Grade R
2024

MATHEMATICS GAMES BOOKLET

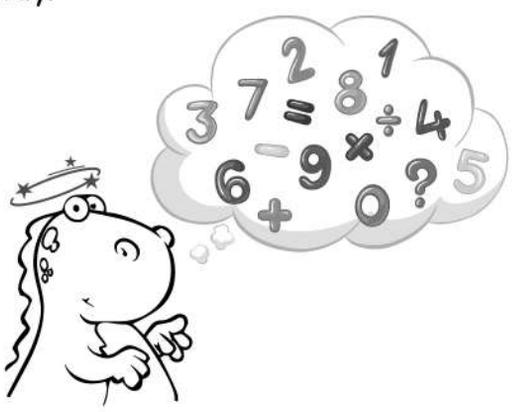
Name: .....

Grade R

MAGIC CLASSROOM COLLECTIVE

CONTENTS

When I was a little dinosaur, I thought that mathematics was very DIFFICULT! I thought that maths was about filling my head with lots of numbers. And I thought it was all about getting the right answer! Maths made my head feel sore. I felt like closing my eyes and turning away!



Then I met my best friend! Her name is Infinity. She is a star in the sky. Are you surprised? Did you ever think that you could be friends with a star in the sky?

The cool thing about Infinity is that she is so high in the sky, she can see things very clearly.

She has been introducing me to maths again! When we started, Infinity told me something that was very surprising. She said that mathematics is NOT about filling my brain with numbers and getting the right answer! Can you believe what she is saying!?

She says that maths is about thinking, imagining problems in our head, drawing pictures to help us think better, and talking about how we see and solve problems. She says we learn maths slowly and calmly. She says we learn maths by talking about our thinking!

She does not even care that much about whether I get the RIGHT answer!! She always says, "Hey, Zibalo, tell me about what you are thinking." She asks, "what picture is in your mind to help you think about this problem?"

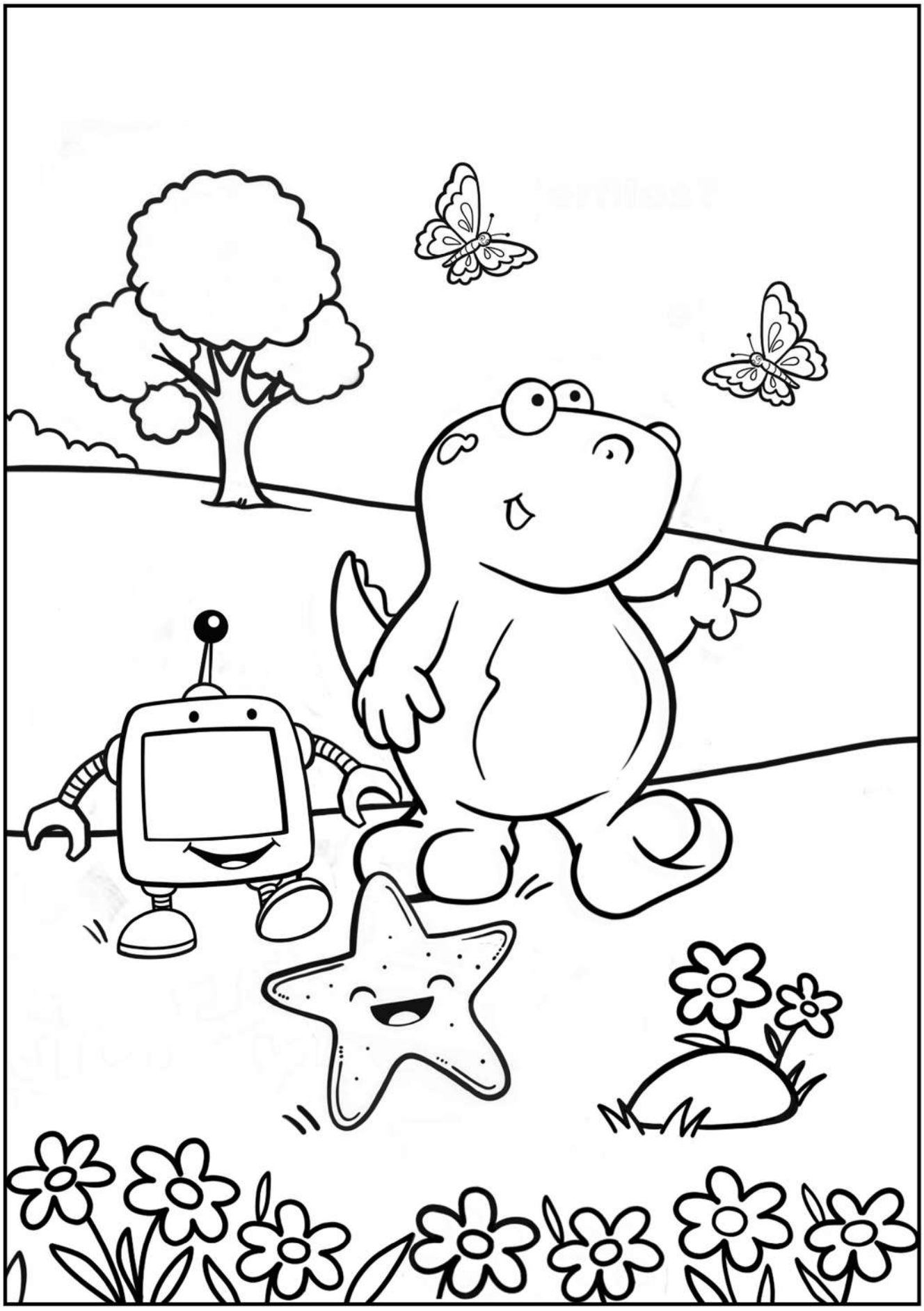
When I show her my answer, she always asks, "HOW did you arrive at that answer?" She says that when we talk about the way we are thinking, we are REASONING together.

Can you imagine a friend asking you these kinds of questions? Can you see why she is my best friend?

I would love to share all that I have learned from Infinity. You will find me on many of the pages of this workbook. I am there to whisper to you and your teacher. I whisper some of the cool things Infinity has whispered to me. Keep asking your teacher, "what does Zibalo say?"

I can't wait to get started. Are you ready?

Colour in.



Did you know that "Infinity" means numbers with no end? Think of a very big number. You can always add one more! My parents named me Infinity because they said their love for me has no end!

I love mathematics. I love thinking about maths, talking about maths and playing maths games.

I am lucky. I am high in the sky. I can see things more clearly from up here!

When I first met Zibalo, she did not like mathematics. She said she was not a maths person!

Well, slowly I showed Zibalo that we are all mathematical! She is so interested in mathematics now. We talk maths every time we are together. Even when we have a party, we talk maths!

In the past, many people thought that only a few people had maths brains, and the rest of us could not do well in maths.

Well, scientists can now study the brain. Do you know what they found?
We ALL have maths brains! They also found that our brains grow and change every day! When we practice maths, our brains change and grow. The more we practice, the easier it is! Imagine that!

Our brains change every day! People who become good at mathematics are the people who like to practice mathematics, and never give up!

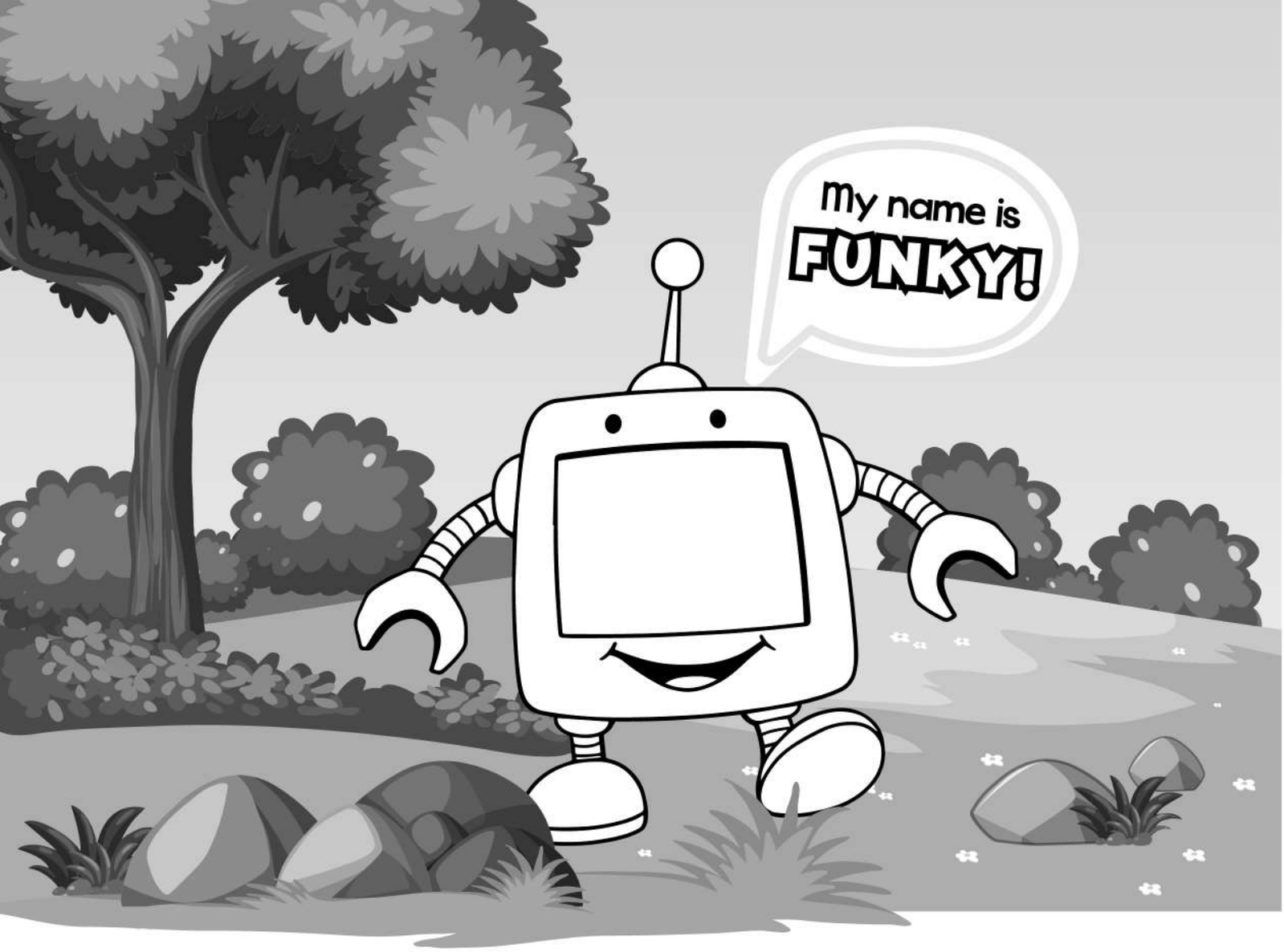
Zibalo is super excited to share what she has learned with you. She is still learning. As mathematicians we are always learning. She knows she will make mistakes. She is no longer scared of making mistakes. When we think and talk about mistakes, our brains grow!

Let me share the 1-2-3's of mathematics that I shared with Zibalo right from the beginning:

1. **Looking:** Mathematics is about looking very carefully! Your teacher cannot SEE for you! You must look to see! Look closely! What do you SEE?
2. **Imagining:** Mathematics is about imagining pictures in our minds to help us think about problems. We draw pictures to help us think!
3. **Talking:** We learn mathematics by talking mathematics. I do not worry about whether you got the right answer. I am super interested to hear you talk about how you are thinking. Can you draw me a picture so I can see your thinking?

Mathematics is about growing our seeing, imagining, picture-drawing, talking and reasoning skills! Cool, neh?

I will walk with Zibalo as she shares with you all she has learned about maths.



Hey! My name is Funky! I am a robot. My friends think I am named Funky because I love to show them the Funky dance!

My real name is Function. My parents called me Function because they love mathematics.

My friends call me the "Funky Function Machine!"

In mathematics, we enjoy looking at how things change. A function describes how things change in predictable ways.

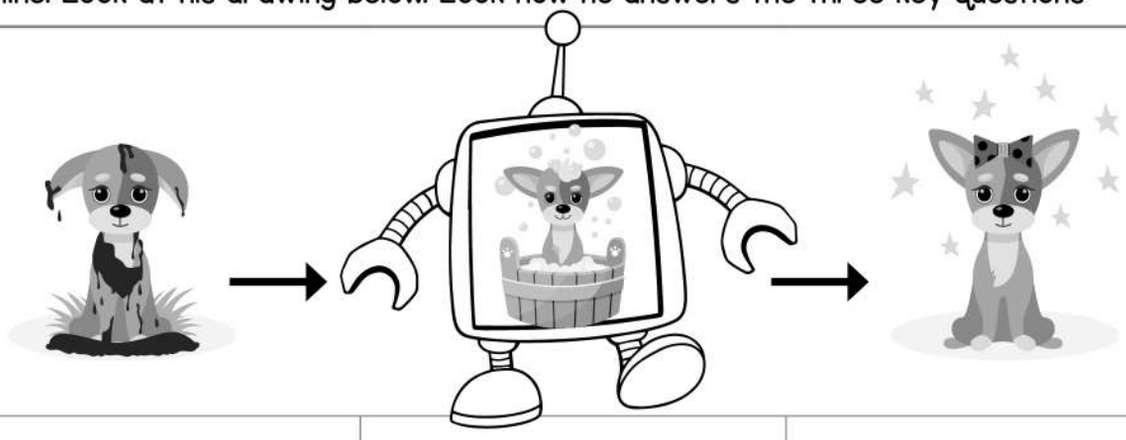
We describe a function machine by asking three questions:

1. What goes into the machine? We call this the INPUT.
2. What happens inside the machine – how do things change?
3. What comes out of the machine? We call this the OUTPUT.

Cool. Before we move forward, I want you to create your own function machine. Do you want me to share an example?

OK fine! My cousin just developed this one. He calls it the Dog-Washer Function

Machine. Look at his drawing below. Look how he answers the three key questions:



1. **What goes in?** Dirty dogs go into the machine. Any dirty dog can go in – big or small, spotted or brown.	2. **What happens <u>inside</u> the machine?** The dogs are soaped and soaped and scrubbed two times, and then they are dried. You cannot even see from the outside! But <u>inside</u> there is a lot going on!	3. **What comes out?** Sparkling clean dogs! The dogs that come out <u>have been changed</u>. They are now clean!

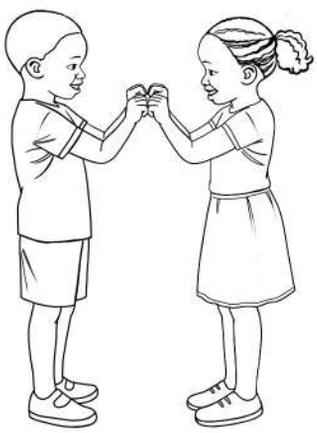
Think about your own Function Machine. Draw it below. Write the name of your machine.
Remember these three questions:

1. What goes into your machine?
2. What happens inside of your machine?
3. What comes out of the machine?

We will play many games in pairs.
We can only play if we know how to get into pairs and out of pairs quickly and quietly!
Lets practice! Do you know your partner?

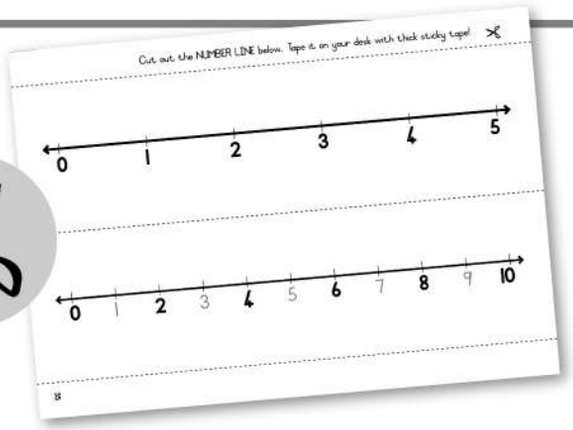
QUICK PAIRS!

- Your teacher will call, "PAIRS PREPARE;"



- Stand up quietly and quickly. Face your partner touching fists.
- Your teacher will say, "BACK HOME!"

- Sit back down quickly and quietly with your hands in your lap.

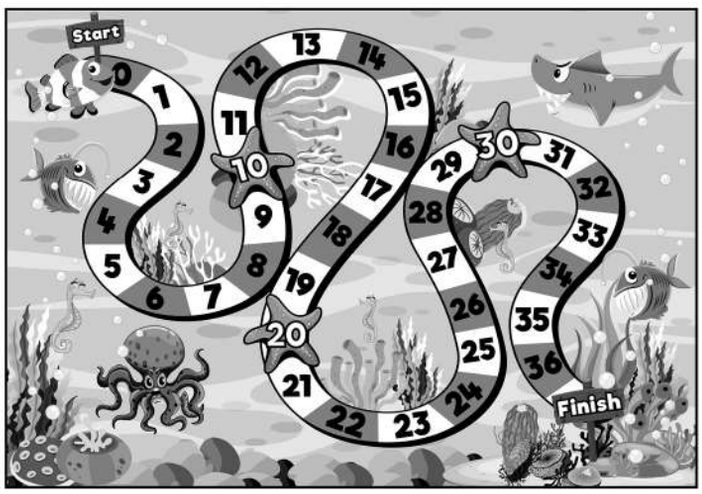


Number Lines

- Cut out the number lines on p33.
- Tape it on your desk with thick sticky tape!

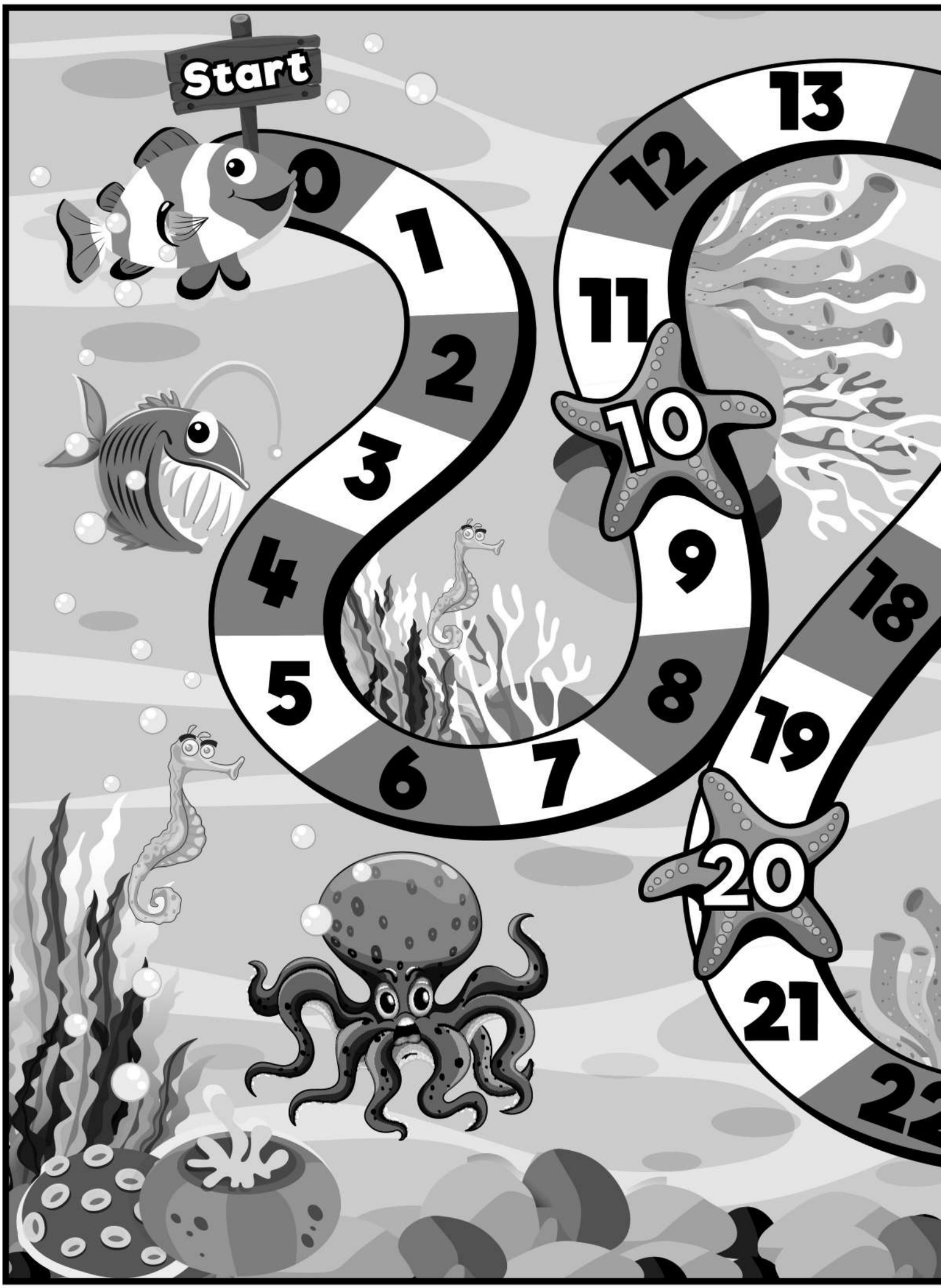
UNDER THE SEA DASH

See the next page for full size board game.



- Play with 2 to 4 players.
- Each player has a cube or counter.
- Use dice or number cards.
- Roll to go first. The player that rolls the highest goes first.
- Players take turns rolling the dice (or picking a card).

  Jump forward the number.
- When you jump to a 10 20 30 you can roll again!
- The first person to reach the FINISH wins!


Start
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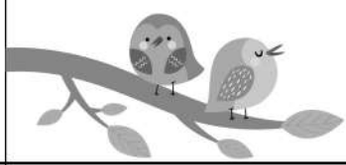
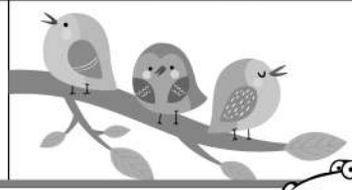
Finish

COUNT FORWARDS:
Birds in the Tree

- Imagine birds on a tree.
- Count with me! Show your fingers.
- One finger is one bird.

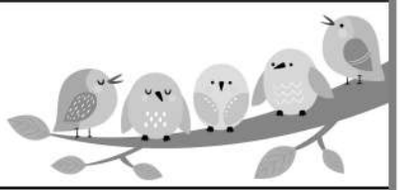
	There are **NO** birds sitting in the tree.	
	**1 bird** lands on the tree. There is **1 bird** sitting on the tree.	
	**One MORE** bird lands on the tree. There are **2 birds** sitting in the tree.	
	**One MORE** bird lands on the tree. There are **3 birds** sitting in the tree.	

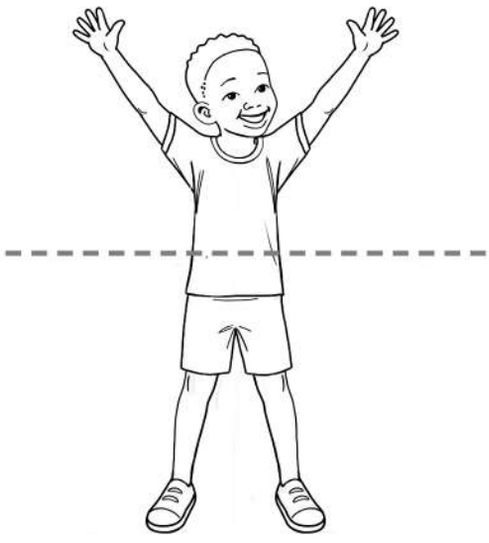
Keep going! Count to 5! Can you count to 10?

QUICK SHOW!
Fingers 0 - 5 !

- I will tell you how many birds are sitting on the tree. (0 to 5)
- You show me the number using your fingers!

COUNT BACKWARDS:
Fly away birds!

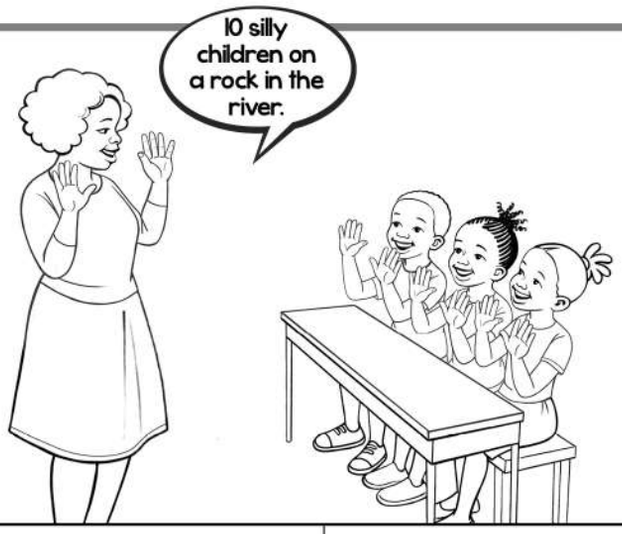
	There are five birds singing in the tree. One flies away.	
	There is **1 LESS** bird singing in the tree. Now there are 4 birds singing in the tree. One flies away.	
	There is **1 LESS** bird singing in the tree. Now there are 3 birds singing in the tree. One flies away.	
Keep going!		
	Now there are NO birds sitting in the tree!	



Top and Bottom!

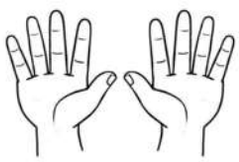
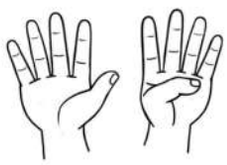
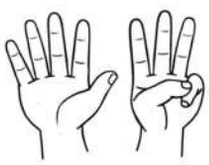
- Imagine there is an invisible line that goes through your belly.
- When I say, "TOP!" move the top half of your body. Keep the bottom half of your body still.
- When I say, "BOTTOM" move the bottom half of your body. Keep the top half still!

Is the TOP half of your body the same as the BOTTOM half of your body?



COUNT BACKWARDS:

- Imagine 10 children on a rock in the river.
- Count with me as they jump off.
- Help make the splash!
- Show with your fingers. One finger is one child.

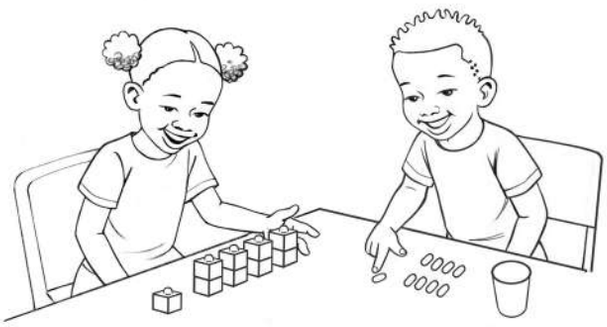
	10 children playing on the rock. 1 child JUMPS in. SPLASH! Now there are...	
	9 children playing on the rock. 1 child JUMPS in. SPLASH! Now there are...	
	8 children playing on the rock. 1 child jumps in. SPLASH! Now there are...	
Keep going until there are...		
	No more children playing on the rock!	

HOW MANY?

- How many children are jumping off the rock?
- I will show you fingers between 0 and 5.
- You tell me how many!

Count and Organise

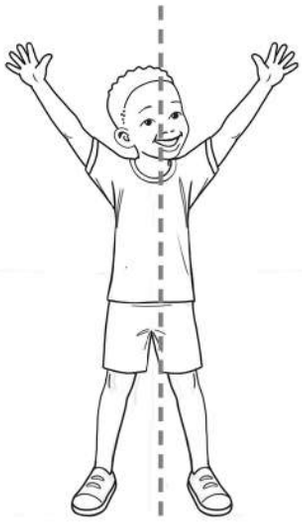
- Grab a small handful of beans, cubes or counters.
- Count! How many?
- Move them around. How many now?
- Organise your beans into groups of 2 so that I can see how many with a quick look.
- Start with a small number. Then try more!



Use cubes, beans or other counters!

ORDER!

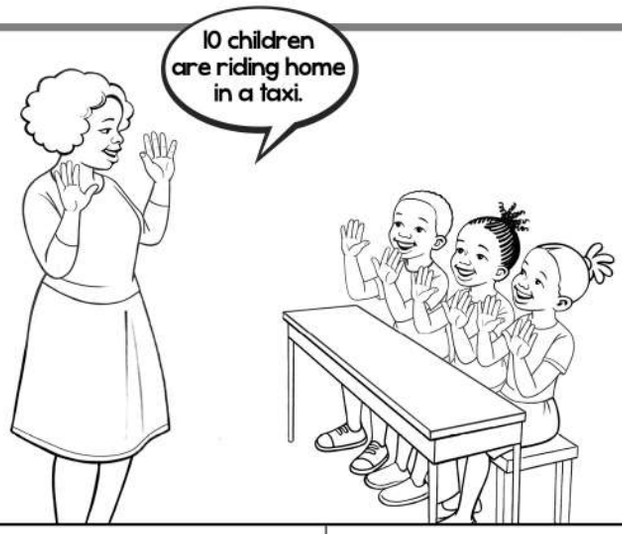
- Build a 1-tower, 2-tower, 3-tower, 4-tower and 5-tower.
- Order from smallest to biggest.
- Order from biggest to smallest.
- Mix up towers. Play again.



Left and Right

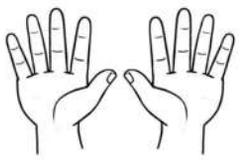
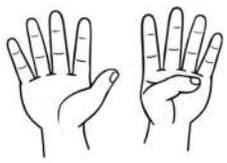
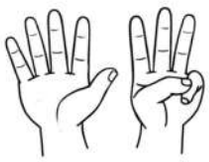
- Imagine there is an invisible line going from your head to your toes, separating your body into 2 pieces.
- When I say, "LEFT" move the left half of your body.
- When I say, "RIGHT" move the right half of your body.

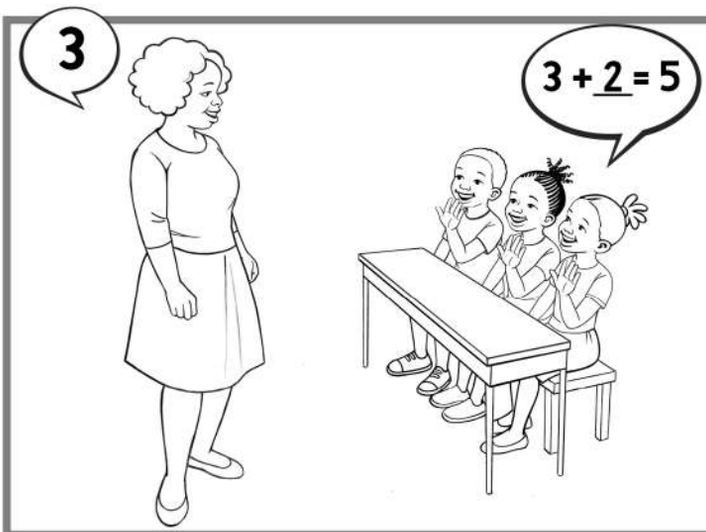
Is the LEFT half of your body the same as the RIGHT half of your body? What is the same? What is different?



COUNT BACKWARDS:

- Imagine 10 children riding in a taxi.
- When the taxi stops, 1 child gets out.
- Count with me as they get off. Show with your fingers. One finger is one child.

	10 children riding in a taxi. The taxi stops and 1 child gets out. Now there are...	
	9 children riding in the taxi. The taxi stops and 1 child gets out. Now there are...	
	8 children riding in the taxi. The taxi stops and 1 child gets out. Now there are...	
Keep going until there are...		
	No more children riding in the taxi.	



5-TALK

- I will call a number between 0 and 5.
- Show me with your fingers.
- How many more fingers to make 5?
- Say the number sentence together.

ORDER!

- Build a 1-tower, 2-tower, 3-tower, 4-tower and 5-tower.
- Order from smallest to biggest.
- Order from biggest to smallest.

- Write number cards: 1 to 5
- Order from smallest to biggest.
- Order from biggest to smallest.

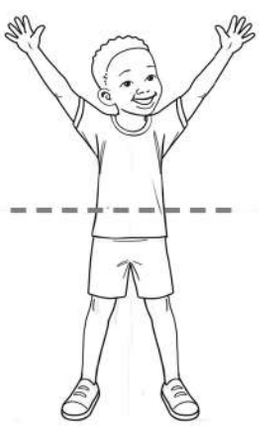
- Mix up towers. Mix up cards. Match towers to cards.

Try playing in pairs!

QUICK SEE!

How many?

- Your teacher will flash two papers.
- The papers have dots. Look quickly.
- Which paper has more? Which paper has less? Are they the same? How do you know?



Top and Bottom

- Imagine there is an invisible line that goes through your belly.
- Are our hands at the TOP or BOTTOM?
- Are our feet at the TOP or BOTTOM?

- When I say "TOP" you clap.
- When I say "BOTTOM" you jump.
- I will tell you how many times.

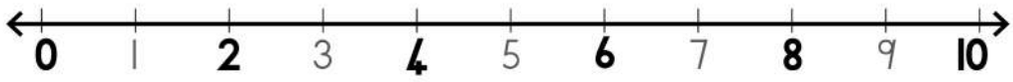
Lets try!

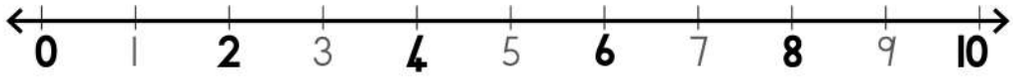
- TOP-2; BOTTOM-4; TOP-1; BOTTOM-3; TOP-6; TOP-5; BOTTOM 0!
- Listen carefully! Can we go faster?

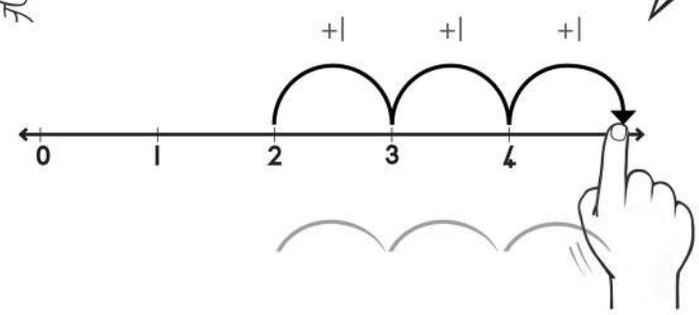
Counting Forward and Backward

On a Number Line

- Make a number line showing 10 equal steps.
- Use tape on the floor or write on the chalkboard.
- One child starts at 0, and takes 10 slow equal steps forward.
- Count steps together: 0, 1, 2, 3, 4...
- When the child reaches 10, he takes 10 slow equal steps backwards.
  Count steps together: 10, 9, 8, 7, ...







HOW FAR TO 5?

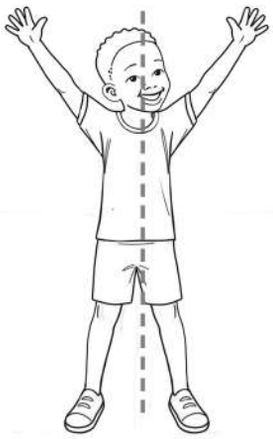
- Look at the number line on your desk from 0 to 5.
- I will call a number from 0 to 5.
- Use your finger to jump to 5.
- How many jumps to reach 5?

Count and Organise

- Grab a small handful of beans, cubes or counters.
- Count! How many?
- Move them around. How many now?
- Organise your beans into groups of 2 so that I can see how many with a quick look.

- Start with a small number. Then try more!

Use cubes, beans or other counters!



LEFT and RIGHT

- Imagine there is an invisible line that goes through from your head to your toes separating your body into 2 equal sides. We call these sides LEFT and RIGHT.

- When I say "LEFT" you SNAP your LEFT hand and HOP on your LEFT foot.
- When I say "RIGHT" you SNAP your RIGHT hand and HOP on your RIGHT foot.
- I will tell you how many times.

Lets try!

- LEFT-2; RIGHT-3; LEFT-1; LEFT-3; RIGHT-6; LEFT-7; RIGHT 0! LEFT-9.
- Listen carefully! Can we go faster?

Standing and Clapping the 5

- Count forward from 0 to 10.
- Count backwards from 10 to 0.
- Stand up and clap on the 5!
- Try to count to 20! Stand up and clap on 5, 10 and 15!

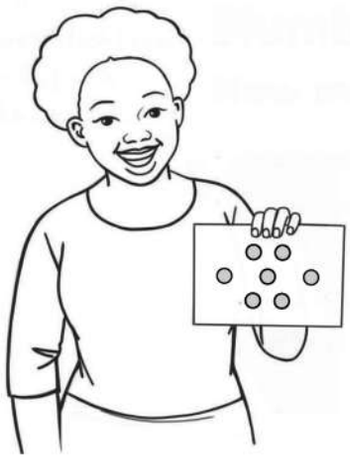
123 QUICK SHOW!

- I will call numbers between 5 and 10.
- Put one hand in the air. That is 5.
- Show more fingers to show the number.

123 SHOW!

More, Less or Same Same

- Play in pairs.
- Put hands behind your back.
- Say together, "1, 2, 3! Vesa!"
- Show fingers on one hand.
- Who has more? Who has less?
- If they are the same, do the "Same-same Dance!"

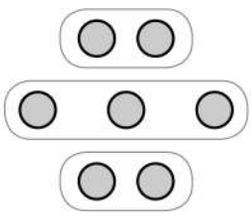
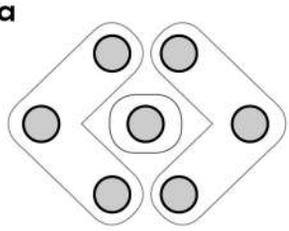
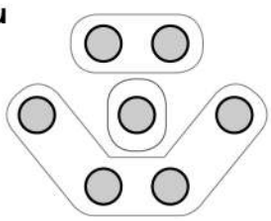
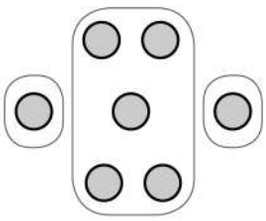


Number Talk

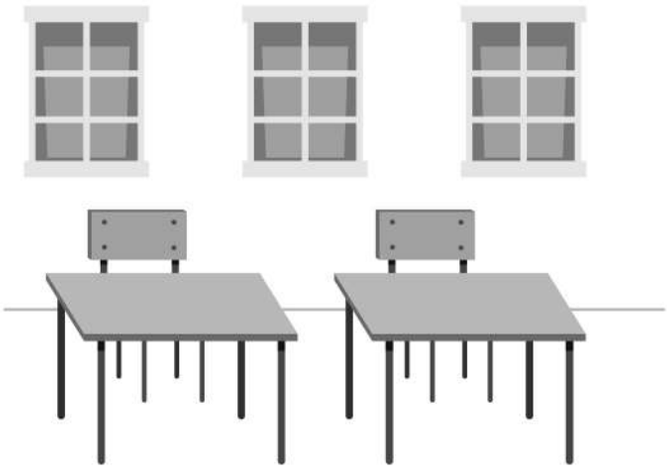
How many?

- Your teacher quickly flashes a dot card.
- Look quickly! How many dots?
- Explain what you see!
- Help your teacher record your model on the board!

Teacher Records

Alu 		$2 + 3 + 2 = 7$
Asanda 		$3 + 1 + 3 = 7$
Nobuntu 		$2 + 1 + 4 = 7$
Brian 		$1 + 5 + 1 = 7$

How many other ways can you see?

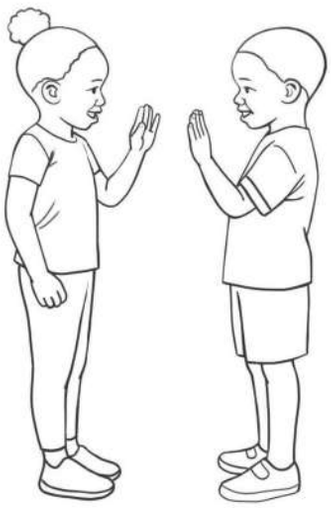


What are we counting?

- When we count, we always ask, "WHAT are we counting?"
- Look at YOUR classroom. What can we count together?
- How many windows?
- How many CORNERS of the windows?
- Count to 10! Count to 20! Keep going!

123 VEZA: 0 to 10

- I will call a number between 0 and 10
- You show me with your fingers.



Let's Explore

Left and Right

- Play in pairs. Face your partner.
- Shake your left hand. What do you see?
- Shake your right hand. What do you see?

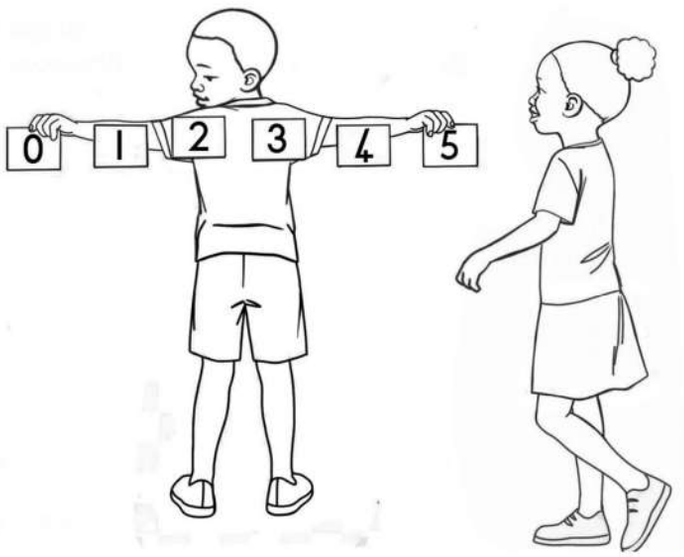
Yes, left and right are opposite when we face each other!

Let's Explore

Left and Right

- Play in pairs. Stand behind your partner.
- You are both facing the same direction.
- Shake your left hand. What do you see?
- Shake your right hand. What do you see?

Yes, left and right are on the same side when we stand in the same direction!



MY BODY: NUMBER LINE TO 5!

- Work in pairs. Face in the same direction!
- One child stretches arms out to be a number line.

- Write number cards from 0 to 5.
- Place 0 and 5 in outstretched hands!
- Attach 1 and 4 near the elbows!
- Attach 2 and 3 near the shoulders!

- Using your finger, point to answer the following:

  5 – 2 =
  2 + 2 =
  3 + 2 =
  4 – 1 =
  1 + ___ = 4
  ___ + 3 = 5

- Make sure you face the same direction!
- Make up your own problem and solve it on the number line!

BUNNY EARS:
0 TO 10

- I will call a number between 0 and 10.
- You show the number as bunny ears.
  Make the ears as equal as possible!

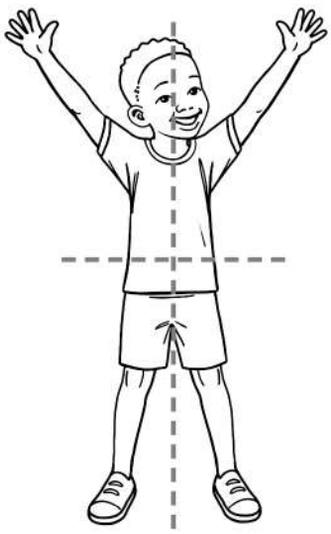
"Yes, 4 is an even number.
When we share equally, there are none left over.
2 and 2 is 4."

"Yes. 5 is an odd number.
When we share equally there is always one left over.
So our bunny ears are not equal.
One of our ears is 2 and the other is 3."

BUILD 5 WITH CUBES!

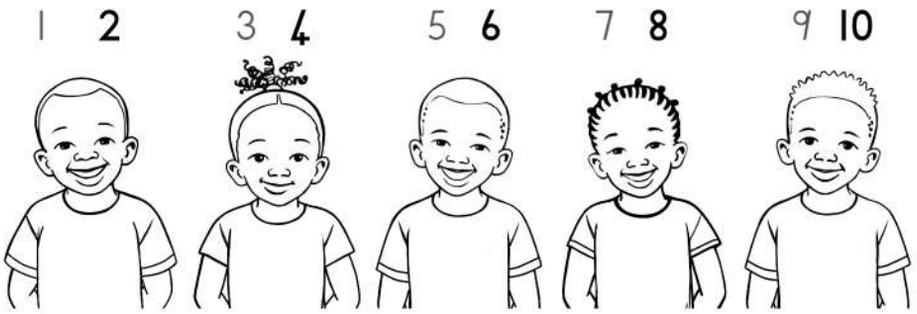
- Build the number 5 with cubes.
- Show 5 in as many ways as you can.
- Talk about how your cubes come together to make 5.

What other ways can you make 5?



QUADRANTS: TOP! BOTTOM! LEFT! RIGHT!

- Imagine there are 2 invisible lines.
- One line goes through your belly, separates your body into TOP and BOTTOM.
- The other line from the top of your head to between your toes, separates your body into LEFT and RIGHT.
- Can you feel that your body is separated into FOUR parts?
- I will call one part. Wave your hand or stomp your foot in that area.
  - TOP-RIGHT!
  - BOTTOM-LEFT
  - TOP-LEFT
  - BOTTOM-RIGHT
- Listen carefully! Can we go faster?



Can you count more than 5 children's eyes?

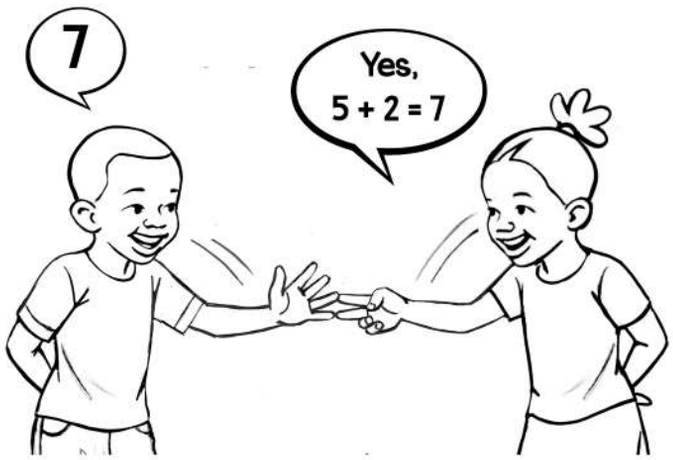
Counting EYES

- 5 children go to the front of the class.
- Count eyes.
- Count softly on the first eye. Count loudly on the second eye.

1, **2**, 3, **4**, 5, **6**, 7, **8**, 9, **10**

- One child walks away at a time. Count eyes.

10, 9, **8**, 7, **6**, 5, **4**, 3, **2**, 1



123 VESA:
3 Fingers!

- Play in pairs.
- Put your hands behind your back
- Say together, "1, 2, 3! Vesa!" (Show)
- Both children show fingers on one hand.
- Add together! Take turns!
- Play again! Faster

Count and Organise

- Grab a small handful of beans, cubes or counters.
- Count! How many?
- Move them around. How many now?
- Organise your beans into groups of 2 so that I can see how many with a quick look.

- Start with a small number. Then try more!

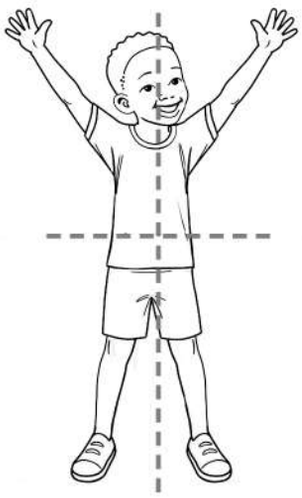
Use cubes, beans or other counters!

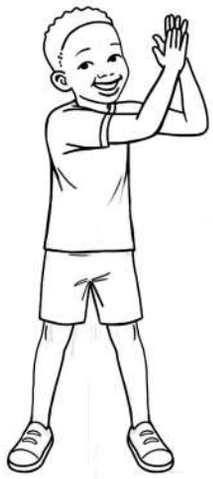
BUILD 6 WITH CUBES!

- Build the number 6 with cubes.
- Show 6 in as many ways as you can.
- Talk about how your cubes come together to make 6.

What other ways can you make 6?

When we share an EVEN number between 2 children there are none left over. When we share an ODD number between 2 children there is always one left over. Is 6 an EVEN or ODD number?





QUADRANTS: TOP! BOTTOM! LEFT! RIGHT!

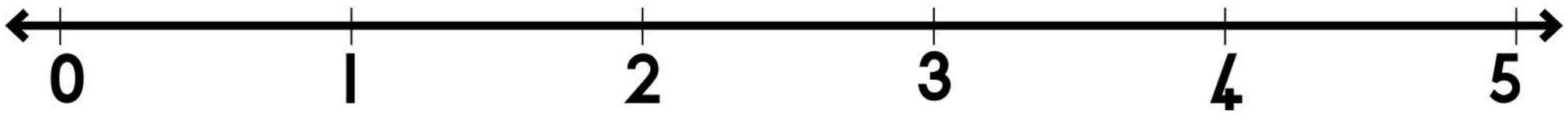
- Remember our bodies separated by 2 invisible lines. Remember when we felt our body in FOUR parts?
- This time I will call a part and a number. Clap your hands to show the number in the correct area.
- TOP-RIGHT - 3
- BOTTOM-LEFT - 6
- TOP-LEFT - 4
- BOTTOM-RIGHT - 10
- Listen carefully! Can we go faster?

Cut out the number cards from 0 to 10 below and on the following page. Decide on a pattern or colour or word. Draw this on the back of each of your cards. This will help you find them again. Store them in a safe place!

0

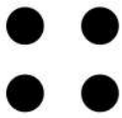
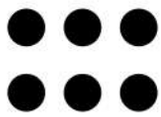
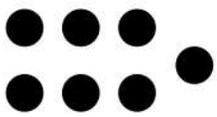
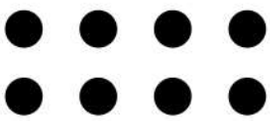
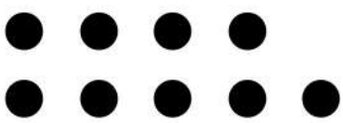
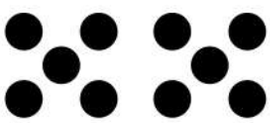
5	10
4	9
3	8
2	7
1	6

Cut out the NUMBER LINE below. Tape it on your desk with thick sticky tape!



Number Chart: 1 - 30

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		one
2		two
3		three
4		four
5		five
6		six
7		seven
8		eight
9		nine
10		ten

Number Chart: 1 - 100

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

Lo ngumsebenzi esizidla ngawo weMagic Classroom Collective (MCC)

The Magic Classroom Collective is a partnership between the Nelson Mandela Institute at the University of Fort Hare and the Eastern Cape Department of Education. The materials have been designed by a long term partnership between the NMI and rural primary schools in the Eastern Cape.

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