



# Beacon Media

## Supporting worldwide education

**Mathematics Years 1-3**  
**for students who need assistance**

# What will you learn?

- How to teach Maths to students who are not succeeding
- How students develop in their number skills
- How to make and gather resources to assist children to progress in Maths
- How to plot the progress of each child you are working with in Maths.

# Maths in the Early Years

This program is based on the course called Early Mathematical Understanding developed by the Australian Catholic University.

It has been adopted and modified by Beacon Media

# Introduction

# What is special about this program?

- It will train you to help children in HANDS-ON activities.
- Less “book-work” than general classroom maths
- More activities that are fun for the students

# Why is this program important?

- It builds a strong foundation in mathematics.
- It can lead to great opportunities in the future.

# Examples of activities

- Number Games
- Working with practical materials like stones, sticks, beads, bottle tops

# Which areas of Mathematics will we focus on?

1. Counting
2. Place Value
3. Addition and Subtraction
4. Multiplication and Division



# How will we teach our students?

- slowly
- with repeated practice and revision
- making sure they understand
- Carefully following the Beacon Media program

# How many students should I work with in each session?

- Two students at a time
- For approximately 20 minutes per session
- For a minimum of 3 sessions per week

# Your resources

- The **Activities** take you step-by-step through the activities you will do with the students
- The activities are levelled from 1- 4.
- The **Progress Chart** shows you the ORDER in which to do the activities.
- The **Resources** are the master copies that you can photocopy.

# COUNTING

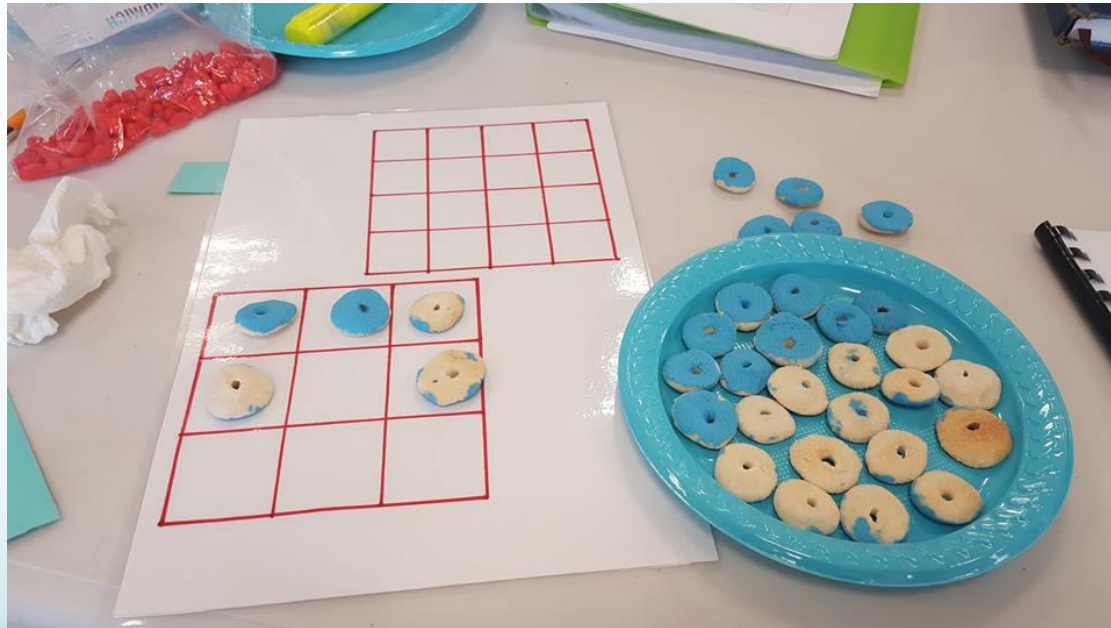
# Useful Resources – counters of many kinds



# Bottle caps!



# Counters and Beads



Bead strings of different length for counting by 1, 10, 5.....





# Counting Development

1. Not yet able to **say** numbers 1-20
2. Can count to 10 using words, but can't tell you how many things in a group
3. Can count a group of objects accurately, to 10 first, then 20.
4. Can count forwards to 100, then from different starting points
5. Can count backwards from different starting points.

6. Can count by tens, fives and twos
7. Can count by threes, fours, sixes sevens
8. Counting is preliminary to learning times tables
9. Can count money and work out the change
10. Can count using fractions and decimals

# Begin with simple touch counting

- **One-to-one correspondence** is a basic skill.
- Use counters and bead strings
- Get children moving - pacing out steps, clapping, jumping.....



## **Practical Work:**

Make the following resources ready for

### **Counting Level 1 & 2 Activities:**

- Large Number Line to 20 (quarter of an A4 sheet per number)
- Bead string to 50 (each 10 different colour)
- Have ready paper cups (or recycled containers), counters and dice

**Now go through the Counting Level 1 & 2 Activities**

# PLACE VALUE

# What is Place Value?

- ones/units, tens, hundreds, thousands etc.

Examples:

- 12 has a value of 10 and 2 ones (units).
- 364 – 3 hundreds, 6 tens, 4 ones



# Helpful Resources



Straws and rubber bands



Pop-sticks and rubber bands

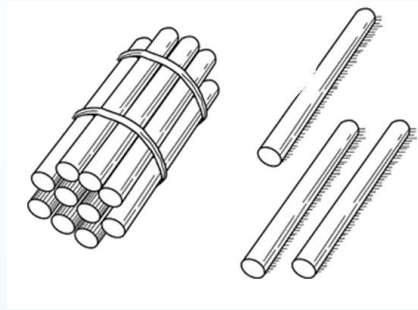
## Containers for storing number cards



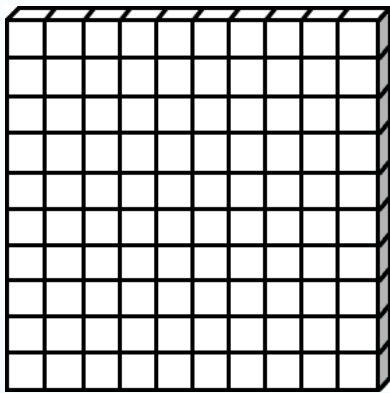


# Place Value Development

1. Understands numbers to 10
2. Can use bundles of ten to make numbers (11 to 99)

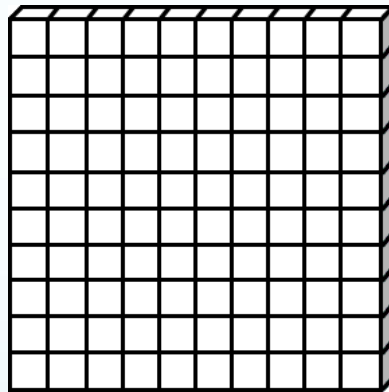
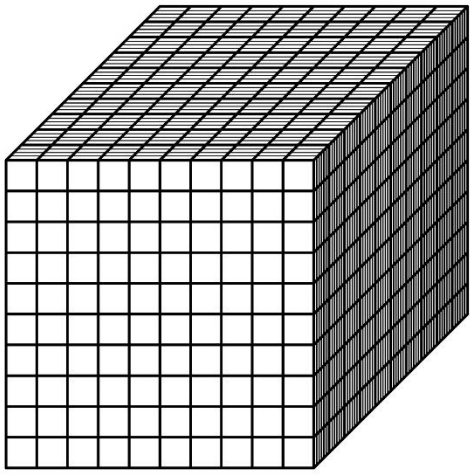


3. can make numbers using hundreds, tens and ones







Note: See “Block Pictures in your resources.”

4. can use thousands, hundreds, tens and ones



# Place value chart

Thousands 	Hundreds 	Tens 	Ones 

# Number Charts

Cut up and create jigsaw puzzles.



# Things to make or collect

## **For Place Value Level 1:**

Make Number cards 1-10 (2 sets)

Make dot cards 1-10

Make all spinners

Collect dice, counters, empty margarine container

**Now go through all Place Value Level 1 Activities.**

# ADDITION AND SUBTRACTION

# Addition and Subtraction Development

- Not yet able to add together two groups of things
- Can add together two groups of things by counting
- Can **count on** from one number to find the total in addition
- Can count back (or count down) to solve a subtraction sum



- Can double, add 10
- Can add 9
- Can solve simple addition and subtraction sums in their head
- Addition and subtraction with fractions and decimals

# Dice

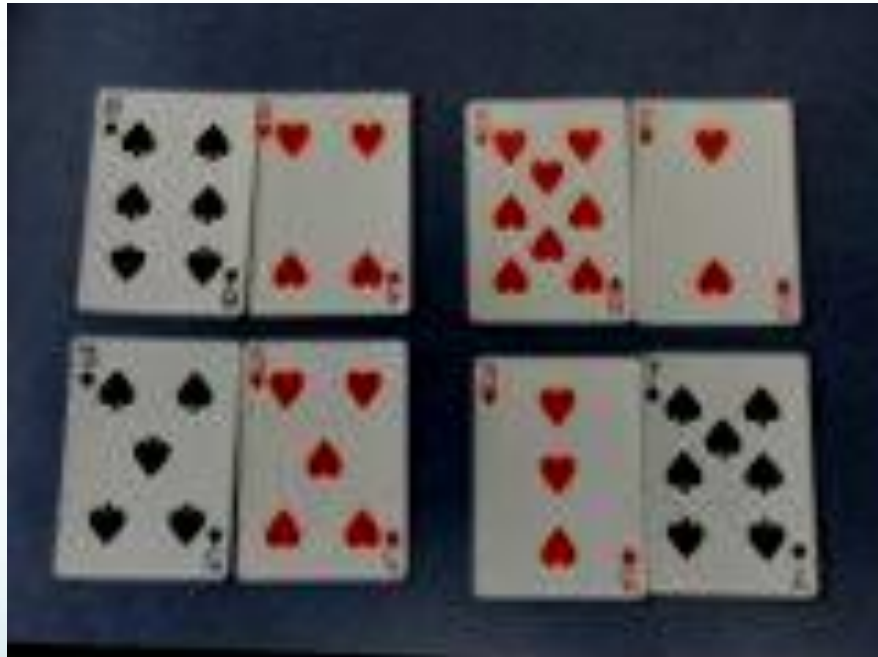


**one die**



**more than one dice  
(rhymes with mice)**



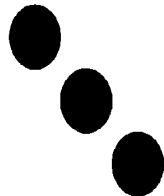
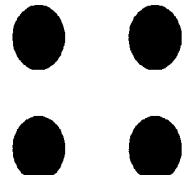
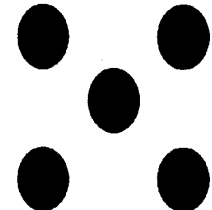
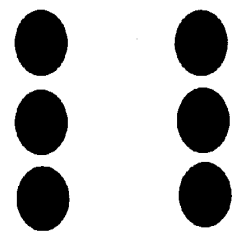
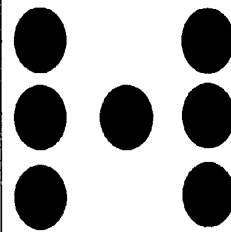
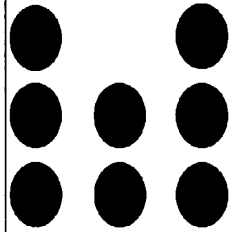
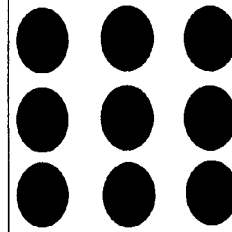
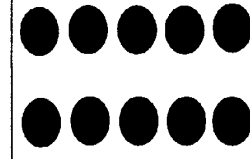
# Addition using playing cards



# Addition game using playing cards

- Hand out 2 cards to each child and they add them.
- Hand out 3 cards each and they add the totals quickly.
- alternatively you can play this with dot cards.

Copy onto card and cut up each square. Increase to A3 for larger cards.

1	2	3	4	5
				
6	7	8	9	10
				

# Things to make or collect

## **For Addition and Subtraction Level 1**

Make painted sticks or disks, painted on one side

Make small number lines 0-10 and 0 – 20

Make number cards 0-20 (You can add to your 0-10 number cards and colour code 0-10 and 0-20)

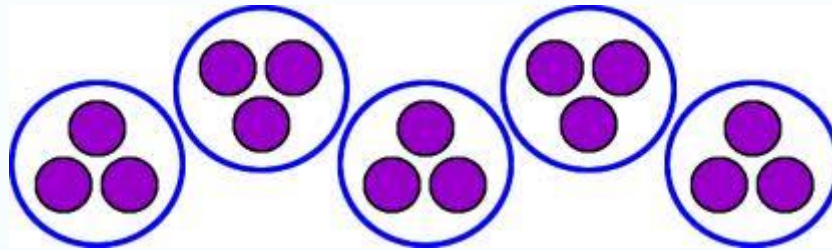
Collect dice and counters

**Now go through all Addition & Subtraction Level 1 activities**

# MULTIPLICATION AND DIVISION

# Multiplication and Division Development

1. Not yet able to make groups of a given number
2. Can make groups and count the total.



**5 groups (or sets) of 3 makes 15**



### 3. Can **share** objects to solve division problems



**15 buttons shared between 3 bags.  
How many in each bag?**

4. Can skip count (Count by 2s)

5. Can solve multiplication & division without physically making groups

6. Uses times tables

7. Can solve problems using multiplication & division, e.g. money

# Encourage children to solve problems.

Problem solving is a lifetime skill.

Examples:

- Three girls each had 2 cakes. How many cakes?
- 15 pencils shared between 5 children. How many pencils each?



# Things to make or collect

## **For Multiplication and Division Level 1**

Trains (colour and laminate)

Teddies (colour with 2 colours and laminate)

Get ready 0-9 number cards; spinners 1-6 or dice;  
spinners with numbers 2,4,6,8,10,12,14

**Now go through all Multiplication and Division Level 1 activities.**

# Monitoring progress

- Use the Progress chart to keep a record of your students' progress.
- To find out where to start with a student, use the introductory test.

# Stick to the program

- Some teacher might ask you to assist students with more difficult work, not in this program.

e.g.

$$\begin{array}{r} 453 \\ +410 \\ \hline \end{array} \quad \begin{array}{r} 586 \\ +103 \\ \hline \end{array} \quad \begin{array}{r} 285 \\ +514 \\ \hline \end{array} \quad \begin{array}{r} 592 \\ +307 \\ \hline \end{array} \quad \begin{array}{r} 298 \\ +601 \\ \hline \end{array}$$

$$\begin{array}{r} 365 \\ +234 \\ \hline \end{array} \quad \begin{array}{r} 472 \\ +527 \\ \hline \end{array} \quad \begin{array}{r} 355 \\ +644 \\ \hline \end{array} \quad \begin{array}{r} 224 \\ +753 \\ \hline \end{array} \quad \begin{array}{r} 154 \\ +535 \\ \hline \end{array}$$

$$\begin{array}{r} 857 \\ +576 \\ \hline \end{array} \quad \begin{array}{r} 498 \\ +198 \\ \hline \end{array} \quad \begin{array}{r} 405 \\ +877 \\ \hline \end{array} \quad \begin{array}{r} 299 \\ +418 \\ \hline \end{array} \quad \begin{array}{r} 687 \\ +643 \\ \hline \end{array}$$

- You will explain to the teacher that YOUR activities will get the students ready for more difficult work later on. The student is not READY for this!

# Counting Level 3

Now continue going through the activities from Counting Level 3. Work in small groups to work out the instructions then demonstrate to the large group.

Make the following before doing the Counting Level 3 activities:

- Number cards 1-100
- Bingo boards – all
- Jigsaw

# Place Value Level 2

Make the following before doing the Place Value Level 2 activities:

- Collect straws or sticks and rubber bands
- Make Tens Frames
- Make word cards one to ten
- Make word cards twenty, thirty ... to ninety



# Addition & Subtraction Level 2

Collect the following before doing the Addition & Subtraction Level 2 activities:

- 10-sided spinner
- Teddies and Train
- Number cards 10-20 and number line 1-20

Note: You shouldn't have to make anything for this one.

# Multiplication & Division L2a

Collect the following before doing the Multiplication & Division 2a activities:

- Collect paper plates & counters

# Counting Level 4

Collect the following before doing the Counting Level 4 activities:

- Paper strips
- Small number charts 1-120

# Place Value Level 3a

Make the following before doing the Place Value Level 3a activities:

- The target
- Block pictures
- Expanders

# Multiplication & Division 2b

Make the following before doing the Multiplication & Division 2b activities:

- Fruit pictures

# Continue with activities

Continue working in groups to try out and demonstrate all the rest of the activities.

# Practical Resources

Check that all of the following are in your kit.

- Activity and Resource Files
- Progress charts for each student
- at least 10 - 10s frames
- a variety of number charts
- 3 types of number lines (large 1-20, small 1-10, small 1-20)
- Number cards – 2 sets 0-10; 1 set 0-100; 1 set 0-200
- Beads on strings & paper clips
- Disks or sticks painted on one side
- Bingo boards (3 of each kind)
- Jigsaw



- a variety of counters – bottle caps, dough disks, pop sticks or straws, stones etc
- yoghurt / margarine containers or paper cups
- 4 dice and spinners
- dot cards
- teddies, trains and fruit
- 2 sets of playing cards if possible
- writing materials including colouring pencils
- crayons or markers, ruler, scissors and sticky-tape
- rubber bands and straws
- paper for student and Assistant's use