# Mathematics Curriculum Guide: Grade 2

## Contents

**ACKNOWLEDGEMENTS**

Developing curriculum material for our students to experience meaningful learning on the pursuit for mathematics education in school is a work that involves contribution by certain persons and institutions. While space will not allow for mentioning every contributor explicitly, one cannot avoid listing the following names.

| Player | Field/School |
|---|---|
| Lindsay Howard | Curriculum Consultant under the DIFD Project |
| Cassandra Lavinier | Teacher/Tete Morne Primary |
| Martha Carbon | Teacher/Woodford Hill Primary |
| Sylma Moses | Teacher/Goodwill Primary |
| Junior Drigo | Teacher/Giraudel Primary |
| Allie Walter | Teacher/Grand Bay Primary |
| Tricia Tavernier | Teacher/Convent Prep |
| Joycelyn Panthier | Teacher/Roseau Primary |
| Matsuyo Utsunomiya | Japanese UN Volunteer/Curriculum Unit |

Simon Sharplis
Mathematics Education Officer

Editors: Nicholas Goldberg
Robert Guiste
Raymond Henderson
Simon Sharplis

**Introduction: Generic**
**Definition**

The question as to what is mathematics arises when we seek to understand the bases/roots of our human activities. Mathematics can well be regarded as the foundation stone of many of our human activities. Mathematics deals with a collection of objects which includes points, lines, numbers and events all of which are basic notions in our thinking. The concern is not so much with the objects themselves as with the relationships and patterns they show.
The study of mathematics involves observing, discovering and investigating patterns and relationships especially as illustrated and modelled in the real world.

Purpose of Mathematics for life in our world
It provides the capacity to

- Think in precise terms
- Develop (process/problem solving) skills, that are needed for:
  - Making connections
  - Reasoning
  - Communicating
  - Problem solving

- Have confidence in building or interpreting quantitative descriptions

**Contribution of Mathematics to the Curriculum**

Mathematics provides a foundation for productive discourse especially in the sciences and to some extent in the humanities.

It offers fuel for:

- Creativity
- Originality
- Imagination

**The Subject Strands:**

- Number
- Geometry
- Measurement
- Statistics and data handling
- Patterns, functions and algebra

**Integration**

**Across subjects**

Mathematics concepts can be integrated into almost all other subjects of the national Curriculum and conversely mathematics can integrate concepts, skills and attitudes of other subjects. For example:

- Social Studies and HFLE: Social issues and trends that form the basis of life can provide the raw data needed for Statistics/Data Handling.
- In mathematics, students learn to estimate and make accurate measurements which are skills required to engage in learning experiences in Science. Measuring time is a life skill integrated into all subjects.
- Mathematics has its own vocabulary and mathematical literacy needs to be acquired in the early grades. This reinforces and consolidates the learning in Language Arts.
- Mathematics is about problem solving, mathematics contributes to the development of life skills and the holistic development of the learner.

**Thematic Integration**

It is possible to use a thematic approach to integrate across and within subject areas. For example, Nature provides opportunities for thematic integration not only across strands in mathematics but across other subjects.

Curriculum Time

It is expected that schools will devote at least four hours per week to mathematics in grade 2 or approximately eight half hour sessions per week.

| TERM 1 SUMMARY | |
|---|---|
| **UNITS** | **SESSIONS** |
| **UNIT 1: ON THE BEACH – Number**<br>AT 1: LO 3<br>Success criteria 1 | 16 |
| **UNIT 2: ON THE BEACH – number (place value)**<br><br>*AT 1: LO 1*<br>*Success Criteria*: 1 – 7<br>AT 1: LO 2<br>Success criteria: 1 – 3 | 24 |
| **UNIT 3: OUT OF THE BOX – geometry (3-D shapes)**<br>AT 2: LO 1<br>Success criteria: 1 – 5 | 8 |
| **UNIT 4: HELPING MUMMY – measurement (length)**<br>AT 3: LO 1; LO 2<br>AT 3: LO 1<br>Success criteria: 1 – 4<br>AT 3: LO 2<br>Success criteria: 1 – 3 | 12 |
| **UNIT 5: ON THE BEACH – number (addition/subtraction)**<br><br>**AT 1: LO 3**<br>**Success criteria: 1 – 4** | 24 |
| **UNIT 6 : MY FAVOURITE THINGS - patterns**<br>AT 5: LO 1<br><br>Success criteria: 1 – 2 | 12 |
| | 96 |

## UNIT PLAN WITH SUGGESTED TEACHING, LEARNING & ASSESSMENT ACTIVITIES

**TERM 1 STRAND 1 Number UNIT 1: ON THE BEACH 2 (2 weeks – 16 sessions)**

| | |
|---|---|
| **AT 1** | **LO 3: Create and solve real life problems involving addition and subtraction with numbers up to 100 (and involving multiplication and division of one and two digit numbers)**<br>***Success Criteria*** |

**1.** Discuss and use several strategies to recall the basic facts for addition and subtraction up to 20.

**ACTIVITIES**

**Discuss and use several strategies to recall the basic facts for addition and subtraction up to 20.**

1.1 Using teacher-suggested number stories and counters, students build addition and subtraction tables. I am looking for claps. Please, give me 4 claps. Now, give me 6 more. (Or: Now, give me 16 more.) Write an addition to show this. How many claps are given? (In another story, I may be looking for sunflowers, toy trucks, birds, etc.) Students engage in exercises to (i) manipulate numbers, (ii) write an addition, (iii) decide how many, (iv) fill in missing numbers in number sentences. (Similar stories are used for subtraction, using concrete materials and base ten materials.)
Students write 4 + 16. They arrange 4 + 16 as 16 + 4 and count on in ones from 16. [Strategy: Put the larger number first and count on from it.]

1.2 Give out 12 bottle tops to each student. Students arrange the tops into two groups viz.

5 + 7 = 12

Students arrange tops in as many ways they can and record answers. This gives rise to the story of 12 (12+0 = 12, 11+1=12, 10+2=12, etc.)

1.3 Activity 1.2 can also be done on squared paper e.g.

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ● | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | | 9 | + | 4 | = | 13 |
| ● | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ○ | | 8 | + | 5 | = | 13 |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |

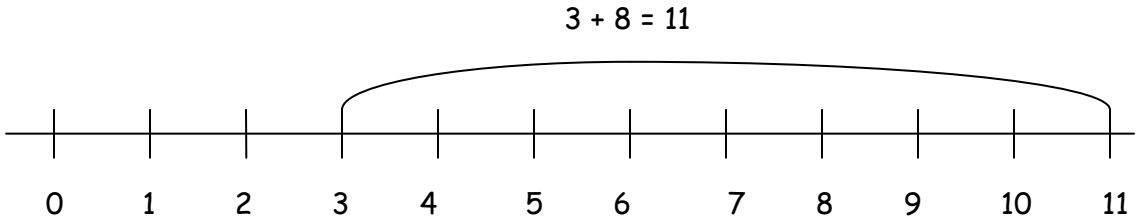
1.4 Get students to count on when doing simple additions e.g.

O O O O O O O  O  O  O  O  O

'seven'  'eight'  'nine'  'ten'  'eleven'  'twelve'

Hence, 7 + 5 = 12. Give students lots of practice.

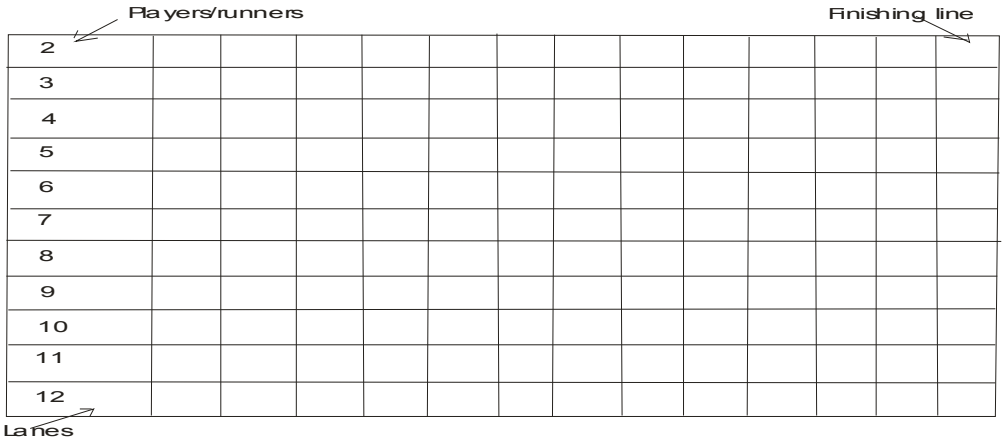
1.5 Students use the number line to count on or back to do simple additions and subtractions. For example,




1.6 The answer is 15 (say), students are asked to find as many ways as possible of adding two numbers to get the answer 15. Repeat with other starting numbers.

1.7 Students are introduced to a game called the great race. With a button or bead, each play takes up a starting position in one of the cells numbered 2 to 12. The players roll 2 dice and the two numbers which show up are added to get the

sum. The player in the lane position corresponding to that sum moves one cell forward. The winner is the first player to reach the finishing line.



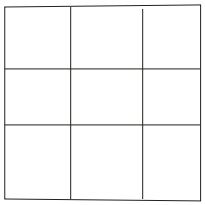

Variations:

(i) The sum must be found mentally, without any aid (such as use of fingers)

(ii) To get students to play with bigger numbers, do the following. Instead of the two dice, use cards showing pairs of numbers from 1 to any desirable number, up to 50 (two 1s, two 2s, two 3s, …, possibly going up to two 50s). These cards can be placed in a bag into which students dip to take two cards without looking. The cells would now have to be numbered 2 to 100 (or 2 to some more practical number).

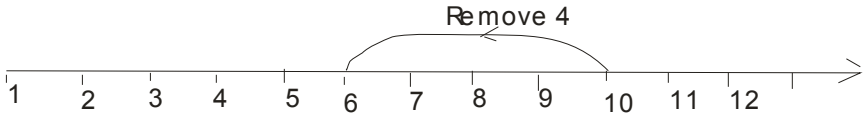
1.8 Get students to create their own word problems that represent simple additions (e.g. 13 + 5 = 18) or subtractions (e.g. 17 – 9 ).

1.9 Students are given numbers 1, 2, 3, 4, 5, 6, 7, 8, 9 and a $3 \times 3$ square, as shown below. They are asked to make a magic square by placing the numbers in the square in such a way that the three numbers in each row add to 15, as do the three numbers in each column and the three numbers on the diagonal. In this case, the magic number is 15.

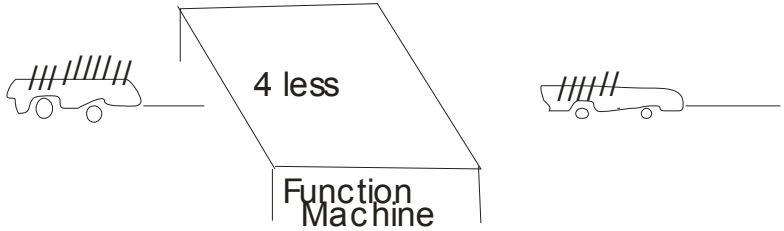


1.10 Students are shown a pile of, say, 10 items (e.g. stones, bottle tops, shells, nuts, etc). They are engaged in discussing situations in which they might wish to remove, say, 4 from this number (possibly because they wish to give their friend 4 of the 10 nuts). They are guided to see possible ways to do this subtraction. To remove, say, 4 from 10, we can remove all 4 at once. Students are allowed to do this, using objects on their desks.

1.11 An illustration is given using the number line below. Students are helped to see that the number we start with is on the number line, as is the number we get after doing the subtraction.

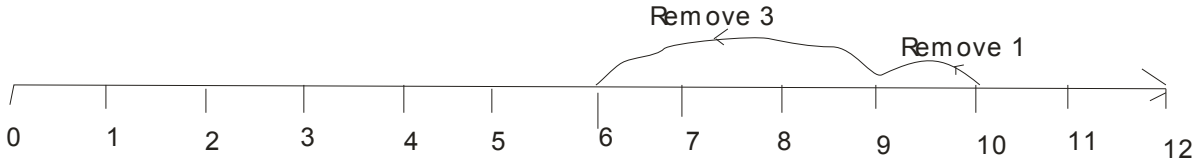



Another illustration uses a function machine, as shown below.




This is said by writing the expression 10 – 4. Since the number line shows we land on 6, we can write 10 – 4 is 6. Or we can write the number sentence 10 – 4 = 6.

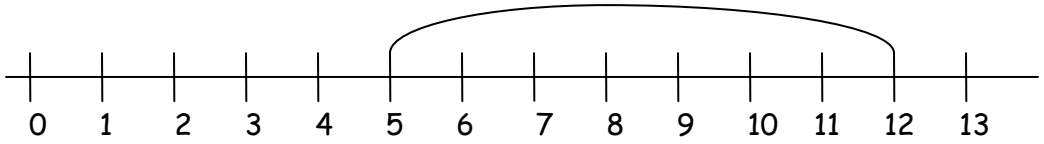
Students are then questioned to see that there is another way to proceed. We can first remove 1 and then remove 3. Students do this using the objects on their desks. They are then walked through the number line illustration.




This fact is said if we write 10 – 1 – 3. Because we land on the same answer, it means the expression 10 – 1 – 3 and the expression 10 – 4 mean the same thing. (Students are challenged to produce other expressions that say the same thing as 10 – 4)

Another way to say 10 – 4 is to first separate 10 as 6 + 4 and then to write 10 – 4 as 6 + 4 – 4. This form allows us to see that we can just cancel the two 4's to be left with 6. General rule: If we wish to give away 4 from the 10 we have, we can first rewrite the 10 in a way that shows 4. If we wish to give away 8 from the 10 we have, we can first say the 10 we have is the same as 2 + 8. Then we write 2 + 8 – 8, from which we see we can just cross out the 8's to be left we 2.

1.12 Students are asked to find as many different subtractions as they can that give 17 (say) as a result of the subtraction. Repeat for other numbers.




1.13 Use comparative form of subtraction:

Kay has 15 marbles: O O O O O O O O O O O O O O O
Ann has 7 marbles: O O O O O O O

How many more marbles does Kay have? Give lots of practice.

**TERM 1 STRAND 1 Number UNIT 2: ON THE BEACH (3 weeks – 24 sessions)**

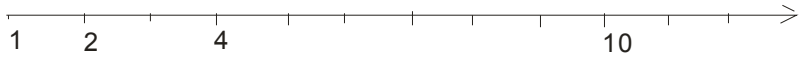
| AT 1 | **LO 1: Demonstrate understanding of number up to 100**<br>***Success Criteria*** |
|---|---|

1. Count and make sets up to 100 objects in a variety of ways
2. Count by 2's, 5's and 10's to 100 and beyond
3. Count on from a given number
4. Play games to develop number sense (bingo, matching, jigsaw etc.)
5. Identify, discuss, use and write numbers up to 100 and represent them in a variety of ways
6. Compare and order sets of numbers in a variety of ways
7. Use a calculator, pencil and paper procedures, or mental strategies to investigate number concepts

**ACTIVITIES**

**Count and make sets up to 100 objects in a variety of ways**

1.1 Students are told a story in which two friends, Jayanie and Cody, are in a conversation about a dog, Rover. Jayanie wants to convince Cody that 100 Dalmatians can come from Rover. But she begins by saying that 10 Dalmatians can come from Rover. This leads Cody to begin drawing a number line to show the numbers. Students are shown Cody's attempt and asked to complete it by filling in the missing numbers.




Number line

Students are given suitable pictures and asked to count by aligning pictures (or objects) along a number line and filling in the missing numbers. They are questioned on which number comes first on this line, which number comes second, which number comes third and which number comes next. (One Dalmatian comes before two. Two Dalmatians come before three. Three Dalmatians come before four, and so on. A class member asks, "I wonder what number comes next on this line." And another attempts to answer.)


1.2 Students collect up to 100 objects individually. (i) Students represent up to 100 objects in a variety of ways. (ii) Students use base 10 material to represent 100.

**Count by 2's, 5's and 10's to 100 and beyond**

2.1 Students use a hundred square on a sheet of paper and crayons to colour multiples of 2, 5, 10.

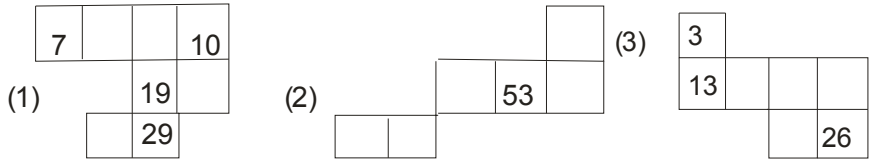
2.2 Take the hundred chart. (i) Count by 5. (ii) Colour numbers you land on. (iii) Describe the pattern you get.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

**Count on from a given number**

3.1 Students given a grid on a sheet of paper with spaces for numbers from 1 to 100 and asked to fill in the missing numbers.

3.2 Students given sections of a hundred square and asked to write the missing numbers e.g.




**Play games to develop number sense (bingo, matching, jigsaw etc.)**

4.1 Play bingo games – make bingo cards with 16 squares and fill them with different 2 digit numbers. Give students bottle tops as counters.

(i) Pick 2 digit numbers from a hat or call out numbers at random, first player to bingo wins.

(ii) Call out numbers 'the next number after 26', 'the number before 40', 'the number between 19 and 21' etc.

4.2 Play matching game with number names and numbers (this can also be done as a bingo game)

4.3 Create a jigsaw puzzle – students put puzzle together.

**Identify, discuss, use and write numbers up to 100 and represent them in a variety of ways**

5.1 Students are told a story in which someone claims to have some numbers for us. The task is to show the numbers. On a worksheet, students are given some numbers in words but with some of the letters missing and asked to (i) fill in the missing letters to write the number word, (ii) write the number in figures and (iii) draw objects to show that number.

5.2

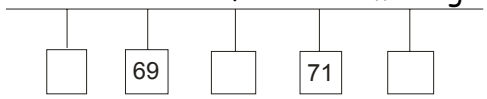
5.3 Students are shown a list of numbers in words and asked to read the number words.

**Compare and order sets of numbers in a variety of ways**

6.1 Students are shown a number and asked to write the number that comes before and after.

6.2 Students are given shuffled cards and asked to put them in order: from 35 to 45; from 0 to 100.

6.3 Students are given the following number line and asked to fill in the missing numbers



6.4 Students are asked to write a number on each blank card so that the six numbers are in order

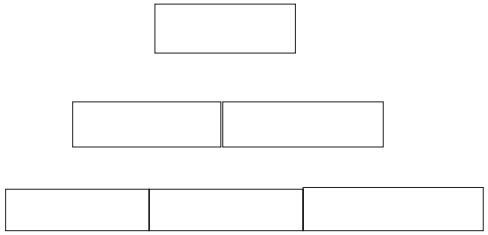
| 85 | | 91 | | 102 | |
|---|---|---|---|---|---|

6.5 Students given some numbers and asked to put them in other, largest/ smallest first:

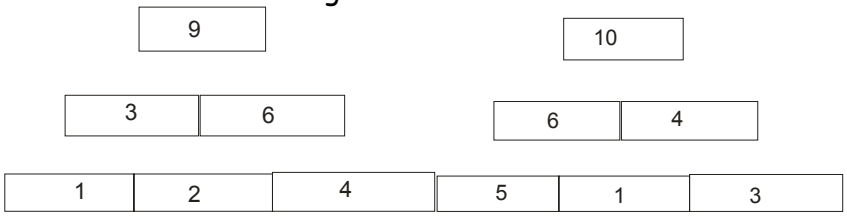
(A) 27 16 85, 72, 52;

(B) 50, 45, 54, 40, 55

6.6 Students observe as teacher draws a wall as illustrated.



They are asked to choose three numbers from 1 to 5 and place at the base of the wall. They mentally add each number and write the answer on the bricks above. They add those two numbers again and write the answer on the brick above. If final answer is more than 10, students start again. The winner is the student whose number reaches closest to 10 without exceeding 10.




Variation: Use larger numbers – e.g. choose three numbers from 1 to 10… Winner is student whose number reaches closes to 20 without exceeding 20

**Use a calculator, pencil and paper procedures, or mental strategies to investigate number concepts**

7.1 One student writes a number in words on paper; a second student enters the number on the calculator. The roles are reversed and one student starts by entering a number on the calculator. The other student writes that number in words.

7.2 In pairs students enter 100 on their calculators and take turns to subtract 1 repeatedly, partner has to guess answer before subtraction is done. First person to make an error loses. Game can be repeated for subtracting 2, adding 3 etc. from any given starting number.

7.3 Students add 5 repeated (form 0) on their calculators, what do they notice? Can they predict next number? Repeat for adding 2, adding 10 etc.

7.4 Students are paired. They wait as teacher writes down a two-digit number in a secret place. Each pair of students writes a two-digit number. They observe as teacher then shows her number. The students then determine whose guess is closest to the teacher's number. Students are placed in larger groups (four or five) for further practice.

7.5 Students observe as teacher shuffles cards numbered 0 to 20 (after informing them that she is using cards numbered 0 to 20). They observe as teacher puts the cards in a pile, turns over the next card and reads out the number. Before teacher turns the next card, students predict with reason whether the next card will be higher or lower. The activity is repeated for many other cards. Students keep track of numbers used in some form. The class votes on whether the next number will be higher or lower.

7.6 Students use the calculator to investigate patterns involving 9. They are asked to find the answer to 9 + 9 and note the answer. They then find 9 + 9 + 9 and note the answer. They continue in this way. They are asked to check and compare the answers to note if a pattern exists.

7.7 Students are asked to use their calculator to show 20 on the display by only pressing the 3, 7, +, and = keys.

**See calculator booklet for other ideas.**

**RESOURCES**

Counters, number line, hundred square, calculators, calculator booklet

**ASSESSMENT**

1. Shown number patterns with missing numbers, can complete the pattern: e.g. 2, 4, 6, __, __, 12, __ and 5, 10, __, 20, 25, __, __, 35.
2. Shown a number track with missing numbers, can fill in the missing numbers

| 1 | | 3 | | 5 | | 7 | | 9 | | 11 | |
|---|---|---|---|---|---|---|---|---|---|---|---|

3. Shown some numbers like 16, 39, 47 (in figures), can write their names (in words).
4. Shown a list of numbers (like 82, 17, 90, 28, 65), can rewrite them in a specified order, example, from the smallest to the largest.

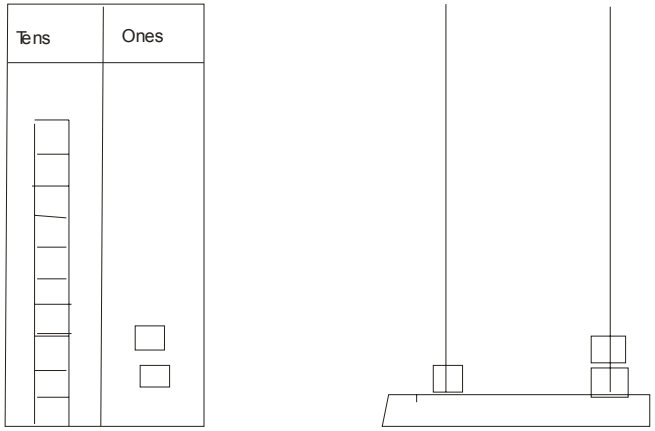
| **AT 1** | **LO 2: Create and solve simple problems involving place value**<br>**Success Criteria** |
|---|---|

1. Use games and sorting activities to discuss and state the place value of any two-digit number
2. Discuss and write two-digit numbers in expanded forms (e.g. 27 = 20 + 7)
3. Create and solve problems involving place value

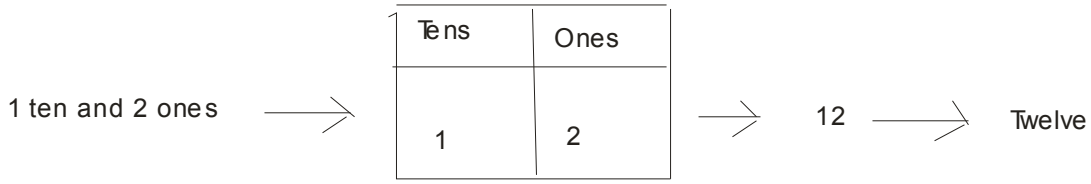
**ACTIVITIES**

**Use games and sorting activities to discuss and state the place value of any two-digit number**

1.1 Students observe as the teacher makes/ presents a drawing on the chalkboard or manila paper to show a number between 11 and 19. They are asked to look at the number. They proceed to write it as a figure. They talk about (i) how many tens are in it, (ii) how many ones, (iii) which part of the figure represents the ten, (iv) which part represents the ones. In the discussion it is pointed out that each part of the figure is called a digit, so, for example, in 12 there are two digits, which are 1 and 2.




The same number shown differently




1.2 Students are given 23 counters, and are allowed to check that it is 23 by counting. They are asked whether it is possible to find a ten in 23. They are engaged in discussing the existence of a ten in 23. They hear, "Let us pause to ensure that we can each find a ten in 23." They are lead to observe that when we find ten in 23 we are saying 23 can be recorded as 1 ten + 13 ones. Now that we have found a ten in 23, is it possible for us to find another ten? We have now found 2 tens in 23 and this means we are saying 23 can be recorded as ___ tens + ___ ones. How is it known that in 23 are as many as 2 tens? [23 is an example of a two-digit number. This is because in the recording of this number, use is made of two digits, identified as 2 and 3. Each digit has a place value, 20 being the place value of the digit '2' in 23 and 3 being the place value of the digit '3' in 23]. Get class to repeat for other 2 digit numbers.

1.3 Using base-ten material, students engage in teacher-led discussion to establish the following. Every number has its digit(s). In the number 53 are two digits, 5 and 3. The digits are in different places – the 5 in the ten's place and the

3, in the one's place. Students talk about different two-digit numbers and show them using base-ten material and what are the values of each digit in them.

1.4 Students are engaged in playing game in which someone makes a statement such as: "I am a number with 4 tens and 23 ones". Students, show this using base ten materials. Then try to find the actual number. This may be in an arrangement in which groups create their own questions and compete with other groups.

1.5 Students are given a place value chart and counters. They place a counter in the ones side each time the teacher gives a signal (such as a snap of the finger or a tap at the desk). The items in the ones sides are continually observed. Once their number is ten, they are transferred to the tens side. Periodically students are asked to read the number on their map.

**Discuss and write two-digit numbers in expanded forms (e.g. 27 = 20 + 7)**

2.1 **Using base-ten material**, students engage in teacher-facilitated discussion on how two-digit numbers are put in expanded form, how to get the expansion. Use stories that are likely to be appealing – e.g. I went looking for mangoes. I got 27. I can rearrange them as 2 tens and 7 ones. The expression that gives this is 20 + 7. Students are given other examples and asked to put them in expanded form. Students also identify numbers when given their expanded forms.

2.2 Teacher prepares a set of cards like these

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 |
| And | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

These could be used to show 40 + 7 = 47 by showing 40 and 7 as 4 7

**Create and solve problems involving place value**

3.1 Students are allowed to create problems and solve using base-ten material. Example: I have 23 ones and 4 tens. Who am I?

3.2 In groups or individually students are given a number of counters (between 15 and 40 to begin, the number different for each group). Students are asked to make groups of six, then express their given number as

____ Groups of 6 and ____ Ones

Students repeat the exercise using sets of 3 and finally sets of 10.

With the number of counters increased to 99, students form groups of 10 and express number as

____ Groups of 10 and ____ Ones

Students are asked to express their given number in as many ways as possible using

____ Groups of 10 and ____ Ones

For example,

47 = 4 tens and 7 ones
47 = 2 tens and 27 ones, etc.

3.3 Give students plastic bags containing lots of different collections of place-value pieces up to 99, most of these will be non-standard collections such as 4 tens and 35 ones. Students select a bag and record the number of each piece. They use the pieces and make trade to find the standard number names. They can be asked to find another representation of the same number. Students can then trade bags and start over.

3.4 Students are given a place-value mat, a supply of counters and small cups

| Tens | Ones |
|---|---|
| | |

Each time a signal is given (e.g. a finger is snapped, the desk is tapped), students place one counter on the ones side. Whenever there are ten counters in the ones side students call ten. The counters are placed in a cup and put on the tens-side. Periodically students are asked to read their mat and they call the number represented on the map.

3.5 Students are given opportunity to create relevant similar or other problems which they then share with others to solve.

**RESOURCES**

Crayons, counters, manipulatives, worksheets, base ten materials

**ASSESSMENT**

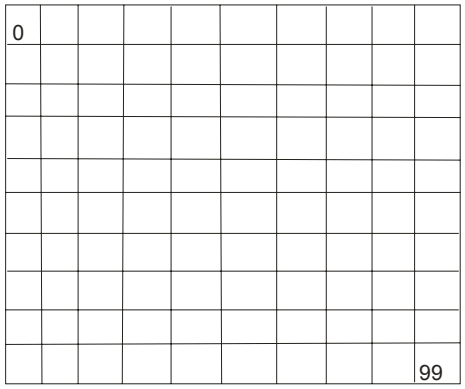
1. Shown a number, can represent it using base ten materials; e.g. can record 43 as 40 + 3 after showing it as 4 ten bars (or strips) and 3 ones.
2. Shown a 0 to 100 line marked in tens, can write where these numbers go on the line: 20, 60, 90


3. Shown a picture in which are some ten bars together with ones, or only ones, can write the figure to indicate how many.
4. Shown a picture as illustrated below, can write the correct number in the boxes.

60 = ☐ + 4

= ☐ + 14

5. When a card is taken from a pack of two-digit numbers, can write the number in the correct place in this 0 to 99 square



**TERM 1 STRAND 2 Geometry UNIT 3: OUT OF THE BOX (1-2 weeks – 12 sessions)**

| AT 2 | **LO 1: Classify and identify, by name, regular 3-D shapes according to given criteria**<br>***Success Criteria*** |
|---|---|

1. Identify the faces of 3-D shapes
2. Identify the 2-D shapes that make up the faces of 3-D shapes
3. Sort and classify 3-D shapes on the basis of their attributes, e.g., number of faces, shapes of faces, size, etc.
4. Describe and compare the groups formed from classification exercises
5. Identify and discuss examples of cubes, cuboids, cones, cylinders and spheres in their environment

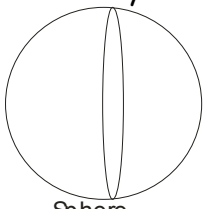
**ACTIVITIES**

**General**: Once some 3-D shapes are introduced in the lesson, students are encouraged to make observations (say, about shape, size, number of sides, number of angles), drawings/ sketches and comparisons, saying (i) how they are alike and (ii) how they differ. Once the names of these shapes are introduced, students are encouraged to find or state objects that are like these shapes (e.g. Sphere – football, tennis ball, etc).

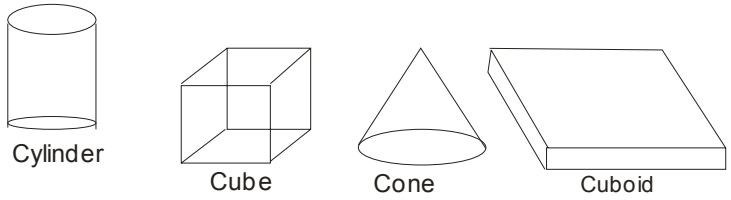
**Identify the faces of 3-D shapes**

1.1 Students are shown a balloon and told a story in which someone enters a room or environment in which a balloon is. The observation provokes the question: what does a balloon do if it is blown? Students are led to conclude that it does what a ball does; it takes the shape of a sphere (or becomes more and more like a sphere). This generates questions, such as: In this form does the balloon have (i) the ability to roll? (ii) a face

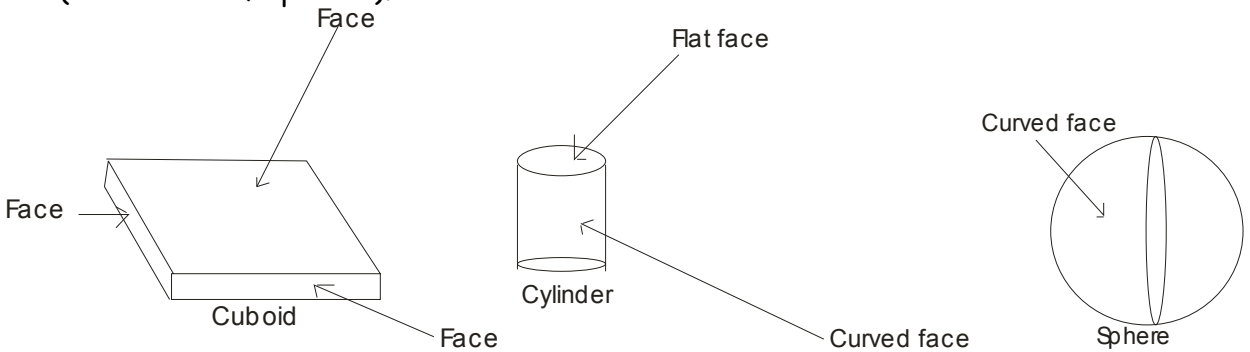
Sphere like 



1.2 Students are engaged in comparing the number of faces the balloon has with the number it would have if it were like (i) a cylinder, (ii) a cuboid, (iii) a cube, (iv) a cone.



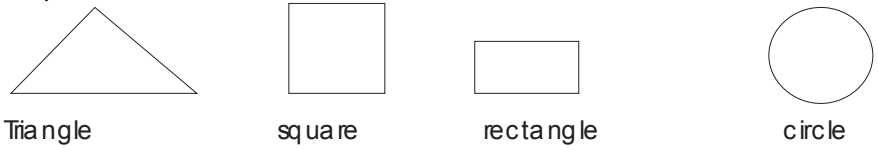

1.3 Students are presented with (a variety of) 3-D shapes. They manipulate shapes and describe the different faces in each shape, e.g. using terms such as 'flat' (e.g. in the case of cuboids), 'flat and curved' (in the case of cylinders), 'curved' (in the case of spheres).




1.4 Students are allowed to play game to identify the number of faces in each solid.

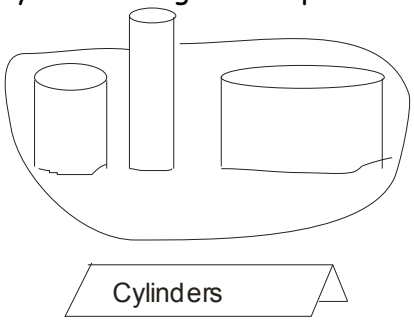
**Identify the 2-D shapes that make up the faces of 3-D shapes**

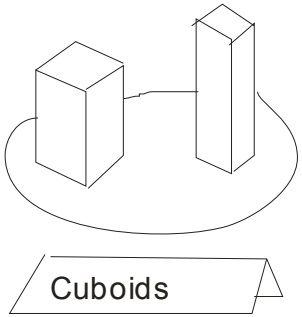
2.1 Students are given 2-D shapes, say, triangle, square, rectangle, circle. Students match these shapes to the faces of 3-D shapes.



**Sort and classify 3-D shapes on the basis of their attributes, e.g., number of faces, shapes of faces, size, etc.**

3.1 Students are placed in groups. Each group is given a bag containing different sizes and colours of 3-D shapes. Students sort shapes on the basis of attributes of their choice (which initially may be informal, e.g. the ones which will roll, the ones which have a point, the ones which can stack or make towers). They are given opportunity to talk about how they are sorting the shapes and why.




3.2 Students sort solids according to attributes given by the teacher, e.g. put all solids with flat faces in a group.

**Describe and compare the groups formed from classification exercises**

4.1 Students report on findings describing and comparing classification of solids.

4.2 Teacher distributes solids and worksheet to class. Students manipulate solids and fill in worksheet in groups.

| Solid | Number of faces that are | | |
|---|---|---|---|
| | Flat | Curved | Square |
| | | | |

Students report on findings describing and comparing classification of solids

**Identify and discuss examples of cubes, cuboids, cones, cylinders and spheres in their environment**

5.1 Students walk around their classroom, school or home environment and identify 3-D shapes found there.

5.2 Students are given a picture of the environment. They identify the different shapes in the picture.

5.3 Students are shown a cube, a cylinder, a cuboid and a sphere. They are then given a list that includes objects such as a block of ice, a football, a wooden block and a can of peas. For each item on the list, they are to write the name of the shape that looks most like the item.

**RESOURCES**

3-D shapes, crayons, scissors, paper, construction paper, glue, pictures, popsicle sticks, drinking straws, school and class environment

**ASSESSMENT**

- Students are given some 3- D shapes. They complete the table below.

| Shape | Number of faces | Shape of faces | Does it roll? |
|---|---|---|---|
| Box/cuboid | | | |
| Cylinder | | | |
| Cone | | | |

- Shown picture involving various 3-D shapes (including spheres, cubes, cones), can identify and give name of each shape

**TERM 1 STRAND 3 Measurement UNIT 4: HELPING MUMMY (2 weeks – 16 sessions)**

| AT 3 | **LO 1: Estimate and measure the length of different objects using basic standard units** |
|---|---|
| | ***Success Criteria*** |

1. Compare estimates, measure and record lengths and heights of objects using the metre as the unit of measure
2. Estimate, measure and record distances using the metre as the unit of measure
3. Play games to use the language of comparison e.g. tallest, shortest, longest etc
4. Create and solve problems involving linear measurement

**ACTIVITIES**

**Compare estimates, measure and record lengths and heights of objects using the metre as the unit of measure**

1.1 Review the use of non-standard units (e.g. handspans, paces) to measure lengths of objects. Get different students to measure the length of a desk in handspans or the length of a the classroom in paces. Record results, for example:

| Object | Student 1 | Student 2 | Student 3 | Student 4 |
|---|---|---|---|---|
| Desk | 8 handspans | 7 handspans | $7\frac{1}{2}$ handspans | 9 handspans |
| Room length | 10 paces | $9\frac{1}{2}$ paces | 9 paces | $10\frac{1}{2}$ paces |

Discuss with students the reason for different answers. Discussion should lead to the need of a standard unit of length – the metre.

1.2 Students are shown a metre rule. They then find objects so as to complete the table below:

| Object | Less than 1 metre | About 1 metre | More than 1 metre |
|---|---|---|---|
| | | | |
| | | | |

They are then given a metre rule (or a string 1m in length and check to see if they were correct.

1.3 Students are given an object (such as a wire or a string) whose length they are likely to want to find out and shown a metre rule. Students make estimates of the length of the object. They are given turns to suggest what they think the length is. Students' estimates are recorded so that these estimates can then be compared. Some of these are expected to be below the actual value and some to be above. *But all of these measurements involve* ***error***.

1.4 Students talk about how to reduce the error. They are given opportunity to appreciate that we can reduce the error by using an **instrument** (e.g. a ruler for length, a clock for time), one that is suitable/ appropriate. In other words, we can get closer to the "truth," the actual value. This can be regarded as the reason we use instrument in the measurement of length. (If an instrument is never introduced, we would remain with our error, which we do not want.)

1.5 Students estimate then measure using a metre rule or a piece of string 1 metre long the lengths of a variety of objects. They complete a table viz.

| Object | Estimated length (m) | Actual length (m) |
|---|---|---|
| Table | | |
| Chalkboard | | |
| Window | | |
| Door height | | |

Etc.

1.6 Students are given an elastic band. They take turns in stretching it to make their estimate of a metre. They then compare their estimate with a metre rule and record results.

| Student's name | Estimates much less than 1 metre | Estimates about 1 metre | Estimates much greater than 1 metre |
|---|---|---|---|
| | | | |
| | | | |

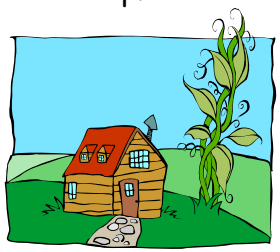
**Estimate, measure and record distances using the metre as the unit of measure**

2.1 Students observe as the teacher makes two marks on a strip of rubber/elastic band. Students are led to see that between these two marks is a distance. Students engaged in discussing what happens, what the distance does, if the rubber/elastic is stretched. They are led to conclude that the distance increases.

2.2 Students are exposed to a picture showing a plant at, say, 4 stages: when 1 month has passed, when 2 months have passed, when 3 months have passed and when 4 months have passed. Students proceed to measure and record how tall the plant is at each stage (see table).

| Stage of plant | Height in metres |
|---|---|
| 1 month | |
| 2 months | |
| 3 months | |
| 4 months | |

2.3 Students are asked to imagine that the height just kept increasing as time passed, as in stories such as "Jack and the Beanstalk". Students discuss what would happen. They discuss what we would see if people just kept on growing, without stop. Students speculate on what their height will be when they are, say, 15 years, or 20 years.



**Play games to use the language of comparison e.g. tallest, shortest, longest etc**

3.1 Students are involved in a game, Contest for Wednesday (any day of the week). What is the height of this student (or this pole)? Record your estimates in a table.

| Name | guess |
|---|---|
| John Jones | _____ |
| Alison Pink | _____ |
| _____ | _____ |
| _____ | _____ |
| | |

Now measure the height. The person whose estimate is closest wins an orange.

3.2 Treasure Hunt Activity: Students are involved as teacher says, "Hunt! Hunt! Hunt! There is something in the room which has a length of 2 metres (say). Can you find it?" Or: "Hunt! Hunt! Hunt! There are two points in the room with a distance of 1 metre (say). Can you find them?"

**RESOURCES**

Rulers, tape measure, straws of various lengths, sticks of various lengths, students, desks or tables, pieces of string, strips of rubber, pieces of paper, basic standard units for students to select

**ASSESSMENT**

- Check that when given suitable material such as string, students can make a metre long measure.
- Check that students can use a metre long measure to measure various lengths or distances and say whether each is (i) shorter than 1 metre, (ii) about 1 metre (iii) longer than 1 metre
- Check that students can find things that are (i) about a metre long or (ii) about half a metre long

| AT 3 | **LO 2: Use basic 2-D shapes to cover surfaces**<br>**Success Criteria** |
|---|---|

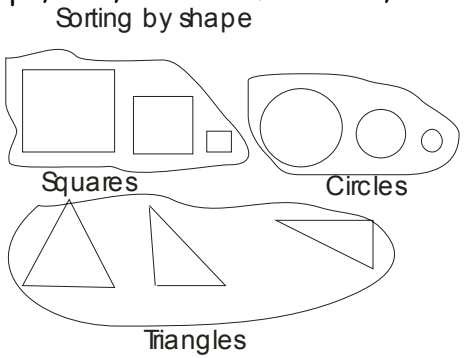
1. **Make wall patterns with simple 2-D shapes e.g. square, rectangle**
2. **Make observations about patterns and pictures e.g. some 2-D shapes make patterns that cover a page others leave gaps**
3. **Observe patterns and make predictions of what is next.**

**ACTIVITIES**

**Make wall patterns with simple 2-D shapes e.g. square, rectangle**

1.1 A 2-D shape outing: Students walk around school environment to observe 2-D shapes and on their return they discuss and state names and numbers of shapes seen.

1.2 Students are given sheet with drawings of 2-D shapes. They colour shapes using different colours – e.g. colour the squares blue; colour the circles green; colour the rectangles red, etc.
Students then group shapes according to shape, size, number of corners, etc.




1.3 Students are told a story in which some friends enter a room and see a surface that they want to cover. Students are placed in groups. Each group is given cut-out shapes. They discuss and report observations.

1.4 Students are given a number of 2-D shapes (cut-outs) and in groups they proceed to sort the shapes and make patterns according to a particular shape.

1.5 Each group is given various 2-D shapes. Students form patterns ("multi-shape patterns") with shapes.

**Make observations about patterns and pictures e.g. some 2-D shapes make patterns that cover a page others leave gaps**

2.1 Students are asked to look around in the classroom and identify various 2-D shapes around them. Students must describe the 2-D shapes.

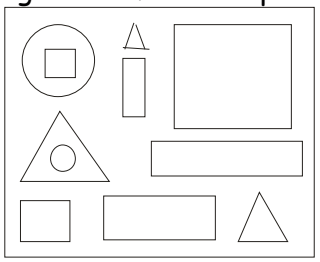
2.2 Students draw shapes according to given descriptions.

Example: I have two long and two short sides:

I am round:

2.3 Students are given blank paper and 2-D shapes. Students stick shapes to paper so that, for example: All squares are together; all triangles together; all rectangles together.

2.4 Students use phrases to show position and recognition of the shapes in chart presented by the teacher



**Observe patterns and make predictions of what is next**

3.1 Students are given a number of shape patterns and must draw the next shape or shapes which will follow the pattern, as in the example.



3.2 Students make their own shape sequences with 2-D cut outs and their partners try to guess the next shape.

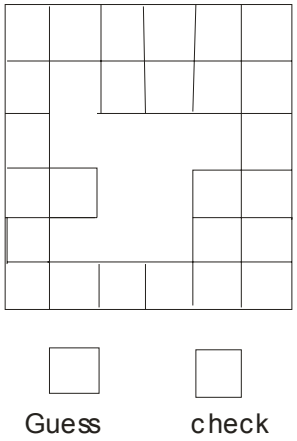
3.3 Students draw 2-D shapes to demonstrate patterns of their own.

**RESOURCES**

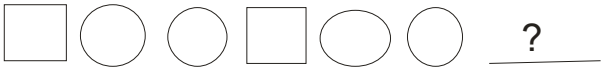
Cut-outs of shapes, blank papers, classroom, glue, crayons or markers, pencils

**ASSESSMENT**

1. Shown a figure involving tessellating shapes where some tiles are missing, can indicate the number missing to cover the surface. Example




2. Shown a pattern, can predict what is next. For example



## UNIT PLAN WITH SUGGESTED TEACHING, LEARNING & ASSESSMENT ACTIVITIES

### TERM 1 STRAND 1 Number UNIT 5: ON THE BEACH 2 (3 weeks – 24 sessions)

| | |
|---|---|
| **AT 1** | **LO 3: Create and solve real life problems involving addition and subtraction with numbers up to 100 (and involving multiplication and division of one and two digit numbers)**<br>***Success Criteria*** |

2. Discuss and use several strategies to recall the basic facts for addition and subtraction up to 20.
3. Use several strategies to add a two-digit number to a one or two digit number, without and with regrouping, totals up to 100.
4. Create and solve problems involving addition and subtraction of whole numbers with totals up to 100.
5. Discuss and use several strategies to subtract a one or two-digit number from a two-digit number, without and with regrouping.

**ACTIVITIES**

**Use several strategies to add a two-digit number to a one or two digit number, without and with regrouping, totals up to 100.**

2.1 We enter a yard looking for flowers. So far, we have 22. To this we want to add 7. How else can we say this? Suggestions to include (i) 22 plus 7 (ii) add 7 to 22, (iii) how many are 22 and 7 altogether? Use games and stories – e.g. the seven bears; 22 steps to downstairs; how many rabbits? Spokes in the bicycle; 10 nice waves.
Students are given opportunity to explain their work, using strategies such as the following:

(i) I see the expression 5 + 6. I write it as 5 + 5 + 1, which is 10 plus 1 or 11.
(ii) I see the expression 20 + 21. I write it as 20 + 20 + 1, which is 40 plus 1 or 41.

Note: students will need much practice in decomposing additions.

2.2 Another strategy is to first rewrite one of the numbers in the expression. To solve 10 + 18, you can first rewrite it as 10 + 10 + 8. This is then rewritten as 20 + 8, which you may see is 28. This could be used together with concrete

objects to demonstrate each expression in this list. The expression 10 + 18, for example, could be illustrated as follows:

●●●●●●●●●● ●●●●●●●●●●●●●●●●●

On the other hand, 10 + 10 + 8, could be illustrated as follows

●●●●●●●●●● ●●●●●●●●●● ●●●●●●●●

Finally, 20 + 8 could be illustrated as follows

●●●●●●●●●●●●●●●●●●● ●●●●●●●●

2.3 Another strategy is to first set up the work as shown

10
<u>+ 18</u>

2.3 Another strategy uses the number line, in which we start by showing 18 on the number line and from 18 taking as many as 10 steps to the right (or in the positive direction).

**Create and solve problems involving addition and subtraction of whole numbers with totals up to 100.**

3.1 I think of a number, then add 25 to it. The answer is 42. What was my number?
In my yard are 16 puppies. 5 have spots. What number has no spots?
Kay and Jenny have 8 cakes each. How many have they altogether? Kay gives 2 to Jenny? How many does Kay now have? How many does Jenny now have?
85 persons on a bus. 8 get off. How many persons are on the bus now?

3.2 Students create their own word problems involving addition or subtraction. Problems are given to small groups to solve. Problems and solutions are displayed in the classroom. Students are challenged to find faster or more efficient ways of solving student created problems. New solutions are displayed and discussed. Are they better? Faster? Easier to follow?

**TERM 1 STRAND 5 Patterns, Functions & Algebra UNIT 6: MY FAVOURITE THINGS (2 weeks)**

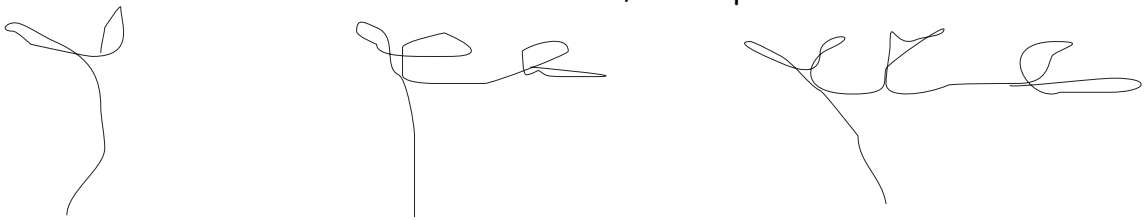
| AT 5 | **LO 1: Use simple diagrams to show relation of one number to another in familiar contexts** ***Success Criteria*** |
|---|---|

1. Draw arrow diagrams to show simple relationships
2. Create and solve their own problems using number patterns and relationships

**ACTIVITIES**

**Draw arrow diagrams to show simple relationships**

1.1 Students are told a story in which some friends enter a yard and see some flowers in a line. It is noticed that: The first flower has 1 branch and 2 leaves
The second flower has 2 branches and 4 leaves
The third flower has 3 branches and 6 leaves, as the picture shows

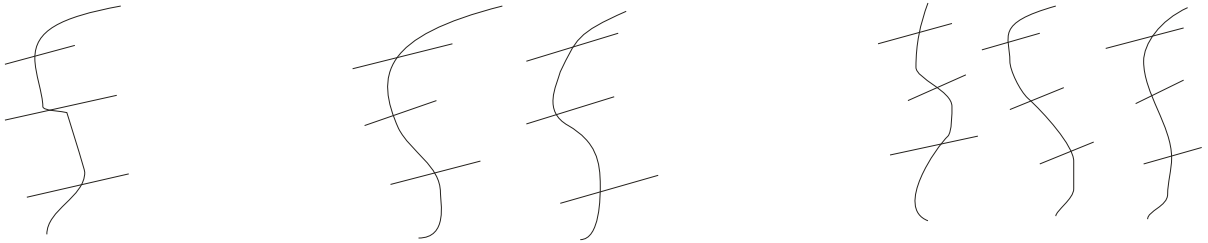


(i) Draw the next flower
(ii) How many leaves (are there) for each branch?
(iii) Complete the table

| How many branches? | 1 | 2 | 3 | |
|---|---|---|---|---|
| How many leaves? | 2 | 4 | 6 | |

1.2 Students look as some persons enter the classroom, one by one. They see that:

The first person comes with 1 string and 3 sticks
The second person comes with 2 strings and 6 sticks
The third person comes with 3 strings and 9 sticks, as the picture shows



First person second person third person

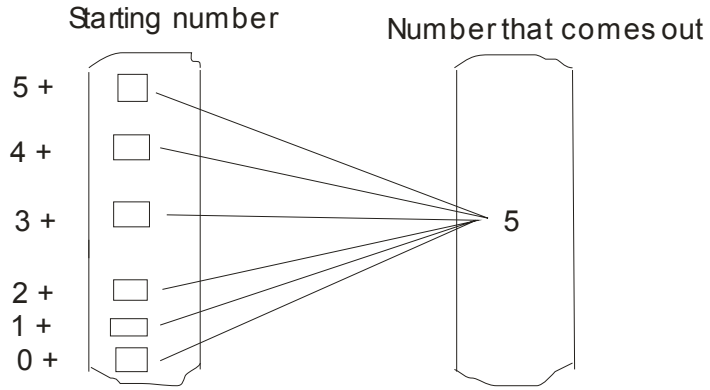
(iv) Students predict what the next person has (before that person enters the classroom).
(v) Students draw the next person.
(vi) Students discuss how many sticks (there are) for each string.
(vii) Students complete the table

| How many strings? | 1 | 2 | 3 | |
|---|---|---|---|---|
| How many sticks? | 3 | 6 | 9 | |

1.3 Students are told a story in which some "learners" are on a trip or passage in a vehicle which is being pulled by a string as shown. The trip is designed in such a way that the learners will come through a machine, a function machine. Once they enter the machine, their number changes. It is now doubled. Students find the result when the starting number is given. They use their calculation to complete a table.

| Starting number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Result | | | | | |

1.4 Students use the function machine to create addition patterns in which, for different starting numbers, the number that comes out is the same.

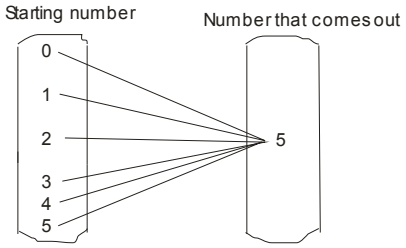



Students fill in the spaces shown in the starting number column as they answer questions such as the following:

i. We want to make 5 by adding 5 to a number. Is there a number to which we can add 5 to get 5? If so, what number is it?

ii. We want to make 5 by adding 4 to a number. How can we do this? What must the starting number be?

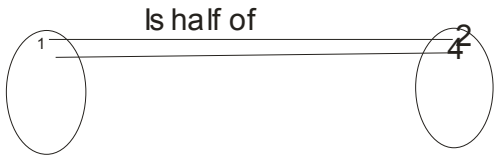
1.5 For the above pattern, students are presented with a picture or illustration as follows



What number must we add to 0 to get 5? What number must we assign to 1 to get 5? What number must we add to 2 to get 5? What number must we assign to 3 to get 5? What number must we give to 4 to get 5? What number must we add to 5 to get 5?

1.6 Students engaged in game in which a member of one team says, "My number is now □. But I want it to be 5. What must I do?" And the question is answered by a member of the other team. Example: "My number is now 1. But I want it to be 5. What must I do?" "Add 4." Variation: Instead of 5, use another number. [A similar activity can be done for subtraction: Example: "My number is now 15. But I want it to be 5. What must I do?" "Subtract 10."]

1.7 Students complete the following picture and are engaged in discussing any connection they see it has to 1.6.




**Create and solve their own problems using number patterns and relationships**

2.1 Students are told a story in which some friends enter a neighbourhood in which is a mango tree and begin to send stones to pick mangoes. They notice that:
To pick 1 mango, they send 2 stones
To pick 2 mangoes, they send 4 stones
To pick 3 mangoes, they send 6 stones

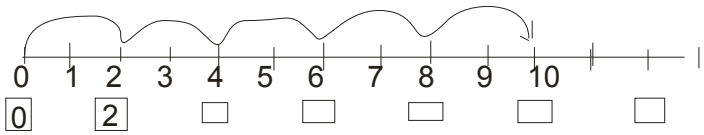
| ♥ | ♥♥ | ♥♥♥ | |
|---|---|---|---|
| OO | OOOO | OOOOOO | |

(ii) Draw the next picture
(iii) Complete the table

| How many mangoes? | 1 | 2 | 3 | |
|---|---|---|---|---|

| How many stones? | 2 | 4 | 6 | |
|---|---|---|---|---|

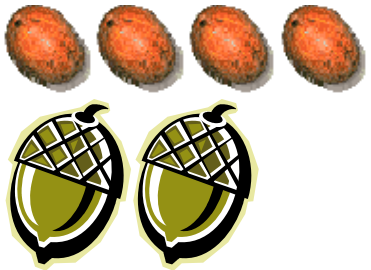
a. Through suitable story, students are introduced to patterns using the number line. For example, they are told of a game in which a mosquito is told that every number it jumps on is its own. The mosquito jumps as shown in the diagram.




Students predict where the mosquito will land after the next jump. They identify the numbers the mosquito gets (0, 2, 4, 6, 8, 10, …). They discuss and identify what rule the mosquito uses to jump. (The rule is to begin on 0 and add 2 for each jump.)

b. Students of one group (say group A) come to students of another group (group B), doing so in such a way that the first student has 1 item of a particular kind and, say, 2 of another kind. The second student comes with 2 items of that kind and 4 of the corresponding kind. The third student comes with 3 items of that kind and 6 of the corresponding kind. Students (of group B) are to work out how the next student (of group A) will come etc.

**First student of group A**



**second student of group A**

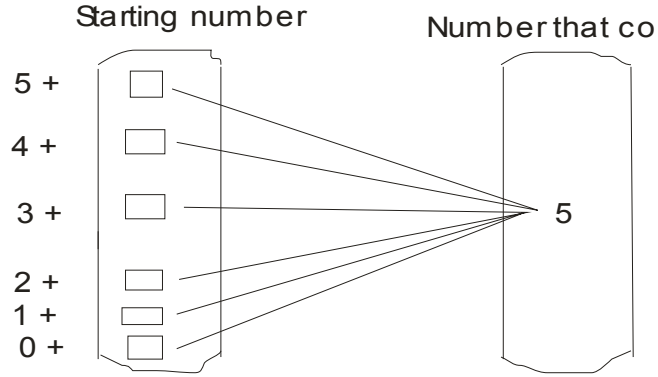
**third student of group A**

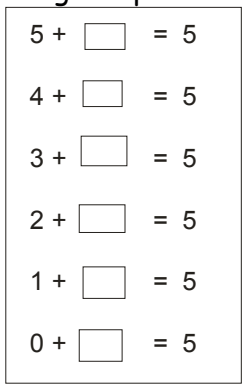
**RESOURCES**

Blank paper, diagrams of incomplete patterns, persons, strings, sticks, branches and leaves,

**ASSESSMENT**

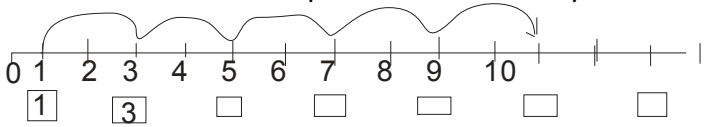
- Shown a diagram as follows, can fill in the spaces to shown different ways to get a particular number, such as 5.




- Shown a way to get a particular number, can write other ways. For example, shown 7 + 0 = 7 as a way to get 7, can indicate other examples such as
  - (i) 6 + 1 = 7
  - (ii) 5 + 2 = 7
  - (iv) 4 + 3 = 7
  - **(v)** 3 + 4 = 7
  - **(vi)** 2 + 5 = 7
  - **(vii)** 1 + 6 = 7
  - **(viii)** 0 + 7 = 7

- Shown a pattern as pictured below, can continue the pattern and identify the rule



| TERM 2 SUMMARY | |
|---|---|
| **UNITS** | **SESSIONS** |
| ***UNIT 1: ON THE BEACH*** **Number**<br>*AT 1: LO 3*<br>*Success Criteria*: 2 – 6 | 32 |
| **UNIT 2: OUT OF THE BOX Geometry**<br>AT 2 : LO 2<br>Success criteria: 1 – 6 | 10 |
| **UNIT 3: HELPING MUMMY Measurement**<br>AT 3: LO 3; LO 4<br><br>AT 3:LO 3<br>Success criteria: 1 – 3<br>AT 3: LO 4<br>Success criteria: 1 – 4 | 10 |
| **UNIT 4 : GOING SHOPPING Statistics**<br>AT 4: LO 1<br><br>Success criteria: 1 – 5 | 12 |
| **UNIT 4 : MY FAVOURITE THINGS Patterns**<br>AT 5: LO 2<br><br>Success criteria: 1 – 4 | 10 |
| | 74 |

## UNIT PLAN WITH SUGGESTED TEACHING, LEARNING & ASSESSMENT ACTIVITIES

### TERM 2 STRAND 1 Number UNIT 1: ON THE BEACH (4 weeks – 32 sessions)

| | |
|---|---|
| **AT 1** | **LO 3: Create and solve real life problems involving addition and subtraction with numbers up to 100 (and involving multiplication and division of one and two digit numbers)**<br>***Success Criteria*** |

1. Use several strategies to add a two-digit number to a one or two digit number, without and with regrouping, totals up to 100.
2. Create and solve problems involving addition and subtraction of whole numbers with totals up to 100.
3. Discuss and use several strategies to subtract a one or two-digit number from a two-digit number, without and with regrouping.

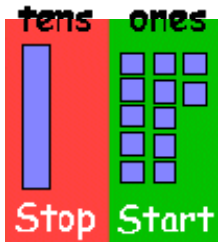
**ACTIVITIES**

Manipulatives: The most important thing to remember when introducing or practicing the concepts of addition and subtraction is to use manipulatives. By using manipulatives, students are able to master basic facts.

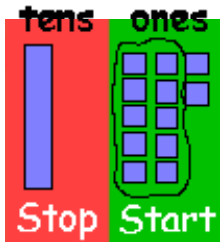
**Use several strategies to add a two-digit number to a one or two digit number, without and with regrouping, totals up to 100.**

1.1 Addition with regrouping requires the students to use manipulatives to demonstrate how they exchange ten "ones" for one "ten". Students are asked to show the number 12 using only ones manipulatives and placing a ten manipulative in the tens column. This is when the students are taught that there can be no more than 9 ones in the ones column. This form of exchanging should be repeated with other numbers.

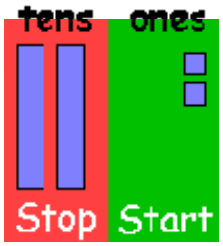
1.2 Additions such as 14 + 8 can be modeled using base ten materials, see below:




1 ten 4 ones & 8 ones




1 ten 14 ones

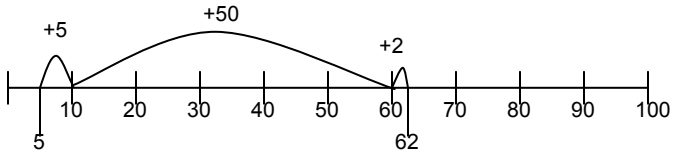



2 tens 2 ones

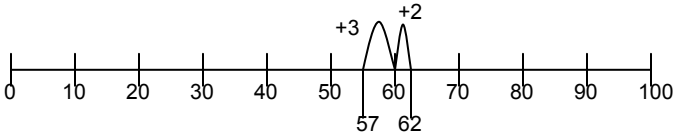
1.2 Write on the board: 5 + 57
Ask students: *How might you work this out?*

Illustrate the two ways of tackling this calculation on a number line.

5 + 57 =

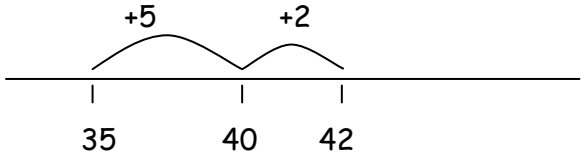



57 + 5 =




Use the number line marked in multiples of 10 to illustrate how to partition the 7 into 5 and 2, to make use of the multiple of 10.

Model the recording:




35 + 7
= 35 + 5 + 2
= 40 + 2
= 42

**Note: Students will need a great deal of practice with all these ideas.**

**Discuss and use several strategies to subtract a one or two-digit number from a two-digit number, without and with regrouping.**

3.1 Write on the board: 35 – 7 = ف
**Ask students** *How might you tackle this?*

Encourage responses such as:

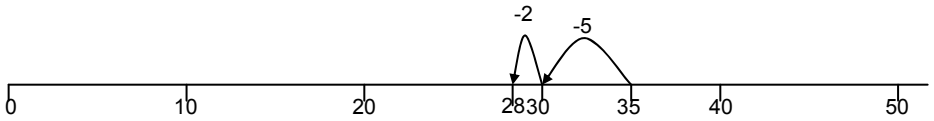
- subtract 7 from 35
- find the difference between 7 and 35
- calculate 35 minus 7
- count back 7 from 35.

3.2 Ask the children to think about how they have been adding a single digit onto a two-digit number.
Can you use a similar method for subtracting a single-digit number?
Is the answer to this calculation going to be more or less than 30? How do you know?

Explain that this will tell them whether they need one or two steps to solve the calculation. Illustrate the two steps on a bead string.

3.3 If the calculation was 35 – 4, would we need two steps or one? Why

Show the same calculation (35 – 7) on a number line marked with multiple of tens.




Record 35 – 7
= 35 – 5 – 2
= 30 – 2
= 28

Emphasise that, as with addition, this strategy uses multiples of ten as a 'bridge'.

Point out that both ways achieve exactly the same total.

**Note: Students will need a great deal of practice with these ideas.**

**TERM 2 STRAND 2 Geometry UNIT 2: OUT OF THE BOX (1 – 2 weeks – 10 sessions)**

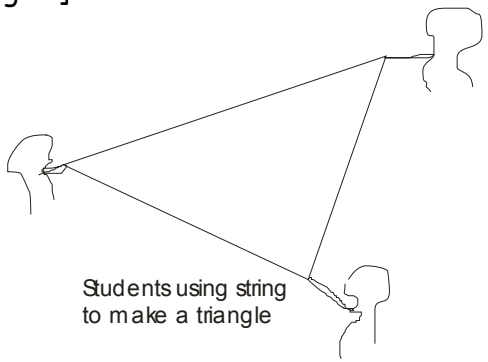
| AT 2 | **LO 2: Classify and identify, by name, regular 2-D shapes according to given criteria**<br>***Success Criteria*** |
|---|---|

1. Identify and talk about examples of 2-D shapes (rectangles, squares, triangles and circles) in their environment.
2. Sort and classify 2-D shapes on the basis of their attributes, e.g., shape, size, number of corners
3. Describe 2-D shapes in terms of the number and length of their sides
4. Sketch squares, rectangles, triangles and circles.
5. Sketch 2-D shapes according to given descriptions.
6. Play games to reinforce use of prepositions such as by, on, in, inside, outside, opposite, beside etc. in relation to 2-D shapes.

**ACTIVITIES**

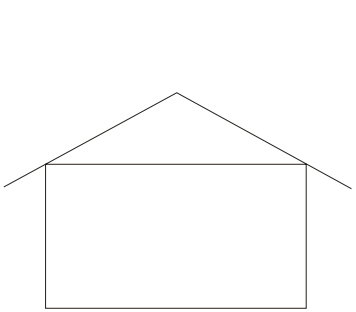
**Identify and talk about examples of 2-D shapes (rectangles, squares, triangles and circles) in their environment.**

1.1 Students look as three sticks (possibly match sticks) or taut strings are moved so that they meet at three points. Students are asked to suggest the name of the figure that results. Students talk about how they know it is a triangle. ["tri" means "three;" triangle has three angles]

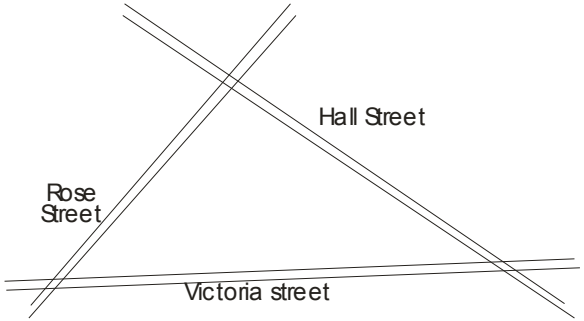


Students using string to make a triangle

Students mention where the triangle is involved in the environment.



Is there a triangle in this house?




Is there a triangle in this arrangement?

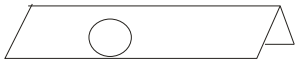
1.2 Students are given a rectangular piece of paper. They talk about the rectangle. Using scissors, they cut the sheet in such a way that it separates into two other shapes, each of which is a rectangle. They discuss the relation between the large rectangle and the smaller ones. For example, they observe that the large one can result from putting the smaller ones together. (This may serve as a springboard for exploring the idea of tessellation.)

1.3 Students talk about the relation of a rectangle (or a square) to triangle. For example, they show how to get a rectangle (or a square) from two triangles (or how to get triangles from a rectangle or square).

**Sort and classify 2-D shapes on the basis of their attributes, e.g., shape, size, number of corners**

2.1 Students are engaged in comparing the number of corners a shape has if it is (i) a rectangle, (ii) a square, (iii) a triangle, (iv) a circle.

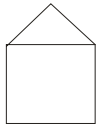
2.2 Students are given various figures on cards and asked to sort them according to their shape



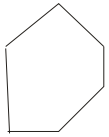
What shape is on this card?

What shape is on this card?

2.3 Students sort shapes into those with symmetry and those without symmetry. They note that the result (figure) has symmetry if it is made using a rectangle and a triangle, as illustrated.



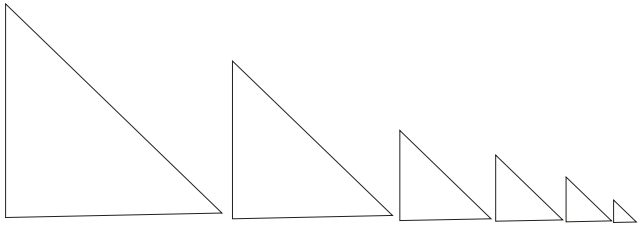
2.4 Students are told a story in which this shape is flying in space. It enters a hole and is squeezed so that a piece falls off from it.



Is it still with symmetry? Students discuss things, such as loss of an arm or a leg, which means the body loses symmetry.

**Describe 2-D shapes in terms of the number and length of their sides**

3.1 The teacher enters the classroom and shows assorted triangles (see figure)



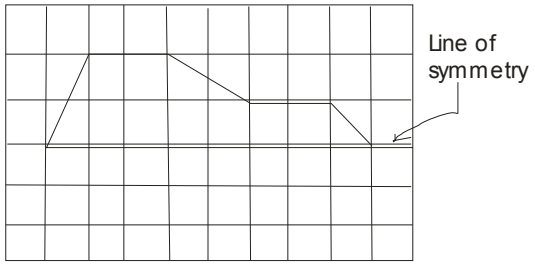
Students talk about the triangles – how they are the same and how they are different. They describe the triangles in terms of the lengths of their sides. In groups, students are given similar triangles and explore ways to arrange the triangles to find that they can make different shapes.

3.2 Students are grouped. Each group is given a different 2-D shape to describe in terms of sides and length of sides.

**Sketch squares, rectangles, triangles and circles**

4.1 Students are grouped. Each group is given cut-out 2-D shapes, construction paper, scissors and glue. Students trace around shapes on construction paper and paste on their exercise books.

4.2 Students complete the sketching of figures so that the result has symmetry.




4.2 Students are given a picture depicting 2-D shapes. Students answer questions based on picture: e.g. (i) The circle is ___ the flower pot. (ii) The door is shaped like a ____. (iii) Windows are shaped like ____. (iv) The ___ is above the flower pot. (v) The roof is shaped like a ____

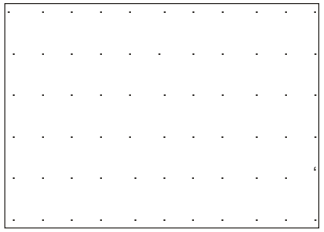
**RESOURCES**

Squared paper, cards, coloured paper, geoboard

**ASSESSMENT**

- Check that when given a square, students can (i) cut it into 4 triangles, (ii) can indicate whether using these 4 triangles they can make
  (a) a rectangle
  (b) a big triangle
  (c) another square
  (d) a circle

- Check that when shown a grid as illustrated, students can use it to sketch a square, rectangle or triangle



- Check that when shown a word bank and a picture, students can use words from the word bank to describe the position of some item in the picture. For example, when the word bank includes words such as in, on, beside, above, between, students can complete items as follows.

The plane is _____ the air

The car is _____ the road

- Check that students can complete tables such as the one below

| Shape | Number of sides | Number of corners |
|---|---|---|
| Triangle | | |
| Rectangle | | |
| Etc. | | |

**TERM 2 STRAND 3 Measurement UNIT 3: HELPING MUMMY (2 weeks – 10 sessions)**

| | |
|---|---|
| **AT 3** | **LO 3: Estimate and measure the capacity of different objects using basic standard units**<br>***Success Criteria*** |

1. Compare estimates, measure and record the capacity of containers using the litre as the unit of measure.
2. Compare the capacity of two or three containers using phrases such as 'holds more', 'holds the least', etc.
3. Create and solve problems involving the measurement of capacity.

**ACTIVITIES**

**Note: teachers should exercise caution when using water in the practical activities. A bucket and mop should be available.**

**Compare estimates, measure and record the capacity of containers using the litre as the unit of measure.**

1.1 Get students to fill some tins with water using three different sized cups and record answers viz.

| Tin | Cup A | Cup B | Cup C |
|---|---|---|---|
| 1 | 5 cups | 7 cups | 3 cups |
| 2 | 4 cups | 6 cups | $2\frac{1}{4}$ cups |

Students discuss answers. This should lead to the need to use a standard unit of capacity – the litre (l).

1.2 Show students a 1 litre container. The show them shown a container whose capacity they are likely to want to know. Students are then engaged in making estimates in litres of the capacity of the container. Students' estimates are recorded so that these estimates can then be compared. Some of these are expected to be below the actual value and some to be above. *But all of these measurements involve* ***error***. Discuss how error can be reduced.

1.3 Students are placed in groups and given a variety of different sized containers. Students compare and estimate the amount of water in each container.
Students then measure the capacity of each container using a litre measuring cup. Students should complete a table to show their results.

| Container | Estimated capacity (litres) | Actual Capacity (litres) |
|---|---|---|
| A | | |
| B | | |
| C | | |

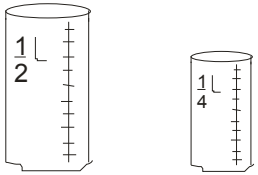
**Compare the capacity of two or three containers using phrases such as 'holds more', 'holds the least', etc.**

2.1 Students are given a range of containers and are allowed to compare the capacity of the containers by using "holds more", "holds less". Students draw the containers and record their observations on their books.

**Create and solve problems involving the measurement of capacity.**

3.1 Students are given a table showing various containers and their capacities. Students observe information and answer questions based on the information given.

Students draw containers to show which hold more, less



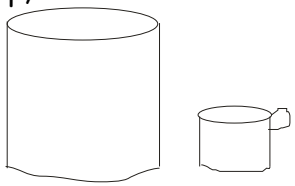

3.2 Students can use results of their measurements to create and solve their own capacity problems. For example, if item A's capacity is 1 unit and item B's capacity is 2 units, what is the capacity of the item holding exactly the contents of A and of B?

**RESOURCES**

Tins, water, plastic cups, 1 litre jug or bottle, sand, glasses

**ASSESSMENT**

- Check that when shown two containers, students can indicate which is greater in capacity (which has the larger capacity).
- Check that when shown a container, students can give their estimation of its capacity and then check their estimation.
- Check that when shown a large container and a cup, students can indicate the number of cups the container holds



- Check that when shown a definite number of a large container that someone drinks in, say, a week, students can indicate that amount by indicating the number of cups.

| AT 3 | **LO 4: Estimate and measure the mass of different objects using basic standard units**<br>***Success Criteria*** |
|---|---|

1. Compare estimates, measure and record the mass of objects using the kilogram as the unit of measure.
2. Talk about situations in real life where the kilogram is used as a unit of measure and give reasons for these uses of the unit.
3. Compare the masses of two or three objects using phrases such as heavier, lighter, lightest, etc.
4. Create and solve problems involving measurement of mass.

**ACTIVITIES**

**Compare estimates, measure and record the mass of objects using the kilogram as the unit of measure.**

1.1 Get students to weigh some object using three different sizes of wooden cubes (or other suitable item) and record answers viz.

| Object | Small cubes | Medium cubes | Large cubes |
|---|---|---|---|
| Book | 18 | 12 | 6 |
| Pencil case | 8 | 6 | 4 |

Students discuss answers. This should lead to the need to use a standard unit of mass – the kilogram (kg).

1.2 Student are placed in groups. Each group has a balance and some sand/stones, some plastic bags and a 1 kg weight. Students fill the plastic bags with what they think is 1 kg of sand/stones. They then check their answers by placing their bag on a balance with the 1 kg weight. Students check to see if their estimates were close. Students can then fill their bags so that they weigh exactly 1 kg.

1.3 Students in small groups write down items that they believe weigh more than, less than, about same as 1 kg.

| Item with mass less than 1 kilogram | Item with mass about 1 kilogram | Item with mass more than 1 kilogram |
|---|---|---|
| | | |
| | | |
| | | |

Using a balance and a 1 kg weight students check whether their answers are correct.

1.4 Students are engaged in using scale to weigh objects. What is important is getting/ recording different measurements. This can be achieved by using, say, the same shoe but each time after having placed additional items such as stones inside it. (This lets students see that their bag, say, can be heavy or light depending on what they have in it.) Or it can be achieved using different things.

After they are recorded, the measurements can be used to create problems and proceed to work out possible solutions. For example, if item A's mass is 1 kg and item's B's mass is 2 kg, what is the mass of the item formed by placing A and B together?

1.5 Students are placed in groups and given a variety of items. Students compare each item with a 1 kg weight and estimate the mass of each item.
Students then use a scale to find the actual weight in kilograms.

| Item | Estimated mass (kg) | Actual Mass (kg) |
|---|---|---|
| A | | |
| B | | |
| C | | |

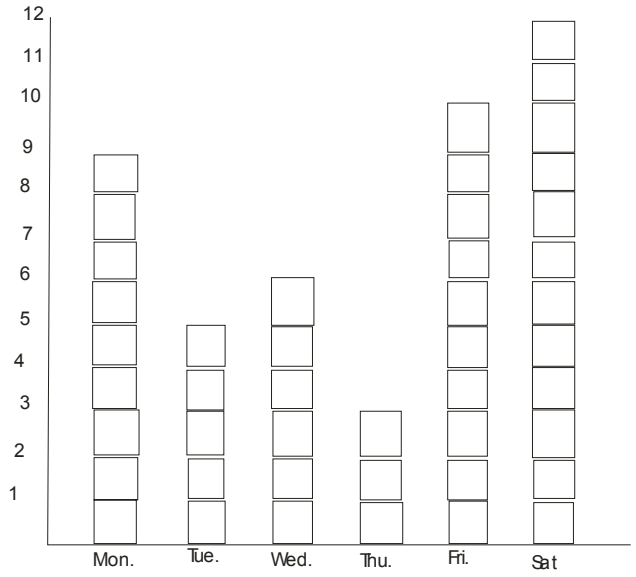
**Talk about situations in real life where the kilogram is used as a unit of measure and give reasons for these uses of the unit.**

2.1 Discuss buying sugar, flour etc. from a shop or supermarket. Ask students how much does your family buy? Ask students about the units of weight used (pounds, kilograms, grams etc.)

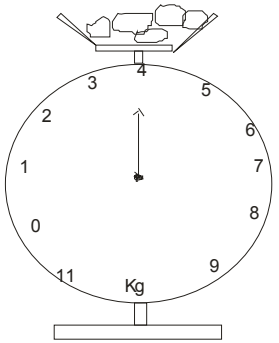
2.2 Get students to bring in some tins/covers from a supermarket. Look at the weights shown on the packages, discuss what they might mean. Get students to make a collection of labels which mark weight in kilograms.

**Create and solve problems involving measurement of mass.**

4.1 Students are told a story of a market in which meat are sold. They are shown items that represent the meat sold at that market on different days of the week, say, from Monday to Saturday. Students are to use a balance to find the mass of the meat sold on each of the given days. Their results can be displayed using a bar chart, as illustrated below. (Numbers are in kilograms.) They are posed with questions, such as: What mass was sold on Monday? On which day was the sale of meat best?




4.2 What measurement is shown on the scales?



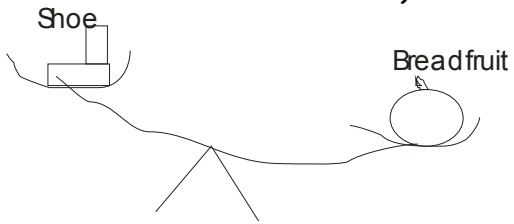

4.3 There are 5 kg of pears in 1 box. How many kilograms of pears are in 3 boxes?

**RESOURCES**

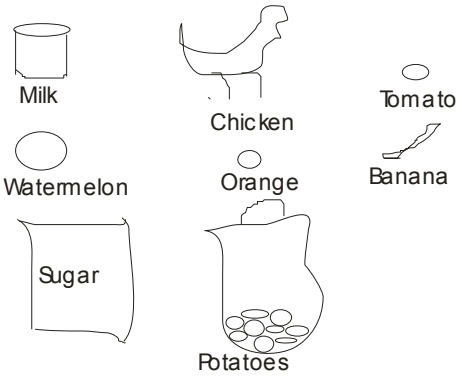
Supermarket/shop, items in shop/supermarket, scale, various weights

**ASSESSMENT**

- Check that when shown two items on different sides of a balance, students can indicate which is heavier or lighter or whether they are equally massive (whether their masses are the same).




- Check that when shown various items, students can sort them according to their mass in kilogram, by completing a table like the one below




| Items that have a mass of | | less than $\frac{1}{2}$ Kg |
|---|---|---|
| 2 kg | 1 kg | |
| | | |
| | | |
| | | |
| | | |

- Check that when shown various items, students can indicate which they estimate to have a mass of more than 1 kg.

**TERM 2 STRAND 4 Statistics and Data Handling UNIT 4: GOING SHOPPING (1-2 weeks)**

| AT 4 | **LO 1: Collect simple data through observation and interview and record results**<br>***Success Criteria*** |
|---|---|

1. Generate real life questions that may be answered through data collection.
2. Describe how to collect data through observation and simple interviews.
3. Discuss similarities and differences between observation and interviewing.
4. Collect simple sets of data through observation and simple interviews.
5. Use number statements to record collected data.

**ACTIVITIES**

**Generate real life questions that may be answered through data collection.**

1.1 Students are read a story which leads to their asking, "How many sunny days, cloudy days and rainy days are there in a month?" They are engaged in discussion to help them suggest how they may proceed to answer the question. They are led to observe that they would have to record each day's weather and that this may be done by drawing picture on a calendar, or use of a table as illustrated.

| Weather | Tally |
|---|---|
| Sunny | |
| Cloudy | |
| Rainy | |

They then proceed to record each day's weather. At the end of the month they make a picture graph showing how many sunny days, cloudy days and rainy days in that month. They are questioned to give answers such as, "The weather on day 1 was sunny."

1.2 Students are led to observe that although they all get to school, they do not do so in the same way. They are engaged in discussing how students get to school. They ask questions such as, 'How many students get to school by bus?'

1.3 Students are read a story in which someone eats a variety of food items. They are led to ask, "How many apples, oranges, bananas and mangoes does our class eat a week?" Again they are led to note that they would have to record the numbers on each day of the week. At the end of the week, they are asked to count the numbers of each type of fruit eaten. They are engaged in discussion to answer questions to how many more of one kind of fruit are eaten then another. They are posed with question such as, "What was our class' least favourite fruit that week?"

**Describe how to collect data through observation and simple interviews.**

2.1 Students are involved in discussions that generate questions such as: how many boys in your class? How many girls in your class? How many male teachers in your school? How many female teachers in your school? How many students of Grade 2 are wearing white shoes? How many are wearing black shoes? How many teddy bears in our toy corner? How many cars in our toy corner? Etc. Ask: *How could you collect this data?*

2.2 Students are allowed to name their birthdate and record it on board in the form of a table. Students compare their birthdates to each other.

2.3 Students and teacher discuss various days subjects are taught: Mathematics – Monday & Tuesday; Language – Thursdays, Mondays

2.4 Students with orange juice, cool-aid, guava juice are asked to form groups or lines according to kind of juice.
2.5 Students may be grouped according to their likes and dislikes (through interview)
2.6 Students can be paired up and allowed to interview each other and are allowed to asked about each other's likes and dislikes.

**Discuss similarities and differences between observation and interviewing.**

3.1 Students are told a story in which someone enters the classroom in which they are and wants to find out, say, their height, their number of hours of sleep, their favourite subject. Students talk about and identify how they would collect the data for each topic. One group of students use observation to collect the data and describe how they go about doing so.

3.2 Another group use interview to collect the data and describe how they go about doing so. These descriptions are each written on a chart and placed side by side on the chalkboard. Students are asked to identify how the procedures are alike and how they are different. One group may prepare a booklet on observation and the other group on interview.

3.3 Students such and such the following demonstration. A basket of fruits is presented to a student. The student comes forward and represents information on chart.

| Fruit | Tally |
|---|---|
| Orange | |
| Banana | |
| Guava | |
| Mango | |

While another student questions 12 students standing in front of the class to elicit from them which of the four fruits is their favourite. Students then represent information collected on chart.

| Favourite fruit | Tally |
|---|---|
| Orange | |
| Banana | |
| Guava | |
| Mango | |

Students are involved in discussing with the teacher the similarities and differences between observation and interviewing.

3.4 Students are given various kinds of information. Students pair up and compare the similarities and differences of the information given.

3.5 Students are given various fruits and are allowed to taste them. Students group fruits in terms of sweet ones, sour ones, dry fruits, water fruits.

**Collect simple sets of data through observation and simple interviews.**

4.1 Students are placed in two groups. One group is asked to collect information through interview and the other through observation on the snacks that are eaten during breaktime. The similarities and differences in the method of collection are discussed.

4.2 Class Project: Students collect data on number and type of fruits eaten at home for a week through observation and interview. They fill out information on worksheet.

4.3 Students are allowed to question each other about their families – e.g.: Number of boys
Number of girls
Number of people
Number of men
Number of women

Students must represent this in a table.

**Use number statements to record collected data.**

5.1 Students can be given a passage, count the number of times particular letters (or verbs) appear and record it on given table or tally chart. Students then make statements to answer questions such as, "how many times does the letter 'a' appear?"

5.2 Students are given a chart, labelled various colours and number of cars with named colours. Students write the number of cars with the colour red, number of cars with the colour blue. [Caribbean Primary Math, p. 43]

**RESOURCES**

Students, various juices, various fruits, chart with various colours and cars, teddy bears, animal chart, pictograph

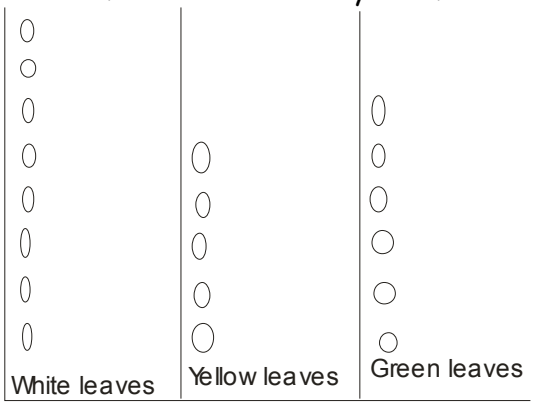
**ASSESSMENT**

- Check that when shown a tally chart, students can complete a table. Example, for the tally chart which shows the number of children who sat on various rides, they can complete the table.

| Activity | tally |
|---|---|
| Ferris wheel | 𝍸 𝍸 // |
| Bumper car | 𝍸 /// |
| Horse Carousal | 𝍸 / |
| Roller Coaster | 𝍸 𝍸 𝍸 |

| Activity | number of children |
|---|---|
| Ferris Wheel | |
| Bumper car | |
| Horse carousal | |
| Roller coaster | |

- Check that when given a graph showing some result, students can answer related questions. The following graph shows the colour of the leaves lost by the flowers in a yard.




_____ flowers lost white leaves.
_____ flowers lost yellow leaves.
_____ flowers lost green leaves.
_____ more flowers lost white leaves than green leaves.
_____ was the most popular colour.

**TERM 2 STRAND 5 Patterns, Functions and Algebra UNIT 5: MY FAVOURITE THINGS (1-2 weeks)**

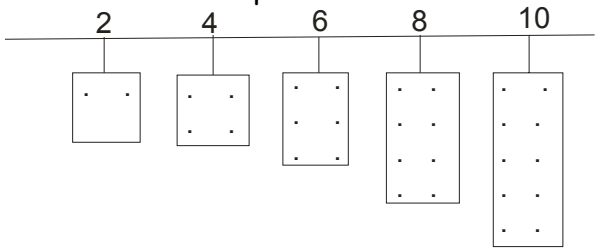
| AT 5 | **LO 2: Predict missing elements of simple patterns or sequences**<br>***Success Criteria*** |
|---|---|

1. Complete a sequence of numbers that involves counting by 2's, 5's and 10's
2. Create their own number sequence by counting on.
3. Play games and puzzles to complete number sequences.
4. Solve problems involving simple number sequences.

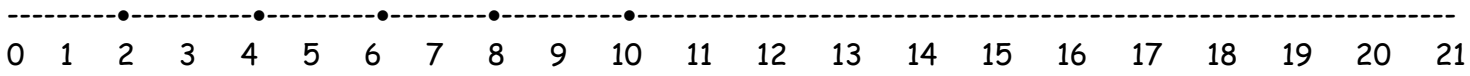
**ACTIVITIES**

**Complete a sequence of numbers that involves counting by 2's, 5's and 10's**

1.1 Students are told a story which is about a sequence, in which the numbers of mangoes that fall from the tree (or the number of green bottles that fall from the wall or the number of cars that appear at a station) are 2, 4, 6… Students are shown an illustration of this on the number line. They predict the next number that falls (or appears) and discuss the relationship.




1.2

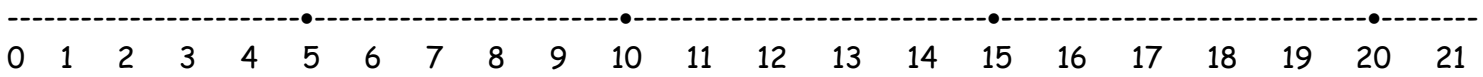


Note:

(i) For this pattern, it may be suggested to students that they imagine, say, a mosquito starting at 0 and skipping 1 but landing on 2, skipping 3 but landing on 4, skipping 5 but landing on 6, and so on. On what number will the mosquito land after ten jumps? Answer: 20)

(ii) Students can be involved in deciding how the mosquito proceeds and therefore in making their own sequence and asking their peers to answer prediction type questions.

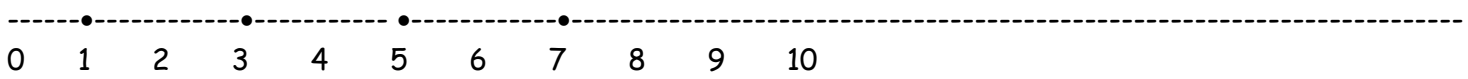
1.3 Students are told a story in which a goat enters a yard and begins to eat away at some flowers there. It is noticed that the number of leaves that fall are 5, 10, 15, 20… Students proceed to see an illustration of these numbers on the number line.




1.4 Students are engaged in a similar example, but in which the numbers that appear are 10, 20, 30, 40, …

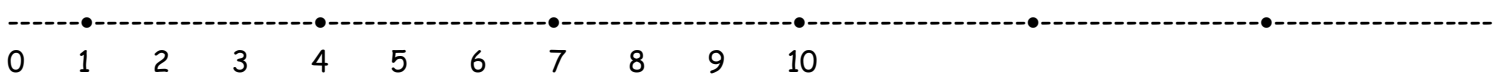
**Create their own number sequence by counting on.**

2.1 Students are told a story in which a mango tree is shaken, by someone on the tree. Someone under the tree notices that after the first shake, 1 mango falls from the tree. After the second shake, 3 mangoes fall. After the third shake, 5 mangoes fall. After the fourth shake, 7 mangoes fall. In fact, the numbers of mangoes that fall from the tree are 1, 3, 5, 7… Students are shown an illustration of this on the number line.




Students (i) suggest the number that will fall after the fifth shake, (ii) give reasons, (iii) explain the pattern that the numbers show in how mangoes fall from the tree.

2.2 Students are told a story in which someone (say, a student in the class) blowing a whistle has an effect on another (such as the teacher). After the first blow, 1 object (say a pebble) is dropped. After the second blow, 4 objects are dropped. After the third blow, 7 objects are dropped. After the fourth blow, 10 objects are dropped. Students are shown an illustration of this on the number line.




Students (i) predict the number that will be dropped after the fifth blow, (ii) continue the pattern 1, 4, 7, 10… , (iii) talk about the relationship between each pair of numbers in this sequence, for example, the relationship of 4 to 1, of 7 to 4; (iv) students observe that the difference is always 3.

2.3 Students are involved in (i) creating stories that give rise to such simple number patterns or sequences, (ii) observing illustrations of these on the number line, (iii) talking about the relationship between each pair of numbers in the sequence.

**Solve problems involving simple number sequences.**

4.1 Students are told story such as follows. For the claps and stomps she made, one student made a table as shown. They are then engaged in discussing the table and answering simple questions. Example: How many stomps were made for 4 claps? How many for 6 claps? If there were 16 stomps, how many claps?

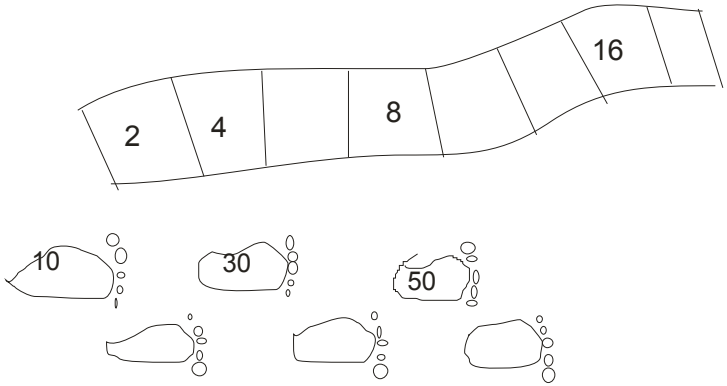
| Claps | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Stomps | 2 | 4 | 6 | 8 | 10 |

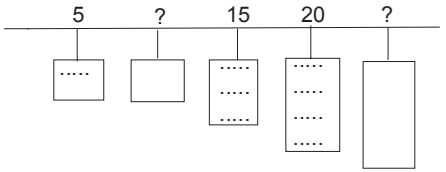
**RESOURCES**

Drawing of number line, number cards, students, number squares, crayons and markers

**ASSESSMENT**

1. Shown a number sequence such as the example below, can complete the sequence.



| TERM 3 SUMMARY | |
|---|---|
| **UNITS** | **SESSIONS** |
| ***UNIT 1: ON THE BEACH - Number***<br>*AT 1: LO4*<br>*Success Criteria*: 1 – 3 | 12 |
| **UNIT 2: HELPING MUMMY - Measurement**<br>AT 3: LO 5; LO 6<br><br>AT 3: LO 5<br>Success criteria: 1 – 7<br><br>AT 3: LO 6<br>Success criteria: 1 – 5 | 24 |
| **UNIT 3: ON THE BEACH - Number**<br><br>**AT 1: LO 3**<br>**Success criteria: 6 -7** | 24 |
| **UNIT 4: GOING SHOPPING - Statistics**<br>AT 4: LO 2<br>Success criteria: 1 – 4 | 10 |
| | 70 |

## UNIT PLAN WITH SUGGESTED TEACHING, LEARNING & ASSESSMENT ACTIVITIES

## TERM 3 STRAND 1 Number UNIT 1: ON THE BEACH (1- 2 weeks 12 sessions)

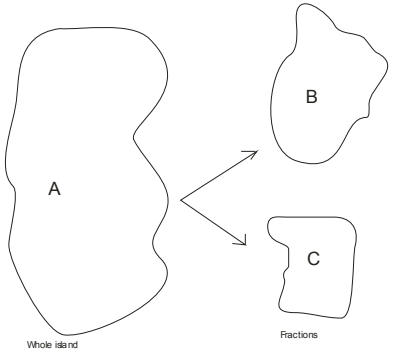
| AT 1 | **LO 4: Use and write simple fractions in a variety of ways in real life situations**<br>***Success Criteria*** |
|---|---|

1. Identify and compare simple fractions using concrete materials (halves, quarters, eighths) using games and puzzles.
2. State and write in numerals the proper fraction that corresponds to a pictorial representation of a fraction of a whole.
3. Describe real life situations that involve fractions of a whole.

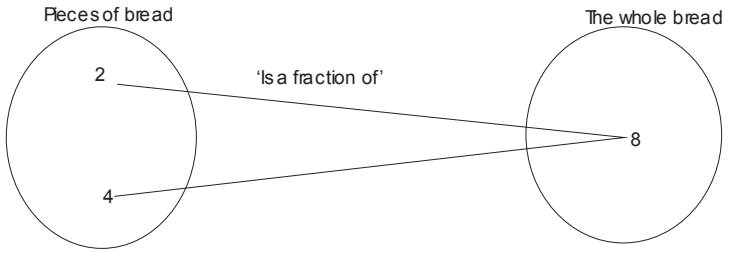
**ACTIVITIES**

**Identify and compare simple fractions using concrete materials (halves, quarters, eighths) using games and puzzles.**

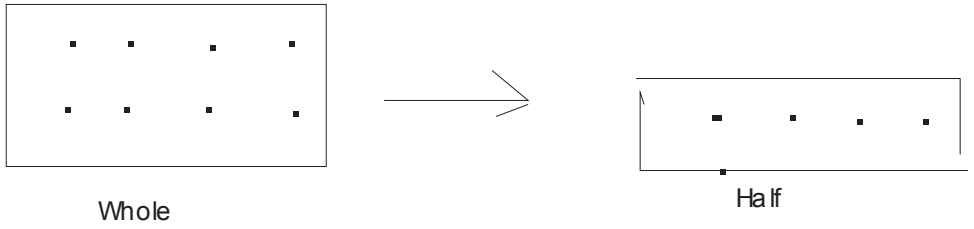
1.1 Students are told stories in which things are broken, whether intentionally or not. For example, in one story in which some persons on a boat are fishing, so much fish is caught that the net is broken. In another story in which some persons are about to have a meal, a whole bread is broken. In yet another story, an island experiences an earthquake and the earthquake is so strong that the island is broken into two pieces/ parts.



Students are reminded (led to recall) that when something is broken, each part/ piece is a fraction. Students watch as different things are broken. They are involved to say that each piece shown is a fraction. When a number is broken, for example, each part is a fraction. Present different whole objects e.g. fruits, bread, cake. Students are shown a picture as illustrated below and they are asked to read what it says.

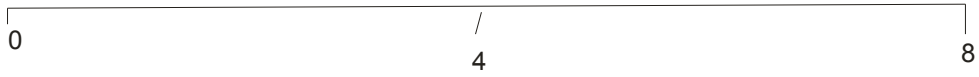



Here the whole bread involves 8 pieces; it can be broken into 8 pieces. If we take 4 of these pieces, we can say 4 is a part of 8, or 4 is a fraction of 8. But 8 has many fractions. So we must say which fraction of 8 that 4 is. To answer this question, we can use pictures, as shown below.




This shows that 4 is half of 8.

1.2 Students are helped to see the part of the number line below illustrates a rod.

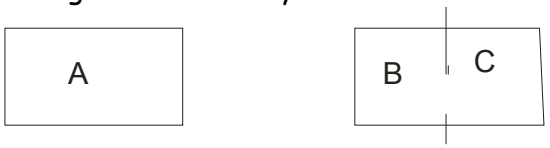



So if this is a rod and it is broken at the position marked by 4, we can say it is broken in half. Each piece is half of the whole rod. This shows that 4 is half of 8.

Students are pointed to various numbers and (in each case) asked to say which fraction of a particular number it is. Example, they are pointed to 5 (on the part of a number line stretching from 0 to 10) or in some other picture as illustrated above and they are allowed to say what fraction of 10 is 5.

1.3 Students are told a story in which Susan cuts a pie in four parts and gave her brother one. Her brother claims that he did not receive a quarter. Students are asked to suggest how this is possible. Students are led to see it is easy to say what fraction we get only if the breaking occurs "cleanly." For example, in the islands we get from the earthquake, is it easy to see what fraction of A is B? "No." We cannot say that island B is half of island A.

Below is an example in which the breaking occurs "cleanly."

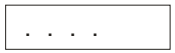



Here it is easy to see that each part is half of the whole. B is half of A. And C is half of A. B is $\frac{1}{2}$ of A. And C is $\frac{1}{2}$ of A.

1.4 Students are told a story in which a mother bought two pizzas. She gave her son Amber half (1/2) of the first pizza and her daughter Asher a quarter (1/4) of the second. Asher got more pizza than Amber. Students are asked to suggest how this is possible.

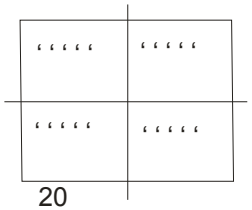
1.5 Students are allowed to draw pictures to answer: Is half of 10 bigger than quarter of 20?

10



Half of 10

Half of 10 is 5



20

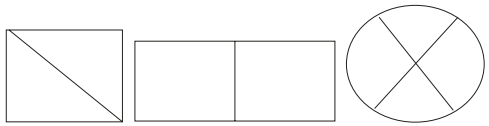
Quarter of 20

Quarter of 20 is 5

So half of 10 is equal to quarter of 20.

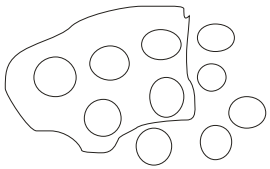
**State and write in numerals the proper fraction that corresponds to a pictorial representation of a fraction of a whole.**

2.1 Students are shown a picture in which a fraction is shaded.



They write the fraction shaded, as $\frac{1}{4}$, $\frac{1}{2}$ etc.

2.2 Students are shown a set of objects such as buttons with a fraction ringed.



Students write, say, $\frac{1}{2}$ to state the fraction ringed.

**Describe real life situations that involve fractions of a whole.**

3.1 Students are told a story in which a whole cake or pizza is divided equally between two or four persons. Students state what fraction each person gets.

3.2 Students are told a story in which a pie is shared equally among the four members of a family. Students describe the fraction that each member gets.

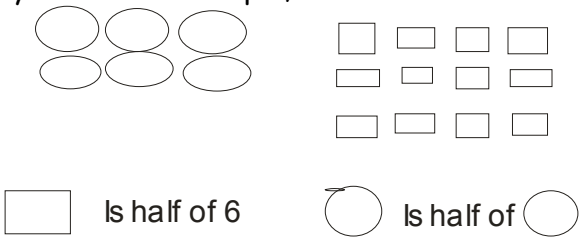
3.3 Students are told a story in which a pizza is divided into four equal parts to share among Susan, Shirley and Cody. Two parts go to Shirley and one each to Susan and Cody. Students describe the fraction that each person receives.

**RESOURCES**

Food, fruits, fraction pies, games, puzzles

**ASSESSMENT**

1. Shown the objects of a set, can identify half. For example, can do exercises such as the following




2. Related a story, can use the information to decide a number.
   i. Anna had 12 cherries. He gave half to Fred. Anna gave Fred ____ cherries.
   ii. Joan had 12 skipping ropes. She gave her friend Susan a quarter of them. Joan gave Susan ___ skipping ropes.

3. Can answer questions such as the following
   i. How many quarters make a half?
   ii. How many halves make a whole?
   iii. A pizza is divided into 8 equal parts. What fraction of the pizza is two parts?
   iv. Is $\frac{2}{4}$ more than, less than or equal to a half?

**TERM 3 STRAND 3 Measurement UNIT 2: HELPING MUMMY (3 weeks – 24 sessions)**

| | |
|---|---|
| **AT 3** | **LO 5: Tell and write time appropriate to age and solve simple problems involving time**<br>***Success Criteria*** |

1. Sing songs for the number of days in a month (e.g. 30 days has September, …)
2. Examine calendars to compare the number of days in a week, month.
3. Use time vocabulary appropriately, e.g., yesterday, today, tomorrow, next week, last week, as soon as, etc.
4. Read and write dates and months from a calendar.
5. Tell, read, write and represent time on the hour and half hour n several ways (e.g. 8:00, eight o'clock) on analogue clock/watch.
6. Tell, read, write and represent time on a digital clock/watch.
7. Create and solve simple problems involving time.

**ACTIVITIES**

**Sing songs for the number of days in a month (e.g. 30 days has September, …)**

1.1 Students are told a story in which some friends want to know the number of days in January. They use an illustration, as shown below.

1.2 Students are taught the number of days in each month (in sequence). They are involved in making up songs about number of days in each month. They can also be taught:

*30 days has September, April, June and November,*
*All the rest have 31,*
*Excepting February alone, which has 28 days clear,*
*And 29 in each leap year.*

**Examine calendars to compare the number of days in a week, month.**

2.1 Students are placed in groups and presented with calendars. With guidance, students are allowed to examine the months of the year and their number of days.
Students are allowed to name the days – example: Today is ____. Yesterday was ___. Tomorrow will be ____.

**Use time vocabulary appropriately, e.g., yesterday, today, tomorrow, next week, last week, as soon as, etc.**

3.1 Students name and describe various events using the words today, yesterday, tomorrow, next week.

**Read and write dates and months from a calendar.**

4.1 Students write and tell their birthdates. Students are given dates to find on calendars – example: 12th March.
4.2 Students are told events and they write the month in which these events take place. Example: Christmas, Carnival

**Tell, read, write and represent time on the hour and half hour n several ways (e.g. 8:00, eight o'clock) on analogue clock/watch.**

5.1 Students are given a variety of clocks and are led (taught) to tell time on half hour, in a variety of ways, example, 12:30 or twelve thirty; 3:00, 3 o'clock or three o'clock.

5.2 Students tell various times – example: time they go to bed; time they go to school.

5.3 Students are given drawn clocks with time and are allowed to write the various times.
5.4 Students are given clocks with time and are allowed to tell the time then, write the times on their books.

**Tell, read, write and represent time on a digital clock/watch.**

6.1 Students can be given digital clocks/watches and are asked to represent time on hour and half hour. Example: Show
2:00 2:30 7:00

6.2 Students are given a range of digital times and asked to match the times on given analogue.

**Create and solve simple problems involving time**

7.1 Students are given scrambled months and are asked to arrange the months in order 1st – 12th

7.2 Word problems involving time. Example: Mark leaves home at 7:00 and arrives at school at 8:00. How long did Mark take to reach school?

**RESOURCES**

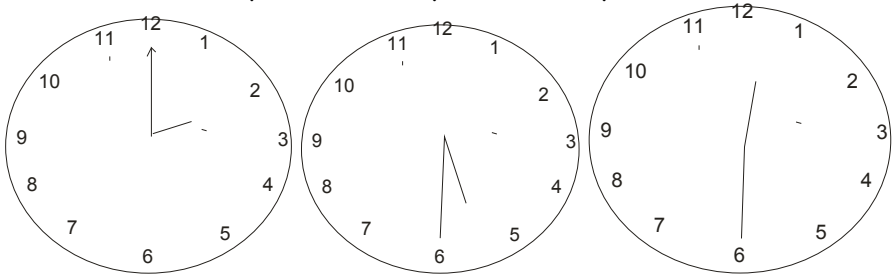
Calendar, word cards, various clocks, drawn clocks

**ASSESSMENT**

1. Shown a picture of some activity (e.g. drinking a glass of water, eating a sandwich, writing a letter), can decide how long it will take, e.g., whether it will take hours, minutes or seconds.

2. Shown a list such as the following, can complete
   i. There are ☐ minutes in an hour.
   ii. There are ☐ months in one year
   iii. There are ☐ days in two weeks

3. Shown clock faces and various times, can match the clock to the correct time. For example, for the clocks faces and times such as half-past 12, half-past 8, half-past 5, 7 O'clock, 2 O'clock, 10 O'clock, can decide which shows what time.



4. Shown the time either digitally or with a clock face, can write the time in words.

5. Shown the time on a clock face, can write the time digitally.

| | |
|---|---|
| **AT 3** | **LO 6: Create and solve real life problems involving representation and combination of coins and giving of change**<br>**Success Criteria** |

1. Describe the coins and notes in circulation.
2. Represent amounts up to $5.00 using coins in a variety of combinations.
3. Find the total cost of two or three items, up to a total of $1.00.
4. Role play shopping to find change from $1.00 using counting on (shop keeper's method)
5. Create and solve problems involving money.

**ACTIVITIES**

**Describe the coins and notes in circulation.**

1.1 Students are shown a picture of some persons working. They are asked what happens when we work and are led to say we get money, which comes to us as notes and coins. They are questioned for examples of coins and examples of notes that they know.

1.2 Students are given various coins. They observe the one cent, the two cent, the five cent, the ten cent, the twenty-five cent and the dollar. They talk about features of each that allows us to identify it (make it out).

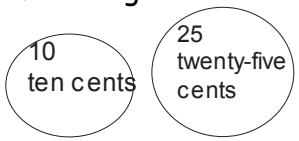
**Represent amounts up to $5.00 using coins in a variety of combinations.**

2.1 Students make/ find combinations that total up to $5.00. (lots of practice needed! – start with combinations for 10 cents etc.)

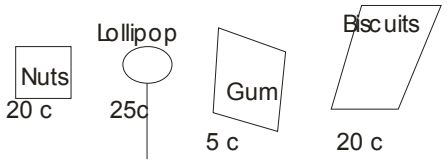
2.2 Students exchange coins for their equivalent value, for example, they exchange a 25 cent piece for two 10 cent pieces and a 5 cent piece.

**Find the total cost of two or three items, up to a total of $1.00.**

2.3 Students are shown a combination of two or three coins and asked to give/ say the total. For example, they say how much the following combination is.

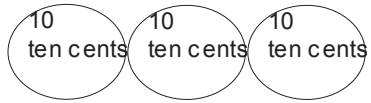


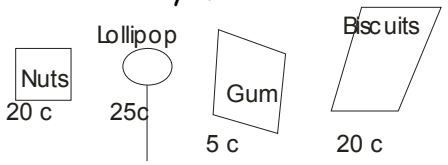

2.4 Students use the terms price, cost, pay, cost more, cost less.
Students are shown a picture involving various items and their prices and asked to find the cost of certain combinations. In the following list, for example, students find the total cost of (i) gum and nuts, (ii) apple and nuts and lollipop and (iii) biscuits and nuts.




**Create and solve problems involving money.**

5.1 What, from the following list of items can Janice buy if she has




5.2 Students create and solve problems such as the following. An orange costs 15 cents more than a mango. A mango costs $1.00. What does an orange cost?

5.3 What coins can I have if I have 45 cents? 30 cents? $1? Etc.

5.4 Students investigate ways of using coins to pay $2.

5.5 Students are told a story in which Ruth has two coins of the same value. They work out how much she might have altogether.

5.6 Students talk about the meaning of expressions such as $3.50, $4.25. They begin to appreciate that an expression such as $4.25 means $4 and 25 cents.

5.7 Students are given amounts in cents and they write them in dollars and cents. For example, they write 125 cents in dollars and cents ($1.25). Students respond to questions such as (i) how many cents is $1.50? (ii) How many cents is $2.25?

5.8 Students told a story in which Sam buys three pieces of cheese at $5 each. They work out how much change from $20 he get

**RESOURCES**

Various coins and notes, various items from shop or supermarket, students, scale

**ASSESSMENT**

1. Shown a list of items from a "snack shop" with associated prices (ranging from, say, 10 c to 50 c), can decide the total cost of any two items.
2. Shown an item bought and the coins with which it is paid for, can decide the change.

**TERM 3 STRAND 1 Number UNIT 3: NUMBER (3 weeks – 24 sessions)**

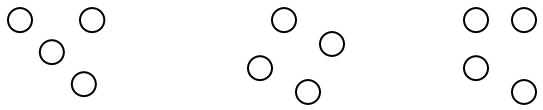
| | |
|---|---|
| **AT 1** | **LO 3: Create and solve real life problems involving (addition and subtraction with numbers up to 100 and involving) multiplication and division of one and two digit numbers**<br>***Success Criteria*** |

6. Discuss and use several strategies (e.g., concrete objects, skip counting, properties of multiplication) to develop the multiplication basic facts for the 2, 5, and 10 times table.
7. Create and solve simple problems involving multiplication and division using concrete objects.

**ACTIVITIES**

**Discuss and use several strategies (e.g., concrete objects, skip counting, properties of multiplication) to develop the multiplication basic facts for the 2, 5, and 10 times table.**

6.1 Relate multiplication to addition: give each student a set of bottle tops. Tell them to make three groups of four tops.

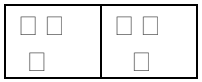


4 + 4 + 4 = 12

or 3 groups of 4 = 12 or 3 x 4 =12

Students repeat making different groups with different numbers of counters and recording results.

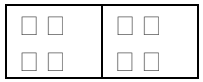
6.2 [Multiplication by 2] Students are told a story. They are told that in a shop two pieces of materials are delivered to a girl. In each piece, the girl sees 3 buttons. This means one has 2 groups of 3.



'2 groups of 3'

Students are led to recall that this is a story which is represented by the number sentence 3 + 3 = 6. This is not the only way the story can be represented. Another way, which involves multiplication, uses the fact that saying '2 groups of 3' is just another way to say 2×3. So the story can also be represented by the number sentence 2×3 = 6.

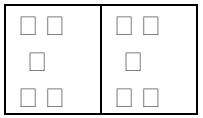
6.3 Students are told a story. They are told that in a restaurant, two meals are delivered to a boy. In each meal, the boy sees 4 pieces of dasheen. This means one has 2 groups of 4.



'2 groups of 4'

Students are led to recall that this is a story which is represented by the number sentence 4 + 4 = 8. This is not the only way the story can be represented. Another way, which involves multiplication, uses the fact that saying '2 groups of 4' is just another way to say 2×4. So the story can also be represented by the number sentence 2×4 = 8.

6.4 Students are told a story. They are told that in a cricket game (or in a rounders match) two overs are delivered to a batter). In each over, the batsman scores 5 runs. This means one has 2 groups of 5.



'2 groups of 5'

Students are led to see that this can be represented by the number sentence 5 + 5 = 10. This is not the only way the story can be represented. Another way, which involves multiplication, uses the fact that saying '2 groups of 5' is just another way to say 2×5. So the story can also be represented by the number sentence 2×5 = 10.

6.5 Students are engaged in building up multiplication table using objects.
Tables can be introduced with bottle tops. For example:

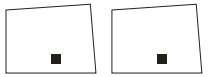
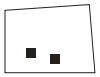
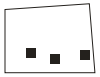
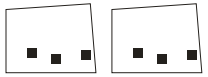
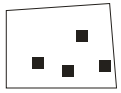
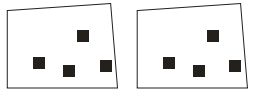
| | | | |
|---|---|---|---|
| Put out 2 bottle tops | O O | 2 | 1 set of 2 |

| | | | |
|---|---|---|---|
| Put out 2 more | O O O O | 4 | 2 sets of 2 |
| Put out 2 more | O O O O O O | 6 | 3 sets of 2 |

How many in each group? How many groups? What is the pattern? Continue it and record answers. Repeat for other numbers.

6.6 Students are asked to give (make up) a story for each number sentence in the 2 times table, example, to give a story for the number sentence 2×6 = 12.

6.7 Completing the expression: Students complete simple number expressions or sentences for multiplication that happens by 2. For example: 2×__ is the same as ___. Or: 2×___ = ___. Students continue as suggested below to build the 2 times multiplication table.

| Start | | Multiply by 2 | Answer/result |
|---|---|---|---|
|  |  |  2×1 | 2 |
|  |  |  2×2 | 4 |
|  |  |  2×3 | 6 |
|  |  |  2×4 | 8 |
| | | | |

2×1 is
2×2 is
2×3 is
2×4 is
2×5 is
2×6 is
2×7 is
2×8 is
2×9 is
2×10 is
Multiplication by 2 gives us a table of numbers called the 2 times table.

6.8 **5 – 10 minutes drills <u>daily</u> on the 2, 5 and 10 time table**.

6.9 Now show the array of 4 rows of 5 dots showing one row at a time, asking the children to count in fives.
Ask students: *How many in each row? How many rows?*

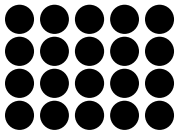
5 + 5 + 5 + 5 = 20 and as a multiplication sentence 5 x 4 = 20.

Show an array of 5 rows of 4 dots demonstrate building rows of 4s.
Ask students: *How many in each row? How many rows?*
Ask: *What do you notice about these two arrays/sentences?*

Rotate the arrays through 90 degrees to reinforce the 'sameness'. Point out that 4 x 5 and 5 x 4 have the same answer.
*What other arrays would have 20 counters in all?*
*What arrays can you make for the number 24?*

6.10 Challenge the children to work in pairs to find as many arrays with a total of 24 as they can. They should record each array and multiplication sentence in their books. Repeat for other numbers, allow students to use bottle tops to assist them in making the arrays. Get students to record their results.

6.11 **U**se counters to demonstrate the completion of an array.



5 x 4 = 20

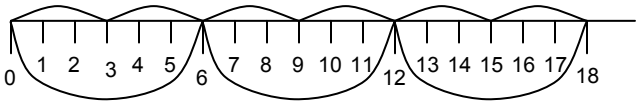
4 x 5 = 20

Point out that 5 x 4 = 4 x 5 depending on which way you look at the array i.e. counting the rows first or the columns, but the answer (known as the product) is the same. Explain the usefulness of this especially when multiplying by 2 e.g. 2 x 9; all count in twos to reach 18, or 9 multiplied by 2 and its link to double 9.

6.12 Write the multiplication fact 3 x 6 = 18 on the board. All read together. Ask the class to draw the array which they visualise when they see that sentence and then write the partner sentence 6 x 3 = 18 in their books.

Illustrate further by drawing six hops of 3 on a large number line.
Ask students: *How many hops of 6 do you think will be equal to 18?*

Invite a child to check on the number line, drawing the hops underneath the line.




.

Repeat for other multiplications.

**6.13** Give students hundreds charts or parts of hundreds charts, get them to colour in or shade multiples of 2, 5, 10 etc.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |

| | | | |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 |

**Create and solve simple problems involving multiplication and division using concrete objects.**

7.1 Students are told a story in which a teacher goes to a party. There she receives 20 sweets for 4 students. Students are asked to suggest how many each student will receive? Students are involved in discovering the steps to take to get the answer. They conclude that the first step is to use what we are told to write an expression. Students are led to see that the expression is 20 ÷ 4. Students are involved in reading the expression (20 divided by 4, or 4 into 20). Students are involved in illustrating the expression (e.g. 20 students are to divide themselves into 4 circles on the classroom floor).

7.2 Expose students to simple word problems that will involve division. For example: share 15 mangoes equally among 3 brothers; 14 oranges are placed in two equal piles, how many oranges in each pile? Students are given bottle tops to represent the items to be shared or grouped. Students, with teacher direction, share or group their bottle tops appropriately.

Students record their answers: 15 shared equally among 3 equals 5 or 15 ÷ 3 = 5 etc.
**Give students much practice on this.**

7.3 Get students to create other problems involving divisions such as: Billy goes to his father and receives 12 wooden wheels for 3 toy trucks. How many wheels will each truck get? Record answers as 12 ÷ 3 = 4 etc.

7.4 Students create their own simple multiplication and division problems. Each student or group of students can contribute, to develop, "Our book of multiplication problems" or "My book of division problems". Questions in the book can be given to groups of students to solve and hence develop answer pages.

**TERM 3 STRAND 4 Statistics and data handling UNIT 4: GOING SHOPPING ( 1- 2 weeks)**

| AT 4 | **LO 2: Use, construct and interpret simple charts and pictographs**<br>***Success Criteria*** |
|---|---|

1. Discuss and describe how data are represented in pictographs and in bar graphs.
2. Construct simple pictographs and bar graphs for which a grid has been provided where one picture represents one unit of data from real life data.
3. Read the data presented in simple pictographs and bar graphs.
4. Interpret the data presented in simple pictographs and bar graphs.

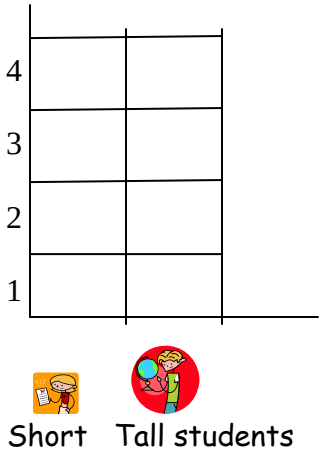
**ACTIVITIES**

**Discuss and describe how data are represented in pictographs and in bar graphs.**

1.1 Students are asked to arrange themselves according to height, shortest to tallest. They observe as teacher demonstrates how one goes about presenting the information in the arrangement on a table. Example:

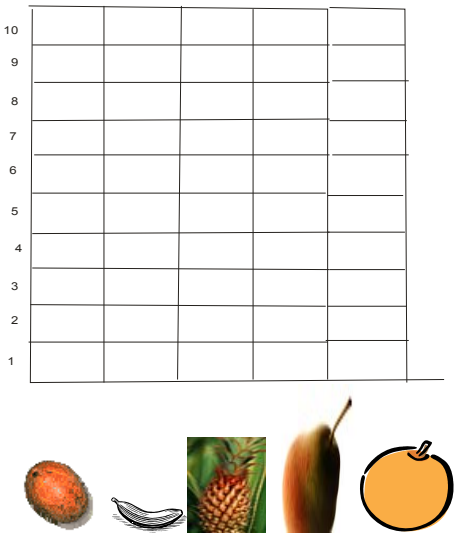
| Number of tall students | Number of short students |
|---|---|
| | |

They observe as teacher draws example of pictograph and bar graph and represents information on the graph.



**Construct simple pictographs and bar graphs for which a grid has been provided where one picture represents one unit of data from real life data.**

2.1 Students are allowed to interview their classmates for information to complete a bar graph on favourite fruit as follows.




2.2 Students are led to make a pictograph, using the data in the previous exercise. The pictograph is used to find (i) the number of students in the interview, (ii) the number of students in the most popular group, (iii) the number of students who prefer orange + the number of students who prefer pear.

**Read the data presented in simple pictographs and bar graphs.**

3.1 Students look on as teacher presents pictograph/bar graph. Students are allowed to tell what they see. They are involved in discussing how data are presented.

The picture shows the "nice things" that come to two friends, Shirley and Julian.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Shirley | ⬭ | ⬭ | ⬭ | ⬭ | ⬭ | ⬭ | ⬭ |
| Julian | ⬭ | ⬭ | ⬭ | ⬭ | | | |

⬭ Marble

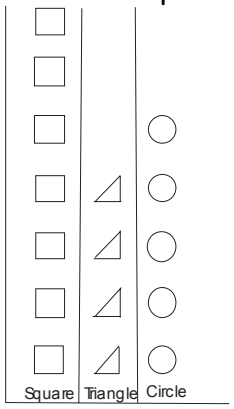
Use the picture to answer the questions

i. The number that comes to Shirley is ____
ii. The Number that comes to Julian is ____
iii. The number that comes to _____ is smaller than the number that comes to ____
iv. The number that comes to both of these friends is _____

**Interpret the data presented in simple pictographs and bar graphs.**

4.1 Given pictographs or bar graphs with information on collected data, students record interpretations using number statements.

Each student in the class gave the teacher their favourite shape to show.



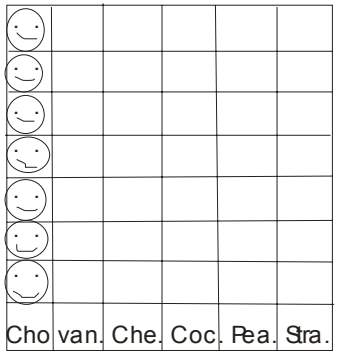

i. The number that chose square is ____
ii. The number that chose triangle is ____

iii. The number that chose circle is _____
iv. _____ more students chose squares than circles
v. _____ was the most popular shape for the students.

4.2 Students are told a story in which some children were asked to name their favourite ice cream flavours. The results were used to make the following tally chart

| Flavour | tally |
|---|---|
| chocolate | ///// // |
| Vanilla | //// |
| Cherry | // |
| coconut | ///// / |
| Peanut | //// |
| strawberry | / |

Students are informed that Johns Jones wants to make a pictograph that shows the same information. They are shown what he started below and asked to help him by completing the pictograph and use  to represent 1 person.



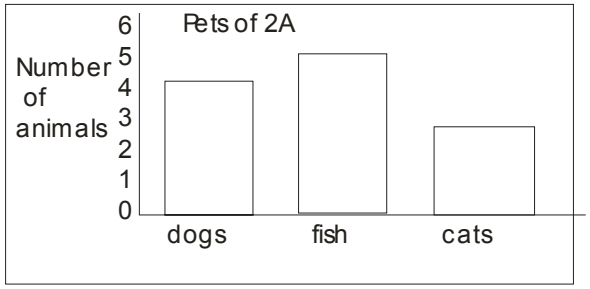

Students use the graph to respond to questions:

a. which flavour was most liked by the children
b. which flavour the children liked least
c. the number of children who chose chocolate flavour

d. the number of children who chose either vanilla or peanut
e. the number of children who chose vanilla
f. the number of children who chose strawberry
g. the total number of children making a choice

4.3 Students use the graph to answer these questions:

v. What does the graph show?
vi. How many animals are represented on the graph?
vii. Which bar represents the most pets?
viii. Which bar represents the least pets?



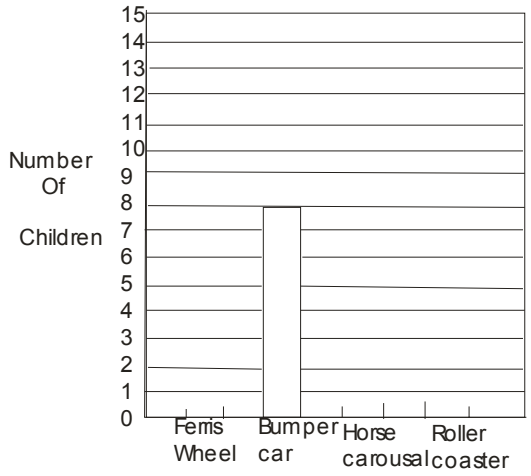

**RESOURCES**

Pictograph, bar graph

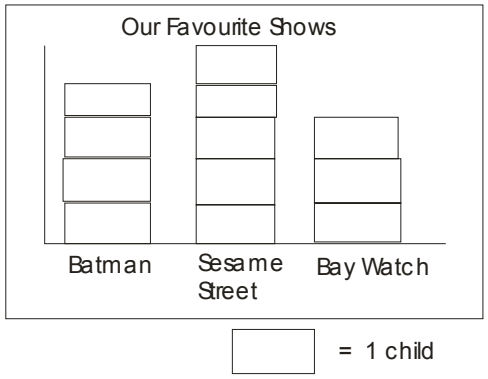
**ASSESSMENT**

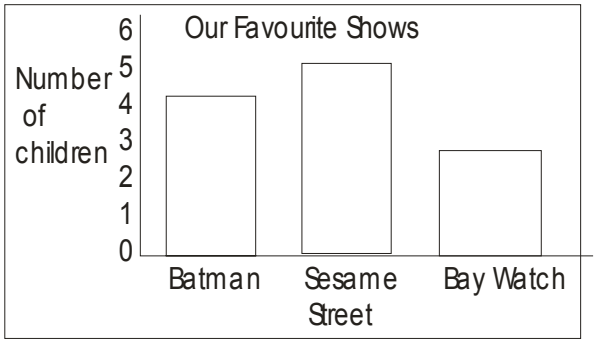
- Check that when shown data in a table, students can complete a bar graph.

| Activity | number of children |
|---|---|
| Ferris Wheel | 12 |
| Bumper car | 8 |
| Horse carousal | 6 |
| Roller coaster | 15 |

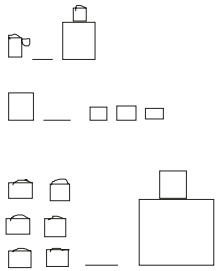



- Check that when shown a simple bar graph or pictograph, students can get information from it to answer question. For example, when shown either of the following graphs, students can say
  i. the number of children that prefer Batman
  ii. the number that prefer Sesame Street
  iii. the number that prefer Bay Watch
  iv. the most liked show among children



| **EXEMPLAR LESSON PLAN** | | | |
|---|---|---|---|
| **UNIT 3: Helping Mummy** | | **TOPIC: Measurement** | |
| **TIME: 30 minutes** | | | |
| **EXPECTED BACKGROUND KNOWLEDGE OF STUDENTS**<br>Students can compare estimates, measure and record capacity using the litre as the unit of measure | | | |
| **LEARNING OUTCOME**<br>Estimate and measure the capacity of different objects using basic standard units | | | |
| **SUCCESS CRITERIA**<br>Students will be able to measure and record capacity of containers using the litre as the unit of measurement | | | |
| **ORGANISATION & TIME** | **TEACHER ACTIVITY** | **STUDENT ACTIVITY** | **RESOURCES** |
| **WAY IN**<br>**5 min** | Teacher presents objects<br>Asks students "Guess how much each holds" | Students discuss and answer | Drinking glass, toothpaste, water jug, coffee cup, flower vase, bottle, Jam, ketchup, milk, cola's bottle…etc. |
| **DEVELOPMENT**<br>**15 min** | Teacher<br>▪ puts students in groups<br>▪ distribute activity sheet, some resources, gives instruction<br>▪ use $\frac{1}{4}$ $\frac{1}{2}$ 1 Label the bottles<br>▪ make them estimate capacity first then measure and record the results on activity sheet<br>▪ teacher moves around assisting student groups | Students<br>▪ make some groups, receive activity sheet, containers, understand what they will do<br>▪ guess how many cups of water each container can hold<br>▪ measure how much each container holds | ▪ activity sheet<br>Container \| Guess \| Count<br>▪ $\frac{1}{4}$ $\frac{1}{2}$ 1 Label the bottles |
| **CONCLUSION**<br>**5 min** | teacher asks students to summarize today's lesson | Students demonstrate the result of activity | Chalk, board |
| **WAY ACROSS** | science | | |

| | | | |
|---|---|---|---|
| **5 min** | | | |
| **ASSESSMENT** | Teacher gives some questions to do for assessment | Fill in <, >, or = to make true sentences  | |
| **EVALUATION OF LESSON** | | | |

| EXEMPLAR LESSON PLAN | | | |
|---|---|---|---|
| **UNIT 1: Number** | **TOPIC: Place value** | | |
| **TIME: 30 minutes** | | | |
| **EXPECTED BACKGROUND KNOWLEDGE OF STUDENTS**<br>Students already can read and write two digit numbers | | | |
| **LEARNING OUTCOME**<br>Create and solve problems involving place value | | | |
| **SUCCESS CRITERIA**<br>**Discuss and write two digit numbers in expanded forms.** | | | |
| **ORGANISATION & TIME** | **TEACHER ACTIVITY** | **STUDENT ACTIVITY** | **RESOURCES** |
| **WAY IN**<br>**5 min** | ▪ Teacher shows a balloon or gives each student a balloon. Teacher leads students to note that ordinarily, the balloon is not blown. Sometimes the balloon is blown.<br>▪ Teacher relates this fact about balloons to the expansion of numbers. | Students observe and discuss the ways the balloons are | balloons |
| **DEVELOPMENT**<br>**15 min** | ▪ Teacher asks students to think of a two-digit number (or take one by taking a card from a bag) and invites a student to share the number.<br>▪ Teacher asks students to suggest things that are true about the number given. By making reference to examples, she leads them to realise that the number has many ways in which it can be written. In the case of 23, for example, she leads them to see that the many ways include 22 + 1, 21 + 2, and 20 + 3; and in the case of 19, they include 18 + 1, 17 + 2, 16 + 3, 15 + 4, 14 + 5, | Students give two-digit numbers<br>Students make suggestions, e.g., they note that the number has two digits.<br>Students look on and observe<br>Students explain the steps and repeat with various numbers.<br>Students practice on their books expanding 26 in a | Two-digit numbers written on cards and placed in a bag from which students can dip when asked to do so.<br><br>chalkboard |

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| | 13 + 6, 12 + 7, 11 + 8 and 10 + 9<br>▪ For a two-digit number suggested by students, teacher expands it on the board, explaining the process to students<br>▪ Teacher points students to the fact that if 23 is written as 20 + 3, or if 19 is written as 10 + 9, we say it is written in expanded form. | variety of ways.<br>Faster students can be challenged to find more ways or given larger numbers. | |
| **CONCLUSION**<br>**5 min** | Teacher asks students to summarise lesson | Students explain various steps taken to expand numbers. | |
| **WAY ACROSS**<br>**5 min** | Teacher helps students to cite instances when use can be made of an expanded form.<br><br>(To work out 23 + 7, we can first say 23 is 20 + 3 so 23 + 7 is 20 + 3 + 7 and then note that 3 + 7 is 10, so one has 20 + 10, which is 30) | Students consider a number such as 12 and think of instances when we might want to present<br>  <br>12 As 10 | |
| **ASSESSMENT** | | Expand these numbers<br>a) 32 b) 27 c) 41<br>d) 53 e) 64 | |
| **EVALUATION OF LESSON** | | | |

**References**

Bright Sparks
Caribbean Primary Math

## GREAT WEBSITES FOR MATHS TEACHERS

1. http://www.standards.dfes.gov.uk/primary/teachingresources/?subject=S_900361&yeargroup=&term=

   Detailed unit plans from UK's standards site. You must check out these resources.

2. http://www.kented.org.uk/ngfl/subjects/numeracy/index.htm

   Another top class site for teachers!

3. http://www.teachingideas.co.uk/maths/contents04number.htm

   Loads of maths (and other subject) ideas from Downs Primary School

4. http://www.teachinglinks.co.uk/mathematics.htm

   Just what it says!

5. http://www.woodlands-junior.kent.sch.uk/maths/

   If your school has internet access this is a great site for interactive maths games