director’s notes

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Our founder has more than 10 years of international publishing and distribution experience, won international textbook projects, initiated publishing programmes for specific countries and successfully placed textbooks in the prescribed lists of selected countries.

Our flagship Maths SMART and Science SMART series are based on the Cambridge Primary Mathematics and Science curriculum framework respectively, using Singapore’s robust and renowned teaching approach. The TOP Maths and TOP Science series are endorsed by Cambridge International Examinations, further reinforcing the international standing of Alston Publishing House.

Our ELT series such as Best Friends, Elfin, Lollipop, and Active English are based on the Common European Framework Reference (CEFR). These titles are well received in the non-native English speaking countries in Latin America and Asia.

While we take pride in our success and growth in the existing international projects, we are also looking forward to actively enter new territories.

If you would like to partner Alston Publishing House in this endeavor, or is keen to explore the possibilities of Alston representing your products in selected territories, please contact me.

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maths and science
MATHS SMART

What is the Singapore approach to learning Maths?

It refers to the teaching strategies used by teachers in schools in Singapore. This approach allows pupils to master several concepts each year with deeper conceptual understanding through active visualisation and problem solving. Maths SMART adopts the 4 key principles that make this approach so successful.

**Spiral progression of topics**

**Concrete > Pictorial > Abstract approach**

**Key skills development**

**Ample reinforcement of learning**

**Grade 1**
Add a one-digit number to another one or two-digit number

**Grade 2**
Add a one-digit or two-digit number to a one-digit or two-digit number

**Grade 3**
Add two-digit or three-digit numbers to three-digit numbers

We introduce fewer topics at greater depth at each level. At later grades, we build upon previously covered topics to ensure a gradual build-up of concepts and skills.

Use concrete manipulatives and pictorials to teach for deeper conceptual understanding before introducing abstract mathematical symbols.

Use of pictorial representations such as bar diagrams to enable pupils to anchor a concept.

Instill 21st century skills such as problem-solving skills, thinking skills, communication skills and ICT literacy skills in pupils.

Various types of practices at different junctures for pupils to attain mastery and gain exam confidence.

“Learning should not only take us somewhere; it should allow us later to go further more easily.”

15

Handling Data

How can Rita record the number of black and white sheep in the shepherd’s field? How can she organise and display this information clearly?

Learning Outcomes
• Collect, present and interpret data in tally charts, frequency tables, pictograms and bar graphs

Chapter Opener
acts as a trigger introduction to stimulate & encourage active discussions.

A comprehensive Series that builds a strong foundation in Mathematics
✓ Teaches for deeper understanding
✓ Motivates through interesting activities
✓ Develops essential skills
✓ Reinforces and assesses knowledge

Learning Outcomes are clearly highlighted at the beginning of the chapter. Teachers set the expectations at the start of lesson.
Critical thinking and problem-solving questions promote 21st Century Skills.

### Equivalent fractions
**Finding equivalent fractions**

Rita, Tom and Ari each have a similar swiss roll.

- Rita cut her swiss roll into 2 equal parts and ate 1 part.
- Tom cut his swiss roll into 4 equal parts and ate 2 parts.
- Ari cut his swiss roll into 8 equal parts and ate 4 parts.

We can also use diagrams to show the parts that were eaten by the three children.

We can see that the parts that were eaten by all three children are the same length. So, the fractions \(\frac{1}{2}\), \(\frac{2}{4}\) and \(\frac{4}{8}\) are equal.

We call them equivalent fractions.

We shade the parts that each of them ate.

We can see that the parts that were eaten by all three children are the same length. So, the fractions \(\frac{1}{2}\), \(\frac{2}{4}\) and \(\frac{4}{8}\) are equal.

We call them equivalent fractions.

**Who ate more?**

**Apply What You Know**

1. A fraction has a numerator that is 10 less than its denominator. It has an equivalent fraction of \(\frac{7}{9}\). What is this fraction?

**Concrete ➔ Pictorial ➔ Abstract approach?**

Based on the research of psychologist Jerome Bruner, this approach is necessary for pupils to develop an understanding of a concept.

Spiral progression means developing the same concepts from one grade level to the next in increasing complexity and sophistication.

**Emphasis on key terms and ideas** highlights important concepts covered in the chapter.

**Concrete materials and pictorials** helps pupils visualise and understand abstract maths concepts better.

**Different types of activities** promote peer interaction and collaborative learning.

**Critical thinking and problem-solving** questions promote 21st Century Skills.

Every chapter in this textbook is packed with interesting features.

Let us look at these features to see how they can help pupils in their learning journey.

What is the **Concrete ➔ Pictorial ➔ Abstract approach?**

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Teachers use **Do You Remember?** to recall prior knowledge with pupils. Pupils can construct new knowledge based on what they already know.

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Teachers use **Do You Remember?** to recall prior knowledge with pupils. Pupils can construct new knowledge based on what they already know.
To enable teachers to deliver engaging and effective Mathematics lessons, we provide:
- Scheme-of-work
- Chapter overview

**Chapter 2: More about Numbers**

**Chapter Overview**

**Background Information**

In this chapter, pupils deepen their understanding about the symbols and concepts of numbers. They will learn to compare and order numbers to 20. Pupils will then progress to find a number in between two numbers from 0 to 20. They will also learn to compare two groups. They will then progress to comparing the areas. Allow them finding equivalent fractions by comparing the areas to determine if two fractions are equivalent. Get pupils to pair them gain a firmer grasp of the concept of halving.

**Learning Outcomes**

- Identify the concept of equivalent fraction by comparing areas
- Sort collections of fractions
- Write a fraction in its simplest form

**Differentiated Learning Strategies**

For struggling learners:

When working pupils to find halves of the shapes using the sheets of paper, allow pupils to cut out and fold the shapes in B 4.3 (found in the Appendix) to help them gain a firmer grasp of the concept of halving. Then, go through "Presentation 4B: Finding halves of shapes" (Online) to help them find halves using pictorial representations. Print out a copy of slides 3, 5, 8 and 10 for each pupil.

For English Language learners:

Explain to pupils that "halves" is the plural of "half".

**Differentiated Learning Strategies**

For advanced learners:

Guide pupils to explore if they can cut a triangle in half. Distribute Worksheet 4.3: Can triangles be cut in half? (found in the Appendix). Lead pupils to conclude that only equivalent and isosceles triangles can be cut in half.

**Teaching Tips!**

- Differentiated strategies for struggling, advanced, and English language learners
- Think! answers and skills’ elaboration

**Internet Links:**

- http://www.ixl.com/math/grade-1/comparison-word-problems
- http://www.sheppardsoftware.com/mathgames/earlymath/BalloonPopVOrder.htm
- http://www.ixl.com/math/grade-1/comparing-numbers-up-to-10

**Lesson notes in wrap-a-round format**

- Prior knowledge check
- Teaching tips are provided

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SCIENCE SMART

What is the BSCS 5E Instructional Model?

It is based on a learning strategy that draws on pupil’s existing knowledge, beliefs and skills. This constructivist approach to learning involves an active process whereby new knowledge is being built upon what the learner already knows.

Engage & Explore

Ignite curiosity in pupils through chapter openers and trigger activities using inquiry questions.

Get pupils involved! Carry out an experiment or activity that facilitates conceptual change.

Explain

Discuss the texts with pupils to generate an explanation of the phenomenon.

Challenge pupils to extend their understanding of skills and concepts.

Elaborate

Relate the concepts to their relevant experiences!

Evaluate

Link what they learnt to the real-world and encourage independent learning.

Students assess their own understanding in Worksheets and Activities.

—

Do you know that sweating is a way by which your body cools itself? We sweat when our body gets too hot. When sweat evaporates from our skin, it takes away some of the heat. This makes us feel cooler.
**Key Inquiry Question**

What are the physical features of the Arctic habitat?

**Teaching Tip**

Bring a globe to class. Show pupils where the Arctic habitat can be found. It is north of the Arctic Circle, includes the Arctic Ocean, Greenland, Baffin Island, other smaller northern islands, and the far northern parts of Europe, Russia (Siberia), Alaska and Canada.

**21st Century Skill**

Global awareness

---

**Arctic habitat**

The Arctic is extremely cold, snowy and windy. However, there are organisms that can survive these harsh conditions.

The soil in the Arctic is mostly covered with snow or small plants.

**Background**

The characteristics of every animal are different. So are their life cycles. Understanding life cycles can help us explore the variety of life.

All animals go through stages of growth and development from birth to adult. The adult can then reproduce their own young of the same kind to continue the species. These stages repeat to form a life cycle. Pupils will learn about the different life cycles in animals and the concept of heredity in this chapter.

Pupils will develop the process skills of observing, comparing and inferring when they explore how different animals grow and reproduce. They will need to compare and contrast the characteristics of animals with their young to study the effect of genes.

An introduction of animal life cycles can be found in this website.  
**URL 1.1:** http://www.kidzone.ws/animals/lifecycle.htm
The soil in the Arctic is mostly covered with snow or small plants.

Salmon
Walrus
Arctic fox
Lichen

Discover More!
Polar bear
Snowy owl

You have learnt in Grade 3 Chapter 2: Sorting Living Things that fungi feed on dead plants and animals. Fungi break their food down into simpler substances, which can become nutrients in the soil and useful for plants.

Cross Link!

Activity 4: Fussy Earthworms!
Activity 5: Find My Home!

>> Workbook Activity

Skills!

Build Your

Watch the video at Internet Link 2.2 to learn about a special microhabitat. What other microhabitats can you think of? Discuss your ideas with a friend. Then look for a microhabitat in your school compound. What organisms can be found there? Why do you think these organisms live there?

Some small animals, fungi and plants can be found in the leaf litter habitat.

Leaf litter habitat
A habitat that occupies a small area is called a microhabitat.

A leaf litter is an example of a microhabitat. It is made up of dead plant materials such as leaves, bark and small branches that have fallen to the ground. It is usually cool, dark and damp.

A leaf litter is an example of a microhabitat. It is made up of dead plant materials such as leaves, bark and small branches that have fallen to the ground. It is usually cool, dark and damp.

Some small animals, fungi and plants can be found in the leaf litter habitat.

Microhabitat — mah-ky-roh hab-i-tat

Vocabulary

Link

Pupils should recall what they have learnt about fungi in Grade 3 Chapter 2: Sorting Living Things.

Teaching Tip

If the school has a leaf litter habitat in the garden or compound, get pupils to observe this habitat.

Get pupils to complete Activities 4 and 5 in the Workbook.

URL 2.6: http://www.youtube.com/watch?v=RJSa4U5if2A

URL 2.7: http://www.guardian.co.uk/environment/endangered-habitats

Refer to Lesson 2.3 for more information.

21st Century Skills

Apply technology effectively; Be self-directed learners; Global awareness; Environmental literacy

✓ Engages, excites and motivates pupils
✓ Encourages inquiry
✓ Develops essential science skills
✓ Enhances understanding and encourages independent learning
✓ Builds exam confidence
**Key Inquiry Questions**

1. Where does wood come from?
2. Which objects in the classroom are made of wood?
3. Why do you think...?
MATHS CARNIVAL

Singapore approach to learning Maths

Maths Carnival builds a strong foundation in pupils through the use of sound pedagogical principles. Adopting the popular Concrete ➝ Pictorial ➝ Abstract approach widely used in the Singapore mathematics curriculum, pupils are introduced to new concepts through concrete manipulatives and engaging pictorials before they are led to see their abstract symbolic representations. This allows pupils to have a deeper understanding of mathematical concepts, thus motivating them to learn.

WHO
Designed for CBSE-affiliated schools, introduced in India for the 1st time.

WHAT
Using the spiral progression and C➔P➔A learning approach to Mathematics.

HOW
Comprehensive Teacher’s Guides to help teachers facilitate & deliver lessons using C➔P➔A.

Your fun learning zones

Learning Zone
Here, you can learn the key concepts of mathematics with solved examples.

Practice Zone
Here, you can practice questions on the concepts you have learnt.

Vocabulary Zone
Here, you can learn the keywords of mathematics.

Skill Zone
Here, you can develop important 21st century skills & life skills. You can also solve higher order thinking questions.

Testing Zone
Here, you can test yourself on the learnings acquired from the entire lesson.

Fun Zone
Here, you can apply what you have learnt to perform project work and creative activities that will enhance your problem solving skills.

Teachers will provide different activities in class to promote peer interaction and collaborative learning.

Encourage 21st century skills such as problem-solving and critical thinking, communication and value education.

Engage pupils with interesting activities to cater to different types of learners.

Use manipulatives and pictorials to teach for deeper understanding.

Practices and tests act as Formative Assessments given during and after the lessons.
CHAPTER 8
Halves and Quarters

What Will You Learn?
By the end of this lesson, you will be able to:
✔ find and recognise halves and quarters of shapes
✔ identify a whole

Prior Knowledge Check
Prior knowledge of equality:
Assess pupils’ prior knowledge of the concept of equality that they were introduced to Chapter 1. In this chapter, pupils will need to build upon this concept to understand what it means to divide or share out something equally.

Pedagogical Approach
C — Matching pieces or parts of whole in warm-up.
P — Cut pictures and drawings into halves and quarters by drawing lines.
A — Understanding fractions \( \frac{1}{2}, \frac{1}{4} \) and how to write them.

Key Inquiry questions
Direct pupils attention to p. 105 of textbook. Ask pupils if Jimbo has shared the pie equally, if not, ask them to suggest a better way.

Lesson Warm Up
The picture shows a group of four children discussing how to share a pie equally between them.

Prior to this lesson, draw different shapes like circle, square & rectangle on sheets of different coloured paper and then cut each shape out along all its dotted lines. (Note: Each shape must be on a different coloured paper.) Put all the cut-outs in a bag or box.

Recap with pupils some shapes that they have learnt before.

Say: I have some of these shapes in this bag/box. However, they have all been cut into pieces! Each of you will take one piece from the bag/box. Then, at the count of three, you will have to look for your missing partner or partners and form the original shape. Your partner or partners must have pieces of the same colour as you!

Once pupils have found their partners, ask them to check if the whole shape that they have have been cut into equal parts. Direct the class’ attention to the pair of pupils with a circle cut into half. Ask the two pupils to overlap the parts and highlight that they are the same shape and size. Repeat the procedure for another cut-out of a circle cut into quarters.

Are your shapes cut into equal parts? (Get pupils to share their arrangements.)

Online Resources
are available for downloading by teachers!
www.alstonpublishinghouse.com
See p.32, p.54–56
Practice questions appear after every new concept to provide immediate reinforcement and formative assessment.

Contains key concepts of mathematics.

Contains key mathematical terms.

Excites pupils with fun and interesting details about the world around them.

Comprises higher-order-thinking questions for the pupils to apply what they have learnt.

Contains a summary of key concepts and mathematical terms to consolidate learning at the end of every chapter.

Contains riddles and activities to strengthen pupils’ concept.

Maths and Science

Vocabulary Zone

Straight and Curved Lines

Fascinating Facts

Apply What You Know

Practice Zone

Reading Zone

Number name

Place Value - Tens and Ones

Mental Maths

Values in Action

Testing Zone

TEACHER’S CORNER

Refer to Teacher’s Guide for related Activities

Maths Carnival Book 2

Chapter 6:

Shapes and Solids

Carefully selected and graded questions appear at the end of every section to ensure a gradual build-up of skills in pupils.

Pupils will perform hands-on activities using manipulatives facilitated by teachers.

Pupils will be given project assignments by teachers to perform in class or at home. Teachers can access our online portal for additional worksheets, tests and materials at www.alstonpublishinghouse.com

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### Chapter 8: Halves and Quarter

**SCHEME-OF-WORK**

Total teaching time: 8 periods (Each period is about 30 minutes)

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<tr>
<th>Lesson</th>
<th>Teaching Time</th>
<th>Specific Learning Outcomes/Skills</th>
<th>Resources</th>
<th>Materials</th>
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</thead>
<tbody>
<tr>
<td>Chapter Opener</td>
<td>0.5 period</td>
<td>• Develop pupil’s ability to visualise how shapes can be cut into equal parts</td>
<td>TB 1 Ch 8 p. 105</td>
<td>• Cutout of shapes</td>
</tr>
<tr>
<td>Halves of Shapes</td>
<td>2 periods</td>
<td>• Find halves of shapes • Determine if a shape is one half of a whole</td>
<td>TB 1 Ch 8 pp. 106-108</td>
<td>5 sheets of A4 pages</td>
</tr>
<tr>
<td>Quarters of Shapes</td>
<td>2 periods</td>
<td>• Find quarters of shapes • Determine if a shape is one quarter of a whole • Identifying a whole</td>
<td>TB 1 Ch 8 pp. 108-110</td>
<td>• Cutout of shapes, circle, square, and rectangle</td>
</tr>
</tbody>
</table>

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**Extra teaching strategies, differentiated activities and challenging questions are provided.**

---

**Hands-on activities and project work instructions are provided.**

---

**Every page comes with detailed text wrap to help teachers facilitate a lesson and explain concepts.**

---

**Every chapter comes with a suggested Scheme-of-work to help teachers with class preparation.**
SCIENCE CARNIVAL

Adopting the inquiry-based learning approach, Science Carnival uses engaging visuals with experimental activities to arouse pupils' curiosity about the world around them. Starting with exploratory questions, Science Carnival spurs them to investigate a problem by asking questions, collecting and analysing information, generating solutions, making decisions, justifying conclusions and taking action.

WHO
Designed for CBSE-affiliated schools, introduced in India for the first time.

WHAT
Using the inquiry-based learning approach to Science

HOW
Comprehensive Teacher’s Guides to help teachers facilitate lessons using 5E instructional model

Your fun learning zones

Learning Zone
Here, you can learn science concepts.

Experiment Zone
Here, you can perform interesting experiments to predict, observe and explain phenomena in Science.

Skill Zone
Here, you can develop important skills, 21st century skills and life skills. You can also solve HOTS questions.

Practice Zone
Here, you can practise questions on the concepts you have learnt.

RECAP Zone
Here, you can use the mind map to recapitulate the key concepts of the lesson.

Testing Zone
Here, you can test yourself on the learnings acquired from the entire lesson.

Activity Zone
Here, you can perform exciting activities related to the concepts you have studied.

Vocabulary Zone
Here, you can learn the keywords and their meanings.

Fun Zone
Here, you can apply what you have learnt to perform project work. You can also read interesting developments in science.

Explain concepts to pupils with authentic examples.

Evaluate pupils’ understanding with mind maps to help retain concepts.

Engage and explore with pupils using activities and experiments to instill process skills.

Extend pupils’ knowledge by getting them to apply concepts in the real world.
CHAPTER 2
Uses of Plants

Background
Green plants are known as producers. Most of the food which we eat comes from plants. Food grains, fruits and vegetables all come from plants. Plants also give us various food products like oils, sugar, tea, coffee etc. In fact plants are the major source of food for human beings and animals. We also get many other useful things from plants such as wood, medicines, paper etc. Above all, plants provide us with oxygen - the basic need for living things to survive.

Pedagogical Processes
✔ Engaging pupils in discussing the uses of plants.
✔ Observing and classifying the various plant products.

Learning Indicators
✔ Help pupils identify various useful plants, plant parts and plant products.
✔ Investigate the importance of green plants.

Chapter opener
Refer to p. 18. Guide pupils to observe the various plants we see around us, their importance and why we need to take care of them.

Key Inquiry Questions
Why are plants so important to us?

Why are plants so important to us?
Look at these plants. They are very useful to us. Thus, we must take good care of them.

Why do you think plants are so important?

By the end of this lesson, you will be able to:
✔ describe the use of plants as food
✔ state the other uses of plants, such as to make fibres, medicines, perfumes and dyes

Teaching Tips!
Let pupils observe the picture and try to identify as many of the plants as possible. Get them to list down the descriptions of some plants they have seen.
Inform them that we get many useful things from them. They are our source of fruits and vegetables. It is therefore very important to take good care of them.

Extra teaching strategies, differentiated activities and challenging questions are provided in the Teacher’s Guide.

Online Resources are available for downloading by teachers!
www.alstonpublishinghouse.com
See p.32, p.54–56

Sri Lanka Edition is also available.
Chapter Opener
Inquiry questions spark pupils’ curiosity to allow teachers to access their prior knowledge.

What will You Learn?
The learning outcomes listed gives pupils a simple overview of what they will learn.

Skill Zone
Apply What You Know comprises questions that promote higher order thinking skills and 21st century skills.

Values in Action
encourages pupils to be good to others and the things in their environment.

Activity Zone
provides opportunities to apply newly acquired science process skills.

RECAP Zone
enhances pupils’ understanding of each chapter by organising all the key concepts learnt in a visual and easy-to-comprehend manner.

Fun Zone
provides fun and interesting projects for the pupils to carry out in and out of the classroom.

Science Bulletin
focuses on real-life science applications. This inspires pupils and helps them relate what they have learnt to the world around them.

Formative and Summative Assessments are included at the back of the Student Book.

Testing Zone
evaluates pupils’ understanding of the science concepts learnt.

Project Work
creates opportunities for pupils to carry out an activity or experiment.
What will You Learn?
By the end of this lesson, you will be able to:
✔ state the other uses of plants, such as to make fibres, medicines, etc.

Overview of Lesson Plans:

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<tr>
<td>Plants Give Us Food</td>
<td>2 periods</td>
<td>Describe the use of plants as food</td>
<td>Observe and classify in different groups</td>
<td>Environmental literacy</td>
<td>Environment</td>
<td>TB2 Ch1 sp: 18 - 20</td>
</tr>
<tr>
<td>Other Uses of Plants</td>
<td>1 period</td>
<td>State the other uses of plants, such as to make fibres, perfumes and dyes</td>
<td>Observe and classify in different groups</td>
<td>Observing and Communicating</td>
<td>Environment</td>
<td>Fibre, Jute, TB2 Ch1 sp: 18 - 20</td>
</tr>
<tr>
<td>Plants Give Us Medicine</td>
<td>1 period</td>
<td>State the medicinal uses of plants</td>
<td>Observe and collect information</td>
<td>Observing and Communicating</td>
<td>Health literacy</td>
<td>Quinine, Diwane, Malana, TB2 Ch3, p. 21</td>
</tr>
</tbody>
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Section 2: Uses of Plants

How are Plants Useful?

Plants give us Food
Plants are an important source of food for us. They give us vegetables and fruits. We eat the roots, stems, leaves and flowers of some plants.

Vegetables
Vegetables come from plants and they are nutritious. You should eat vegetables daily.

Fruits
Fruits are very tasty and we can eat them raw.

Pulses and Cereals
Pulses like peas, kidney beans and green grams are the edible seeds of plants. Cereals like rice, maize and wheat are obtained from plants. They are also known as food grains.

Plants also give us oil, paper, rubber, perfumes and wood. We get oil from seeds, nuts and also from some fruits. We can use this oil to cook and make scops or shampoos. Paper can be made using bamboo fibres. Rubber trees give us rubber. Some plants like the jenna plant are used to make perfume. Boxes are used to make rose water. We also get wood from plants to make furniture.

Tea and Coffee

Tea and coffee are obtained from plants, even the sugar that is used to sweeten these drinks comes from plants.

Other Uses of Plants

Plants give us fibres. We can make clothes, ropes and mats from these fibres.

Clothes are made from cotton fibres. Ropes and mats are made from jute and coconut fibres.

Plants also give us oil paper, rubber, perfumes and wood. We get oil from seeds, nuts and also from some fruits. We can use this oil to cook and make scops or shampoos. Paper can be made using bamboo fibres. Rubber trees give us rubber. Some plants like the jenna plant are used to make perfume. Boxes are used to make rose water. We also get wood from plants to make furniture.

Project Work

Reusable Bags From Jute

Reusable bags made from fibres like jute can be reused many times. These reusable bags are also known as bags for life.

1. Tick (✔) the correct answer.
   a. Amla is a fruit.
   b. Broccoli is a fruit.
   c. Muskmelon is a fruit.
   d. Alphabet is a fruit.

2. Fill in the blanks.
   a. We get ............... from sugarcane.
   b. Green gram is a ............... food.
   c. We get paper from ............... trees.

3. Write “T” for true statements and “F” for false statements.
   a. We get tea from plants.
   b. Wheat and maize are not cereals.
   c. Tulsi is not a medicinal plant.
   d. Mangos and apples are fruits.
   e. Cabbage is a fruit.

4. Answer the following questions.
   a. Name two vegetables.
   b. Name two pulses.
   c. Name two cereals.
   d. Name a plant that is used to make ropes.

Answer Key
1. a) Amla b) Watermelon c) Plants
2. a) Green gram b) Wheat c) Cabbage
3. a) True b) True c) False d) True
4. a) Amla, Okra b) Kidney beans, Mustard c) Rice, Wheat d) Sugarcane

Resources
- MATHS AND SCIENCE pp. 18 - 20
- Science Bulletin p. 21
TOP MATHS

Endorsed by Cambridge International Examinations for full syllabus coverage, learner support and teacher support

1. Builds a strong foundation of the subject and confidence in pupils with clearly structured content and spiral progression across stages. A wide variety of practice questions are provided in our Textbooks and Workbooks.

2. Covers all the learning outcomes in the Cambridge Primary Mathematics curriculum framework.

3. Adopts a Concrete → Pictorial → Abstract approach, engaging pupils through concrete manipulatives and pictorials to develop a deeper understanding of mathematical concepts.

4. Equips pupils with 21st century skills, with emphasis on problem-solving, critical thinking, creativity, ICT and mathematical literacy by communicating their reasoning.

5. Comes with comprehensive coloured Teacher’s Guides that include engaging and effective lesson plans, schemes of work, and additional resources such as consolidated worksheets, fun & games, and exam practices. The Teacher’s Guides provide a page-by-page guide to our Textbooks and Workbooks to enhance teachers’ delivery in the classroom.

Covers all the learning outcomes in the Cambridge Primary Mathematics curriculum framework.
Chapter Opener

Introduces topics using trigger activities with prompt questions provided to encourage active discussion to allow teachers to elicit pupils’ prior knowledge.

Chapter 2

Fractions

I will learn to:
• Count on and back in fractions
• Find equivalent fractions
• Write a fraction in its simplest form
• Compare and order fractions
• Convert mixed numbers to improper fractions and vice versa
• Simplify mixed numbers and improper fractions and represent them on a number line
• Relate fractions to division

Who coloured more of their squares? Why do you say so?

Learning Outcomes
Appears at the beginning of each chapter to ensure that learning objectives are conveyed and learning is focused.
Use of concrete materials and pictorials
Helps pupils visualise and understand abstract mathematical concepts better

Emphasis on key terms and ideas
Highlights important concepts covered within a chapter

Try This!
Follow-up questions appear after the teaching of every new concept to provide immediate reinforcement to pupils

Hands-On Maths
Contains different types of activities that promote peer interaction and collaborative learning

On Your Own
Ample practice and a gradual build-up of skills at the end of each learning section

Interesting inter-disciplinary facts or trivia related to the concept(s) learnt
Questions that provoke thinking and extend learning

Try This!
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Hands-On Maths
Contains different types of activities that promote peer interaction and collaborative learning

On Your Own
Ample practice and a gradual build-up of skills at the end of each learning section

Interesting inter-disciplinary facts or trivia related to the concept(s) learnt
Questions that provoke thinking and extend learning
Since they have the same area, they are equivalent.

Introduce the concept of equivalent fractions by comparing areas. 

Besides using diagrams to explain equivalent fractions, we can also find equivalent fractions by multiplying the numerator and denominator by the same number. For example, when we want to find the equivalent fraction of \(\frac{1}{2}\), we can multiply the numerator and denominator by 2, giving us \(\frac{2}{4}\). We can also multiply the numerator and denominator by 3 to get \(\frac{3}{6}\), and so on. So, we can conclude that \(\frac{1}{2}\), \(\frac{2}{4}\), and \(\frac{3}{6}\) are equivalent fractions.

Example:

Find an equivalent fraction of \(\frac{1}{2}\).

Answer:

\(\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \ldots\)

Therefore, \(\frac{1}{2}\) is equivalent to \(\frac{2}{4}\), \(\frac{3}{6}\), and \(\frac{4}{8}\).

Try This!

From the picture, how many parts out of these parts are shaded?

So what fraction of your square is shaded?

Ask pupils with short hair, how many parts out there in the square? (it, how many of those parts are shaded?)

Now, cutting along the dotted lines, compose your rectangle with your part of the square.

Which ones have the same area?

1. What have you done?

2. Which ones are equivalent fractions?

Differentiated Learning Strategies

For advanced learners:

- Provide more complex equivalent fractions (found in the Appendix). Ask pupils to cut out the strips and compose the doys to identify other sets of equivalent fractions.

Fraction Development

Say:

\(\frac{1}{2} \) is equivalent to \(\frac{2}{4}\) because they have the same value. 

Work out the examples below.

Equivalent fractions are fractions that have same value. 

We have shaded each of the fractions in the same colour, and the shaded parts are equal.

Therefore, these fractions are equivalent.

Check: 20 of 30 parts shaded in the orange square. 20 of 30 parts shaded in the other square.

Try This!

Change the fractions in Profile 1: Multiply the numerator and denominator by the same number.

Table of Equivalent Fractions

<table>
<thead>
<tr>
<th>Fraction</th>
<th>Equivalent Fractions</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\frac{1}{2})</td>
<td>(\frac{2}{4}) (\frac{3}{6}) (\frac{4}{8}) \ldots</td>
</tr>
</tbody>
</table>

Supporting features for teachers to teach for deeper understanding and to reinforce concepts.

Detailed notes for each page to support teachers' facilitation in classrooms.

Online Resources are available for downloading by teachers!

www. astonpublishinghouse.com

See p.32, p.54–56
TOP SCIENCE

Endorsed by Cambridge International Examinations for full syllabus coverage, learner support and teacher support.

Cambridge Primary Science combines a world-class curriculum with high-quality support for teachers and integrated assessment. The curriculum is dedicated to helping schools develop learners who are confident, responsible, innovative and engaged.

1. Adopts an Inquiry Approach to the teaching and learning of Science, with emphasis given to developing pupils’ inquiry and process skills, as well as critical thinking.

2. Comes with coloured Teacher’s Guides that include lesson plans, schemes-of-work, additional worksheets and test practices. Page-by-page guide aims to help teachers facilitate inquiry-based learning classroom.

3. Process skills are introduced in progression to watch the cognitive development in pupils to maintain psychological consistency. Engaging visuals and experimental activities are used to arouse pupils’ curiosity so as to motivate them to learn.
Chapter Opener

Introduces topics using a dilemma situation with prompt questions to encourage active discussion to allow teachers to elicit pupils' prior knowledge.

Engage: Pupils are given questions to stimulate their thinking and generate interest in the new topic.

Explain: Pupils are taught that temperature changes can affect states of matter.

Explore: Pupils discover new information in a real-life situation.

Do you know why Ari can't see himself clearly in the mirror?

What is covering the mirror and how did it get there?

What’s happening? I can’t see myself clearly in the mirror.

Matter is anything that has mass and occupies space. Properties of matter are given in the table below:

<table>
<thead>
<tr>
<th>Solid</th>
<th>Liquid</th>
<th>Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snow</td>
<td>Ice</td>
<td>Steam</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td>Water vapour</td>
</tr>
</tbody>
</table>

Matter is anything that has mass and occupies space. Properties of matter are given in the table below:

<table>
<thead>
<tr>
<th>Solid</th>
<th>Liquid</th>
<th>Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has a definite shape</td>
<td>Has no definite shape</td>
<td>Has no definite shape</td>
</tr>
<tr>
<td>Has a definite volume</td>
<td>Has a definite volume</td>
<td>Has no definite volume</td>
</tr>
<tr>
<td>Cannot be compressed</td>
<td>Cannot be compressed</td>
<td>Can be compressed</td>
</tr>
</tbody>
</table>

Teaching Tip

Draw out the tables above and get your pupils to complete them.

Key Inquiry Questions

1. What can you see that suggests Ari just had a hot bath?
2. What caused the clouds of water droplets to form?
3. Why do you think Ari can't see himself clearly in the mirror?
4. What caused the substance that covered the mirror to form?

Activity

Take a mirror and breathe on it. Show the pupils what has formed on the mirror.

Ask pupils:
- What can you see forming on the mirror?
- Why does this happen?

Refer to Lesson 4.1 for more information.

21st Century Skills

Think creatively; Communicate clearly; Be self-directed learners

Background

The pupils have learnt in Stage 4 Chapter 3: Solids, Liquids and Gases that matter can exist in three states — solid, liquid and gas. Some examples of different states of water are given in the table below:

<table>
<thead>
<tr>
<th>Solid</th>
<th>Liquid</th>
<th>Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snow</td>
<td>Ice</td>
<td>Steam</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td>Water vapour</td>
</tr>
</tbody>
</table>

Teach pupils that temperature changes can affect states of matter.
Experiment Time! develops pupils’ process skills in carrying out experiments.

Key Inquiry Questions
1. What happens to the water that was used to dissolve the sugar?
2. Why do you get sugar crystals?
3. Give other examples of solution where a solid is left behind when the liquid evaporates.

Common Misconception
Explain to the pupils that even though evaporation and boiling cause the same change in the state of matter from liquid to gas, the process is different. The following table summarises the differences between evaporation and boiling.

<table>
<thead>
<tr>
<th>Evaporation</th>
<th>Boiling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Takes place all the time</td>
<td>Takes place at a fixed temperature (at its boiling point)</td>
</tr>
<tr>
<td>Occurs only on the surface of the liquid</td>
<td>Occurs throughout the liquid</td>
</tr>
<tr>
<td>Very slow</td>
<td>Very fast</td>
</tr>
</tbody>
</table>

When a liquid evaporates from a solution, a solid is left behind.

Activity
Get the pupils to make their own sugar crystals. Prepare the materials and have them follow the instructions.
1. Dissolve 200 g of sugar in 50 cm³ of water in a clean beaker.
2. Tie one end of the string to a clean paper clip, and tie the other end to the middle of the pencil.
3. With the two ends of the pencil resting on the top of the beaker, lower the paper clip into the sugar solution.
4. Allow the beaker to stand for a few days until all the water has evaporated.
5. Watch how crystals grow on the paper clip.
6. You may ask the pupils to add food colourings.

Refer to Lesson 4.3 for more information.

Online Resources are available for downloading by teachers! www.alstonpublishinghouse.com

See p.32, p.54–56

Activity 6: Collision Course!

Process skills: Observing, Analysing, Inferring

Instructions:
You will need two rubber balls and six players for this game.

First, draw a circle with a diameter of about 30 cm on the floor. Sit around the circle as shown below. The players sit opposite each other form a team.

Each team takes turns to roll the rubber balls towards the circle. The team will score one point when the balls collide and remain inside the circle. The team with the highest score after five tries is the winner.
Min wanted to find out whether cotton or plastic is more absorbent. She got a cotton handkerchief and a plastic sheet of the same size and thickness. She rolled them as shown. Then she filled two similar measuring cylinders three-quarters full with water. She placed the rolled-up handkerchief in Cylinder X and the plastic sheet in Cylinder Y. After 30 seconds, Min removed the cotton handkerchief and the plastic sheet.

a. Draw in the diagram on the right what you predict the new water levels would be when the cotton handkerchief and the plastic sheet were removed. 

b. Which material, cotton or plastic, is able to absorb water? Explain how the water levels in 'a' support your answer. 

Cotton is able to absorb water. The water level in Cylinder X has decreased but the water level in Cylinder Y remains about the same. This shows that only the cotton handkerchief has absorbed water.

c. What property does a material possess that makes it unable to absorb water? 

Waterproof
ONWARDS MATHS

ONWARD Maths allows pupils to master the fundamentals of Mathematics by scaffolding learning. It uses a simple and clear language to facilitate learning.

Chapter 7

Fractions

How much of the cake is Ari taking?
Is Min taking the same amount of cake as Ari?

Learning Outcomes
- Recognise that fractions are parts of a whole
- Read and write fractions
- Find halves, thirds, quarters, fifths, eighths and tenths of shapes
- Compare and order two or more fractions

✅ Consists of 1 Textbook & 1 Workbook
✅ Step-by-step lesson delivery notes
✅ Differentiated learning activities
✅ Online support with editable Scheme of Work
These questions assess pupils’ understanding of the concepts and skills learnt so far. They can be assigned as individual class work.

### Skills Check

<table>
<thead>
<tr>
<th>Question</th>
<th>Skill</th>
<th>Textbook pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Count, read and write numbers up to 10 000</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Know the value of each digit in a four-digit number</td>
<td>2</td>
</tr>
</tbody>
</table>

### Hands-On Maths

#### Folding magic

**Materials needed (per pair):**
- 2 folding place value templates (BM 1.1)

**Objective of activity:**
- Use the folding place value template to understand the value of the digits in four-digit numbers

**Activity notes:**
1. Get pupils into pairs and distribute two folding place value templates (BM 1.1 – found in the Appendix) to each pair.
2. Read and explain the instructions to pupils, demonstrating where necessary:
   1. Say any four-digit number.
   2. Have your friend write the value of each digit on one of the templates. Start with the thousands in the first row, followed by the hundreds in the second row, the tens in the third row and the ones in the fourth row.
   3. Get your friend to fold the template in along the dotted lines and out along the solid lines.
   4. Look at the number that is formed. Check that the number is the one you have said.
   5. Now, have your friend say any four-digit number for you to write on the other template. Repeat steps 2 to 4.

### Teacher’s Guide highlights common errors that pupils make so that teachers can address their mistakes.
Shapes

Understanding polygons

Can you name these shapes? How many straight sides does each of these shapes have?

Triangles, squares, rectangles, pentagons and hexagons are all examples of polygons.

A polygon is a closed figure. Its sides are formed by straight lines that do not cross one another.

Triangles, squares, rectangles, pentagons and hexagons are all examples of polygons.

1. Here are some prisms.

   Read the descriptions below. Then write the correct letter in the box below each prism.

   A: I have 12 vertices and 8 faces.

   B: The number of edges I have is 1 more than two times the number of faces that I have.

   C: I have 9 edges and 6 vertices.

   D: I have 6 faces. All of my faces have 4 sides.

2. Which type of prism does each object look like? Fill in the blanks. One has been done for you.

   (a) (b) (c) (d)

   rectangular prism

   When a figure has one or more lines of symmetry, we say the figure is a symmetric figure.

   Patterns with symmetry

   Just like shapes, patterns can also have a line of symmetry.

   Tom hangs different colored T-shirts on the washing line as shown.

   Do you see a pattern?

   Red-blue-yellow, yellow-blue-red

   This is a symmetrical pattern.

   Worksheets follow closely to lessons taught in the Textbook.

   Pupils are encouraged to apply mathematical knowledge on things around them.

   Consolidation Worksheet helps pupils ‘Put Together’ all the learning outcomes.
Solids

Prisms

Look at the solid below. It has only straight edges.

The two opposite faces of the solid above are the same shape and size. The solid above is called a prism.

A triangular prism has 5 faces (3 rectangular and 2 triangular). It also has 9 edges and 6 vertices.

Since the opposite faces of the prism above are in the shape of a triangle, this solid is called a triangular prism.

A rectangular prism has 6 faces. It also has 12 edges and 8 vertices.

Do you notice that prisms are named according to the shapes of their opposite faces?

5. Helen made a paper cutout as shown by folding a piece of paper and cutting it. How many lines of symmetry does the paper cutout have?

6. (a) Cross out the objects that are not symmetrical.
   (b) Draw the lines of symmetry for the objects that are symmetrical.

7. Complete the figures to make them symmetrical. Use the dotted line as the line of symmetry.

THINK!

- Is a pyramid a prism?
- How about a cylinder and a cube?

Online Resources

are available for downloading by teachers!
www.alstonpublishinghouse.com
See p.32, p.54–56
**MATHS SMART**
1. Schemes-of-Work
2. Test Papers with Answer Keys
3. TG’s Blackline Masters and Worksheets
4. Performance Tasks
5. Project Works
6. Flashcards
7. Lists of Weblinks

**SCIENCE SMART**
1. Schemes-of-Work
2. Lesson Plans
3. Consolidation Worksheets with Answers
4. Fun and Games Worksheets with Answers
5. Virtual mind maps
6. Phonetic pronunciations

**MATHS CARNIVAL**
1. Schemes-of-Work
2. Formative Assessments with Answer Keys
3. Summative Assessments with Answer Key.
4. Teacher’s Corner Activity Sheets
5. Teacher’s Corner Project Works
6. Lists of Weblinks

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**TOP MATHS**
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2. Test Papers with Answer Keys
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4. Performance Tasks
5. Project Works
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7. Lists of Weblinks

**TOP SCIENCE**
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2. Lesson Plans
3. Consolidation Worksheets with Answers
4. Fun and Games Worksheets with Answers
5. Virtual mind maps
6. Phonetic pronunciations

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1. Schemes-of-Work
2. Test Papers with Answer Keys
3. TG’s Blackline Masters and Worksheets
4. Performance Tasks
5. Project Works
6. Flashcards
7. Lists of Weblinks

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**Add**

Putting together parts to make a whole.

Example:

![Addition Example Image](image1)

We can add 5 and 2 to get 7.

**Equal**

Having the same amount or value; we can write “equal” as “=”.

Examples:

- Red counters: 
  - 4 red counters: 
- Blue counters: 

The number of red counters is equal to the number of blue counters.

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**TOP Maths Stage 1 – Performance Task 1**

**TOP Maths Teacher’s Guide Stage 3 Chapter 1**

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**TOP Science Stage 1 – Performance Task 1**

**TOP Science Teacher’s Guide Stage 3 Chapter 1**

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**ONWARD Science Stage 1 – Performance Task 1**

**ONWARD Science Teacher’s Guide Stage 3 Chapter 1**

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**Recommended Total Teaching Time:** 13 periods (6 hours 30 minutes)

- Reinforce and consolidate skills and concepts taught in I Know That
- Apply What You Know 21st Century Skills —

  - [estimation](http://www.mathworksheets4kids.com/number-names/numbers-words/3-digit-names.pdf)
  - [Number pairs to 100](http://www.bbc.co.uk/schools/starship/maths/games/place_the_penguin/small_sound/standard.shtml)
  - [ejad.best.vwh.net/java/b10blocks/b10blocks.html](http://ejad.best.vwh.net/java/b10blocks/b10blocks.html)

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**ONLINE RESOURCES FOR MATHS & SCIENCE**

- [Virtual mind maps](image2)
- [Fun and Games](image3)
- [Consolidation](image4)
- [Lesson Plans](image5)
- [Schemes-of-Work](image6)
- [Test Papers with Answers](image7)
- [Worksheets with Answers](image8)

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**INSTRUCTIONS FOR CANDIDATES**

Able to show five ways of

- 20 cards with different
- 9 single cubes
- 10 blocks of 100 cubes
- BM 1.6: Number cards
- BM 1.5: Multiples of 10
- BM 1.4: Number pairs to 10
- BM 1.7: Number lines
- 1 bag of 100 single cubes
- A transparent glass jar
- BM 1.2: Base-100 blocks
- BM 1.1: Blocks I (Appendix)
- Counters or cubes

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*See p.54–56 for more examples of online resources.*
The intensive reading experience provided by the serial story is an opportunity for the teacher to present reading skills. The teacher shows pleasure and interest in the reading, gives a lively oral reading, and thinks aloud about certain aspects of the story.

My name is Lemuel Gulliver. When I was seventeen, I left school. I wanted to travel around the world. In 1699, I left England on a ship to the Far East. The journey was difficult. There were many storms. Some of the men died because of bad food or from fevers. One morning, the winds were very strong and carried the ship the wrong way. The ship hit some rocks. Six of us got into a boat to escape, but the wind turned the boat over. We all fell into the sea. I swam and swam. I did not know what happened to the others. I thought I was lost. I swam to the shore, walked a little, and then fell asleep.
When I woke up, I couldn't move—not even my head. I looked around and saw hundreds of strings across my body. They were everywhere, even in my hair. I heard noises, but could not see anything. Then something moved over my body and up to my face. When I looked, I saw a tiny man. He was the size of my hand. Soon after, others followed him. I shouted, "Hey!" They were all frightened, jumped off me, and ran away. Then some needles hurt my hand. I looked and saw that they were tiny arrows. They were flying everywhere. I was afraid they would hurt my eyes, so I pulled my hand free and over my face. I decided to stay quiet. There were no more arrows. I waited.
Join the two sentences with and.
1. Her hair is black. She has brown eyes.
2. My dog is black. It has shiny fur.

Join the two sentences with but.
1. The cat is small. It has white fur.
2. The whale is big. It is not dangerous.

Write the answers or the questions.
1. A whale breathes air and feeds their babies with milk.
2. Some mammals live in warm places and some in cold places.
3. A whale is a big mammal and it breathes air.
4. A whale lives in the sea, but it is not a fish.
5. A whale is a big mammal and it breathes air.

Follow these steps:
1. Write a title:
   • My Best Friend
   • Kimberly
   (the name of your best friend)
2. Write an introduction:
   My best friend is ____________________
   (the name of your best friend)
3. Describe your friend:
   • How old is your friend?
   • Is he/she big or small?
   • What color hair does he/she have?
   • What color eyes does he/she have?
   • What does your friend like doing?
   • What is your friend good at?
4. Write a conclusion:
   I like my friend a lot. I think he/she is very
   (the name of your best friend).

Join the two sentences with and or but.
1. The dog is small. It has white fur.
   • The cat is black. It has shiny fur.
   • The whale is big, but it is not dangerous.
   • My dog is black, but it has a white ear.

Contractions: And or But
We use conjunctions to join two sentences.
Notice the comma (,) before but.
• A whale is a big mammal. It breathes air.
  A whale is a big mammal and it breathes air.
• A whale lives in the sea. It is not a fish.
  A whale lives in the sea, but it is not a fish.

What would you like?
1. A bag of fruit, please.
   What would you like?
   I'd like a bag of fruit, please.

2. A bag of fruit, please.
   What would you like?
   I would like some fruit.

3. A bag of fruit, please.
   What would you like?
   No, thank you. I don't want any.

4. A bag of fruit, please.
   What would you like?
   Yes, thank you. I would like some.

5. A bag of fruit, please.
   What would you like?
   My, thank you! I don't need any.
Cross-curricular lessons provide opportunities for authentic application of new language.

Writing process instruction supports the needs of young English learners: instruction on the traits of good writing creates a step-by-step writing program across the series.

Contextualized practice allows students to focus on structures.

Guided personalized practice of the new language structure makes new language meaningful.
LOLLIPOP
by Patricia Avila

Join Paty, Tony, and their friends in Lollipop, an innovative and engaging three-level English series for pre-schoolers. This complete program is based on sound pedagogical methodologies and carefully designed to help teachers ensure an effective and steady acquisition of vocabulary and language structures in the classroom.

The Natural Approach
Three stages of pre-production, early production, and speech emergence

Total Physical Response
Uses physical movement to facilitate long-term memory retention of new vocabulary

Sökmen’s Principles for Vocabulary Building
We build a large recognition vocabulary bank by integrating new words with old, providing a number of encounters with a word, promoting a deep level of processing, and facilitating imaging

Lollisteps: Daily Routine for Effective Learning

1. **DO YOU KNOW?**
The aim of this first step is to find out if the students know the concept behind the word. If they do not know the concept in their own language, this exercise should not be presented. For example:
Teacher: “Who is this? Quién es? Who is this?” (“sandwiching” method)
Students: “Mamá!”
Teacher: “Yes! Mother!”

2. **REPEAT AFTER ME!**
Lead the students in a choral repetition drill. Enunciate each word carefully and get the students to repeat after you. Ensure that each word is repeated no more than three times to avoid boredom.

3. **LET’S LOOK FOR …!**
This is a choral drill where students are asked to identify a vocabulary item from several flashcards.

4. **SHOW ME!**
Ask students to come to the front to point to the flashcard you mentioned. For example, say: “Show me mother!” The student will only need to point to the correct flashcard.

5. **WHO/WHAT IS THIS?**
Hold the flashcards in your hands. Show them to the students one by one. Ask them: “Who is this?” or “What is this?” The students will answer as a choral drill.

6. **WHO/WHAT IS MISSING?**
Put the flashcards on the ledge of the board and read the words with the students. Ask the students to cover their eyes, then remove one of the flashcards. Ask the students: “Look! Who is missing?” The students should then study the flashcards carefully and answer.

7. **ARE YOU …?**
Ask one student to come up to the front. Ask the rest to close their eyes. Ask the student to choose a flashcard, then hide it. Get the students to find out which flashcard was hidden. For example:
Student 1: “Are you father?”
Student 2 (the one holding the flashcard): “No.”
Student 3: “Are you sister?”
Student 2: “No.”
Student 4: “Are you mother?”
Student 2: “Yes!”

8. **LET’S COLOR!**
This step consolidates the learning cycle presented up till now. The same drawings as those on the flashcards are used in the book in order to revise the vocabulary taught. The students are free to color the drawings according to instructions given. While the students are busy coloring, monitor the class activity. You may ask individual students: “Who is this?” to ensure they understand the concept behind the word. You may continue with the exercise by changing the instructions to “Now, color father!” and so on.
Lollipop is divided into ten units. Each unit is divided into themes.

Each activity is carefully designed to develop key preschool skills such as critical thinking skills, fine motor skills, and penmanship.

Lollisteps are the backbone of Lollipop. They are activities that will help you present vocabulary in a fun and engaging way with the help of flashcards. Each page will list the Lollisteps that should be carried out during that lesson!

Attractive illustrations stimulate students’ interest and offer coloring opportunities.

Instructions for class activities are clearly stated.

Printable Flashcards present vocabulary in an engaging and effective way that helps develop students’ pre-reading skills.

Online Resources are available for downloading by teachers! www.alstonpublishinghouse.com See p50, p.54–56
Contents provides useful key information about the lesson that teachers need, such as skills, vocabulary, functional language, and materials needed for the lesson.

Lesson Plan provides detailed suggestions for carrying out the activities using daily routines and Lollisteps.

Teacher’s Script provides useful suggestions and prompts for conducting the lesson.

**Lollipop 1 8.1A–8.1B**

**Contents**

- Pages: 146–147
- Phase: ESA (ENGAGE)
- Aim: To identify pets
- Skill Tag: Vocabulary (familiar content)
- Vocabulary: dog, cat, hamster, bird
- Functional Language: This is a cat. Is this a dog? Yes! / No. Is this a cat? No. It’s a bird. What’s this? It’s a hamster.
- Materials: Flashcards: 93, 96, 87, 88
- Homework: Color pages 146–147.

**Notes / Evaluation**

- This is a space for teachers to record feedback, observation, and self-reflection for their own personal and professional development.

**Lesson Plan**

**Warm-Up**

**Daily Routine:**
- Good Morning (song)
- Two Little Fingers (song)
- Days of the Week / What is the Date Today? (song)
- The Alphabet Song (song)

**Lollisteps**

**CLASS ACTIVITY**

Exercise 8.1A (page 146)
- Ask students to open the book to page 146.
- Tell students that they are going to learn about animals that can live in our homes.
- Explain that they are called pets.
- Ask students to point to the dog and repeat after you: “This is a dog.”
- Repeat the same presentation for cat.
- Point to either the dog or cat and ask individual students: “What is this?”

Exercise 8.1B (page 147)
- Ask students to look at page 147.
- Repeat the same presentation for hamster and bird.
- Point to either the hamster or bird and ask individual students: “What is this?”

**Wrap-Up**

- Homework: Color pages 146–147.
- Sing the good-bye song: Skidamarink.

**Teacher’s Script**

**My Pets**

**CLASS ACTIVITY**

Exercise 8.1A (page 146)
- Let’s look at page 146.
- These animals can live in our homes. They are called pets. Do you have pets at home?
- Do you have some pets here? Let’s point to the dog.
- Repeat after me: This is a dog.
- Where is the cat? Let’s point to the cat.
- Repeat after me: This is a cat.
- (Go to individual students.) What is this? (E: This is a dog/cat.)

Exercise 8.1B (page 147)
- Now let’s look at page 147.
- Can you say the hamster?
- Good Repeat after me: This is a hamster.
- Where is the bird? Let’s point to the bird.
- Repeat after me: This is a bird.
- (Go to individual students.) What is this? (E: This is a hamster/field.)

**Wrap-Up**

- For homework, please color pages 146–147.
- Remember to bring your book to the next class.
- Please stand up!
- Let’s sing Skidamarink!
- Thank you! Sit down please!
- Good-bye! See you next class.

**Lollipop 1**

**MONTHLY EVALUATION**

- **STUDENT:**
- **MONTH:**
- **CLASS:**
- **DATE:**

**Identify and Express Feelings**

| 1. I feel happy. (Point to happy.) |
| 2. I feel angry. (Point to angry.) |
| 3. I don’t know. (Point to don’t know.) |
| 4. I don’t care. (Point to don’t care.) |

**Identify and Express Feelings**

| 1. What is this? (Point to cat.) |
| 2. Is it a baby or a cat? (Point to baby.) |
| 3. How do you feel? (Point to happy.) |
| 4. Is it rainy or sunny? (Point to rain.) |
| 5. What is this? (Point to dog.) |

**Identify and Express Feelings**

| 1. What is this? (Point to cat.) |
| 2. Is it a baby or a cat? (Point to baby.) |
| 3. How do you feel? (Point to happy.) |
| 4. Is it rainy or sunny? (Point to rain.) |
| 5. What is this? (Point to dog.) |

**Identify and Express Feelings**

| 1. What is this? (Point to cat.) |
| 2. Is it a baby or a cat? (Point to baby.) |
| 3. How do you feel? (Point to happy.) |
| 4. Is it rainy or sunny? (Point to rain.) |
| 5. What is this? (Point to dog.) |

**Notes for Teachers**

- Pre-production
- Early Production
- Speech Comprehension
Engage, Study, Activate Instructional Model:
Three learning phases that increase the effectiveness of students’ learning by varying the activity type in the classroom.

A & B: ENGAGE
This section engages students’ interest and emotions. New vocabulary or structures are presented through familiar or interesting scenarios.

C & D: STUDY
Here, activities focus on what students have learned previously. Activities may include tracing and matching, penmanship, and coloring exercises.

E & F: ACTIVATE
The interactive and fun activities in this section are designed to reinforce and activate concepts learned. Students use the language learned freely and communicatively.

Cutouts engage the students as they practice language structures. They also develop students’ fine motor skills.
ELFIN
by Elizabeth Baker

Elfin is a 6-level English series for Primary students. It develops the 4 language skills through highly-integrated and communicative lessons. Elfin aims to take learners from Beginners to Pre-Intermediate level (A1 – A2) of the Common European Framework.

Levels 1 & 2
lay a strong foundation in commonly used English phrases.

Levels 3 & 4
students’ vocabulary bank by engaging them in a wide range of interests.

Students will have fun learning through chants, puzzles, and creative writing activities.

Let’s Do It
develops students’ listening skills and reinforces new vocabulary.

Let’s Role Play
encourages students to apply newly learnt sentence structures and conversations in a safe environment.

Guided personalized practice of the new language structure makes new language meaningful.

Theme-based instruction to engage students.

Students learn basic functions, structures and vocabulary for everyday communication.
Deserts

Reading to Learn elaborates on an academic topic, introduce new words. Students need to come back to this text to answer comprehension questions.

Thematic vocabulary is introduced in the Unit Opener. Teachers may use flashcards to aid visual explanation.

Deserts Around the World

Learning Outcomes

• discuss and write about deserts;
• understand the desert's climate;
• discuss and write about what you need in a desert;

Deserts introduces language of academic subjects such as geography, science, and history.

Let's Role Play

Practice the dialogues.

Where is the carousel?

Go straight.

Julie: It's over there. We have to go past the carousel and walk straight.

Sam: Me too! I want to ride on the Ferris wheel. Where is it?

Julie: I love the amusement park!

Practice the dialogue.

The roller coaster.

I also want to take rides on the roller coaster. I also want to eat hot dogs.

Sam: All right, but I want to have ice cream first.

Julie: Let's try the roller coaster first. It's over here, on our right.

Sam: Great! I'm going to have a good time.

Julie: How is the Ferris wheel?
Grammar

Let's Practice

A Look at the example. Then fill in the blanks.

Example:
I wear a green dress.
The lizard wears a green shirt.
We wear green clothes!

1. I ________ flowers.
2. The lizard ________ flowers.
3. We ________ flowers!

B Match the pictures to the sentences.

1. You wear a T-shirt.
2. They like yellow.
3. We are looking at the toys.

Let's Practice

A Look at the example. Then circle the correct words.

Example:
She is cooking.
They are fishing.

1. Pete is / are buying a slice of cake.
2. Mom and I is / are walking to the shopping mall.
3. Kate is / are wearing her new dress.
4. The children is / are looking at the toys.

B Fill in the blanks. Use the words in blue to help you.

1. Jason is __________ at the shoe shop.
2. My brother is __________ to school.

Unscramble the letters to form words. Write them in the blanks.

1. __________
2. __________
3. __________
4. __________
5. __________
6. __________

Listen and complete.

I have a little garden. I dig some holes in the ground with a __________. Then I put __________ in the holes. Sears, little __________ grew above the ground. One day, I found __________ on one of my cucumbers. They were eating the plant! "Oh, no! What should I do?" I asked my father. "Don't worry! That's a good idea!"

Fill in the blanks. Then practice the dialogues.

A: Why don't you grow some flowers?
B: No, I don't like flowers.

A: Why don't you grow some vegetables?
B: No, I don't like vegetables.

A: Why don't you grow some flowers?
B: That's a good idea!

A: Why don't you grow some vegetables?
B: Oh, that's a good idea!

Fill in the boxes. Practice the dialogue.

A: Why don't you go swimming?
B: No, I don't like swimming.

A: Why don't you go shopping?
B: Why don't you grow some flowers?

A: Why don't you go fishing?
B: Yes, that's a good idea.

A: Why don't you grow some vegetables?
B: Okay, I will.

A: Why don't you go swimming?
B: No, I don't like swimming.

A: Why don't you go shopping?
B: Why don't you grow some flowers?

A: Why don't you go fishing?
B: That's a good idea!

A: Why don't you go swimming?
B: Oh, that's a good idea!

Grammar practice — Antonyms

A Pair the words that have opposite meanings.

- live ________
- same ________
- deep ________
- different ________
- large ________
- ask ________
- answer ________
- shallow ________
- die ________

B Fill in the blanks with antonyms of the underlined words. Use the helping words in the box.

- My rabbits are very fat. → My rabbits are very thin.
- My father will buy a car. → My father will ________ a car.
- I begin doing my homework. → I ________ doing my homework.
- My home is close by. → My home is ________ from here.
- I like reading comics. → I ________ reading newspapers.

far ________
sell ________
finish ________
dislike ________

Workbook practice is found at the end of the Student Book to help students retain, understand and apply key concepts.

Supplementary Homework: Photocopiable Worksheets, found at the end of the Teacher's Guide, are additional practice for different ability learners.
B: No, I don't like vegetables.

A: Why don't you grow some flowers?

B: Oh, that's a good idea!

A: Why don't you grow some flowers?
UNIT 5

Summer Vacation

We need to make preparations when we travel. Talk to a partner. What do you have to prepare when you travel to other countries? Replace the words in yellow.

- pack your luggage
- get a passport
- apply for a visa
- make a hotel reservation
- book a flight

What do I have to prepare when I travel?

You have to get a passport.

Before We Start
• What do you do during summer vacations?
• What are your plans for the coming summer vacation?
Vocabulary is taught using visual card, which is more effective than a literal translation from another language structure. Items are arranged in lexical groups and recycled throughout the book.

Reading passages include information, social interaction and literary expressions. The texts progress from controlled to authentic materials across the grades.

**Grammar**

**May/Could (Asking for Permission)**

We use “may” or “could” to ask for permission to do something.

**Formal**

1. May I sit here?
2. Could I sit here?
3. Can I sit here?

**Informal**

1. Can I sit here?
2. May I sit here?
3. Could I sit here?

**Possible Answers**

- Yes, of course.
- No, I’m sorry.
- Sure, no problem.
- Sure, I’ll do it now.
- Certainly.
- No, sorry.
- Yes, of course.
- No, I’m sorry.
- I’m sorry.

**Learning Tip**

The answer to “Could you tell me the time?” is not “yes” or “no.” A possible answer is “It’s 7 o’clock.”

**Questions**

1. Why is an internship a great summer job?
2. Why did Janet choose to do an internship at a hospital?
3. Why was Janet shocked by the conditions in the Nepalese hospital?
4. What is Janet’s wish when she becomes a doctor?

Students are expected to infer grammar rules from example sentences and visual charts. Questions are designed to train students to listen for details accurately.

- Spiral progression of language concept from a personal sphere to authentic and technical terms used in the real world
- Integrated approach to develop listening, speaking, read and writing skills
- Careful recycling of grammar and vocabulary for effective communicative competencies
- Opportunities and support for differentiation in mixed ability classrooms
A Travel Guide

A travel guide introduces famous or beautiful places to visit. Create your own travel guide!

Step 1
Let’s review! Fill in the boxes below.

Step 2
Work in a group of four or five.

Step 3
Choose a city. Do research on the famous/beautiful places in the city. Look for four to five places. Each group member will find out more about each place.

Step 4
Find pictures of the famous/beautiful place and paste them onto the poster paper. You can also design your work on a computer.

Step 5
Write sentences to describe the place. You can also write about what people do there and how to get there.

Step 6
Present your travel guide.

Ways to get to places
•
•
•
•

Places in a city
•
•
•
•
•

Hyde Park

Hyde Park is a very big and beautiful park. There are trees, flowers, and a lake. There is a famous Speakers’ Corner, too. People have picnics at the park.

How to get there:
Take a train to Hyde Park Corner station on the Piccadilly Line.

P O S T  C O D E

UNITED KINGDOM

LONDON
2 0 1 2  •  0 5  •  2 7

W R I T I N G

Look at the chart and write about the places in Stanley’s city.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excuse me, where is the bank?</td>
<td>It is across from the restaurant.</td>
</tr>
<tr>
<td>How do I get to the stadium?</td>
<td>Go straight. Turn left/right. You have to take a train / catch a bus.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Place</th>
<th>Along</th>
<th>Across from</th>
<th>Beside</th>
<th>Between</th>
</tr>
</thead>
<tbody>
<tr>
<td>restaurant</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>post office</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>stadium</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>movie theater</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

REMEMBER TO USE “A” OR “THE” WHEN YOU WRITE ABOUT PLACES.
Get Active
A Travel Guide
A travel guide introduces famous or beautiful places to visit. Create your own travel guide!

Step 1: Let’s review! Fill in the boxes below.

Ways to get to places

Places in a city

Step 2: Work in a group of four or five.

Step 3: Choose a city. Do research on the famous/beautiful places in the city. Look for four to five places. Each group member will find out more about each place.

Step 4: Find pictures of the famous/beautiful place and paste them onto the poster paper. You can also design your work on a computer.

Step 5: Write sentences to describe the place. You can also write about what people do there and how to get there.

Step 6: Present your travel guide.

LONDON
Hyde Park
Hyde Park is a very big and beautiful park. There are trees, flowers, and a lake. There is a famous Speakers’ Corner, too. People have picnics at the park.

How to get there:
Take a train to Hyde Park Corner station on the Piccadilly Line.

Get Active:
Near the end of every unit, students work independently or collaboratively on Get Active assignments.

Get Active assignments:
1. help students develop key skills and generic competencies that prepare them for their future workplaces, e.g., research, presentation, problem-solving, critical thinking, and information and communication technology (ICT) skills;
2. develop soft skills such as teamwork, time-management, and initiative;
3. are open-ended and very versatile, allowing students of all abilities to make an attempt at producing the target language that they have learned;
4. help students to take responsibility for their own learning; and
5. are learner-centered tasks that allow students to tap into their own knowledge, experience, and interests to freely express their ideas and opinions in English.

Online Resources are available for downloading by teachers!
www.alstonpublishinghouse.com
See p50, p.54–56
ONLINE RESOURCES

<table>
<thead>
<tr>
<th>LOLLIPPOP</th>
<th>ELFIN</th>
<th>BEST FRIENDS</th>
<th>ACTIVE ENGLISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Flashcards (Colour &amp; B/W)</td>
<td>2. Alphabets Flashcards</td>
<td>2. Flashcards &amp; Teaching Notes</td>
<td>2. Get Active Handouts</td>
</tr>
<tr>
<td>7. Note to Parents (English &amp; Spanish)</td>
<td>7. Worksheets &amp; Answer Key</td>
<td>7. Interactive Smart Board Software</td>
<td>7. Answer Key to Writing</td>
</tr>
<tr>
<td>8. Songs (Weblinks)</td>
<td>8. Audio Script</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Teacher’s Guide (English &amp; Spanish)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>10. Lesson Plans (English &amp; Spanish)</td>
<td></td>
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</tbody>
</table>

*BSee p.54–56 for more examples of online resources.*
teacher resource
FOSTERING ALGEBRAIC REASONING

- Wide range of anchor tasks and activities for classroom
- Authentic examples of pupils’ work for teachers’ reference

The Importance of Patterns

The ability to recognise patterns forms one of the core activities of Mathematics.

Young children learn to recognise patterns very quickly. Young children recognise the periodic rising and setting of the sun and to associate the rising of the sun with the arrival of the day and the setting of the sun, with the night.

Chapter 2: Developing an Understanding of Arithmetic Structures

Structures

What do we mean by structure in the context of mathematics?

In the physical world, houses, tables, and bridges are examples of structures. For example, a desk has a structure made of tables, wood and glass. The parts are held together by cement, the wood and glass is glued by special adhesives.

In mathematics, an arithmetic expression is an example of a structure. It is made up of numbers held together by any of the four functions of addition, subtraction, multiplication and division. An “expression” will include the name of an expression. The arithmetic expression is the term of the equal sign and the expression to the right of the equal sign. The concept of evaluation is extended to the equal sign. An equality holds if both expressions to the left of the equal sign are identical to each other. Each expression has a numerical value of 18. Because 6 + 6 + 6 = 18 and 6 x 3 = 18 hence 6 + 6 + 6 = 6 x 3.

By applying the concept of balance equation 6 + 6 + 6 = 6 x 3.

Other mathematical structures adhere to certain mathematical laws.

- Commutative law for addition states that addition is independent of order (a + b = b + a).
- Multiplication is independent of order (a x b = b x a).
- Associative law for multiplication states that multiplication is independent of grouping (a x (b x c) = (a x b) x c).
As the world sees an increase in temperature due to global warming, more people are heading to the beach to cool off. Pitching a tent on the beach to camp outdoors for the day or night is becoming increasingly popular. Many people are also discovering that camping on the beach can be an environmentally friendly and cheap way to have fun and take a short holiday closer to home.

In view of this, Adventurous Spirit, a company specialising in the manufacturing of outdoor equipment for adventures and sports, wants to come up with appropriate designs for tents that are saleable and popular with beach-goers. They have invited your team to design and submit a proposal for a 4-man tent that is both cost-effective and marketable.

Task 3
DESIGNING A TENT

Some Considerations about Tent Design

1. The tent must be big enough to house four adults while maintaining:
   - enough clearance to walk inside while maintaining
   - enough space for a haversack belonging to each person
   - enough space for someone to move around in while kneeling down
   - an angle of the sloping face
   - amount of materials used
   - stability of tent

2. What information does your team need?

3. What information does your team intend to use but is not given to you?

4. Questions for students to consider:
   - How long should the pole be?
   - How wide should the tent be?
   - What should the ideal height of the tent be?

5. Note for teachers:
   - Materials that students may consider:
     - steel or aluminum
     - canvas
     - plastic
   - Probes
   - Calculators
   - Measuring tapes
   - Ropes
   - Marking bugs
   - Scissors
   - Protractors
   - Poles
   - Calculators
   - Measuring tapes
   - Probes
   - Scissors

GENERAL NOTES FOR TEACHERS

This task involves designing a tent big enough to house four adults while maintaining:
   - enough space for a haversack belonging to each person
   - enough space for someone to move around in while kneeling down
   - an angle of the sloping face
   - amount of materials used
   - stability of tent
   - enough space for a haversack belonging to each person
   - enough space for someone to move around in while kneeling down

There are a thousand ways to design a tent. The main constraints are weight, space, weather areas, volume, geometry, function, design handling, resistance to wind and rain, and cost. There are a thousand ways to design a tent. The main constraints are weight, space, weather areas, volume, geometry, function, design handling, resistance to wind and rain, and cost.

As with other projects, this task offers exciting platform to expose pupils to authentic tasks, encouraging them to see different ways of mathematical representations and reasoning to appreciate the world around them.

Problem-solving is central to Mathematics learning in any curriculum. Modelling tasks offers exciting platform to expose pupils to authentic tasks, encouraging them to use different ways of mathematical representations and reasoning to appreciate the world around them.
HOW TO SIGN UP FOR ONLINE RESOURCES

1. Visit www.alstonpublishinghouse.com

2. Click on the word “TEACHERS” on the top right corner of the page.

3. Click on “SIGN UP” to register for online access.

4. Teachers will receive a confirmation email once access is granted. Teachers can “LOGIN” with their respective email address and the given password to download resources by clicking on each resource in the last column.
MORE EXAMPLES OF ONLINE RESOURCES

Bar model
A bar model can be used to represent a word problem.
Example:
There are 15 orange ribbons and 8 blue ribbons. How many ribbons are there altogether?

Symmetric figure
A symmetric figure is a figure that has one or more lines of symmetry.
Example:
These are symmetric figures.

Prism
A prism is a solid that has only straight edges. The two opposite faces of the prism are the same shape and size.
Example:
supplementary
Explore general concepts for the four topics in each theme
Type Study for pupils to model after
Boost Creativity
Challenge advance learners
Answer Key provided

Maths Challenge empowers you to find creative and logical solutions for every kind of problem, in school and outside school. Use Maths Challenge to explore the mathematical world by creating and solving equations that represent problems in everyday life.

### Masked Numbers

Find the number represented by , if each shape represents a different number.

1. In the ones place, . What is \( \star + \star \)?
2. The sum of the tens places is a 2-digit number. This can be used to find \( \star \) in the hundreds place. The result of \( \star + \star \) in (1) can be used to find \( \star \). Find the \( \star \) and \( \star \).
3. \( \star \equiv \star \equiv \star \). What is \( \star \)?

### Draw a Picture

There are a total of 5 bicycles and tricycles. If there is a total of 13 wheels, how many bicycles and tricycles are there?

1. Solve the problem.

### Filling the Bathtub

A 20-l bathtub needs to be filled with water by turning on faucet A, which pours 90 ml of water in 2 seconds and faucet B, which pours 190 ml of water in 5 seconds. However, there is a hole at the bottom of the bathtub that drains away 9 ml of water in 3 seconds. How many seconds will it take to fill the bathtub with water?

1. Find the amount of time it takes to fill a 20-l bathtub with water.
2. \( \ast \) children are standing. Some are standing on one leg. If there is a total of \( \ast \) legs on the floor, how many children are standing on one leg?

### Solving through Assumptions

A representative problem that is solved using assumption is the problem of the crane and tortoise. In this problem, the total number of heads and legs are given, and the number of each type of animal needs to be found.

At an animal farm, there are cranes and turtles. When counted, there were total of 8 heads and 18 legs. How many of each type of animal are there?

If it is assumed that all 8 heads are cranes, then the total number of legs should be 12 since each crane has 2 legs. The total number of legs is 18 which is a difference of 6. If 1 crane is changed to 1 tortoise, the number of legs will be increased by 2, or 3 cranes must be changed to 3 tortoises. There are 3 cranes and 3 tortoises.
Unit 1

WHOLE NUMBERS

In this topic, pupils will learn to apply their skills and concepts to analyse mathematical situations, make connections among mathematical ideas and express them logically in the following areas:

• Comparing and ordering numbers up to 100 000
• Four operations of numbers
• Factors and multiples
• Rounding off numbers

Numbers that make sense

Read each problem. Then, place the numbers from the box into the blanks where you think they fit best. Read the problem again and see if the numbers make sense.

1 A teacher bought lollipops for his classes. After giving out lollipops to each class, there were lollipops left.

How would you check that the numbers are in the correct places?

Write a short explanation below.

Right or wrong?

Read each mathematical statement carefully and check if it is correct. Put a tick R in the box if the statement is correct. If it is wrong, put a cross Q in the box and write the correct mathematical statement below.

1 The missing number is 50.

2 48 is the same as 4 ones and 8 tens.

3 Subtract 5 tens and 8 ones from 9 tens. The answer is 4 tens and 1 one.

4 Sandy shared 18 sweets equally with Andy and Mandy. Each of them received 9 sweets.

5 5 fours is the same as 4 + 4 + 4 + 4 + 4.

6 864 has the digit ‘6’ in the tens place and the digit ‘4’ in the ones place.

7 There are 847 marbles in a container at first. Barry then puts 58 more marbles in the container.

8 Alisa has 28 pencils. Beatrice has 15 pencils fewer than Alisa. They have 43 pencils altogether.

9 Whole Numbers

10 The correct subtraction sentence for the picture is 12 – 4 = 8.

11 The missing number in the box is 6.

12 Subtract 3 tens and 6 ones from 9 tens. The answer is 6 tens and 3 ones.

Book A (Covers Primary 1 & 2)
Book B (Covers Primary 3 & 4)
Book C (Covers Primary 5 & 6)

This series aims to deepen pupils’ understanding of mathematical concepts through journal writings and reflecting upon their thinking processes. Pupils clarify their misconceptions by identifying mistakes and communicating their explanations.
1. The sum of two numbers is 168. The larger number is 7 times the smaller number. What is the product of the two numbers?

Answer: $21 \times 147 = 3087$

2. Mrs Alice bought $\frac{2}{5}$ kg of meat and used $\frac{2}{5}$ of it for cooking. How much meat had she left?

Answer: $\frac{10}{21}$ kg

3. A sack contained $\frac{20}{7}$ kg of flour. Bernard repacked the flour equally into 3 bags. How much flour was there in each bag?

Answer: $\frac{20}{21}$ kg

Section A: 1-mark Multiple Choice Questions (Paper 1, Booklet A)

Time allocated: 6 minutes

1. 14 children share 4 pizzas equally. What fraction of the pizza will each child get?

Answer: (a) $\frac{1}{7}$

2. The table below shows the taxi fare charges in a city. How much taxi fare will Indah need to pay if she travels a total distance of 16 km by taxi?

<table>
<thead>
<tr>
<th>Distance (km)</th>
<th>Fare (S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>3.20</td>
</tr>
<tr>
<td>11-20</td>
<td>$0.60/km</td>
</tr>
<tr>
<td>&gt;20</td>
<td>$0.40/km</td>
</tr>
</tbody>
</table>

Answer: $21 \times 147 = 3087$

3. A sack contained $\frac{20}{7}$ kg of flour. Bernard repacked the flour equally into 3 bags. How much flour was there in each bag?

Answer: $\frac{20}{21}$ kg

Section B: 2-mark Short-answer Questions (Paper 2)

Time allocated: 10 minutes

1. The sum of two numbers is 168. The larger number is 7 times the smaller number. What is the product of the two numbers?

Answer: $21 \times 147 = 3087$

2. 10 classmates met together to play a game. Each person shook hands with every other person once. How many handshakes were there altogether?

Answer: 45

3. Mr Goh bought some guppies. When 3 of the fishes died, he bought 5 more guppies. Then he had 24 guppies in the end. How many guppies did he have at first?

Answer: 16

4. 10 classmates met together to play a game. Each person shook hands with every other person once. How many handshakes were there altogether?

Answer: 45

5. Hannah had some guppies. When Hannah gave him the same number of guppies as the number of fishes she had, Mr Goh had 24 guppies in the end. How many guppies did he have at first?

Answer: 20

6. 10 classmates met together to play a game. Each person shook hands with every other person once. How many handshakes were there altogether?

Answer: 45

7. Hannah had some guppies. When Hannah gave him the same number of guppies as the number of fishes she had, Mr Goh had 24 guppies in the end. How many guppies did he have at first?

Answer: 20

Common Mistakes highlight pupils’ misconceptions. They serve as a reminder to pupils to reflect on their workings and thought processes before moving on to the next question. Hints help to scaffold pupils attempting the question. They serve to boost the confidence lower ability students.
States of Matter: Boiling, Evaporation and Condensation

Changes in state
- Matter can change from one state to another when it is heated or cooled. Its state depends on its temperature.
- Matter can undergo a change in state through processes such as freezing, melting, boiling, evaporation and condensation.

Boiling
- Boiling is the process of heating a liquid until it changes to a gas.
- The temperature at which a liquid boils is known as the boiling point.
- The boiling point of water is 100 °C. At this temperature, water continues to boil until all of it changes to water vapour. The water vapour is also at 100 °C, and is known as steam.

Evaporation
- When a liquid gains enough heat to change into a gas (vapour) without boiling, we say that the liquid has evaporated. This process is called evaporation.
- Evaporation takes place all the time in our environment. Unlike boiling, it can take place at any temperature.
- When a liquid evaporates from a solution, a solid is left behind.

Example 1
Ryan and Rita had a spring measuring 20 cm. They each plotted a graph to show how the elastic potential energy of the spring changed as it was compressed more and more.

Let's Think...
- It is important to read the question carefully and note that the 20-cm spring is compressed. The more it is compressed, the more its length decreases. The more it is compressed, the more elastic potential energy it will have. Ryan’s graph shows that as the length of the spring increases, the elastic potential energy increases. This is incorrect. The spring was compressed and not stretched. On the other hand, Rita’s graph correctly shows that the shorter the length of the spring, the more the elastic potential energy it has.

Answer:
- Ryan’s graph is incorrect. If the spring is compressed, its length becomes shorter and it has more elastic potential energy.

4.	Anna is riding a bicycle.

Test Yourself!
1. Draw lines to match the phrases and complete the sentences correctly. [3]
   - A force is a ____________________________
   - A pull makes things ______________________
   - A push makes things ______________________

2. Each of the pictures below shows a push or a pull. Fill in the blanks with ‘Push’ or ‘Pull’ next to them. [5]

3. Anna and Betty are playing tug of war. [2]
   - Anna is pulling the rope. [1]
   - Betty is pushing the rope. [1]
ALL YOU NEED TO KNOW: PHYSICS FOR GCE ‘O’ LEVEL

Also available for Combined Science(Physics)

Includes Tips on Practical Skills:
✓ Identify the aim of experiment
✓ Precision to how many decimal places when recording measurements
✓ How to tabulate results
✓ How many decimal places to leave my calculation in
✓ How to plot a graph and interpret the relationship
✓ Identify errors and limitations of experiment

13 LIGHT

INTRODUCTION

Questions in this section are reflections of light which may involve drawing mirror images and constructing ray diagrams. Occasionally, students are expected to know where images are for single or multiple mirrors.

Questions on the refraction of light can be calculation-based or drawing. The use of the trigonometrical function ‘sin’ and its reciprocal function ‘cosec’ are often the cause of errors. Frequently, questions test on the concept of critical angle, as well as on light rays that travel along the normal.

Question involving converging lenses are usually on one of the six ray diagrams for the thin converging lens. Students must be familiar with the ray diagrams, as well as memorise shortcuts to handle MCQ questions quickly. Do note that the working principle of a lens is refraction, so questions can involve both refraction and refraction of light.

Finally, typical questions involving diverging lenses are on the action of diverging lens on a beam of light.

LIGH T: BASIC INFORMATION

• Light travels in straight lines.

![Figure 13.1 An experiment to show that light travels in straight lines](image)

• The speed of light is 3 x 10^8 m/s in a vacuum.

• Parallel light rays from a source are diverging.

• Light rays from a plane source are diverging.

• Light rays can be represented by arrows.

![Figure 13.2 Representing light rays](image)

QUESTIONS

Section A

1. A light P produces a shadow such that

   a. B is the shadow head
   b. C is the shadow foot
   c. D is the shadow head
   d. E is the shadow foot

2. A light P produces a shadow such that

   a. B is the shadow head
   b. C is the shadow foot
   c. D is the shadow head
   d. E is the shadow foot

3. Which of the following shows the reflection of the image of the right angle? (a) a) b) c) d)

4. Which of the following is the correct ray diagram for a lens?

   a. B
   b. C
   c. D
   d. E

5. Which of the following shows the reflection of the image of the right angle? (a) a) b) c) d)

6. Which of the following objects is the most stable?

   a. A
   b. B
   c. C
   d. D

7. The shadow under the ruler is in equilibrium. Find its mass on ...

   a. 30 N
   b. 40 N
   c. 50 N
   d. 60 N

8. A thin glass slab is placed on a table.

   a. a)
   b. b)
   c. c)
   d. d)

9. A pen P rests on a wheel (radius R) and a thin strip T is

   a. 30 m
   b. 40 m
   c. 50 m
   d. 60 m

10. A toy car F rests on a wheel (radius R) and a thin strip T is

    a. 30 m
    b. 40 m
    c. 50 m
    d. 60 m

Figure 9. 1 How conduction takes place in a solid

Clarify Your Question...

Direction of conduction

Clarify Your Question...

Direction of conduction

09 Transfer of Thermal Energy.indd   96 19/3/13   12:06 PM

Figure 9. 3 Applications of conduction

Identify the aim of experiment: The base of the saucepan is made of metal as metal is a good conductor of heat. This will enable heat to be conducted from the heat source (fire) to the food in the pan. [1] This will ensure that the thermal energy from the fire (heat source) will be conducted quickly to the food in the pan. [1]

Solution

The base of the saucepan is made of metal as metal is a good conductor of heat. This will enable heat to be conducted from the heat source (fire) to the food in the pan. [1] This will ensure that the thermal energy from the fire (heat source) will be conducted quickly to the food in the pan. [1]
COMPREHENSION SKILLS: A GUIDE FOR LOWER/UPPER SECONDARY

This Guide will allow pupils to master skills and strategies to conquer Comprehension! Master the skills in reading passages and visual texts.

Skills and Strategies

Visual
What characters do you see?
What was one of them doing?

Verbal
What do you think will happen after Darren wakes up?

FOCUS 3: Visual and Verbal Support for Significant Information

Review the skills and strategies you have learnt in Chapters 1, 2 and 3 before you attempt

This Guide will allow pupils to master skills and strategies to conquer Comprehension!

Commonly asked questions:

• identifying target audience and grasping the intent of the text
• responding to headlines
• using visual and verbal support to understand significant information in the visual text

To answer questions on visual text comprehension, you have to:

• identify the target audience
• grasp the intent of the designer
• pay attention to features in the text such as the font size, arrangement, framing of the images and their association with one another
• understand how the images work with the words to support significant information in the message of the visual text

Predicting

Good readers think actively as they read. They use their experiences and knowledge of the world, vocabulary, language structure, and reading strategies to make sense of the text and know how to get the most out of it. For example, when they read the title or introduction of an article, they start making predictions — thinking about what will appear in the article.
How to make an omelette

First, break two or three eggs into a bowl.
Then beat the eggs lightly.
Then add water and season with salt and pepper.
Next, heat the pan.
Next, melt some butter in the pan.
Next, pour the mixture into the pan.
Then stir and mix lightly.
Finally, fold the omelette.

Words in the Story
Read the story again and complete the sentences.
1. Then __________ water and season with salt and pepper.
2. Next, heat the __________.
3. Next, __________ the mixture into the pan.
4. Finally, __________ the omelette.

Grammar in the Story
Circle the 7 articles in the story.

Reading Review
Circle the letter of the best answer.
1. What is this story about?
   a. How to clean a pan
   b. How to bake bread
   c. How to ride a horse
   d. How to make an omelette
2. What does the speaker do first?
   a. Heat the pan
   b. Clean a bowl
   c. Fry eggs
   d. Break eggs into a bowl
3. Which ingredient is not used in the omelette?
   a. Eggs
   b. Salt
   c. Lemons
   d. Butter
4. Why does the speaker use salt and pepper?
   a. To melt the butter
   b. To heat the pan
   c. To season the omelette
   d. To fold the omelette
B. Circle the correct word in the bracket and fill in the blank with a word from the box. The first one has been done for you.

1. My mother is reading a book.

2. They are eating lunch.

3. I am running.

4. My family and I are at the beach.

C. Write the correct word from the box in the imperative. The first one has been done for you.

1. ( Fight / Don't fight )!

2. ( Cheat / Don't cheat )!

3. ( Don't cry )

4. ( Don't sit there )

D. Fill in each blank with a present participle of the word in the box.

1. The skirt is ( wear / worn ) by Nancy.

2. The water is ( drunk / drink ) by Tom.

3. The wall is painted by Dad.

4. The painting was ( draw / drawn ) by Sam.

B. Circle the correct word or words. The first one has been done for you.

1. It ( is / are )

2. He ( is / are )

3. I ( am / is )

4. She ( is / are )

C. Match each of the following. The first one has been done for you.

A. Add -ing to each verb. The first one has been done for you.

1. eat ( eating )

2. sit ( sitting )

3. jump ( jumping )

4. talk ( talking )

5. dance ( dancing )

D. Fill in each blank with the correct form of the verb in the brackets. The first one has been done for you.

1. The party was great! The food was ( make ) by Sam. The songs were ( sing ) by Lucy and Jack. The gift box was ( open ) by Ann. We all enjoyed the party!
Lastly, to apply the grammar point
Focus shifts to usage of grammar rule

Learners are introduced to a concept

Read the passage and answer the questions that follow.


I’m African American. My father was from Kenya. My mother was from Kansas, USA. My father went to Africa and didn’t come back. My mother lived in Indonesia, I lived with my grandparents in Hawaii.

I left Hawaii and studied in New York. Then I worked in Chicago.

There were many poor people there. I ( ) happy with that. I thought, “I can do something for them.” So, I studied hard and entered Harvard University. I studied law and helped many poor people.

More and more people needed my help. I thought, “I can be president. Then I can help more people.” I worked hard and I became president in 2008. I will try to make a better America. I will do my best.

1. Circle all the simple past tense of the verb ‘to be’ in the passage.
2. Rewrite the underlined sentence as an interrogative sentence.
3. Choose the word that can be placed in the brackets.
   a. wasn’t  b. didn’t  c. weren’t

What is she doing?
She is exercising.

A: What are they doing?
B: They are eating.

Tom: No, I’m not.
Daisy: It looks like salad with chili dressing.

I am doing my homework. They are eating lunch now.

We use the present progressive form to talk about actions that are going on. We get the present progressive form by using the correct form of the verb ‘to be’ and adding ‘ing’ to the verb. We need to take certain verbs when adding ‘ing’.

The verb ‘to be’ is moved to the start of the sentence to form an interrogative sentence.

I am not dancing. I’m exercising.
Are they singing the song? Yes, they are.
They aren’t floating on the water.
What are you doing now? I’m studying.

Add ‘ing’ to each verb in the brackets and complete the sentence.

1. They are _________ basketball.
2. Jeffrey is _________ the dishes in the kitchen.
3. The children are _________ outside.

Negative sentence
We get the negative present progressive form by adding ‘not’ to the verb ‘to be’. Just like other sentences with the verb ‘to be’, the verb ‘to be’ is moved to the start of the sentence to form an interrogative sentence.

I am not dancing. I’m exercising.
Are they singing the song? Yes, they are.
They aren’t floating on the water.
What are you doing now? I’m studying.

Fill in each blank with a suitable word from the box.

1. He is _________ sitting in the class.
2. We _________ jumping in the air.
3. _________ is Mary talking about?
WRITING SKILLS
Systematic Approach to Great Writing

Unit 4 ORGANISATION

★ IDEAS
Students generate ideas for good writing topics. After brainstorming for initial ideas, students learn to focus on a specific topic.

★ WORD CHOICE
Students learn how to choose the correct words, and precise and interesting vocabulary, to help their readers understand their writing better.

★ SENTENCE FLUENCY
Students use different sentence types, lengths and beginnings to make their writing more interesting. Students will see how good writing should flow, using a variety of sentences.

★ ORGANISATION
The internal structure of writing is very important. It gives a framework around which students can build their topic. A good opening, an appropriate closing and everything in between should be in a logical order.

★ VOICE
Using the appropriate tone and mood allows students to convey their messages effectively.

Student learn to write independently:

EXPOSITORY
Students write to inform, explain, describe or define their topics to the reader. Expository writing require students to use clear words and strong organisation.

PERSONAL NARRATIVE
Students become narrators and write stories about their daily life or experiences. They tell their own stories according to a sequence of events.

LITERATURE
Students write summaries and book reports after they read literary works. They also learn how to write fictional stories or poems on their own.

A TOPIC SENTENCES
The topic sentence is a one-sentence summary of a paragraph. It usually appears at the beginning of a paragraph, but may appear at other places as well. The sentences that follow give details about the topic sentence.

EXAMPLE
Look at the topic sentence and details.

Ants are very hard workers. Every day they build nests and find food. When they find something good, they carry it to the nest. Sometimes the thing they carry is much bigger than they are.

B WRITING CONCLUSIONS
A conclusion is the last part of your writing. It brings your topic to a close for your readers. Here are two ways to write a conclusion:

• State your main idea in different words.
• Ask a question about the main idea.

EXAMPLE
Here are two paragraphs which are the same except for the different endings.

My first space flight was a disaster! I spilled juice on my space suit. My luggage got lost. I forgot to bring the map to Mars. We even landed on the wrong planet! Everything went wrong on that trip.

C YOUR TURN
Circle the best conclusion for this paragraph.

Oh, why did I leave the door open?
My friend gave me a gigantic puzzle for my birthday. It took all day to put it together. Just as I finished, my puppy burst into the room. The puzzle pieces flew in every direction!

PERSUASIVE WRITING
An advertisement is a good example because it persuades readers to buy a product. This unit teaches various techniques on how to convince readers, such as using strong organisation or opinions, and using the correct tone.
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