# Early Number Fun
# Grade R programme
# Session 4
# 19th July 2016

SA NUMERACY CHAIR PROJECT

RHODES UNIVERSITY
*Where leaders learn*

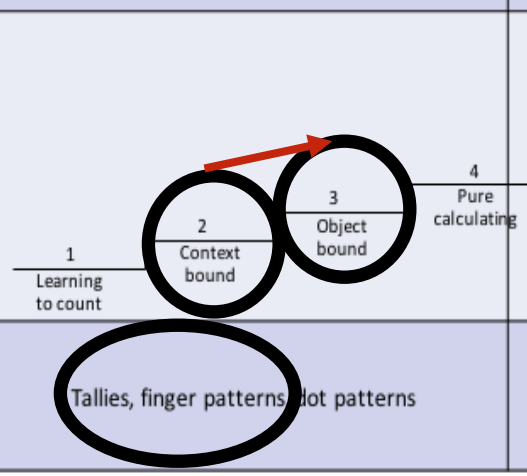
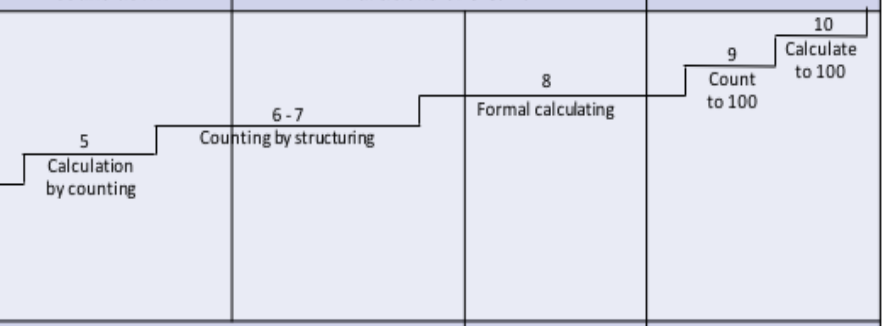
**Prof Mellony Graven; Dr Debbie Stott, Ms Carolyn Stevenson-Milln; Ms Pam Vale; Ms Roxanne Long; Ms Samu Chikiwa**

# Agenda

- Housekeeping
  - Dates: 5th September and 25th October
- Umbrella and Children story
  - Classroom video and discussion
- Patterning and puzzle activities
- Playing card activities
  - Cognitive control
  - Mathematical focus
- Finish

# Dialogical reading using number story books

## CONTEXT-BOUND– BUT extending to OBJECT-BOUND counting

| | | Grade R | Gr R → 1 | Gr 1 & 2 | Gr 3 & 4 | Gr 4 → |
|---|---|---|---|---|---|---|
| Cranfield et al. | | Emergent numeracy<br>*Number sequences to 10* | Learning to count and calculate<br>*+ & - to 10/ number sequences to 20* | Calculate by structuring<br>*+ & - to 20/ number sequences to 20* | Formal calculating | *Counting and calculating up to 100*<br>*+ & - to 100/ number sequences to 100* |
| Wright et al. (LFIN) | EAS | 0, 1, 2 | 3, 4 | 5 | | |
| | Structuring nos. 1 - 20 | 1, 2, 3 | | | | |
| | CPV | | | | 3 | 3 |
| Buys & Treffers | | **Stages 1 to 4**<br>Context bound – up to 4 objects<br>Object bound – up to 10 objects<br>Via symbolisation – unseen items/fingers | **Stages 5 & 6**<br>Count all<br>Count on<br>Count up to<br>Count down | **Stages 7 & 8**<br>Stringing & splitting<br>Doubles/halves<br>Combining with 5 & 10<br>Partitions of 5 & 10 | | **Stages 9 & 10**<br>2-digit + and - |
| Buuys, Treffers Visual progression | |  |  | | | |
| Representations | | Tallies, finger patterns, dot patterns | Models of...<br>Line, group, combination, part-part-whole | | | |

# Number story activities: Key numeracy skills

* Context bound counting and calculating
  (1-5 in the first 2 stories 1-10 in the 3rd)
* Object bound counting and calculating
  (1-5 in the first 2 stories 1-10 in the 3rd )
* Numeral recognition
  (numerals 1-5 in the first 2 stories 1-10 in the 3rd)
* Compare quantities and develop language of more/ less/ many/ none
* Develop comparative language for size – big and small; more and less
* Recognition of words like ‘more’ ‘less’ ‘big’ ‘small’
* Develop a patterned sense of bonds to 5
  (i.e. 5-0; 4-1; 3-2; 2-3; 1-4; 0-5 and bonds to 10 - 3rd story)
* Use written tallies and/or numbers to represent the patterned story of how the ‘number of …’ changes in each place in each stage of the story (extension for learners ready for this aspect)

# Number stories – key literacy skills

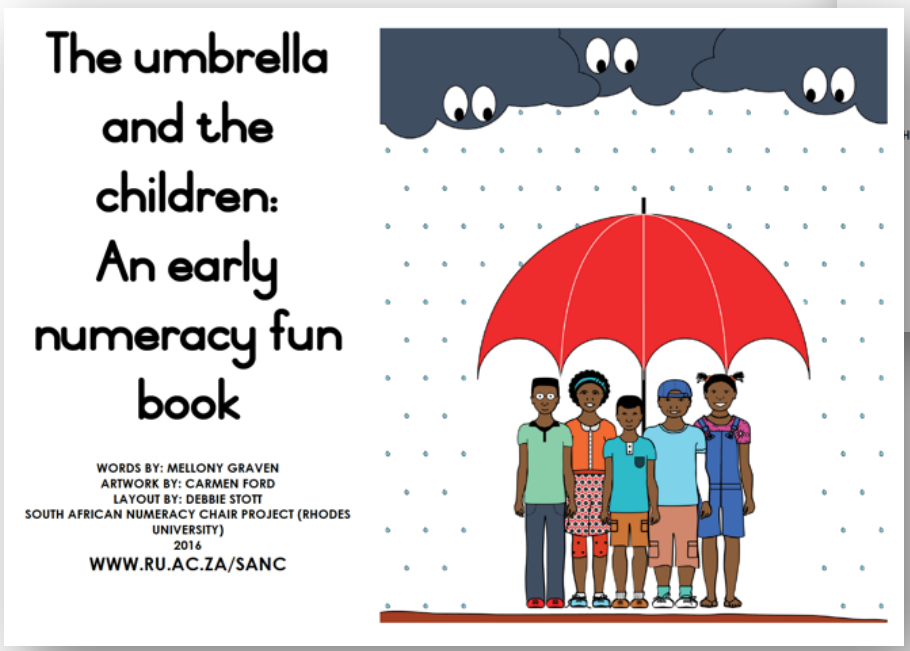
- Love of stories and Love of reading
- Listening and prediction skills
- Comprehension skills
- Develop comparative language for size: big and small; more and less
- Common word recognition: ‘more’ ‘less’ ‘big’ ‘small’
- Imagination and own story telling
- Logic, structuring and organisation of ideas

# Method

- Focus on pictures, numerals and words and speak the key words and number names as the story unfolds
- Act out with facial expressions emotions and feelings communicated in the story
- Have a conversation with the reader
- Predict what might happen next
- Tell their own stories using story-boards and puppets
- Tell their own stories using their fingers to represent the number of monkeys/frogs/children in different trees/lily pads/places etc.
- Do imitative reading where they ‘read’ the story to others in the class

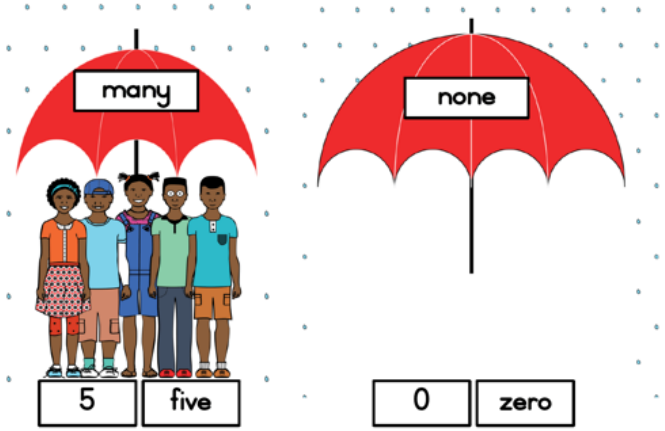

isiXhosa


Afrikaans




English

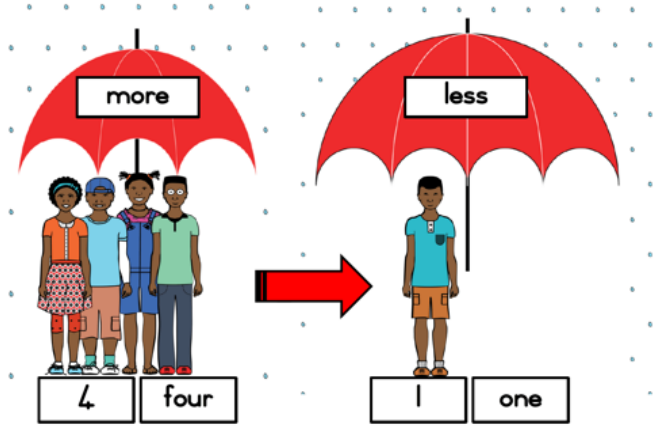
## 5 children under a small umbrella




Busi sings.
There are too many children under this small umbrella.
There are no children under that big umbrella.



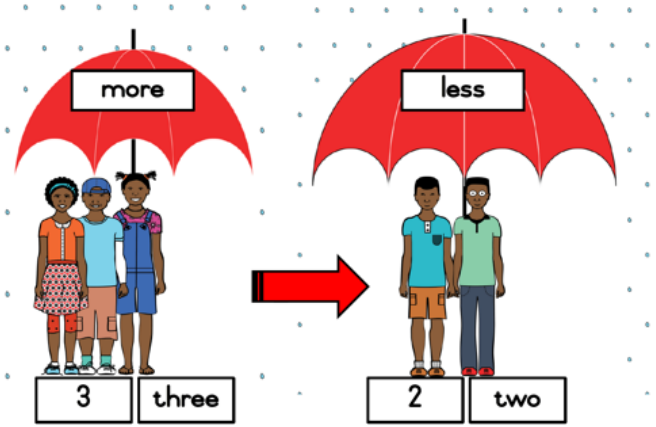
## 1 child runs to the big umbrella




Busi sings.
There are still more children under this small umbrella
and less children under that big umbrella.
What do you think will happen next?



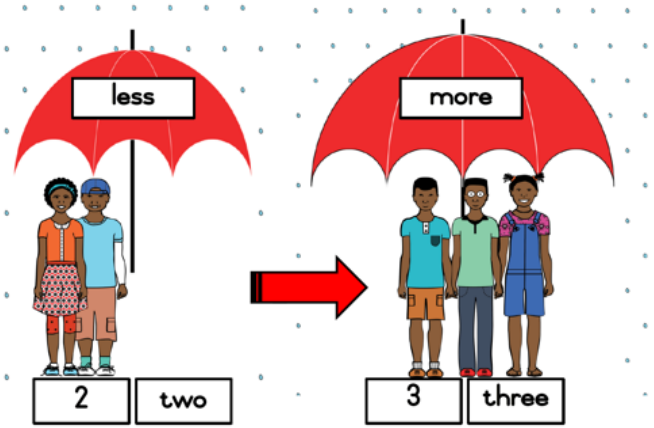
## 1 child runs to the big umbrella




Busi sings.
There are still many children under this small umbrella and less children
under that big umbrella.
Is Busi right? What do you think will happen next?



## 1 child runs to the big umbrella




Busi sings. There are two of us under this small umbrella. Now this umbrella
has less than that big umbrella.
Is Busi right? What do you think will happen next?

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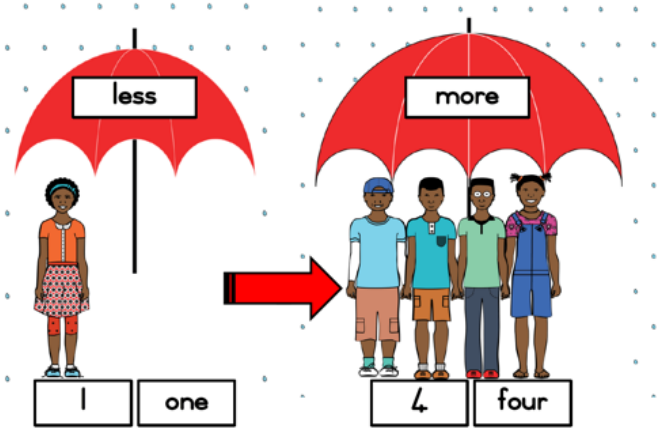
I child runs to the big umbrella




Busi sighs. I am all alone. I am lonely.
There are many children having fun under that big umbrella!
What do you think will happen next?

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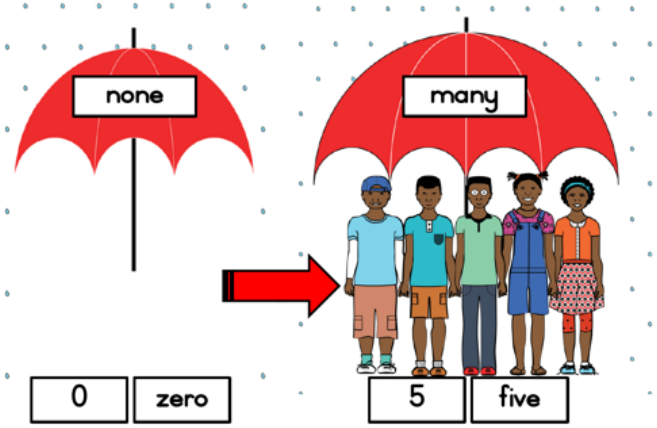
Busi runs to the big umbrella




The children sing.
Five of us are having fun under the big umbrella.

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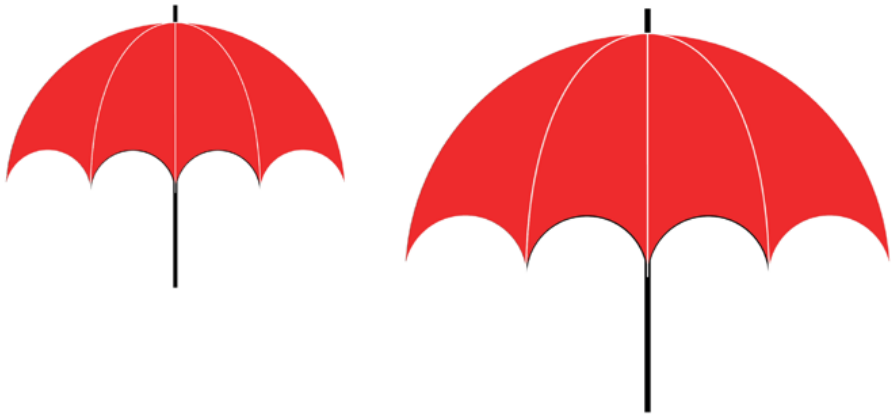
Sing your own story. Use fingers, puppets or pictures to show your story.



Use numbers and words to tell your story

| many | none | more | less | big | small | runs |
|---|---|---|---|---|---|---|

| less | more |
|---|---|
| many | none |
| big | small |

| zimbalwa | ongeza |
|---|---|
| ninzi | azikho |
| khulu | ncinci |

| minder | meer |
|---|---|
| baie | geen |
| groot | klein |

Available from:
http://www.ru.ac.za/sanc/teacherdevelopment/earlynumberfungrader2016-2017

# Umbrella and children story

- 15 minute classroom video
- Using the story in the classroom:
  - Use the story over the course of a week
    - Day 1 – read the story
    - Day 2 – Introduce many, more, less, none words & number symbols on cards
    - Day 3 – Introduce numerals and words on cards
    - Day 4 – act it out
    - Day 5 – Make finger puppets with children for learners to use to enact story
    - Following days – worksheet and other adaptations

# Patterning and puzzle activities

* 1 to 31 number grid
* 1 to 10 number grid
* Puzzle pieces

# 1 – 31 number grid
## page 6

- Ask learners to read the numbers from 1 to 10 with you. Then continue reading the numbers all the way up to 31 for the learners
- Ask learners if they know what today's day is, month is and day is. Show them this day on your calendar. Write the month at the top of the grid.
- Now ask the learners if they can find that same day (number) on the 1-31 grid. Circle this number with a dry wipe marker.
- Ask learners if they can guess why the numbers here stop at 31.
- Cover the numbers 11-31 with paper – focusing on the row of numbers from 1-10. Tell learners that you are going to cover one number with a block and they must figure out what number is covered. Ask learners to close their eyes and you cover any one number on the grid.
  E.g. if you cover 6 then ask learners what number did I cover? And how do you know that number is 6?
- Cover a number as above, and ask a learner to write the number that is underneath.
- Cover a number as above. Ask learners what number comes before and after

| | write month here if required | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 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 | | | | | | | | | |

# 1 - 10 number grid

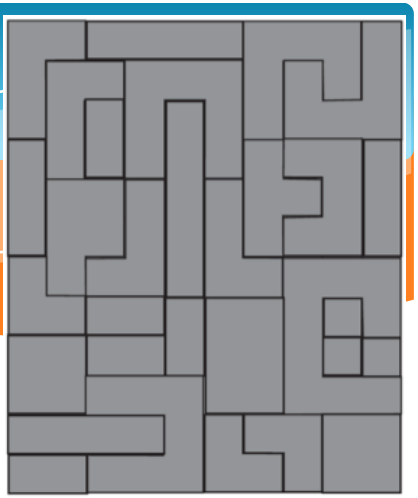
* This can be used for individual work to extend activities introduced with the 1 to 31 grid

| less | more |
|---|---|

| zero | one | two | three | four | five | six | seven | eight | nine | ten |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

| before | after |
|---|---|

# Puzzle pieces
## page 7



**Object of learning:**

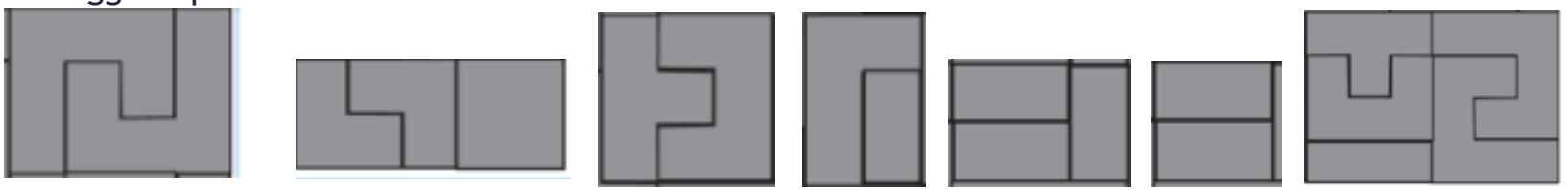
* Shape recognition and description of shapes
* Spatial reasoning and measurement
* Developing language of comparison

*Build rectangles*

* Ask learners to show you a rectangle in the classroom (they could point to the door, or windows or carpet, tiles etc.).
* Ask them why they say those are rectangles and discuss the properties of the opposite sides being equal and usually we have 2 long sides and two short sides and the upright (not slanty or pointy) corners.
* Now ask the learners to use some shapes to build you a rectangle.
* Then ask them to see if they can build another different rectangle (e.g. a longer, fatter or thinner one).
* Ask learners to compare their rectangle to a friend's and describe how they are the **same** and **different** using words such as longer, shorter, fatter, wider, thinner, thicker, smaller, etc..
* Ask them how they know this i.e. putting the shapes next to / on top of each other to make comparisons.

*Build squares*

* Ask learners to explain what a square is and to show you a square in the classroom.
* Discuss why it is a square (i.e. all the sides are equal – and so it is a special case of a rectangle).
* Now ask the learners to use some shapes to build you a square.
* Depending on the size of the square learners have built, ask them to see if they can build another smaller or bigger square



# Playing card activities

- Cognitive control
  - Sorting
  - Memory (concentration)
  - Dingaan's kraal
  - Snap!
- Mathematical focus
  - Ordering
  - Make 5
  - More and less

# Cognitive control card activities

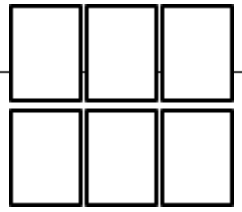


## *PLAYING CARD SORT*

| | | | |
|---|---|---|---|
| ***Mathematical object of learning***: Pattern (subitising) and number recognition<br>***Executive functions:*** flexibility and working memory | ***You need:*** 1 deck of cards per pair / group. When you first play the game take out the 7 to 10 cards, picture cards and jokers | Learners work with a partner | ***IDEAS FOR SORTING CARDS***<br>• Colour (black / red)<br>• Suit (Diamonds / Hearts / Spades / Clubs (flies)<br>• Numbers<br>• Pictures and numbers |

## *MEMORY (CONCENTRATION)*

| | | |
|---|---|---|
| ***Mathematical object of learning***: Number recognition, subitising<br>***Executive functions:*** working memory | ***You need***: 1 pack of cards WITHOUT picture cards. You can include the Jokers for a bit of colour if you want. | Learners work with a partner or in a small group of up to 3 |

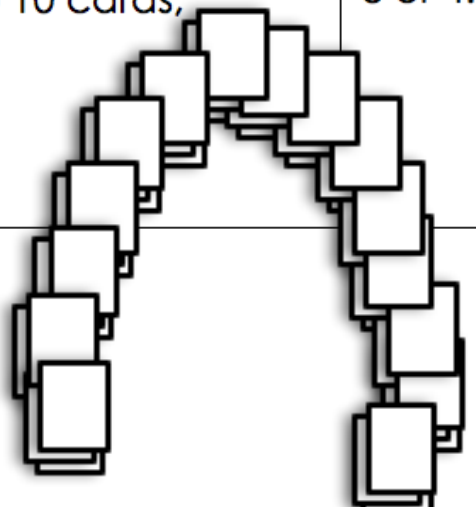


Maths is fun

# Cognitive control card activities
## pages 9 & 10

### *DINGAAN'S KRAAL*

| | | |
|---|---|---|
| ***Mathematical object of learning***: Number recognition, subitising, ***Executive functions***: working memory, inhibition | ***You need***:<br>1 deck of cards per pair / group. When you first play the game take out the 6 to 10 cards, picture cards and jokers | Learners work with a partner or on a group of 3 or 4. |



### *SNAP*

| | | |
|---|---|---|
| ***Mathematical object of learning***: Number recognition, subitising, ***Executive functions***: working memory, inhibition | ***You need***:<br>1 deck of cards per pair / group. When you first play the game take out the 6 to 10 cards, picture cards and jokers | Learners work with a partner or on a group of 3 or 4. |

# Mathematical card activities



## *ORDERING CARDS*

| | | |
|---|---|---|
| ***Mathematical object of learning***: Number sequencing (forward and backward number sequences) | ***You need***: 1 deck of cards per pair / group. Take out cards from 6 to 10, picture cards and jokers. | Learners work in a group of 4 |

## *MAKE 5*

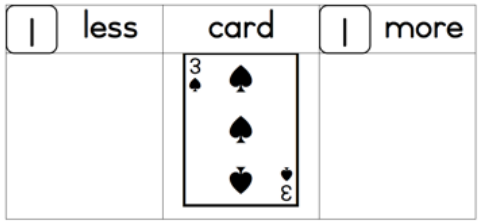
| | | |
|---|---|---|
| ***Mathematical object of learning***: Making number bonds to 5 (working with five as a base) | ***You need***: 1 deck of cards per pair / group. Take out cards from 6 to 10, picture cards and jokers. | Learners work in a group of 3 or 4 |

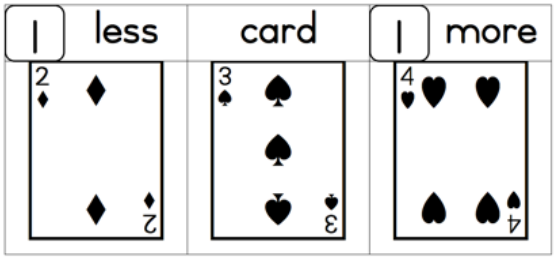
# Mathematical card activities



## *MORE and LESS*

| ***Mathematical object of learning***:<br>More and less | ***You need***:<br>1 **More or less game** board per group of learners<br>1 deck of cards per pair / group. Take out 6 to 10, picture cards and jokers (24 cards)<br>Dry wipe markers | Learners work with a partner |
|---|---|---|

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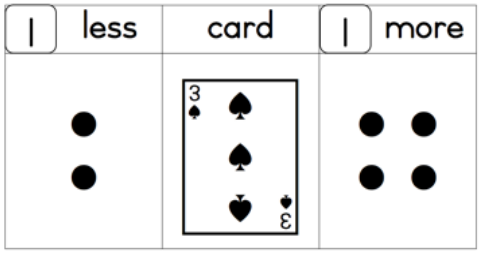


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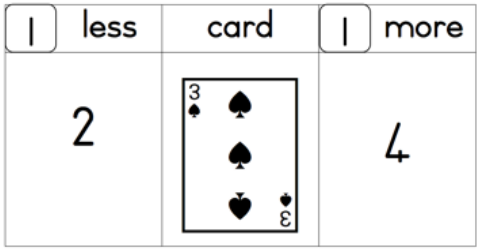

# Implementing ideas

- In the next session as always we will reflect on your implementation of these activities in your class
- Take photos of your learners using resources in class
- Jot down your reflections and bring them to the next session

# Next month: 5th September

* Next month's session – 5th September
* Fellow Numeracy Chair: Hamsa Venkat

* Travel well and we are really excited to be partnering with you all!