whether to use multiplication or division to give an answer to a problem and justify the choice.
- Decide which strategy to follow to solve problems involving addition or subtraction and justify the choice.
- Engage in and solve various puzzles and problems.
- Solve word problems by organising data in lists or tables.
- Identify the relationship between numbers in a sequence.
- Recognise simple relationships between shapes.
- Decide whether a statement is always true, sometimes true or never true providing examples or counterexamples.
- Make a hypothesis and check it to see if it is true.

Maths 5
Learning Objectives

Numbers

- Count forwards and backwards in different jumps starting from any given number (positive or negative).
- Recognise the place value of each digit in five-and six-digit numbers.
- Partition any number up to one million into thousands, hundreds, tens, ones and vice versa.
- Read and write decimals with one or two decimal places.
- Identify the tenths and hundredths digit and use decimal notation.
- Differentiate the whole number part from the decimal part.
- Analyse and synthesise a decimal using place value.
- Multiply and divide a number by a multiple of 10 and explain the effect.
- Round any four-digit number to the nearest ten, hundred or thousand.
- Round decimals with one or two decimal places to the nearest whole.
- Arrange numbers in ascending or descending order.
- Use the comparison signs (<, >) to order.
- Compare and order numbers up to one million.
- Compare negative and positive numbers.
- Order positive and negative numbers on a number line or on a temperature scale.
- Complete the missing readings on a temperature scale or a number line extending beyond zero.
- Calculate the temperature after a rise or a fall by counting forwards or backwards.
- Calculate a rise or a fall of temperature by finding the difference.
- Compare and order decimal numbers with one or two decimal places using the (>,<) signs.
- Place decimals on the number line marked off in whole units, tenths or hundredths.
- Continue number sequences.
- Recognise number sequences involving both positive and negative numbers.
- Identify multiples of 5, 10, 25, 50 and 100 up to 1000.
- Recognise odd and even numbers.
- Explore and state general rules referring to sums, differences and multiples of odd and even numbers.
- Recognise equivalence of fractions ($\frac{1}{2}$, $\frac{2}{4}$ and $\frac{4}{8}$, $\frac{1}{3}$ and $\frac{2}{6}$, $\frac{1}{5}$ and $\frac{2}{10}$).
- Recognise the equivalence between $\frac{1}{2}$, $\frac{2}{4}$ and 50%; $\frac{1}{4}$ and 25%.
- Use all three forms (decimals, fractions, percentages) to represent halves, tenths and hundredths.
- Order numbers in decimal, fraction and percentage form.
- Consider tenth as 0.1 or $\frac{1}{10}$. and hundredth as 0.01 or $\frac{1}{100}$.
- Use the number line to order both whole numbers and mixed numbers.
- Compare and order mixed and whole numbers.
- Distinguish an improper fraction from a proper fraction.
- Convert an improper fraction to a mixed number by dividing the numerator by the denominator.
- Relate fractions to division.
- Calculate simple fractions of small quantities.
- Perceive percentage as the number of equal parts in a hundred.
- Use a hundredth-square to visualise the concept of percentage.
- Write a percentage as a fraction where the denominator is 100 and vice versa.
- Find simple percentages of quantities.
- Write halves, tenths and hundreds as percentages.
- Estimate and express proportions of small quantities as fractions.
- Perceive fractions of quantities as parts of a whole.
- Solve word problems involving ratios by scaling up or down (doubling or halving).
- Memorise pairs for 1 with one-place decimals.

- Complete addition and subtraction sentences involving decimals that add up to 1 or 10.
- Explore pairs for 1 or 10 with one or two-place decimals.
- Write and recall the times tables of all numbers up to 10.
- Complete multiplication and division number sentences for all times tables.
- State and use divisibility criteria to answer whether a number is a multiple of 2, 5, 10, 100 or not.
- Recognise multiples up to the 10th multiple.
- Calculate squares of all numbers up to 10.
- Begin to calculate squares of numbers bigger than 10.
- Write a two-digit number using its factors.
- Conclude that squared numbers can be split into a pair of identical factors.
- Add or subtract by counting forwards or backwards in ones, tens, hundreds and thousands.
- Add or subtract by using the near multiples of 10 strategy.
- Add two two-digit or three-digit numbers with or without jottings.
- Subtract two two-digit or three-digit numbers with or without jottings.
- Add a pair of numbers with the same number of decimal places.
- Subtract any pair of numbers with the same number of decimal places.
- Mentally calculate small differences between decimals.
- Multiply multiples of 10 or 100 by a single-digit number.
- Multiply using the near tens strategy.
- Multiply by 100 and then divide by 4 in order to multiply by 25.
- Use factors to multiply (to multiply by 8, multiply by 4 and then double).
- Double any number to 100.
- Double any number with up to two decimal places by doubling the corresponding whole numbers.
- Halve any even number to 200.
- Halve any even number with up to two decimal places by halving the corresponding whole numbers.
- Double any number up to 100 and also multiples of 10 up to 1000 and multiples of 100 up to 10 000 and find the corresponding halves.
- Add more than three two-or three-digit numbers with or without carries (in ones, tens, hundreds and thousands), using a written strategy.
- Solve word problems with decimals (with the same number of decimal places) in the context of money.
- Add two three- or four-digit numbers with or without carries (in ones, tens, hundreds and thousands).
- Subtract two three-or four-digit numbers with or without carries (in ones, tens, hundreds and thousands).
- Calculate with decimals and/or whole numbers to solve simple word problems in context.
- Multiply a three-digit number by a single-digit number.
- Multiply a two-digit number by a single-digit number.
- Divide a two- or three-digit number by a single-digit number.
- Multiply two two-digit numbers.
- Multiply decimals with one decimal place by single-digit numbers.
- Divide a two- or three-digit number by a single-digit number with or without a remainder.
- Perceive remainders as a fraction of the divisor.
- Solve simple word problems including grouping or sharing.
- Differentiate between rounding up (the digit to the right is 5 or greater) and rounding down (the digit to the right is less than 5).
- Determine whether to round an answer up or down depending on the context.
- Start solving simple number sentences involving brackets.
- Understand the role of brackets to order operations.

Geometry

- Sort triangles into equilateral, isosceles and scalene triangles.
- Describe the properties of different types of triangles referring to their sides and angles.
- Identify and name a triangle in different orientations or sizes as equilateral, isosceles or scalene.
- Recognise reflective (mirror) symmetry in regular polygons.
- Recognise rotational symmetry in regular polygons.

- Create symmetrical patterns with two lines of symmetry using a geoboard or squared paper.
- Recognise 3D shapes given their drawings or nets.
- Recognise parallel and perpendicular lines in 2D shapes and images.
- Find examples of parallel and perpendicular lines in the environment.
- Name common shapes that have parallel or perpendicular sides.
- Measure the size of an angle in degrees with a precision of 5°.

- Place a protractor appropriately to measure an angle in degrees.
- Draw an angle given its degrees with the use of a protractor.
- Use appropriate notation for degrees (°).
- Sort angles into right, acute or obtuse angles.
- Recognise that a right angle is 90°, an acute angle is less than 90° and an obtuse angle is greater than 90°.
- Estimate the size of angles as less than a right angle, or greater than a right angle.
- Identify examples of different types of angles in everyday objects or in the environment.
- Identify a pair of angles that add up to 180° on a straight line.
- Calculate the missing angle in a pair of angles with a sum of 180°.

- Recognise that the x-axis is across and the y-axis is vertical on the coordinate grid.
- Read coordinates in the first quadrant.
- Practise plotting coordinates in the first quadrant.
- Recognise that coordinates are pairs of numbers that show position.
- Investigate when a set of 3 coordinates makes a triangle.
- Draw a polygon after reflection using a symmetry line that is parallel or oblique to one of the sides.
- Perceive translation as a movement along a straight line.
- Draw a polygon after translation on a grid.
- Describe the translation of a shape by giving instructions.

Measurement

- Estimate, measure and record capacity using litres and millilitres.
- Use appropriate notation for litres (l) and millilitres (ml).
- Estimate, measure and record mass using kilograms and grams.
- Use appropriate notation for kilograms (kg) and grams (g).
- Use appropriate notation for metres (m), centimetres (cm) and millimetres (mm).
- Estimate, measure and record length using centimetres and millimetres.
- Convert between different capacity units (l-ml).
- Convert between different mass units (kg-g).
- Convert metres to centimetres, metres to millimetres and centimetres to millimetres.
- Compare and order measurements in mixed metric units.
- Round capacity measurements to the nearest whole unit.
- Round mass measurements to the nearest whole unit.
- Round length measurements to the nearest whole unit.
- Identify the number that lies between two unnumbered divisions on a scaled vessel.
- Identify the number that lies between two unnumbered divisions on a mass scale.
- Identify the number that lies between two unnumbered scales on a ruler.
- Read and compare measurements on different scales.
- Draw and measure a line with centimetre or millimetre accuracy.
- Identify units of time (seconds, minutes, hours) and convert.
- Identify units of time (days, months and years) and convert.

- Identify time system formats (12-hour clocks and 24-hour clocks).
- Read and tell time on an analogue clock (12-hour) and a digital clock (12-hour and 24-hour).
- Make transitions from a 24-hour to a 12-hour clock and vice versa.
- Use and complete a 24-hour timetable based on a daily schedule.
- Know and use the notations a.m. and p.m. when necessary.
- Calculate time intervals in minutes or seconds on an analogue clock.
- Calculate time intervals in minutes or seconds using a digital clock.
- Read and use an annual or a monthly calendar.
- Calculate time intervals in days and weeks using the knowledge of days in calendar months.
- Calculate time intervals in months or years.
- Find the perimeter of regular and irregular polygons by measuring the length of the sides using a ruler.
- Calculate the length of a missing side in a polygon, given its perimeter and the other sides.
- Convert lengths into the same unit or use mixed units to calculate the perimeter of a polygon.
- Calculate the side of a regular polygon given its perimeter.
- Use appropriate notation for square centimetres (cm²).
- Calculate the length (or the width) of a rectangle given its area and the width (or the length).
- Perceive the square centimetre as a metric unit of area.
- Calculate the area of a square and a rectangle using a formula.
- Draw a square or a rectangle given its area.

Data

- Collect, record and organise data provided to answer questions.
- Draw conclusions and pose questions based on specific data provided.
- Become familiar with different scaling on the vertical axis, with reference to bar (line) charts e.g. marked off in twos, fives, tens, hundreds.
- Explore the impact of changing the vertical scale on a bar (line) chart.
- Read and interpret a pictogram and a bar (line) chart.
- Recognise bar charts, bar line charts and their basic format (headings, horizontal and vertical axis).
- Draw pictograms and bar (line) charts to display data.

- Create a line graph to show changes of a phenomenon over time.
- Reason for or against the existence of intermediate points in a line graph.
- Name the mode as the number that occurs most often in a set of data.
- Find the mode of a set of data and explain its meaning considering the context.
- Recognise that sometimes there may be more than one mode.
- Apply the concept of mode in various contexts.
- Describe the likelihood of events using appropriate language.
- Explore the concept of likelihood or chance in real life situations.

Problem Solving

- Comprehend common measurement systems for length, weight, capacity, time and money and use them in real life contexts.
- Use all four operations to solve simple or complex word problems.
- Represent a solution on a diagram or a number line.
- Check subtraction using the inverse operation.
- Check addition using the inverse operation.
- Check the answer of a division by applying multiplication.
- Identify relationships between 2D shapes and 3D shapes.
- Estimate the answer of a calculation using approximating methods and then verifying the result.
- Determine whether the outcome of a problem is reasonable.
- Solve simple word problems by conducting calculations in the context of measurement.
- Choose and apply an appropriate strategy to a calculation and justify the choice.
- Engage in and solve various puzzles and problems.

- Derive new data from the existing data to come up with new conclusions.
- Combine information from different domains to solve a problem.
- Solve word problems by organizing data in lists or tables.
- Identify the relationship between numbers in a sequence.
- Describe and continue number sequences.
- Identify the missing elements in a number sequence.
- Describe the rule corresponding to a number sequence.
- Notice similarities or differences among shapes.
- Decide whether a statement is always true, sometimes true or never true providing examples or counterexamples.
- Make a hypothesis and check it to see if it is true.
- Choose appropriate strategies and give reasonable arguments for the choice.
- Solve multi-step word problems by posing sub-questions to be answered.

Maths 6
Learning Objectives

Numbers 📑

- Count forwards and backwards in fractions from any given number.
- Count forwards and backwards in decimals from any given number.
- Recognise the place value of each digit in whole numbers up to one million.
- Recognise the place value of each digit in decimal numbers with up to three decimal places.
- Multiply and divide any whole number from 1 to 10 000 by 10, 100 or 1000 within one million and understand the process.
- Multiply any decimal with 10 and 100 and understand the process.
- Divide any decimal by 10 and 100 and understand the process.
- Explore factors of two-digit numbers.
- Explore common multiples of two or more numbers, e.g. 3 and 5.
- Recall how to round whole numbers to the nearest 10, 100 or 1000.
- Round numbers with two decimal places to the nearest tenth or whole number.
- Make estimates for operations with large numbers.
- Compare and order positive and negative whole numbers to one million.
- Compare positive whole numbers to one million.
- Use the symbols < and > to express inequality, and = to express equivalence.
- Estimate the position of any four-digit number on the number line.
- Compare and order whole and decimal numbers with up to two decimal places.
- Recognise and work with number sequences of whole positive and negative numbers, decimals and fractions.
- Extend number sequences of whole positive and negative numbers, decimals and fractions.
- Use decimals with up to three places to measure length.
- Use decimals with up to three places to measure weight.
- Use decimals with up to three places to measure capacity.
- Identify if a number is odd or even using a range of criteria.
- Articulate general comments and rules about operations with odd and even numbers.
- Identify prime numbers up to 20.
  Search for all prime numbers up to 100.
- Divide a three-digit number by a single-digit number, with or without a remainder (also in the context of money).
- Learn to use the sieve of Eratosthenes.
- Understand the historical origins of our number system and how it evolved.
- Start to connect the squares of numbers with the Pythagorean Theorem visually.
- Calculate tenths and hundredths of quantities.
- Make comparisons of fractions with the same or related denominators, e.g. $\frac{1}{2}$ with $\frac{3}{4}$.
- Recognise the equivalence of fractions.
- Identify and use the equivalence of decimals and decimal fractions.
- Find the position of mixed numbers on a number line.
- Order fractions, whole and mixed numbers and decimals.
- Turn an improper fraction into a mixed number, e.g. ($\frac{5}{4}$ to $1\frac{1}{4}$).
- Simplify fractions ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$, fifths, tens).
- Use division to convert vulgar fractions to decimals.
- Use percentages to express $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{10}$, $\frac{1}{100}$.
- Recognise percentage as parts in every 100.
- Recognise simple percentages of familiar shapes.
- Recognise simple percentages of whole numbers.

- Find percentages in word problems.
- Identify and work with ratio in simple word problems.
- Identify and work with direct proportion in simple word problems.
- Make pairs of one-place decimals totalling 1, e.g. 0.3 and 0.7.
- Recognise and use addition and subtraction facts for numbers to 20.
- Make pairs of two-place decimals totalling 10, e.g. 8.1 and 1.9.
- Make pairs of two-place decimals totalling 1, e.g. 0.29 and 0.71.
- Understand and use divisibility rules of 2, 4, 5, 10, 25 and 100.
- Add or subtract pairs of decimals using place value and number facts, e.g. 0.27 + 0.13.
- Add or subtract two-digit whole numbers using place value and number facts.
- Add or subtract three-digit multiples of 10 using place value and number facts, e.g. 1400 + 3600.
- Add or subtract numbers with one decimal place using near multiples of 1, e.g. 4.7 + 2.4.
- Add or subtract near multiples of 10, 100 or 1000, e.g. 4138 + 5991.
- Add or subtract using adjusting (also in the context of money).
- Use multiplication facts and knowledge of place value to perform mental multiplication and division operations.
- Recognise and multiply easily multiples of 10 and 100, e.g. 20 × 60, 800 × 30.
- Quickly work out the double or half of any two-digit number (whole or decimal), e.g. 64, 6.4, 0.64.
- Divide a two-digit number by a single-digit number, with or without a remainder.
- Add and subtract whole numbers with or without the same number of digits.
- Add two- and three-place decimals with or without the same number of digits or decimal places.
- Add or subtract decimals with or without the same number of decimal places.
- Add and subtract decimals in the context of money.
- Calculate the difference between a positive and a negative integer on a number line or in a real-life situation.
- Calculate the difference between two negative integers on a number line or in a real-life situation.
- Multiply pairs of multiples of 10, e.g. 20 × 30, or multiples of 10 and 100, e.g. 200 × 30.
- Use the distributive property of multiplication to multiply near multiples of 10.
- Multiply by halving one number and doubling the other one, e.g. calculate 25 × 12 = 50 × 6.
- Create new multiplication facts from those already known, e.g. the 12× table from 10× and 2× tables.
- Multiply a number (whole or decimal) with up to four digits by a single-digit number.
- Multiply a number (whole or decimal) with up to three digits by a two-digit number.
- Perform multiplication in the context of money.
- Divide a three-digit number by a single-digit number, with or without a remainder (also in the context of money).
- Divide a three-digit number by a two-digit number with no remainder (also in the context of money).
- Express the result of a division as a mixed number (with divisors of 2, 4, 5, 10 or 100).
- Relate fractions to division.
- Know and apply the arithmetic laws applicable to multiplication, with or without using conventional mathematical terms (commutative, associative or distributive).

Geometry 📐

- Sort different polygons according to their attributes (sides, angles).
- Identify whether a 2D shape is polygon or not.
- Identify and describe 3D shapes using their properties, e.g. faces, edges, vertices.

- Describe the properties of the parallelogram, rhombus, trapezium and other quadrilaterals.
- Sort quadrilaterals according to their parallel sides, equal sides, equal angles.

- Match 3D shapes to their corresponding 2D nets and vice versa.
- Create a 2D net of a 3D shape.
- Estimate and identify acute and obtuse angles.
- Draw and measure angles to the nearest degree with the use of a protractor.
- Use measuring, paper folding or calculating angles in a triangle to identify that the sum of the angles in a triangle is 180°.

- Recall how to read and plot coordinates in the first quadrant.
- Read and plot coordinates from the second to the fourth quadrant.
- Find the position of a polygon after one reflection, when the sides of the shape are not parallel or perpendicular to the mirror line.
- Find the position of a polygon after one translation.
- Find the position of a polygon after one rotation through 90° about one of its vertices.

Measurement

- Use decimals up to three places to read and write length measurements.
- Choose the proper standard unit and use it to measure length.
- Use decimals up to three places to convert any weight unit of measurement (kg and g).
- Use decimals up to three places to convert any length unit of measurement (km, m, cm and mm).
- Use decimals with up to three places to convert different units of capacity (l and ml).
- Understand measurements on different scales, using appropriate measuring tools.
- Draw lines to the nearest centimetre or millimetre.
- Measure lines to the nearest centimetre or millimeter.
- Recognise and use imperial units still in common use, and their equivalents, e.g. the mile.
- Recall and use the units of measuring of time (days, weeks, months, years, decades and centuries).
- Recall and use the units of measuring of time (seconds, minutes and hours).

- Convert one unit of time into another.
- Recall how to tell the time using an analogue or digital 24-hour clock.
- Recall how to make transitions from the 24-hour time system to the 12-hour system.
- Recall how to read and use timetables based on the 24-hour system.
- Recall how to calculate time intervals using digital or analogue clocks.
- Calculate simple time intervals in days, weeks or months by using a calendar.
- Mentally calculate simple time intervals in days, months or years.
- Perceive how the time differs in different time zones in the world.
- Calculate the area of rectilinear shapes by multiplying their sequential sides.
- Count squares to measure or estimate the area of an irregular shape (divided into squares).
- Measure and calculate the perimeter of known shapes, given their sides.
- Calculate the perimeter of simple shapes that can be divided into rectangles.
- Calculate the area of a mixed shape by dividing it into simple shapes.

Data

- Extract, interpret and represent data in tables, graphs, frequency tables and tallies.
- Extract, interpret and represent data in pie charts to solve a problem.
- Extract, interpret and represent data on line graphs to solve a problem (e.g. distance and time).
- Use a ready reckoner to calculate and make conversions between different units of currency.
- Find the mode of a set of data.
- Calculate the range of a set of data.

- Calculate the mean in a set of data.
- Calculate the median in a set of data.
- Differentiate mean from median.
- Investigate the ways statistics are used in everyday life.
- Carry out simple statistical investigations.
- Begin to apply knowledge of percentages in statistics.
- Use probability language to realise concepts of likelihood and risk.
- Use probability language to discuss events with the same likelihood of occurrence.
- Use probability language to characterise events.

Problem Solving

- Consider a variety of strategies to perform an operation.
- Revise mental strategies for all operations.
- Choose the most suitable among different written and mental strategies, to perform calculations that include all four operations.
- Comprehend measurement systems applied in everyday life and use them to make calculations.
- Check addition by adding numbers in a different order.
- Check subtraction using addition.
- Identify relationships between 2D and 3D shapes.
- Make an estimation and check results after calculating.
- Apply a method to carry out a calculation and justify the reasoning behind the choice.
- Analyse existing information to deduce new information.
- Realise the connection between different pieces of information and the interaction between them.
- Analyse, explore and solve number problems and mathematical puzzles using logical reasoning.

- Solve problems systematically by using ordered lists or tables.
- Create general statements using words, letters or symbols to express relationships between numbers.
- Understand and solve word problems, with all four operations and one or more steps.
- Use diagrams or a number line to help solve a word problem.
- Use brackets to show the priority of calculations.
- Use words, symbols and letters to identify relationships between numbers and make general statements (the sum of all angles in a triangle is 180°).
- Calculate distances according to ratio.
- Find percentages or discounts in word problems.
- Identify and work with percentages in simple word problems.
- Make hypotheses and then test and refine them.
- Choose appropriate methods and reasoning strategies.
- Orally justify results or conclusions.

high-quality illustrations to introduce the topic, capture students' interest and motivate mathematical investigation

an introductory question to engage students in the lesson and trigger whole-class discussion

2.6 Let's put them together!

How many apples are there altogether?

keywords highlighted in each lesson

Look!

When we put together, we add.

| 6 | + | 3 | = | 9 |

6 and 3 is 9.

the main mathematical concepts presented through pictorial representations and age-appropriate vocabulary

32

activities that reinforce mathematical skills and acquired knowledge through practice

domain(s) taught in each lesson highlighted

2.6

Activities

1. **Circle the correct number.**

a.   4   +   2   =   **7 / 5 / 6**

b.   4   +   1   =   **6 / 5 / 8**

c.   7   +   3   =   **9 / 8 / 10**

enjoyable cooperative/ individual games, puzzles or cross-curricular activities that promote creative thinking and involve the application of knowledge and skills in different contexts

2. **Count and write the numbers.**

a.   ☐   +   ☐   =   ☐

b.   ☐   +   ☐   =   ☐

c.   ☐   +   ☐   =   ☐

3. **How many balls of play dough are there altogether?**

a keyword list with the significant words of the lesson

Keywords
altogether
put together
add

33

The materials needed for the activities of each unit, accompanied by pictures, are presented at the back of the book.

Classroom materials

Unit 1

A4 paper · Blu-Tack · book · coloured pencils · counters · envelope

interlocking cubes · paint · pencils · play dough · rubbers · school bag

scissors

Unit 2

A4 paper · black sticky tape · coloured pencils · glue · interlocking cubes · paint

paintbrush · pencils · play dough · scissors · straws

Unit 3

A4 paper · bag · balance scales · balloon · book · coloured pencils

counters · funnel · interlocking cubes · jars · pencils · rice

rubbers · set of 3D shapes · tennis ball

Unit 4

black sticky tape · coloured pencils · glue · interlocking cubes · plastic cup · scissors

Unit 5

A4 paper · Blu-Tack · coloured pencils · counters · scissors · set of coins

160 · 161

The key mathematical terms presented with comprehensible, age-appropriate definitions or pictures and examples ensure a gradual development of mathematical terminology.

Glossary

100 square	(number grid 1–100)
2D shape	square, triangle, rectangle, circle, pentagon, hexagon
3D shape	cube, cuboid, sphere, cone, cylinder, pyramid, triangular prism
add	to put numbers or groups of objects together
addition	a number sentence that shows adding e.g. $6 + 3 = 9$
after	The brown canoe is **after** the green canoe.
afternoon	the part of the day between 12 o'clock and about 6 o'clock
altogether	how much of something there is after adding
backwards	in the direction that is behind us
balance scales	a device for measuring how heavy something is
balanced	when the things placed on the two sides of a scales weigh the same

before	The yellow canoe is **before** the green canoe.
behind	The school is **behind** the tree.
between	The bag is **between** the table and the chair.
bigger (for numbers)	more than e.g. 13 is **bigger** than 11.
biggest (for numbers)	the most e.g. 2, 11, 13, 19 19 is the **biggest** number.
block graph	an organised way to show information using blocks
capacity	how much a container can hold
Carroll diagram	a way to sort objects into groups by asking 'Yes' or 'No' questions

	Red	Not red
Car		
Not car		

cent	**cent** coins

164 · 165

20

Practice activities are provided for each lesson of the Student's Book, with a gradually increasing level of difficulty, to reinforce students' understanding of concepts and processes and to help them expand their knowledge. Keys for all the activities of the Workbook are provided in the Workbook Teacher's Edition.

2.6 Let's put them together!

1. How many are there altogether? Write the numbers.

a. [airplanes] + [airplanes] = 9

b. [yellow fish] + [brown fish] = 10

c. + [red fish] = 4

d. [shoe] + [shoes] = 7

2. How many cubes are there altogether? Draw lines to match.

A   B   C   D

6 six   **3** three   **7** seven   **8** eight

3. Count the squares and write the numbers.

a. 1 + 4 = 5

b. 4 + 2 = 6

c. 2 + 5 = 7

d. 5 + 3 = 8

4. How many animals are there altogether? Write the numbers.

4   6

4 + 6 = 10   There are 10 animals altogether.

32   33

A brief introduction to each unit, an overview of each lesson and supplementary information ensure the consistency of the mathematical content and enable teachers to monitor the progression of knowledge throughout the units.

2 Unit map

IN UNIT 2, Ss will deal with the domains of Geometry and Numbers. Ss will recognise three different types of lines. Ss will also recognise common 2D shapes and describe their basic attributes. Then Ss will explore symmetry in pictures through folding and identify odd and even numbers. Finally, Ss will add and subtract through putting sets of objects together or taking them away.

2.1 Lines
In this lesson, Ss will recognise three types of lines: straight, curved and zig-zag.

2.2 Name the 2D shapes
In this lesson, Ss will recognise a circle, a triangle, a rectangle and a square. Ss will recognise their basic attributes; the total number of sides and corners they have.

2.3 More 2D shapes
In this lesson, Ss will recognise a pentagon and a hexagon. Ss will recognise their basic attributes; the total number of sides and corners they have.

2.4 Symmetrical or not
In this lesson, Ss will identify line symmetry through folding paper.

2.5 Even or odd
In this lesson, Ss will recognise and differentiate even and odd numbers according to how objects are paired.

2.6 Let's put them together!
In this lesson, Ss will add by putting together sets of objects.

2.7 Now, let's take away!
In this lesson, Ss will subtract by removing or crossing out objects from sets.

Domain	Prior Knowledge	Learning Objectives	Keywords
Geometry	Ss know some names of common 2D shapes. Ss know some attributes of common 2D shapes.	> Distinguish between straight, curved and zig-zag lines. > Name and recognise common 2D shapes. > Identify the common 2D shapes that form a picture. > Describe common 2D shapes referring to the number of their sides and whether they are straight or curved. > Explore the concept of line symmetry using folded paper. > Distinguish symmetrical from non-symmetrical images by folding. > Identify line symmetry. > Match the symmetrical parts of a drawing.	> straight line > curved line > zig-zag line > 2D shape > square > triangle > circle > rectangle > straight side > corner > curved side > pentagon > hexagon > symmetrical > fold > line of symmetry
Numbers	Ss name, write, recite, compare and put numbers up to 10 in order. Ss know sets of up to 10 objects. Ss find the difference between two single-digit numbers.	> Perceive addition as the act of combining numbers to find the total. > Perceive subtraction as the act of taking away. > Use the addition and equals signs (+, =) to denote addition in number sentences. > Use the subtraction and equals signs (-, =) to denote subtraction in number sentences. > Name the numbers that can be paired as even and the others as odd. > Identify and name even and odd numbers up to 10 (except zero).	> pair > even > odd > altogether > put together > add > take away > subtract

38   39

age-appropriate learning objectives covered in each lesson

a list of the keywords of the lesson to ease lesson planning

materials and resources that students and teachers need throughout the lesson as well as for the activities in the More practice section

a list of students' possible difficulties and/or preconceptions to assist teacher in intervening appropriately

the interconnection between the current lesson, previous lessons and/or other school subjects indicated

an introductory question to capture students' interest and motivate them to explore the picture through whole class discussion

extensive step-by-step guidelines that follow the structure of the Look! section

2.6 Let's put them together!

Learning Objectives
- Perceive addition as the act of combining numbers to find the total.
- Use the addition and equals signs (+, =) to denote addition in number sentences.

Keywords
For the presentation of the keywords, see the guidelines in the TB map.

> altogether   > put together   > add

Materials and Resources
- Number cards
- interlocking cubes (2 different colours), play dough, pencils

Common Student Preconceptions
- Some Ss are familiar with various real-life situations where they have to put things together (e.g. while playing or collecting items).
- Some Ss may use the word add incorrectly, without any mathematical meaning. For example, I add some sugar in my tea.
- Some Ss may not use the symbols (+, =) correctly.
- Some Ss may not identify that the number that shows the total is equal to the number of the last object to be counted.
- Some Ss may have difficulties with additions involving zero.

Cross Curriculum Links (CCL)
- This lesson can be linked with lesson 1.5 from Unit 1, as Ss already know how to count up to ten objects.

LESSON PLAN

How many apples are there altogether?
- Draw Ss' attention to the picture and ask them to say what they can see (a man in a market, red and green apples, oranges).
- Ask Ss the introductory question *How many apples are there altogether?*
- Allow Ss some time to think about their answers.
- Encourage Ss to express their opinions and initiate a short discussion in class.
- Don't correct Ss' answers at this stage of the lesson.

50

2.6 Let's put them together!
How many apples are there altogether?

Look!

When we **put together**, we **add**.

| 6 | + | 3 | = | 9 |

6 and 3 is 9.

32
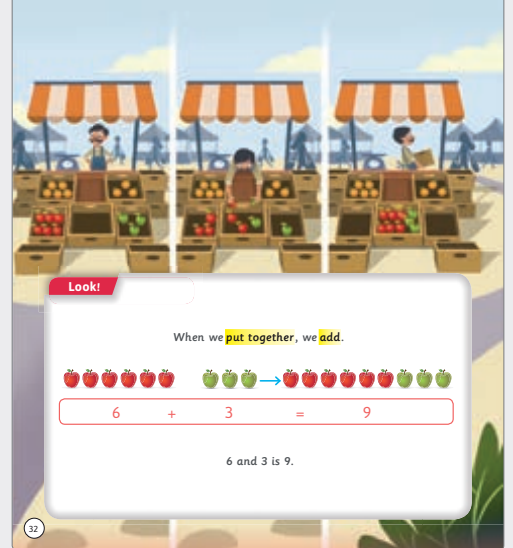
Look!
- Draw Ss' attention to the Look! section.
- Have Ss count the red apples and then the green apples to conclude that there are 6 red apples and 3 green apples.
- Make sure that Ss do not miscount (e.g. Some Ss may count some objects more than once or not count some objects at all.).
- Explain to Ss that they have to find how many red and green apples there are altogether.
- Explain to Ss that we count all the apples together to find how many there are altogether.
- Have Ss count aloud with you.
- Make sure that Ss realise that they should start counting the apples one by one and that the last number they say shows how many apples there are altogether.
- Point out to Ss that there are 9 apples altogether.
- Explain to Ss that when we put together, we add.
- Write '6 + 3 = 9' on the board.
- Explain to Ss that we read (+) as 'and' and (=) as 'is', so we say that 6 and 3 is 9.
- Draw Ss' attention to the picture in the previous section and ask them *How many oranges*

2.6

Activities

1. Circle the correct number.

a. 4 + 2 = **7 / 5 / 6**

b. 4 + 1 = **6 / 5 / 8**

c. 7 + 3 = **9 / 8 / 10**

2. Count and write the numbers.

a. ☐ + ☐ = ☐

b. ☐ + ☐ = ☐

c. ☐ + ☐ = ☐

3. How many balls of play dough are there altogether?

Keywords
altogether
put together
add

33

balls of play dough together and count aloud to find how many balls there are altogether.
• Have Ss repeat the activity until Ss have used all their cards.
• Give Ss some time to do the activity.

More practice

For lower-performing Ss:
• Divide Ss into pairs.
• Provide Ss with pencils.
• Have each pair act out a story problem such as **Kate has six pencils. Lin gives her four pencils. How many pencils does Kate have now?** (Kate has 10 pencils now.).
• Encourage Ss to use their fingers to help them add.
• Give Ss some time to do the activity.
• Have Ss repeat the activity with different numbers.

For higher-performing Ss:
• Provide Ss with interlocking cubes.
• Ask Ss questions involving additions of three numbers such as **Kate has 4 cubes, Lin has 2 cubes and Karim has 3 cubes. How many cubes do they have altogether?** (They have 9 cubes altogether.).
• Encourage Ss to use interlocking cubes to answer.
• Give Ss some time to do the activity.
• Have Ss repeat the activity with different numbers.
• Make sure that the totals do not exceed ten.

> **differentiated activities for lower or higher performing students, designed to enhance cooperative learning**

are there altogether? (There are 8 oranges altogether.).
• Encourage Ss to use interlocking cubes (2 different colours) and ask them questions such as **There are 3 cherries in a basket and 2 cherries in another basket. How many cherries are there altogether?** (There are 5 cherries altogether.).
• Allow Ss some time to think about their answers.
• Make sure that Ss answer correctly at this stage of the lesson.

Activities

1. 🔑 **a.** 6 **b.** 5 **c.** 10
2. 🔑 **a.** 3 + 4 = 7 **b.** 2 + 6 = 8 **c.** 3 + 0 = 3
3. • Divide Ss into pairs.
  • Provide Ss with play dough.
  • Instruct Ss to use their number cards 0-5.
  • Have Ss make a pile using the number cards.
  • Have Ss pick a number card out of the pile, read the number aloud and use play dough to make the correct number of balls as on the number card. Then have each pair put all the

> **keys for all the activities of the Student's Book**

Don't forget to prepare the materials and resources for the next lesson.

> **reminders to facilitate the teaching procedure**

> **brief instructions for the games, puzzles and/or cross curricular activities (the use of materials is often required)**

51

> **thought-provoking questions that enable students to better explore the mathematical concepts of the lesson and which often require justification**

...s have to walk among the desks.

⚠ **Safety rules**
> *Ss should move slowly and calmly.*
• Give Ss some time to do the activity.

> **notes focusing on safety issues for the students**

23

Review activities, designed to assist students in consolidating their learning and reflecting on their knowledge are provided at the end of each unit.

Review

2 Review

1. Tick (✓) the correct painting.

This painting has only 2 curved lines, 1 zig-zag line and 3 straight lines.

| A | B | C |

2. Write the names of the 2D shapes. Then count the sides and the corners.

	Name	Sides	Corners
	t_ _ _ _ _ _ _ _		
	_ _ _ c _ _ _ _ _		
	c _ _ _ _ _ _		
	_ _ q _ _ _ _ _		
	_ _ n _ _ _ _		
	_ _ _ x _ _ _ _ _		

Unit 2 Review

3. Read the sentences and write Yes or No.

| A | B | C |

a. In picture A all ducks are in pairs. _____
b. Picture B is symmetrical. _____
c. Picture C has an even number of ducks. _____
d. Picture A has a line of symmetry. _____
e. Picture C has an odd number of ducks. _____

4. Count and write the numbers.

a. ☐ + ☐ = ☐   b. ☐ + ☐ = ☐

c. ☐ - ☐ = ☐   d. ☐ - ☐ = ☐

Activity 1
- Draw Ss' attention to the pictures and ask them to say what they can see (three paintings).
- Explain to Ss that they have to tick the correct painting.
  ☞ C

Activity 2
- Draw Ss' attention to the pictures and ask them to say what they can see (2D shapes).
- Explain to Ss that they have to write the name of each 2D shape and then count the sides and corners of each 2D shape.

	Name	Sides	Corners
	triangle	3	3
	rectangle	4	4
	circle	1	0
	square	4	4
	pentagon	5	5
	hexagon	6	6

Activity 3
- Draw Ss' attention to the pictures and ask them to say what they can see (three lakes with ducks).
- Explain to Ss that they have to write 'Yes' if they agree and 'No' if they don't agree with the sentences.
  ☞ a. No b. Yes c. No d. No e. Yes

Activity 4
- Explain to Ss that they have to write the numbers in the boxes in order to add or subtract.
  ☞ a. 5 + 3 = 8 b. 4 + 0 = 4 c. 6 − 5 = 1 d. 7 − 7 = 0

Provide Ss with the Assessment Sheet for Unit 2.

54

> detailed instructions on how to approach and carry out each activity of the Review pages as well as keys for all the activities provided at the end of each unit

Assessment pages are provided at the back of the Teacher's Book to help teachers assess students' newly acquired knowledge and for students to evaluate themselves and improve upon their own performance.

Assessment Sheet

Unit 2

Assessment Sheet | Unit 2

1. Draw lines to match.

A	5 straight sides
B	1 curved side
C	4 straight sides
D	6 corners
E	zig-zag line
F	3 corners

2. Tick (✓) the symmetrical octopus.

| A | B | C |

3. Circle the pairs. Then tick (✓) the correct word.

Even ☐
Odd ☐

Assessment Sheet | Unit 2

4. Write the numbers.

a. 6 + 2 = ☐

b. 5 + 0 = ☐

5. Write the numbers, as in the example.

a. 10 - 3 = 7   ☐ - ☐ = ☐

c. ☐ - ☐ = ☐

Activity 1
- Draw Ss' attention to the pictures and ask them to say what they can see (a square, a circle, a pentagon, a triangle, a hexagon, a zig-zag line).
- Explain to Ss that they have to draw lines to match the pictures with the sentences.
  ☞ A. 4 straight sides B. 1 curved side
  C. 5 straight sides D. 3 corners
  E. 6 corners F. zig-zag line

Activity 2
- Draw Ss' attention to the pictures and ask them to say what they can see (three octopuses).
- Explain to Ss that they have to tick the symmetrical octopus.
  ☞ B

Activity 3
- Draw Ss' attention to the picture and ask them to say what they can see (socks).
- Explain to Ss that they have to circle the pairs and then tick the correct word.
  ☞ A circle should be drawn around every pair and one sock will be alone, Odd

Activity 4
- Explain to Ss that they have to write the numbers in the boxes in order to add.
  ☞ a. 6 + 2 = 8 b. 5 + 0 = 5

Activity 5
- Explain to Ss that they write the numbers in the boxes in order to subtract, as in the example.
  ☞ b. 5 − 3 = 2 c. 6 − 6 = 0

Don't forget to prepare the materials and resources for the next lesson.

55

> detailed instructions on how to approach and carry out all the Assessment activities as well as corresponding keys provided at the end of each unit

Resource Sheets are provided to support learning comprehension and serve as a visual support for students.

Resource Sheet | Objects to sort

25

Worksheets, for the differentiated activities of the More practice section, are provided to support understanding of the mathematical concepts and processes and serve as a tool for reinforcement or expansion of knowledge.

3.3 Play with number pairs
Worksheet b **|** More practice

Name: .... Date: ....

1. Look at the picture and write the numbers.

☐ + ☐ = ☐

☐ + ☐ = ☐

☐ − ☐ = ☐

☐ − ☐ = ☐

10

high-quality illustrations introduce the topic, capture students' interest and motivate mathematical investigation

an introductory question to engage students in the lesson and trigger whole-class discussion
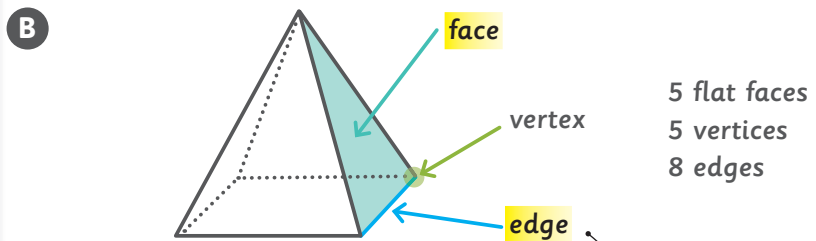
1.9 3D shapes

What 3D shape did Alex make?
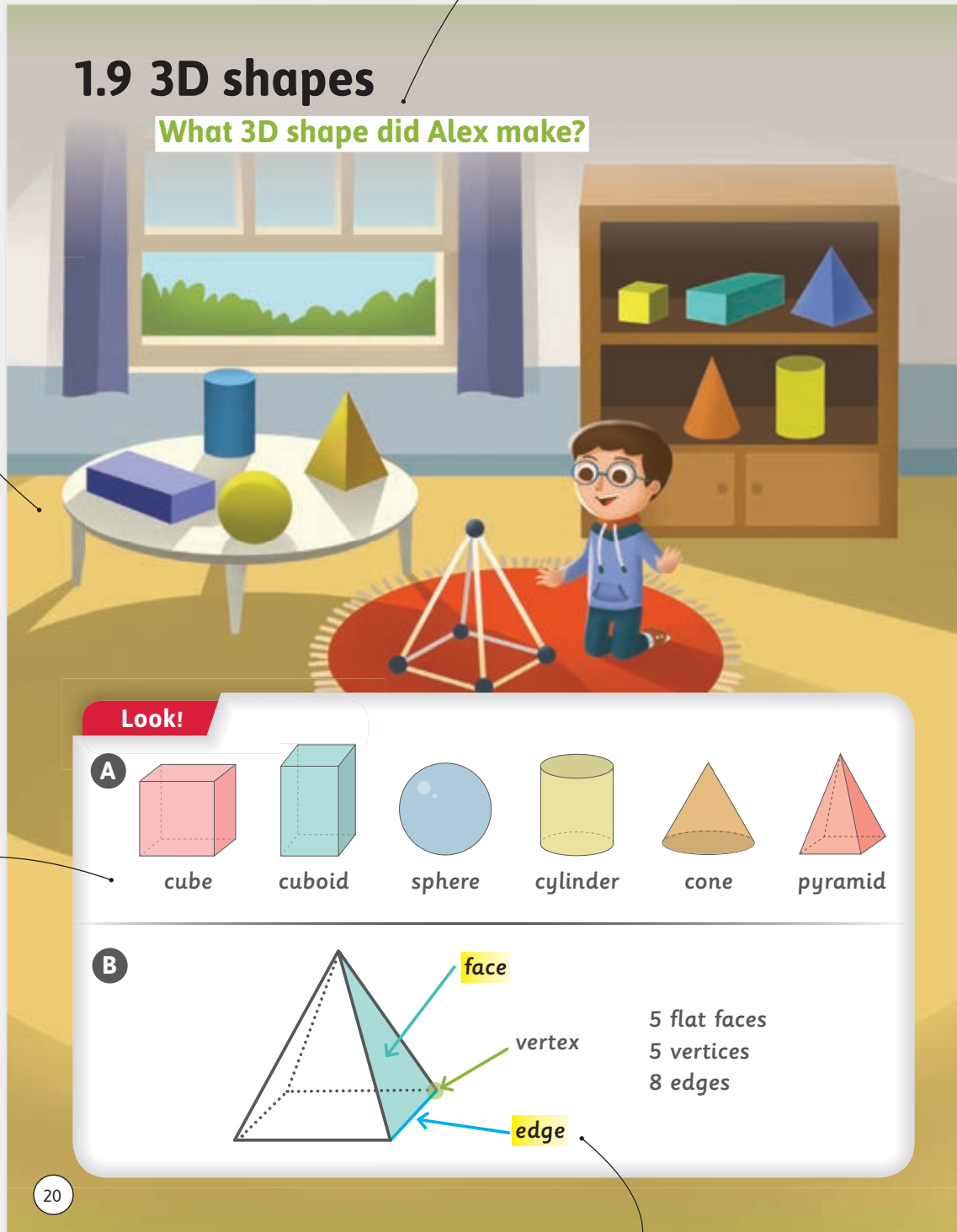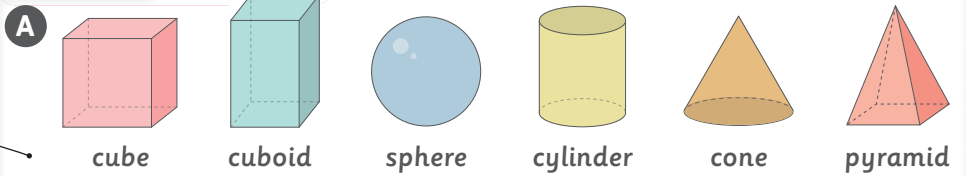
the main mathematical concepts presented through pictorial representations and age-appropriate vocabulary

Look!

A

| cube | cuboid | sphere | cylinder | cone | pyramid |

B

face

vertex

edge

5 flat faces
5 vertices
8 edges

keywords highlighted in each lesson

20

activities that reinforce mathematical skills and acquired knowledge through practice

domain(s) taught in each lesson highlighted

1.9

Activities

1. **Draw lines to match.**

A — cylinder

B — cone

C — cuboid

D — cube

E — sphere

F — pyramid

2. **Match.**

A

B

C
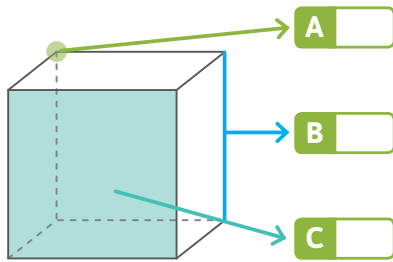
1. face   **2.** edge   **3.** vertex

3. **Make your cube!**

enjoyable cooperative/ individual games, puzzles or cross-curricular activities that promote creative thinking and involve the application of knowledge and skills in different contexts

Keywords
face
edge

21

a keyword list with the significant words of the lesson

27

high-quality illustrations to introduce the topic, capture students' interest and motivate mathematical investigation

domain(s) taught in each unit highlighted

problem-solving methodology, that involves learning through real-life situations and triggers whole-class discussion

keywords highlighted in each lesson

detailed representation of the main concept, accompanied by visuals for deeper comprehension

6.1 Coordinates

A boat is travelling on the open sea when suddenly the captain hears someone calling for help.
He tries to **locate** the man using the monitor.
Help the captain find his position and save him.

Look! We use a **coordinate grid** to show position.

We call the horizontal axis the **x-axis**.

The numbers on the x-axis are **x-coordinates**.

We call the vertical axis the **y-axis**.

The numbers on the y-axis are **y-coordinates**.

4

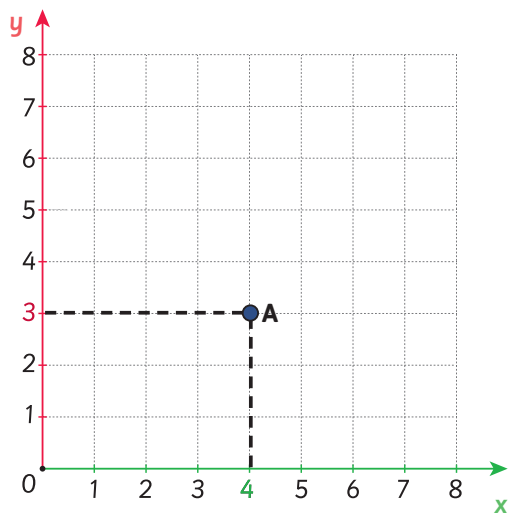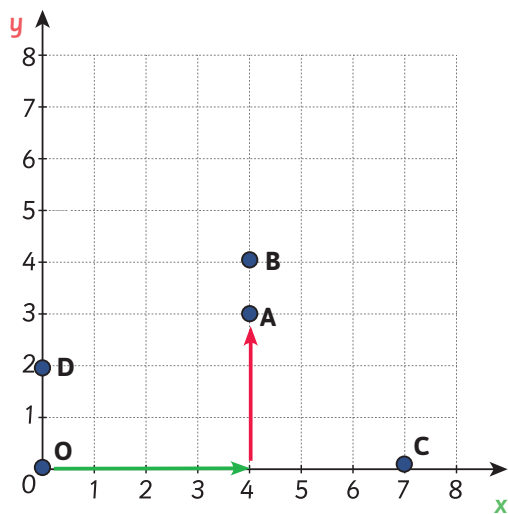domain(s) taught in each lesson highlighted

6.1

We use a pair of brackets to write the coordinates of a point.

We write the x-coordinate first and the y-coordinate second, e.g. (x,y).

When we plot a point, we mark it on the grid.
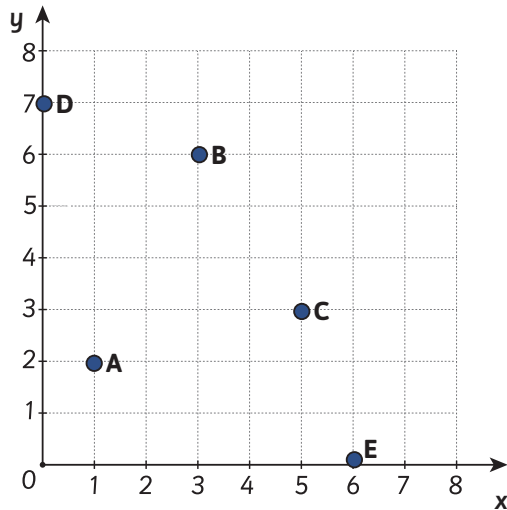
e.g. A(4,3), B(4,4), C(7,0), D(0,2), O(0,0)

5

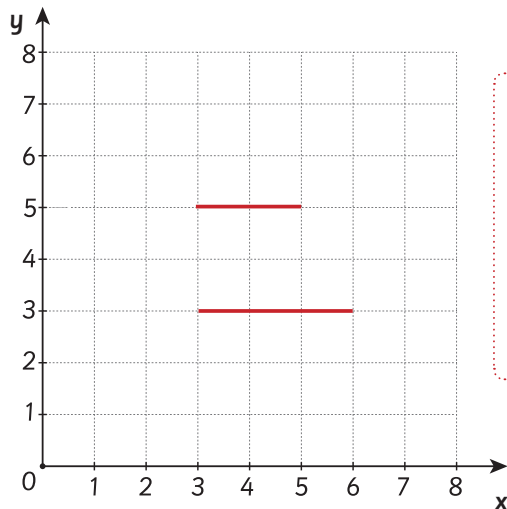activities that reinforce mathematical skills and acquired knowledge through practice

6.1

Activities

1. Tick (✔) the correct answer.

a. The coordinates of point A are:
(1,2) ☐   (2,1) ☐   (2,2) ☐

b. The coordinates of point B are:
(3,3) ☐   (3,6) ☐   (6,3) ☐

c. The coordinates of point C are:
(3,5) ☐   (5,3) ☐   (5,0) ☐

d. The coordinates of point D are:
(0,7) ☐   (7,0) ☐   (7,7) ☐

e. The coordinates of point E are:
(0,6) ☐   (6,6) ☐   (6,0) ☐

2. Plot the points on the grid.

A (5,5)
B (3,8)
C (3,3)
D (1,3)
E (2,1)
F (5,1)
G (6,3)

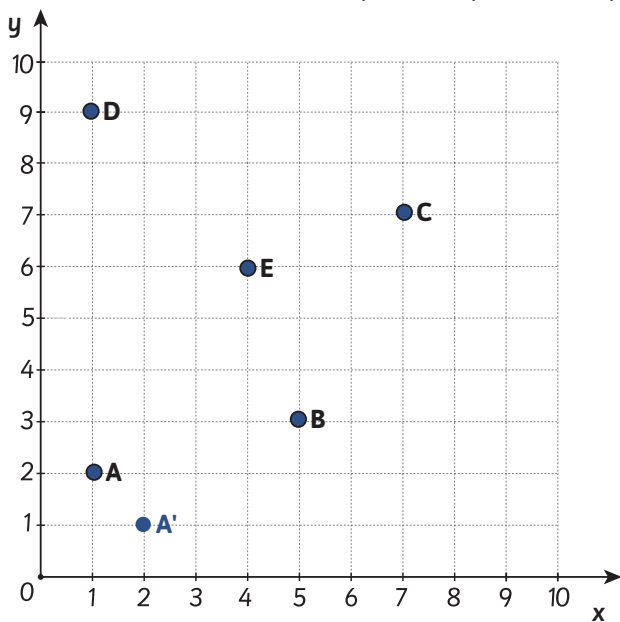Join the points in alphabetical order to discover the picture.

6

guidance for accomplishing the activities successfully

| 12 34 | | | | | **6.1** |

3. Reverse the coordinates of each point and plot the new points, as in the example.

a. A(1,2) → A' (**2** , **1**)

b. B(5,3) → B' (,)

c. C(7,7) → C' (,)

d. D(1,9) → D' (,)

e. E(4,6) → E' (,)

inquiry-based exploration activities and brainteasers that enhance critical thinking and boost appreciation of maths

4. What shape do these points make? Answer. Then plot three points that don't make this kind of shape.
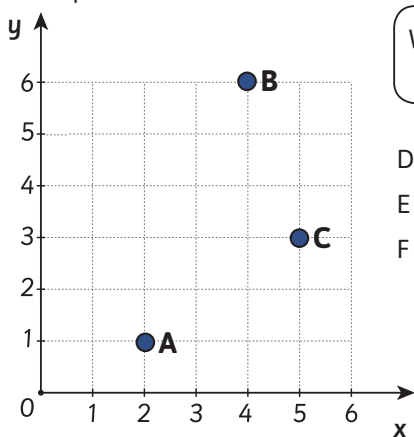
Write the coordinates of these points.

D (,)

E (,)

F (,)

Keywords

locate

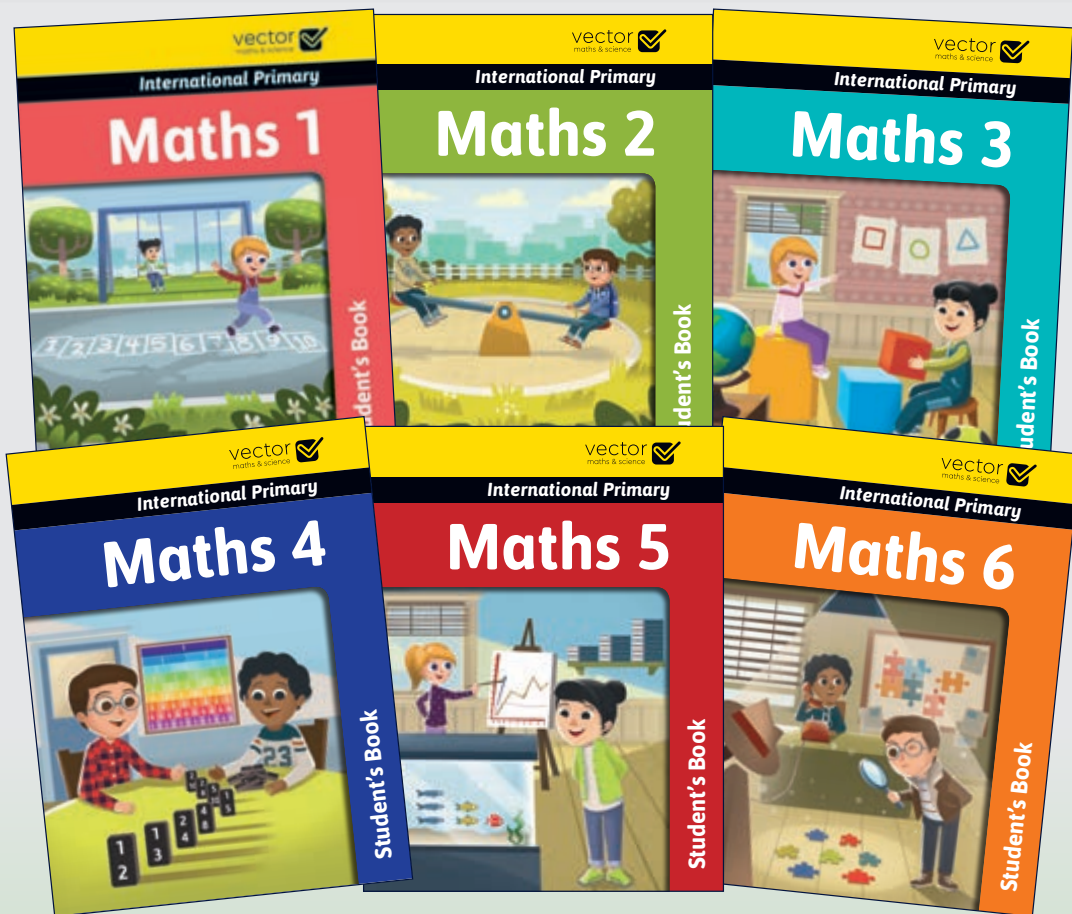coordinate grid

x-axis

x-coordinate

y-axis

y-coordinate

plot

7

a keyword list with the significant words of each lesson

Maths

12
34

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