



## Early Number Fun Grade R Teacher Development Programme

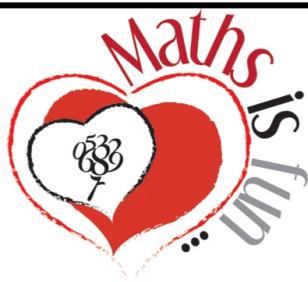
### Session Nine Teacher Handbook

Name

\_\_\_\_\_

School

\_\_\_\_\_



To access resources for this session,  
scan this QR code on your phone to  
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#### DECLARATION

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## Introduction to session

In the first part of this session we focus on teacher experiences of using the activities from session 8.

These included activities based on:

- 5-frame activities
- Frogs and lily pads story
- Assessment activities
- Spot the difference dot pattern activities



## Using story (narrative) approaches for developing number sense

In this session, we provide the fourth book in a series of story-books that have been written to support the transition from context based counting to object bound counting. This book is "Busi, Thabo, the sticks and the fire".

Using story-books with images, and through encouraging learners to answer questions and represent what is happening in the stories with their fingers and puppets, learners will be supported in developing skills of:

- Context bound counting and calculating in the range 1 to 10
- Object bound counting and calculating 1 to 10
- Numeral recognition in the range 1 to 10
- Compare quantities and develop language of more/ less/ many/ none/same/equal
- Develop comparative language for size: big and small; more and less, same/equal
- Recognition of words like 'more' 'less' 'big' 'small' 'same' 'equal'

The method of working with the stories with learners will encourage learners to:

- 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
- Notice patterns
- Predict what might happen next
- Tell their own stories using two different colour popsicle sticks
- Do imitative reading where they 'read' the story to others in the class

## Further work with 5 and 10-frames for developing a sense of 5 and 10

A ten frame is a simple graphic tool that allows learners to "see" numbers.

- 10-frames are useful tools for developing number sense within the context of ten.
- Arranging counters in different ways on the ten-frame prompts students to form mental images of the numbers represented.
- Understanding that numbers are composed of tens and ones is an important foundational concept, setting the stage for work with larger numbers.
- A strong sense of "ten" is a prerequisite for place-value understanding and mental calculations.

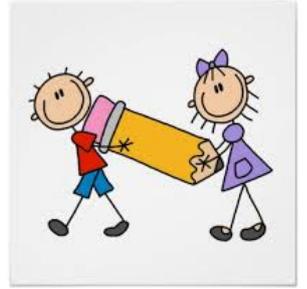
Children in Grade R and 1 should explore numbers with a five-frame first before moving on to a ten-frame. When the children are ready (much later in the Grade R year), introduce the 10-frame with the following **rule** to encourage a "standard way" to show numbers on the ten-frame.

*Always fill the top row first, starting on the left, the same way you read.  
When the top row is full, place counters on the bottom row, also from the left.*

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## Reflection Activity

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Get into groups of 3-5 teachers who are from a different school to you.  
Reflect on your use of the following resources from the last session.

- 5-frame activities
- Frogs and lily pads story
- Assessment activities
- Spot the difference dot pattern activities

1. Reflect on your experiences of the use of **these resources in class**.
2. Did you make any adaptations to the resources? If so, show / explain to the members of your group.
3. What were the learner experiences of the resources?

**NOTES:**

This section provides details of the activities that are presented in this workshop.  
Every workshop will have a similar section so you know where to look in the handbook.

## **Resources**

**Cognitive control activities**  
**Page: 6**

**Story-based activities – The sticks and the  
fire**  
**Page: 7**

**Activities with the 5-frame truck**  
**Page: 9**

## Spot the Difference activities (2)



The aim of these activities is for learners to compare two pictures and to look for what is the same and what is different between them. It is important to encourage the learners to explain the differences that they notice to develop their language of comparison. Use words about colour, shape, size, position and so on.

<b>Skills:</b>	<b>You need:</b>	<b>Work with:</b>
<ul style="list-style-type: none"> <li>to develop executive functions of: Working memory and shifting attention</li> <li>to develop descriptive language of comparison</li> </ul>	<ul style="list-style-type: none"> <li>Pack of 10 Spot the Difference cards with pictures (see below)</li> <li>Dry wipe markers &amp; cloth</li> </ul>	<ul style="list-style-type: none"> <li>We suggest working with smaller groups sitting in a circle on the mat or around a table</li> </ul>

### Using the activity

- Work with a group of learners in a circle.
- Each card is numbered. Learners work individually on one card at a time.
- When all learners are finished with a card, they pass the card onto the learner on their left.

### Ask learners to:

- Look at the top picture (the one above the dotted line)
- Look at the bottom picture (the one below the dotted line)
- Look for the *differences*
- Explain what they notice
- Circle or draw the missing pieces / parts (with a whiteboard marker)

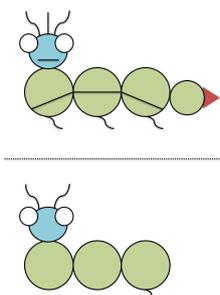
### Language development – some question prompts if needed

Ask learners:

- What is the same in both pictures?
- What is different?
- What is missing in the bottom picture?

### Encourage learners to talk about:

Using this card as an example:



Shapes	e.g. "There are 4 circles at the top. There are 3 circles at bottom."
Colours	e.g. "There are 4 green circles at the top. There are 3 green circles at the bottom"
Body parts	e.g. "There are three legs in the top picture. There is one leg in the bottom picture"
Direction / size	e.g. "There is a small, red triangle at the end of the body"

# Busi, Thabo, the sticks and the fire



## Getting started with the story book

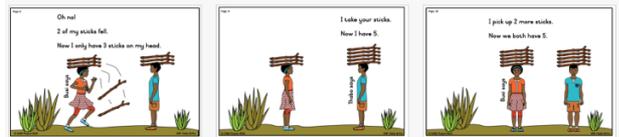
First read the story to your learners. This could be with the whole class on the mat or with smaller groups of learners on the mat while other learners are occupied with other activities.

As you read, pause to ask questions such as:

- "who has more or less sticks?"
- "how many sticks does he/she (Busi/Thabo) have?"
- "how many **more** is this than Busi/Thabo?"

## Use the following prompts for pages 8 to 10

- Ask: How does Busi know that she only has three sticks on her head?
- Is she right?
- How many sticks do Busi & Thabo have altogether?
- Repeat for page 9 and 10, changing the names as you do so.



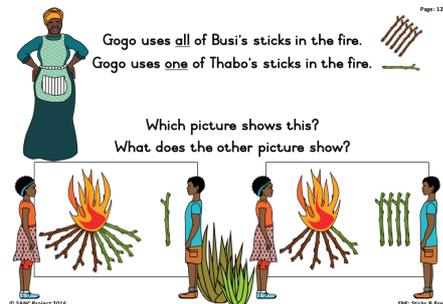
## Note about page 11

- On this page, Thabo's sticks have been coloured green to help the learners think about the problem on page 12 and to use the bundle of five in their thinking



## Discussion for page 12

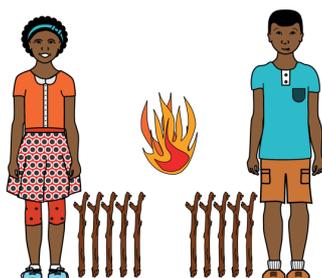
- Cover the pictures on the page
- Read the top of the page
- Ask:
  - How many sticks will Gogo use altogether?
  - How many sticks will Thabo have left?
- Then reveal the pictures and ask the learners which picture shows this.
- Ask learners to tell a number story about the other picture



## What is different from 'Monkeys', 'Umbrellas' and 'Frog' books?

- Number range 1 to 10
- Working with combinations that make 10
- New vocabulary of "same" and "equal"

## Busi, Thabo, the sticks and the fire continued



### Re-enact the story

Now get the learners to re-enact the story with the pages of the story as a guide and using the popsicle sticks.

- Lay a pile of popsicle sticks on the floor
- Re-enact the story with 2 learners in front of the class (using a girl for Busi and a boy for Thabo)
- As the story unfolds, ask the other learners:
  - *What happens next?*
  - *Who has more/less sticks?*
  - *How many sticks on Busi/Thabo's head?*
- Ask learners to place '**more**', '**less**', '**same**', '**equal =**' and numeral cards by the feet of the 2 chosen learners as the story continues.

dieselfde	gelyk =
fanayo	zenza =
same	equal =

### Modelling the final page of the story with sticks (some time later i.e. a week)

For this, extend the story by saying the following:

**Busi always brings dry sticks which are good for making a fire. Gogo always uses ALL Busi's sticks when she makes a fire before using any of Thabo's.**

#### For each learner, you need:

- 5 brown popsicle sticks
- 5 green popsicle sticks
- Numeral cards

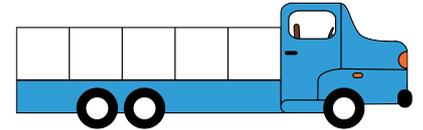
Remind the learners, that in the story, Thabo's sticks were green. As the teacher, pretend to be Gogo. This means that you will always use all Busi's 5 brown sticks in the following scenarios. Make this clear to the learners as a rule: Gogo always uses Busi's sticks first.

- Working with a small group of children on the mat, give each learner 5 brown sticks and 5 green sticks.
- Ask them to hold the 5 brown sticks in the left hand (Busi) and the 5 green ones in the right (Thabo).
- Say "I want to build a fire with 8 sticks. Give me 8 sticks"  
Learners should give you ALL 5 of the brown sticks and 3 of Thabo's green sticks.  
**NB:** If learners count the 5 brown sticks out in ones, remind them that we know that this bundle is 5. Get them to count on from 5: five, six, seven, eight
- Ask:  
*How many of Thabo's sticks do I use?* [3]  
*How many sticks will Thabo have left?* [2]  
*How many sticks altogether in my fire?* [8]
- Have the children use the 5 brown sticks from their left hand (Busi) and the correct amount of green ones from the right (Thabo) to show the sticks for the fire and to answer the questions.
- They can also find numeral cards to match the number of sticks used for the fire and the number Thabo has left over. e.g. 8 and 2
- Continue to work through different numbers of sticks for the fire: 7; 6; 9; 10; 5;
- At the end, build the bonds to 10:  
e.g. 8 sticks in the fire, 2 sticks left; 7 sticks in the fire, 3 sticks left and so on.

### Extension

If you feel that some of the learners are ready, they can write all the ways that they made 10 using the sticks. You are looking for the combinations of: 5 and 5; 6 and 4; 7 and 3; 8 and 2; 9 and 1;

## Activities with the 5-frame truck



### How many different ways can the driver pack the fruit in the 5-frame truck?

The aim of this activity is to give the learners a context in which to learn about using the 5-frame and to work with the combinations that make 5.

<b>Mathematical object of learning:</b>	<b>For each learner, you need:</b>	<b>Work with:</b>
<ul style="list-style-type: none"> <li>Working with the combinations that make 5</li> <li>Seeing 5 in a structured, visual way</li> </ul>	<ul style="list-style-type: none"> <li>1 5-frame truck board (laminated)</li> <li>1 set of fruit strips (apples and bananas)</li> <li>Dry wipe marker &amp; cloth</li> </ul>	<ul style="list-style-type: none"> <li>We suggest working with smaller groups on the mat</li> </ul>

The 5-frame truck and set of fruit is shown below:

<p>Help the driver pack the truck with fruit.</p> <p>5-frame truck</p> <p>How many different ways can you pack apples and bananas?</p> <table border="1"> <tr> <td></td> <td>and</td> <td></td> </tr> </table>		and			and			and			and			and			and		x 2	x 2
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- Using the strips of fruit, the learners place different combinations of fruit onto the 5-frame truck
- Each time they make a combination, they draw or write down the combination in the white boxes
- Initially, allow the learners to work out the combinations in any order.
- Look at their combinations and ask learners questions about these. For example: I see that you have the same (point to any repeated ones)
- After they have completed the activity, you might ask if there is a way to make sure they have all the ways of making 5
- If the learners have had experience with either the Monkeys in the trees or Umbrellas and Children stories, you might draw their attention to the patterns used in the stories i.e. 5-0; 4-1; 3-2; 2-3; 1-4; 0-5
- Learners may then wish to wipe the board clean and try again
- The intention is for them to come to order the combinations in a structured way
- Allow learners to repeat the activity as many times as they like, perhaps over a number of days

<p>Help the driver pack the truck with fruit.</p> <p>5-frame truck</p> <p>How many different ways can you pack apples and bananas?</p> <table border="1"> <tr> <td></td> <td>and</td> <td></td> </tr> </table>				and																
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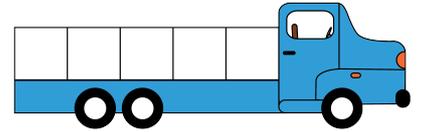
#### For example:

Learners might draw dots, write numbers or draw the actual fruit (or any combination of these) in the white boxes

#### Extension:

When (and if) learners are ready, use the **10-frame truck** as shown on the next page.

## Activities with the 10-frame truck



### How many different ways can the driver pack the fruit in the 10-frame truck?

The focus of this activity is similar to that of the 5-frame truck. It can be introduced much later in the Grade R year.

<p><b>Mathematical object of learning:</b></p> <ul style="list-style-type: none"> <li>Working with the combinations that make 10</li> <li>Seeing 10 in a structured, visual way</li> </ul>	<p><b>For each learner, you need:</b></p> <ul style="list-style-type: none"> <li>1 10-frame truck board (laminated)</li> <li>1 set of fruit strips (apples and bananas)</li> <li>Dry wipe marker</li> </ul>	<p><b>Work with:</b></p> <ul style="list-style-type: none"> <li>We suggest working with smaller groups on the mat</li> </ul>
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The 10-frame truck and set of fruit is shown below:

Help the driver pack the truck with fruit

How many different ways can he pack apples and bananas?

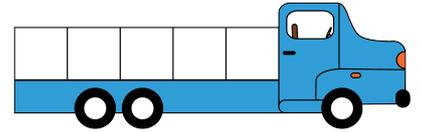
10-frame truck

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x 2	x 2
x 2	x 2
x 2	x 2
x 2	x 2
x 2	x 2

- With the 10-frame, it is an ideal time to introduce the 'rule' about filling the frame:
    - Fill the top row first, starting on the left, the same way you read.
    - When the top row is full, counters can be placed on the bottom row, also from the left
  - Point out to the learners what the top row is, where top left is.
  - Get the learners to **point to** and use **gestures** to show these.
  - Learners can count the number of squares in the 10-frame, starting at the top left and moving down.
- 
- When the learners are familiar with the 10-frame structure, they can use the strips of fruit as they did with the 5-frame to place different combinations of fruit onto the 10-frame.
  - Each time they make a combination, they draw or write down the combination in the white boxes
  - Use the same process as described for the 5-frame. Again, the intention is for them to come to order the combinations in a structured way:  
10-0; 9-1; 8-2; 7-3; 6-4; 5-5; 4-6; 3-7; 2-8; 1-9; 0-10

## 5-frame Snakes and Ladders game



### Mathematical object of learning:

- Becoming familiar with the structure of the 5-frame in a game context

### For each group of learners, you need

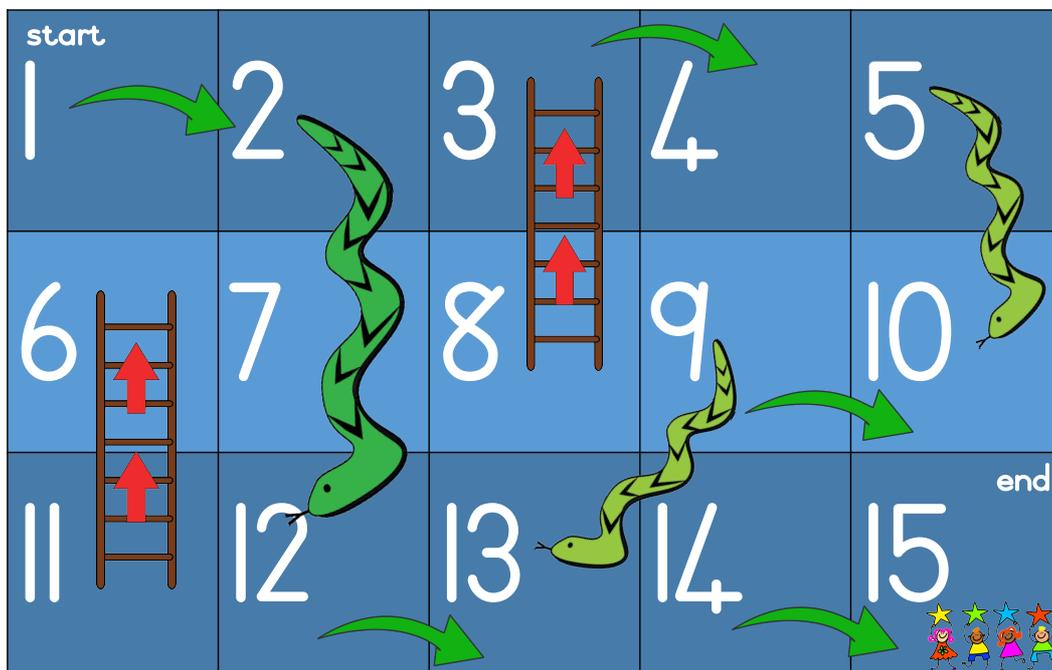
- 1 game board (laminated)
- 1 dice
- Different colour counters or items to move (stone, bottle top etc.)

### Work with:

- We suggest learners work in pairs or small groups on the mat

This is the game board for 5-frame Snakes and Ladders

### 5-frame snakes and ladders

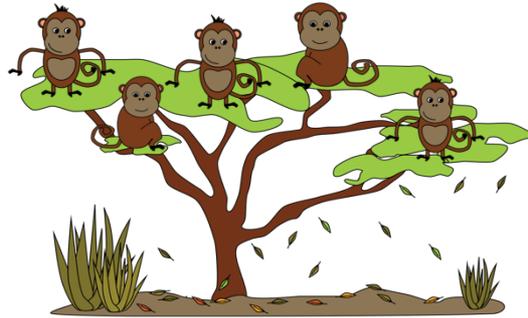


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### Game instructions

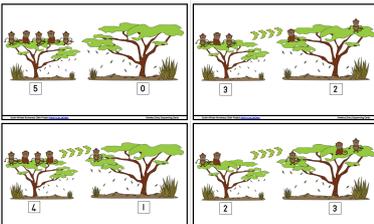
- Start at 1
- Throw a dice
- Count the number of squares to move
- Follow the arrows to each number i.e. move from left to right across each row as you would with the 5-frame
- If you come to a ladder, go **UP**; if you come to a snake, go **DOWN**
- First person to 15 is the winner

## Supplementary activities – 5 monkeys in a tree



Based on feedback from Grade R educators over 2016, these supplementary activities for the “5 Monkeys in the tree” book have been developed.

### Sequencing Cards

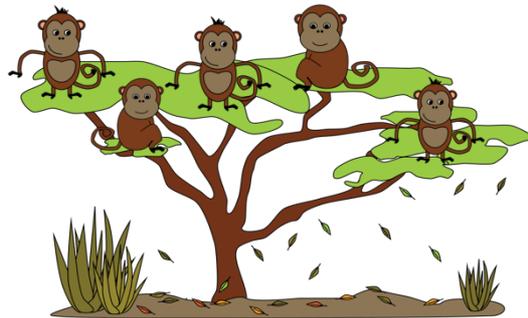
<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>Ordering and sequencing in a logical way</li> <li>Working with the ordinal sequence</li> <li>Reinforcing mathematical concepts from the story</li> <li>Encourages language development</li> <li>Encourages learners to express their thinking</li> </ul>	<p><b>For each learner / pair, you need</b></p> <ul style="list-style-type: none"> <li>One set of sequencing cards</li> </ul> 	<p><b>Work with:</b></p> <ul style="list-style-type: none"> <li>We suggest learners work individually or in pairs on the mat</li> </ul>
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This activity helps the children to order and sequence events in a logical manner, it helps to reinforce the mathematical concepts from the story, encourages language development and expressing their thinking, as well as introduces the ordinal number sequence.

Once your children are familiar with the story, working individually, in pairs or in a small group with the teacher, children can be asked to “tell the story in order, using the cards”.

- First discuss each of the components on the cards – draw children's attention to the small tree, the big tree, the monkeys (count them) and the number symbols.
- Shuffle the cards and give them to the learners
- Then ask them to remember back to the story and to identify which one comes **first**.
- Discuss why they chose that card.
- Then ask them to identify which comes **next, after, 'and then?'** or use the ordinal number words: **second, third, fourth, etc.**

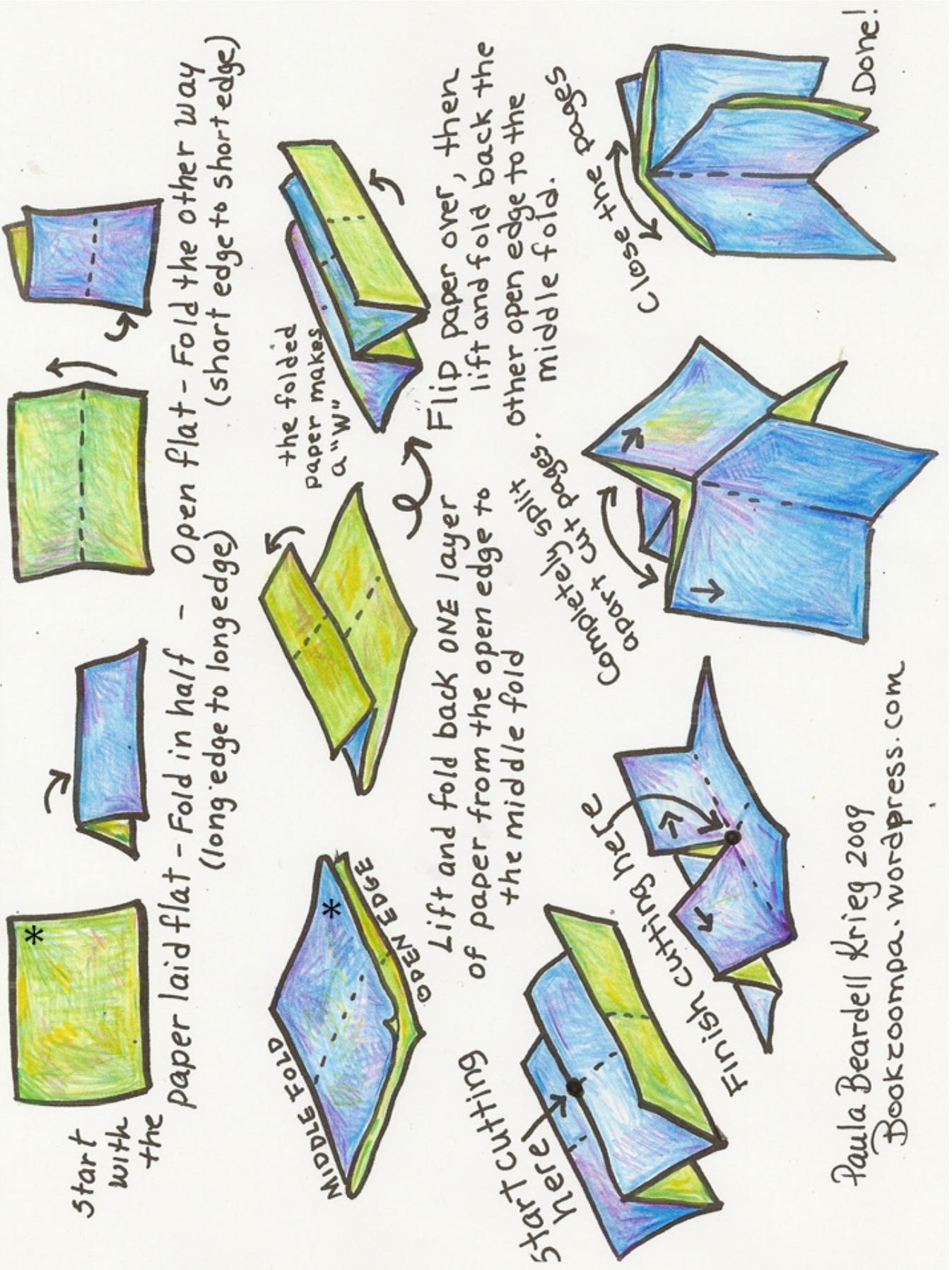
## Supplementary activities – 5 monkeys in a tree



### Mini-folded books for learners

<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Listening</li> <li>• Fine motor skills (in the folding and colouring process)</li> </ul>	<p><b>For each learner, you need</b></p> <ul style="list-style-type: none"> <li>• One A4 sheet for folding</li> <li>• Crayons</li> </ul> <p><b>For yourself, you will need:</b></p> <ul style="list-style-type: none"> <li>• A sample sheet to use for demonstrating</li> <li>• To be familiar with the folding instructions</li> </ul>	
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- Give each child a A4 page.
- Using your own copy, talk them through folding the book one step at a time.



Paula Beardell Krieg 2009  
Bookzoompa.wordpress.com

# 10 Frame Board
