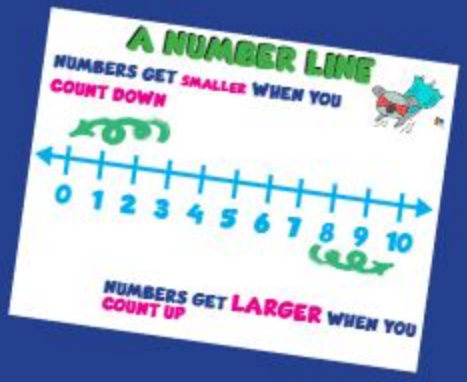
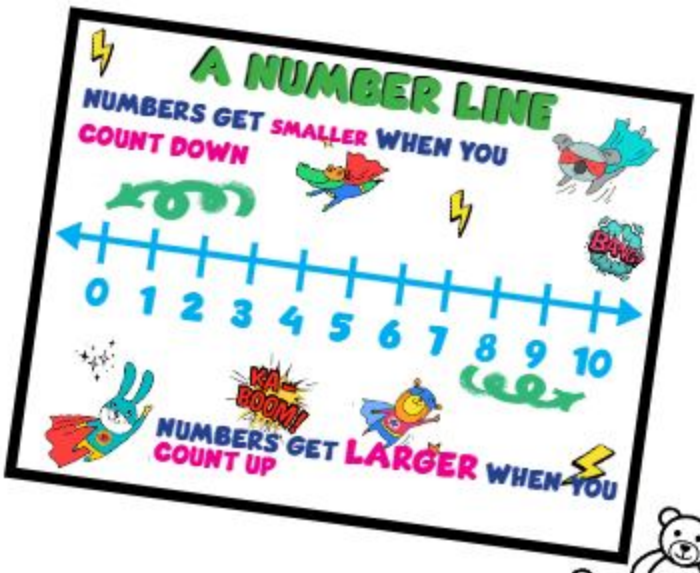
GUIDED MATH
TEACHER'S NUMBER PATHS, NUMBER LADDERS & NUMBER LINES
TOOL KIT





NUMBER PATHS, NUMBER LADDERS AND NUMBER LINE TOOL KIT.

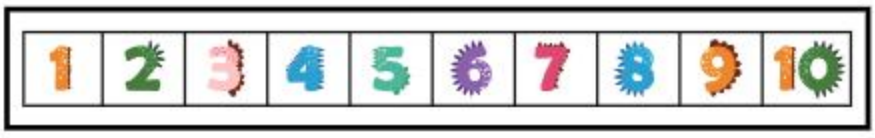


TABLE OF CONTENTS

Math Fact Fluency Playground
Email: drnicki@mathfactfluencyplayground.com
Website: Math Fact Fluency Playground
Produced by Math Fact Fluency Playground
Thank you to the entire Production

Chief Operating Officer: Dr. Nicki Newton
Publisher: Math Fact Fluency Playground
Cover Design: Math Fact Fluency Playground Team
Text Design and Composition: Math Fact Fluency Playground Team

Printed in the United States of America
Volume I: August 2023

Welcome to this book!

I am so excited that you are here to share this with me. This is the everything you ever wanted, needed, thought you might need, never even knew that you needed mega book of guided math number line templates. This book is organized by the priority standards topics that you will teach in k-2 for adding and subtracting within 20. It is written as a k-2 book in the spirit of acceleration and differentiation. The templates are differentiated along the learning progression so that you can meet your students where they are in small groups.

How to Use this Book!

This book has templates that the teacher can use for guided math groups, whole class activities, workstations and homework! The teacher can pull the different templates and make a binder for each person in the group. In the binder, put the templates in sheet protectors or laminate them so they can be used over and over again! Each student will have their own binder and they can use it as needed!

Big Ideas/Priority Standards

This book is aligned to the Big Ideas/Priority standards in k-2. It can be used as a supplement to any program. We have created a variety of templates to address the variations in state standards. These templates will provide you a way to reach back to catch up as well as extend learning for those students who are ready to go to the next steps.

Learning Trajectories

Speaking of steps, we have based all of our templates with the learning trajectories in mind. A learning trajectory is a developmental path that shows the landscape of learning a particular concept. Clements and Sarama have written extensively about learning trajectories (www.learningtrajectories.org). In the front of each book, you will find the learning trajectories for the topic.

Guided Math

Guided Math is a way of teaching students in small groups. Small groups allow us to get up close and personal with our students and their learning. In a small guided math group, there should be no more than 3-5 students. Groups meet for 10-15 minutes. The focus is on DOING MATH. These templates help you to do just that! They provide a space for students to explore, think, talk and work. In the small guided math group, students will make sense of math through working with their peers, their teacher and the different math materials (thinking mats, manipulatives, vocabulary/language talk frames).

While students are working together, the teacher guides them, asks important questions and provides the necessary feedback on their attempts at making sense of the math so that they can make the necessary connections and corrections and build a deeper understanding of the math concepts. The learning spirals and children build on prior knowledge as they engage in new experiences. (Dewey 1933/1998; Piaget, 1972; Vygotsky, 1978; Bruner, 1973, 1990). In the guided math group, the student's should spend most of the time doing math rather than listening to the teacher talk about math.

Experiences are scaffolded in a way to maximize the learning opportunities. Students are working in their Zone of Proximal Development, meaning that they are working at a level that is just right, not too easy and not too difficult (Vygotsky, 1978). Through interaction with more capable peers, adults who are facilitating their learning and artifacts (in this case appropriately selected materials such as manipulatives, books, computer programs etc.), students make meaning of the math (Vygotsky).

Differentiated Instruction

As Coco Aguirre (my mentor teacher) had hanging above the threshold of her door. "If a student doesn't learn the way you teach. then teach the way they learn." This is a simple but powerful truth. Meet the children where they are and then take them to the next level. For me. differentiation is about always asking myself. "If they aren't getting it. what can I do differently?" These templates provide you an option to scaffold the learning so that all students have access to the grade level content!

Tomlinson (1999) speaks of how differentiated instruction results in academically responsive classrooms. In this type of classroom teachers are aware of the academic levels of their students and create curriculum designed to respond to their needs. Tomlinson stated that at its most basic level. differentiating instruction means "shaking up" what goes on in the classroom so that students have multiple options for taking in information. making sense of ideas. and expressing what they learn. In other words. a differentiated classroom provides different avenues to acquiring content. to processing or making sense of ideas. and to developing products so that each student can learn effectively (2001).

While differentiation "advocates attending to students as individuals. it does not assume a separate assignment for each learner"(Tomlinson). "Differentiation needs to be student-centered. rooted in assessment. and dynamic" Serravallo. 2010. We are constantly adjusting our teaching in response to what students are telling and showing us in their work and talk. Teachers who differentiate must take the time to get to know their students well. They have to understand them as people. learners and know what motivates them to reach their goals. Robb notes that "Differentiation is a way of teaching. it's not a program or a package of worksheets. It asks teachers to know their students well so they can provide each one with experiences and tasks that will improve learning" (2008. p.13).

Math Talk

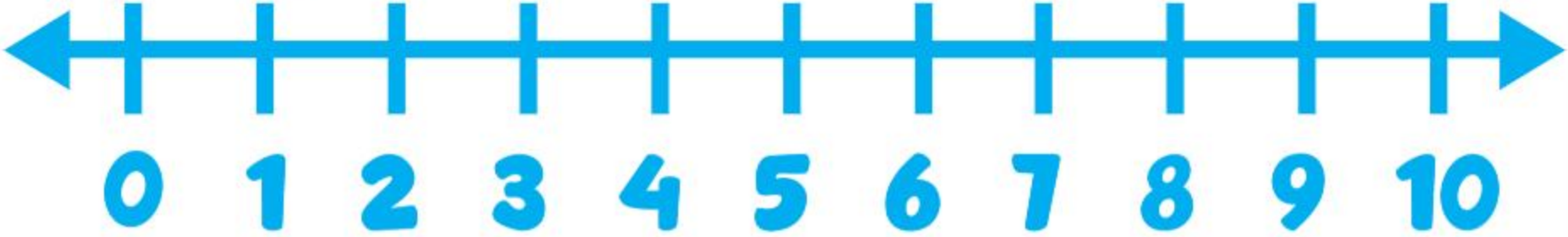
One of the most important things that happen in the math class is the discussion. We have to teach students to be active participants and engaged listeners. We want them to respect each other deeply and seek to truly understand each other without judgment. They have to learn to develop and defend their thinking. justify their answers and respectfully disagree with each other. The National Council of Teachers of Mathematics (NCTM) defines math talk as "the ways of representing. thinking. talking. and agreeing and disagreeing that teachers and students use to engage in [mathematical] tasks" (NCTM. 1991).

Questioning

It is so important to ask good questions. The questions should reach beyond the answer. As Phil Daro notes, we have to go "beyond answer-getting (https://vimeo.com/79916037)." The questions in the guided math group should be designed to get students to understand more fundamentally the mathematics of the grade level. Good questions don't just happen, they are planned for. The teacher should know ahead of time the types of questions that she will ask and why she will ask them. In the plan for the lesson, the teacher should brainstorm some possible questions that push student thinking. These are not yes or no questions, but rather ones that require students to explain themselves, show what they know and defend and justify their thinking.

A NUMBER LINE

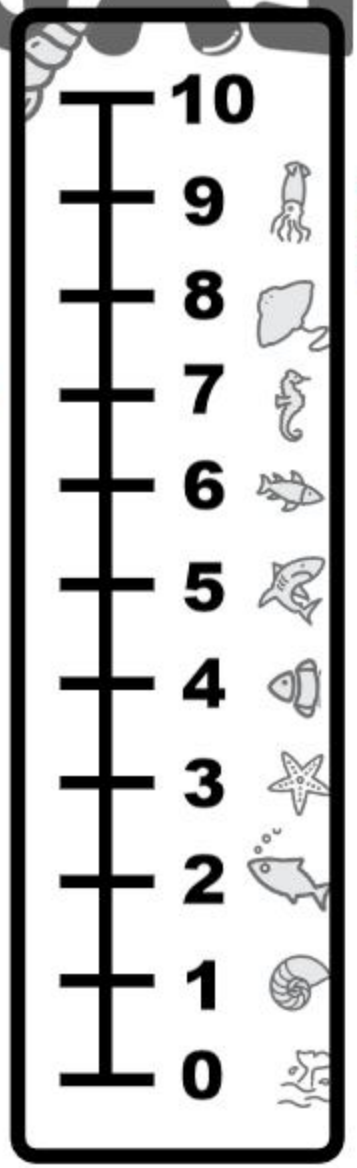
NUMBERS GET SMALLER WHEN YOU COUNT DOWN



NUMBERS GET LARGER WHEN YOU COUNT UP

www.mathfactfluencyplayground.com

A NUMBER LADDER



BANG!

ADDEND

MORE

SUM

PLUS

GREATER

WHEN YOU GO UP... THE NUMBERS GET BIGGER!

WHEN YOU GO DOWN THE NUMBERS GET SMALLER!

TAKE AWAY

SUBTRACT

MINUS

COUNT BACK

DIFFERENCE

KA-BOOM!

A NUMBER PATH

DIFFERENCE

COUNT BACK

MINUS

SUBTRACT

TAKE AWAY

WHEN YOU GO DOWN THE NUMBERS GET SMALLER!

1	2	3	4	5	6	7	8	9	10

ADDEND

MORE

SUM

PLUS

GREATER

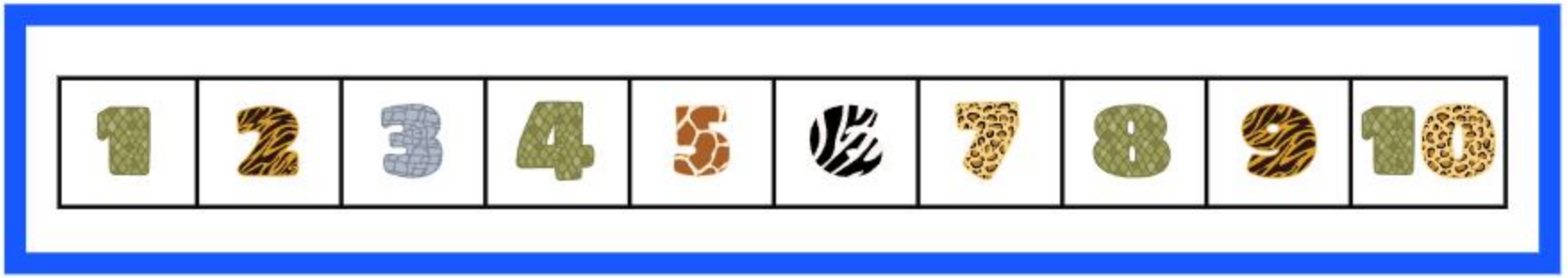
WHEN YOU GO UP THE NUMBERS GET BIGGER!

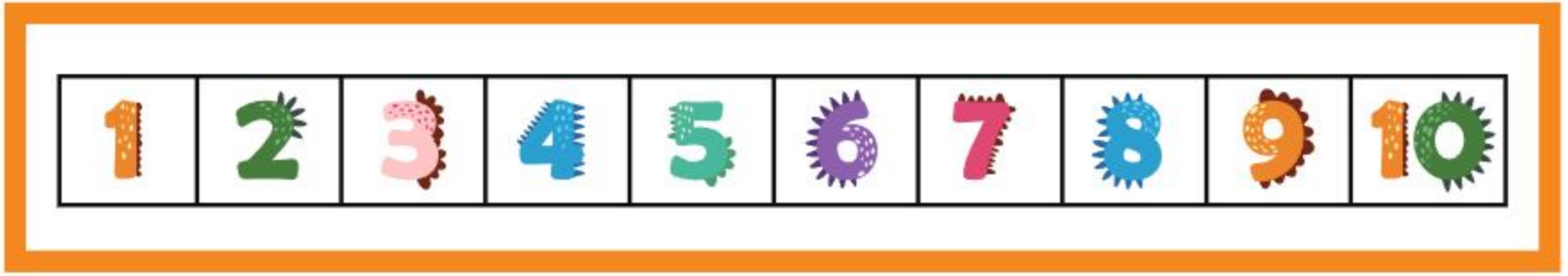
NUMBER PATHS

1	2	3	4	5

1	2	3	4	5

Individual Number Paths





Addition Number Paths

1	2	3	4	5	6	7	8	9	10

____ + ____ = ____

1	2	3	4	5	6	7	8	9	10

____ + ____ = ____

1	2	3	4	5	6	7	8	9	10

____ + ____ = ____

1	2	3	4	5	6	7	8	9	10

+ =

Addition Number Paths 2

1	2	3	4	5	6	7	8	9	10

____ + ____ = ____ ____ + ____ = ____

____ + ____ = ____ ____ + ____ = ____

____ + ____ = ____ ____ + ____ = ____

____ + ____ = ____ ____ + ____ = ____

Subtraction Number Paths

___ - ___ = ___

___ - ___ = ___

___ - ___ = ___

- =

Subtraction Number Paths

1	2	3	4	5	6	7	8	9	10

____ − ____ = ____

1	2	3	4	5	6	7	8	9	10

____ − ____ = ____

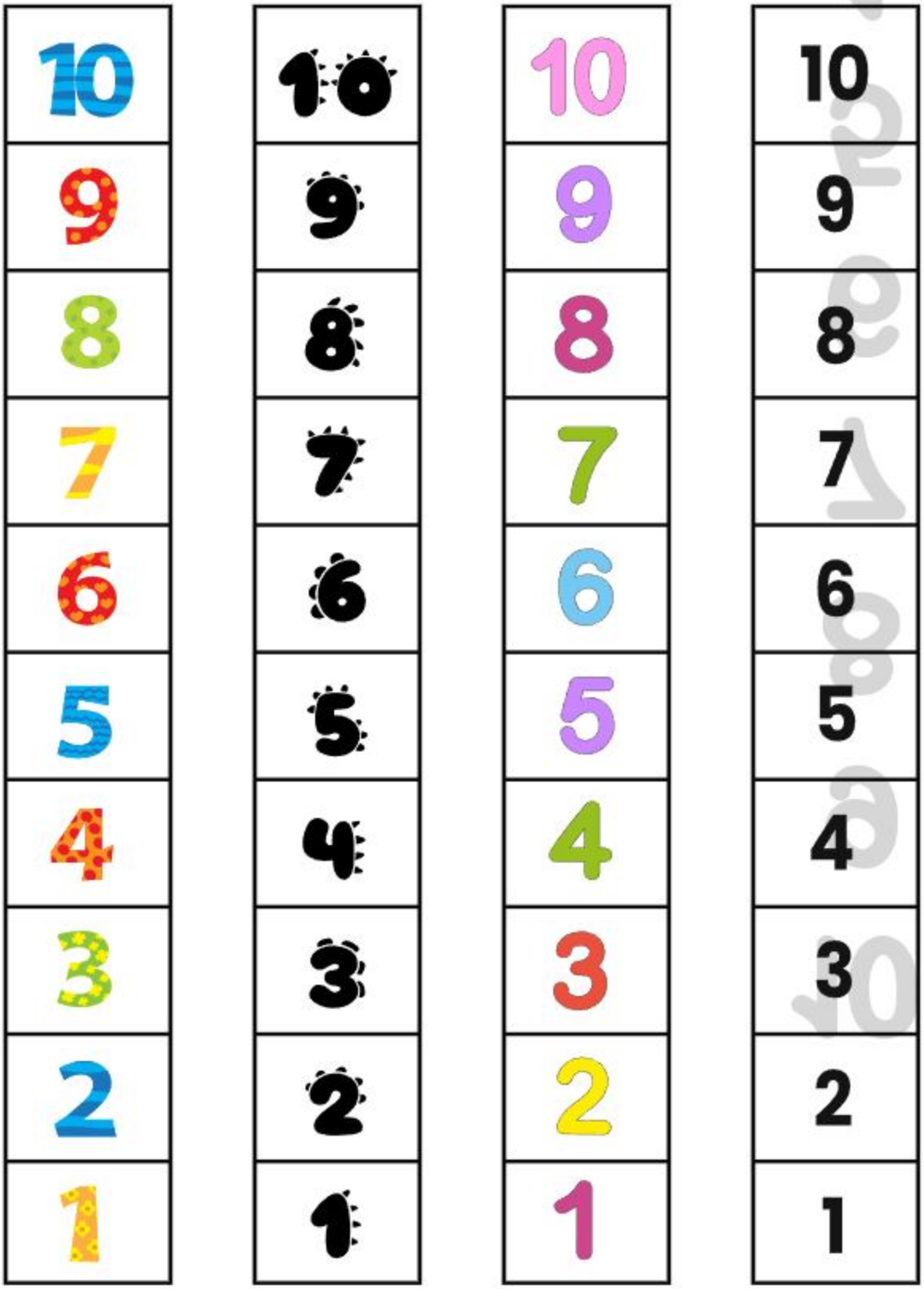
1	2	3	4	5	6	7	8	9	10

____ − ____ = ____

1	2	3	4	5	6	7	8	9	10

− =

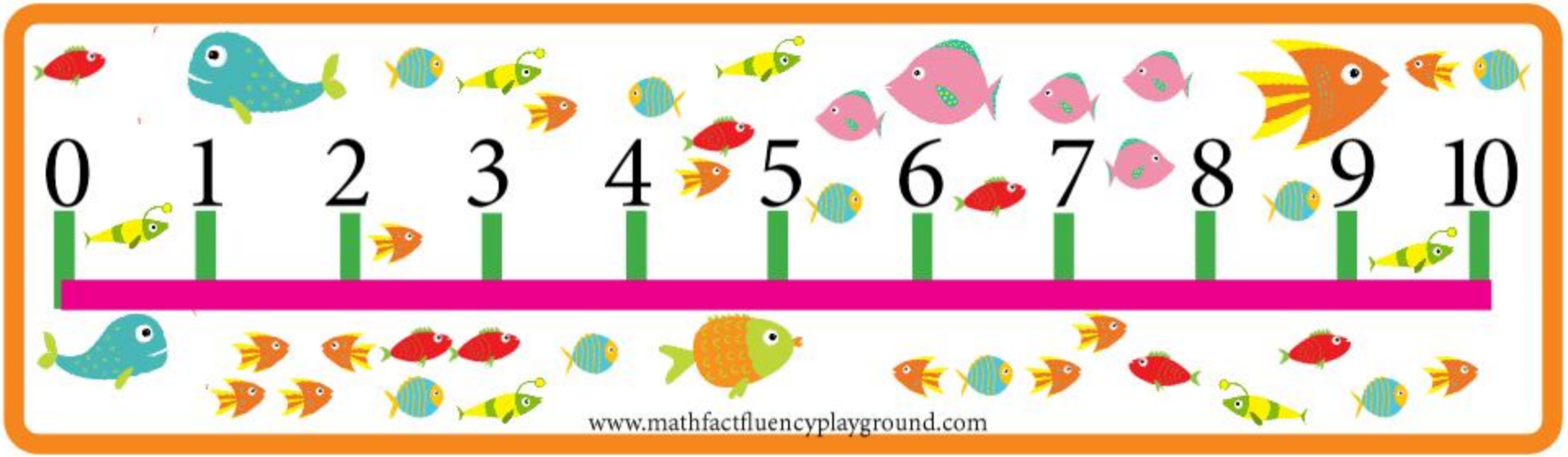
NUMBER LADDERS



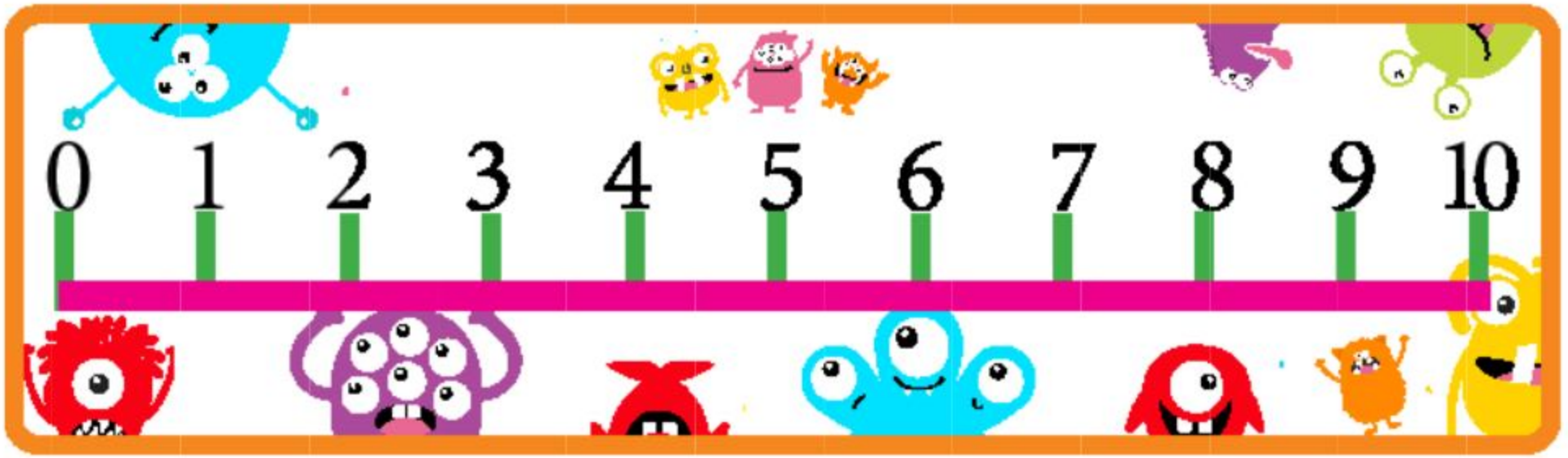
1
2
3
4
5
6
7
8
9
10

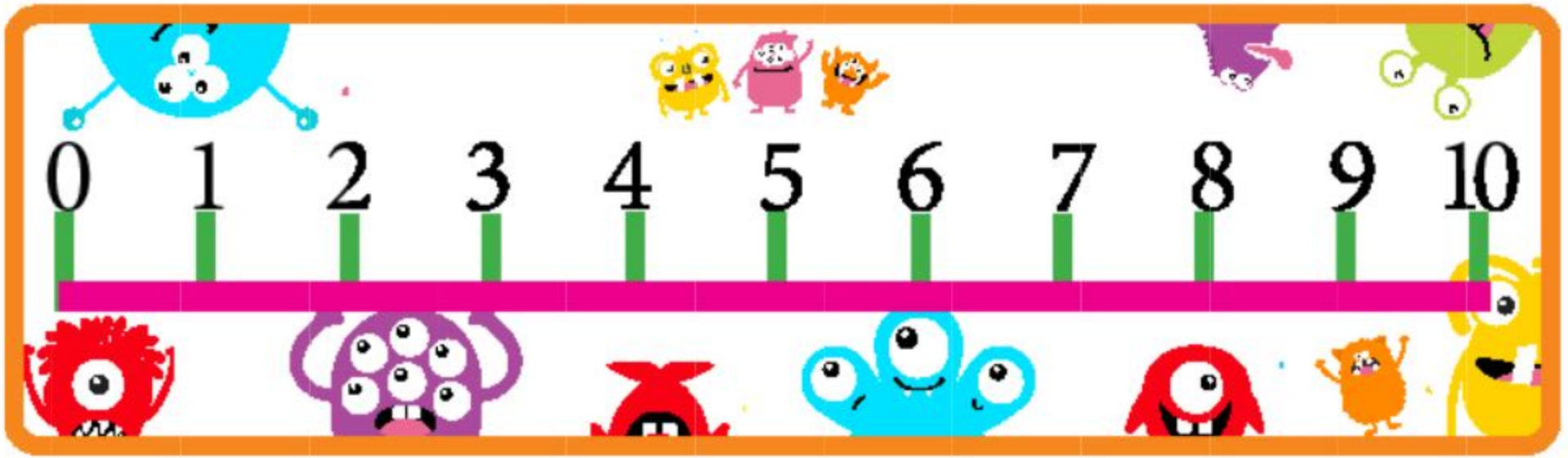
1
2
3
4
5
6
7
8
9
10

NUMBER LINES TO 10

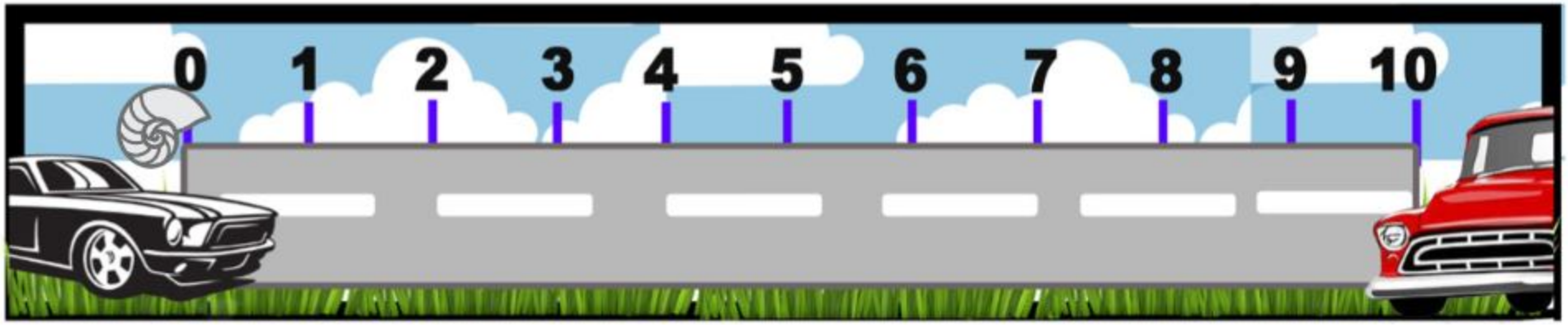


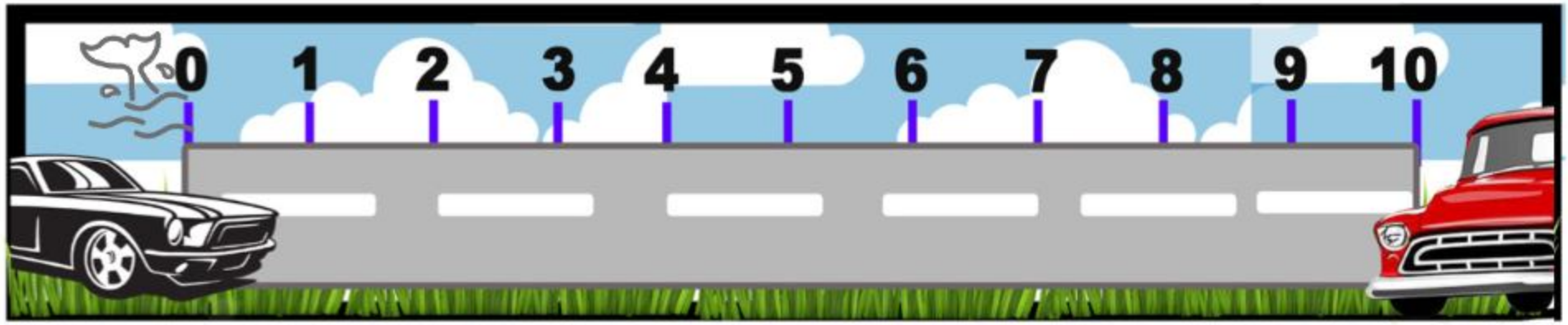
NUMBER LINES TO 10



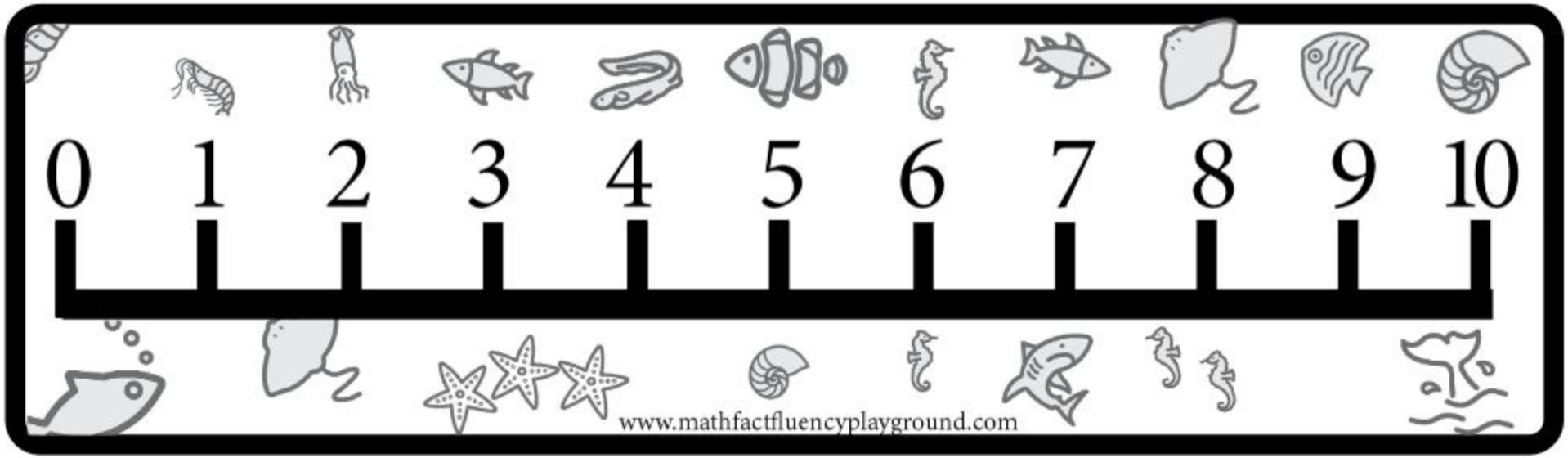


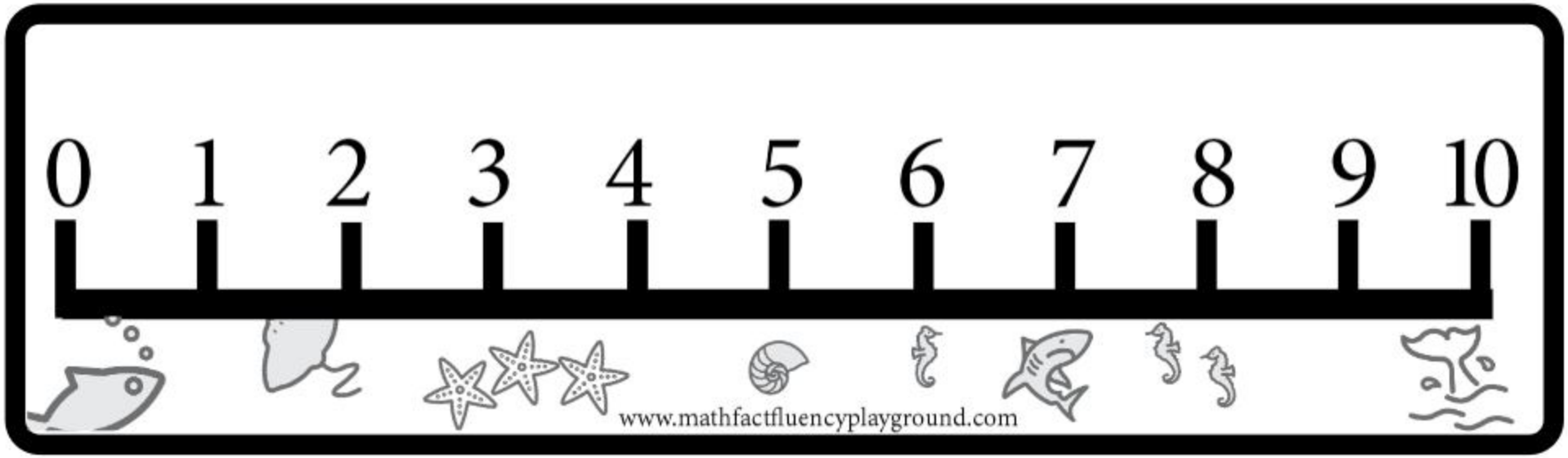
NUMBER LINES TO 10



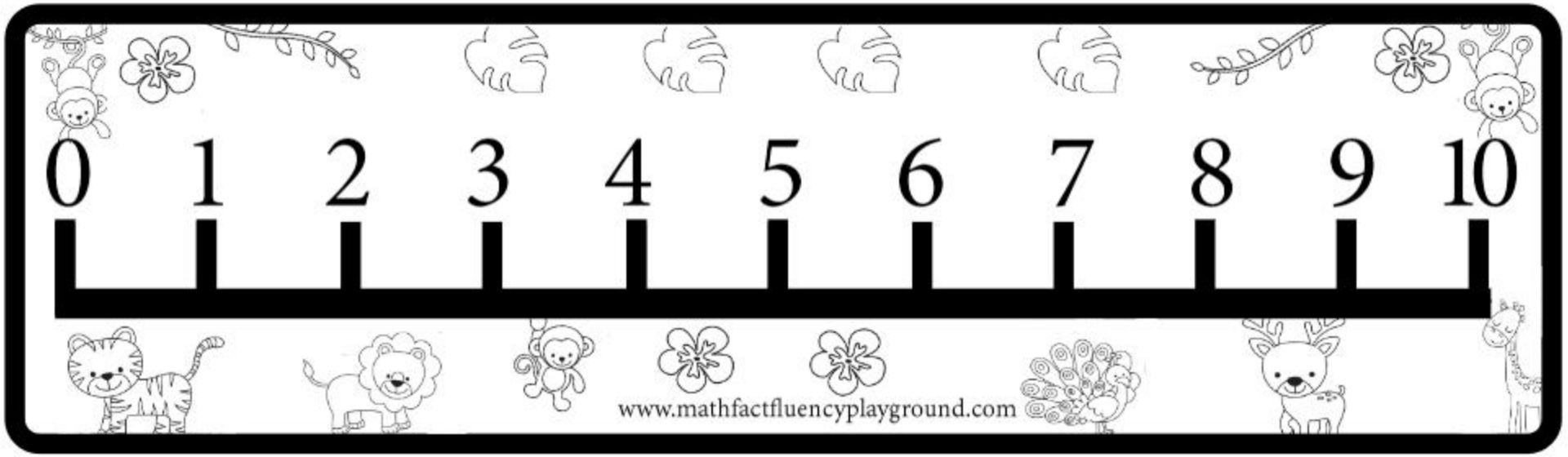


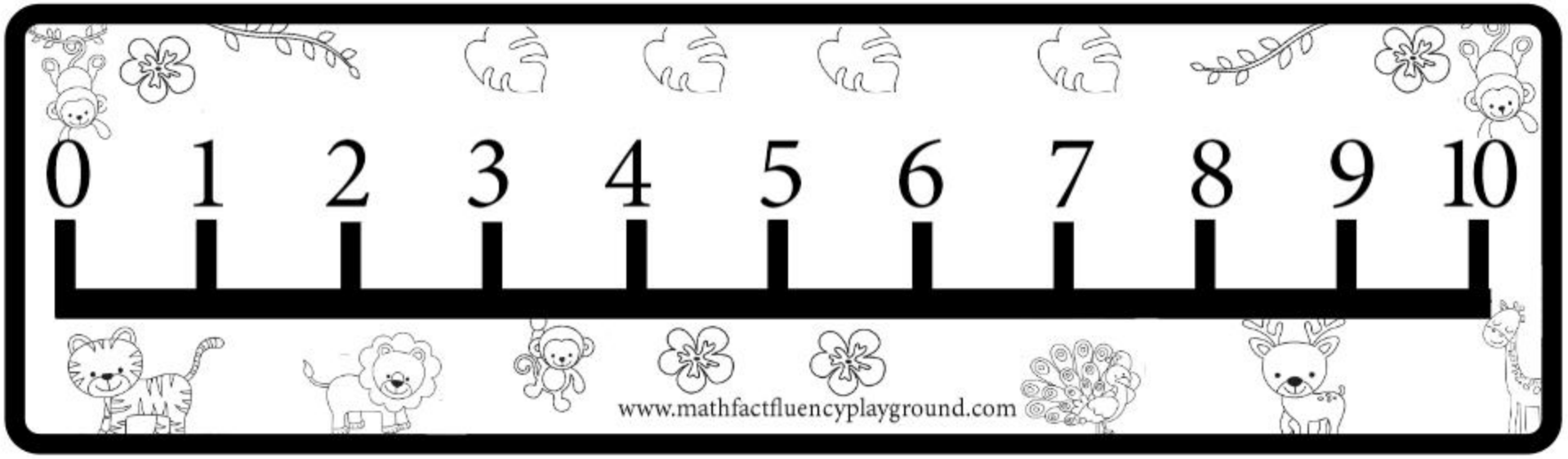
NUMBER LINES TO 10



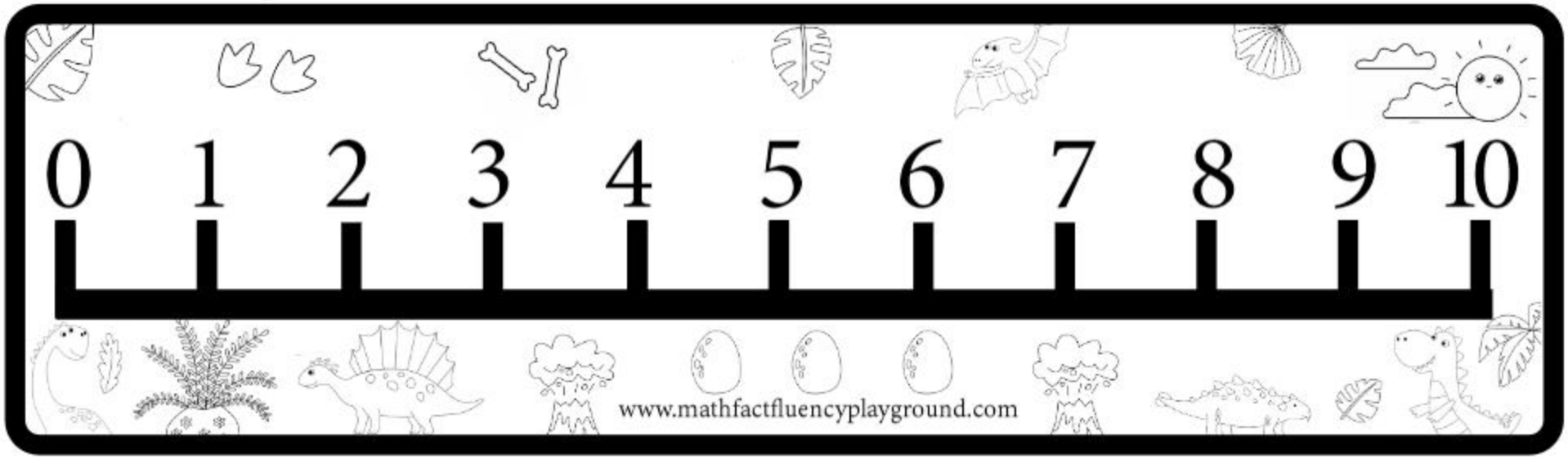


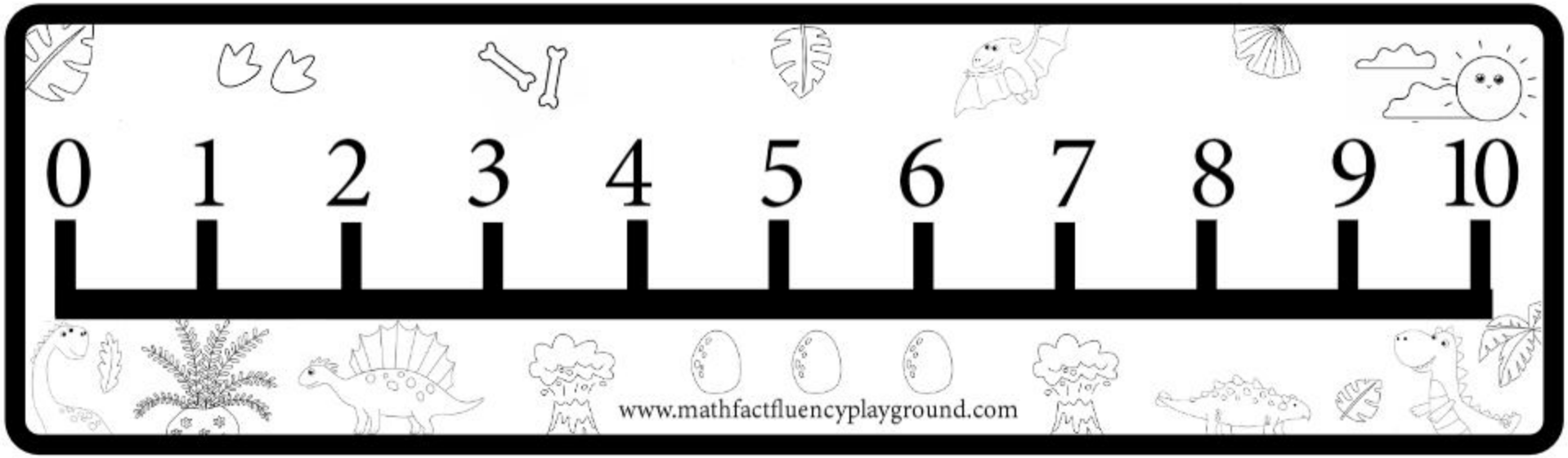
NUMBER LINES TO 10



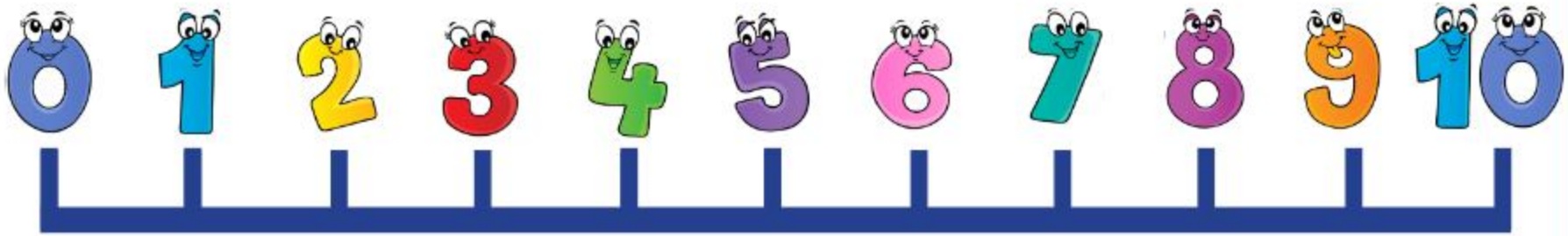


NUMBER LINES TO 10





NUMBER LINES TO 10

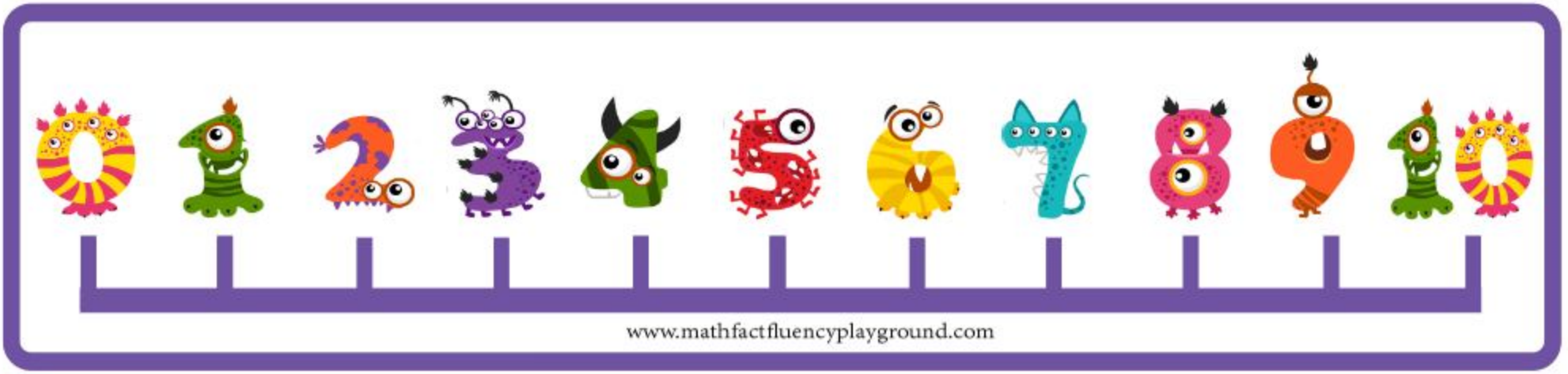


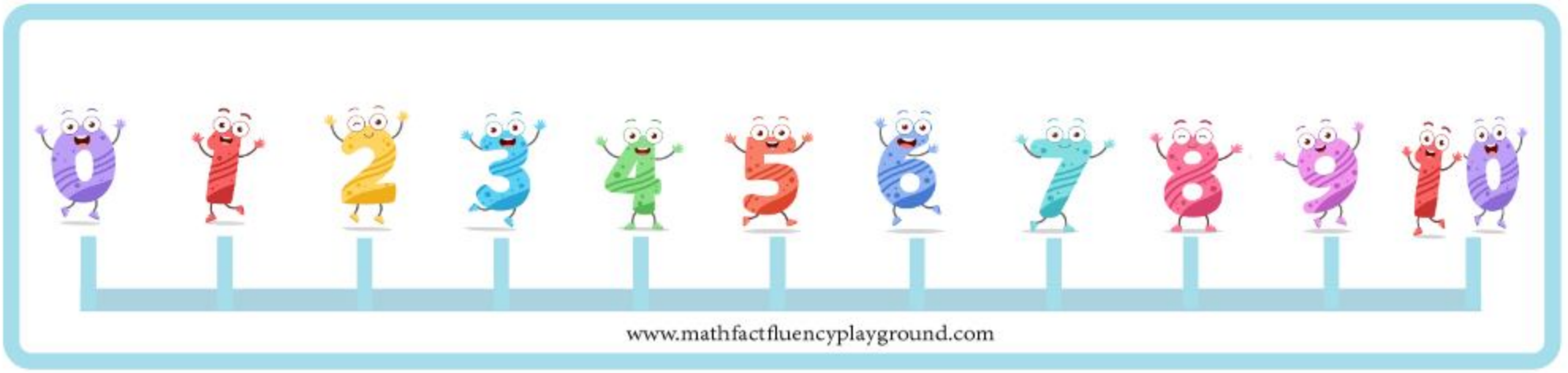
www.mathfactfluencyplayground.com

www.mathfactfluencyplayground.com

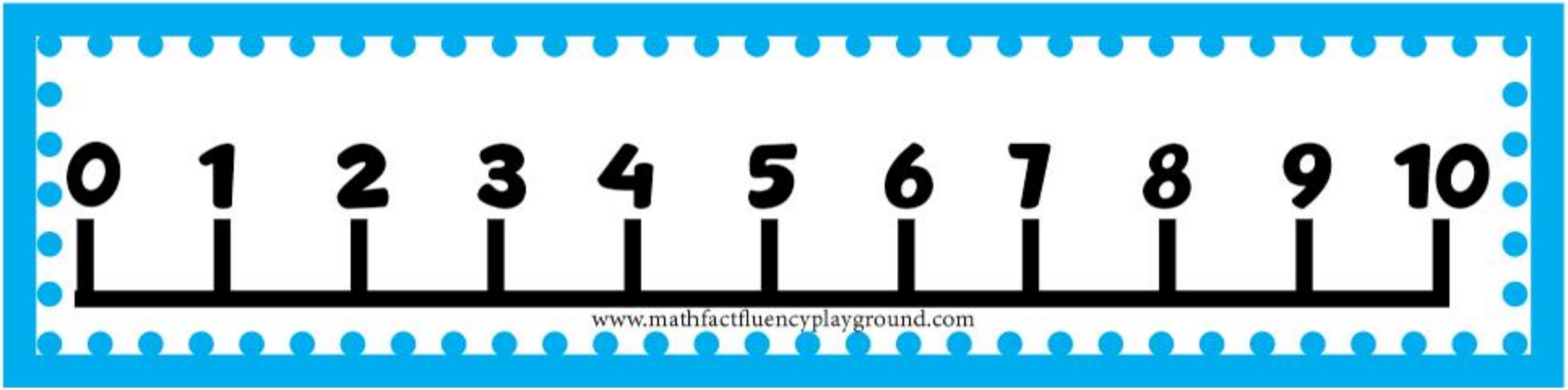
www.mathfactfluencyplayground.com

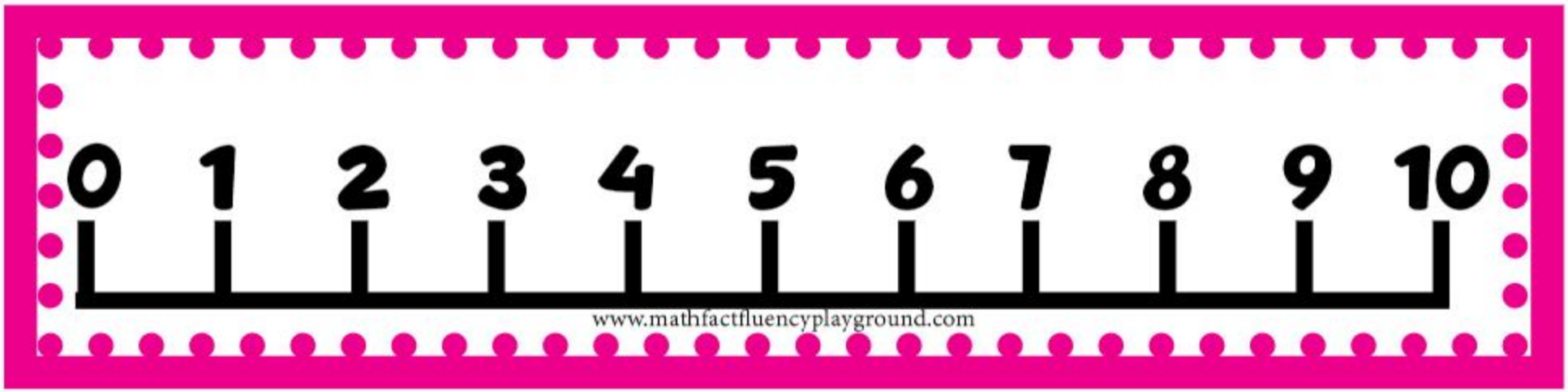
NUMBER LINES TO 10

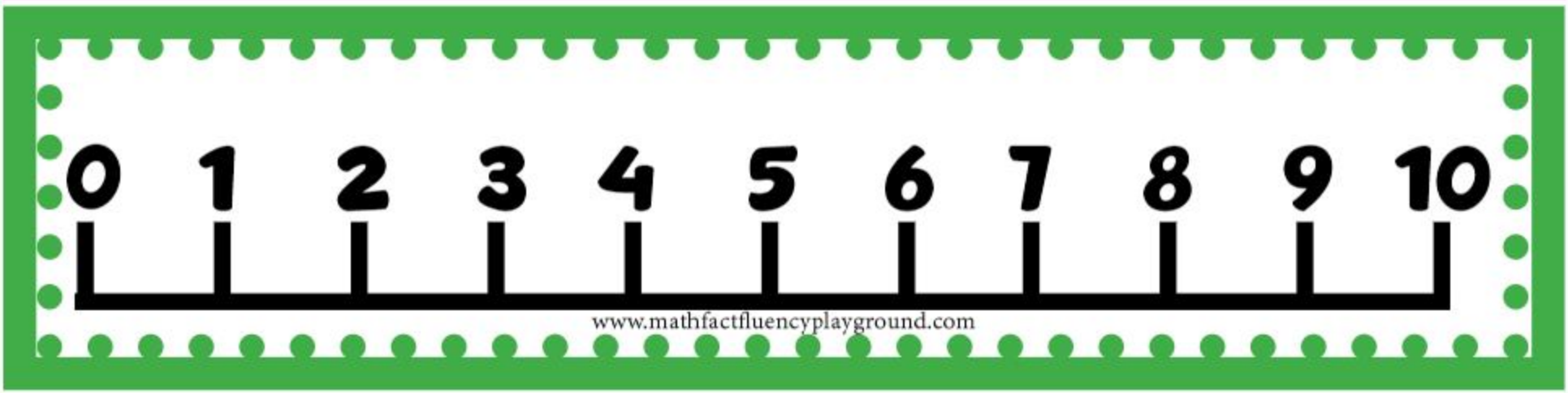




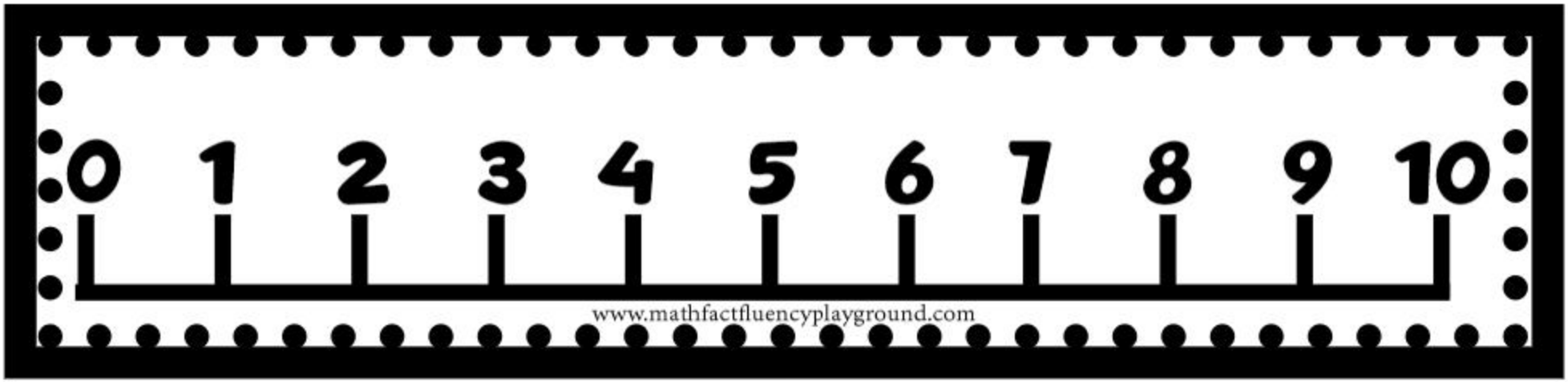
NUMBER LINES TO 10

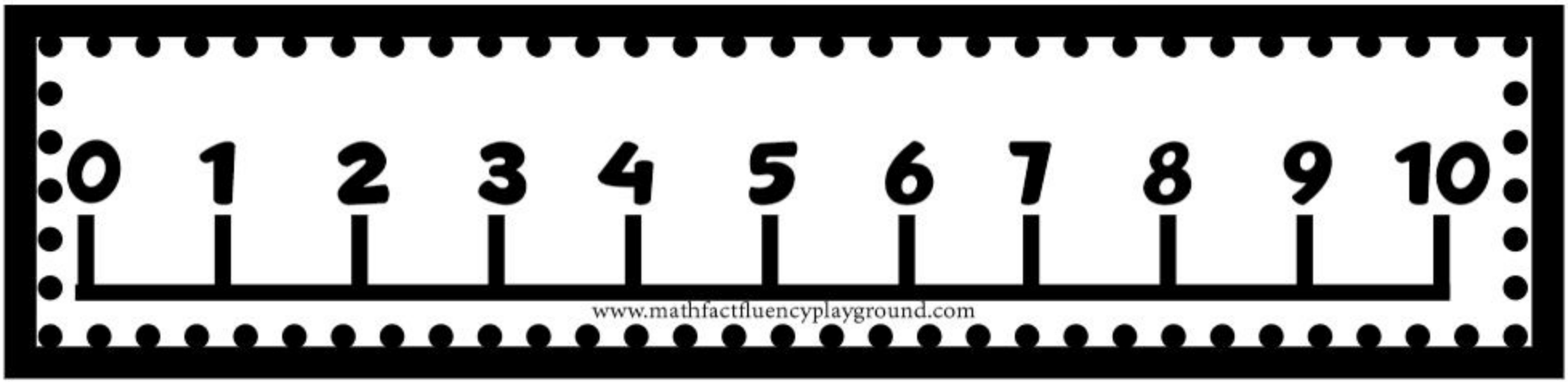


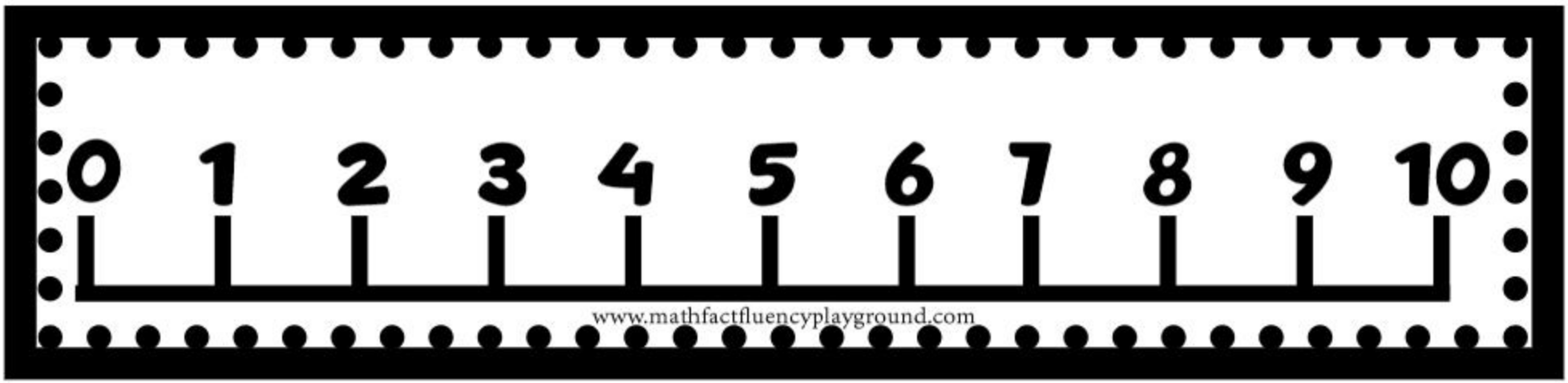




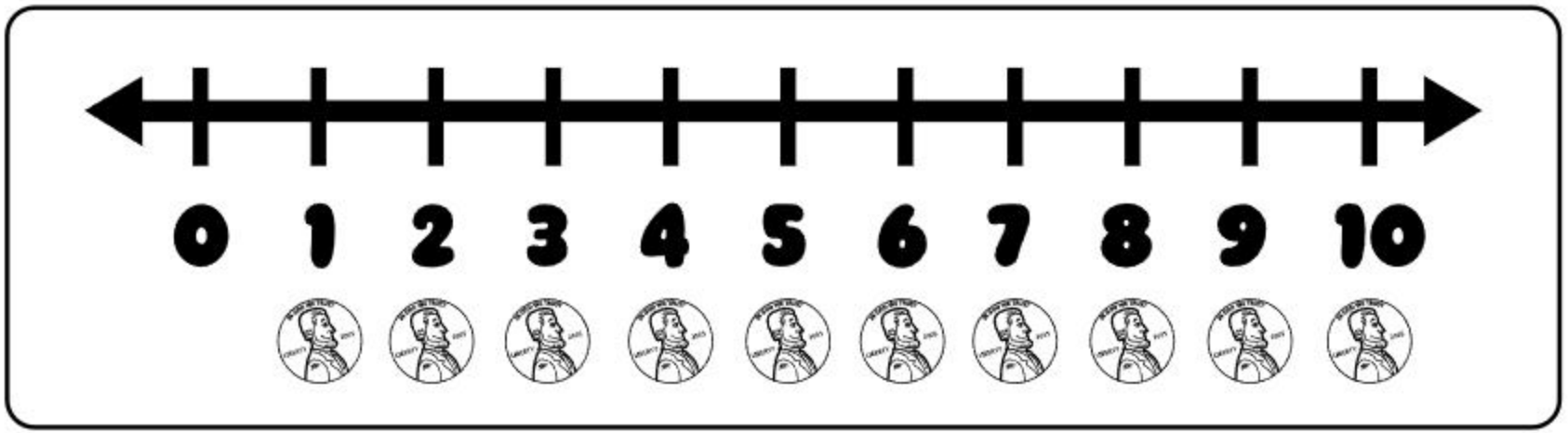
NUMBER LINES TO 10

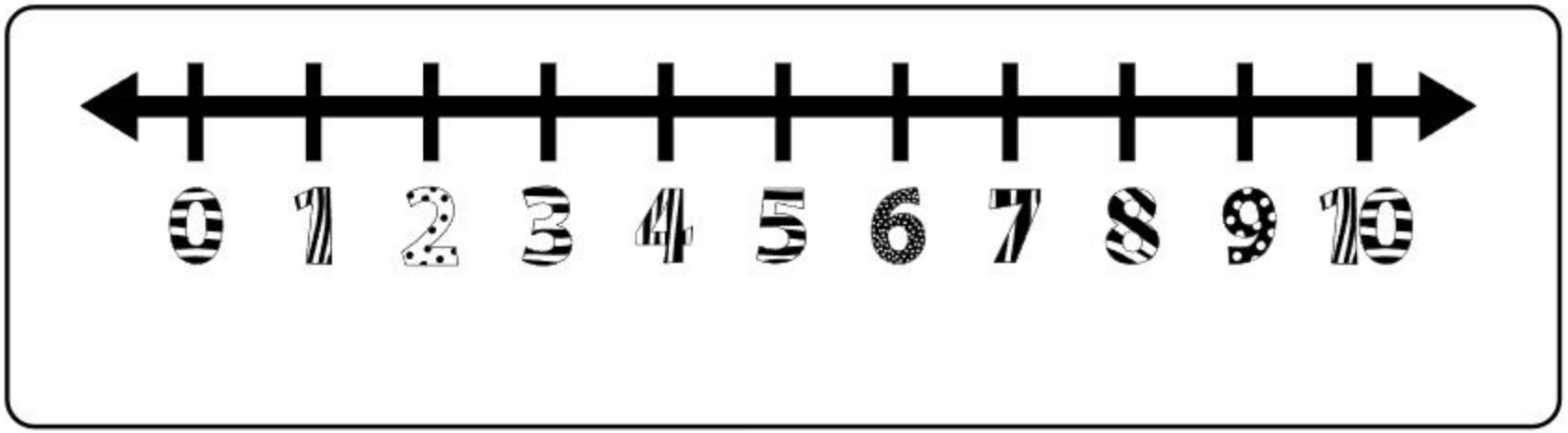






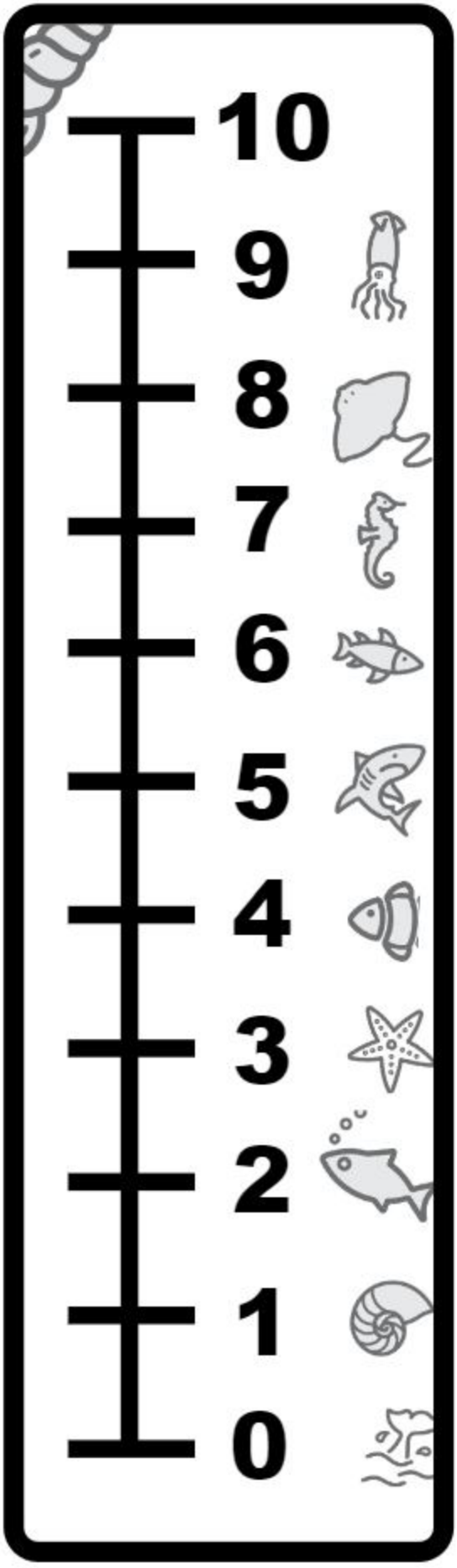
Number Lines to 10



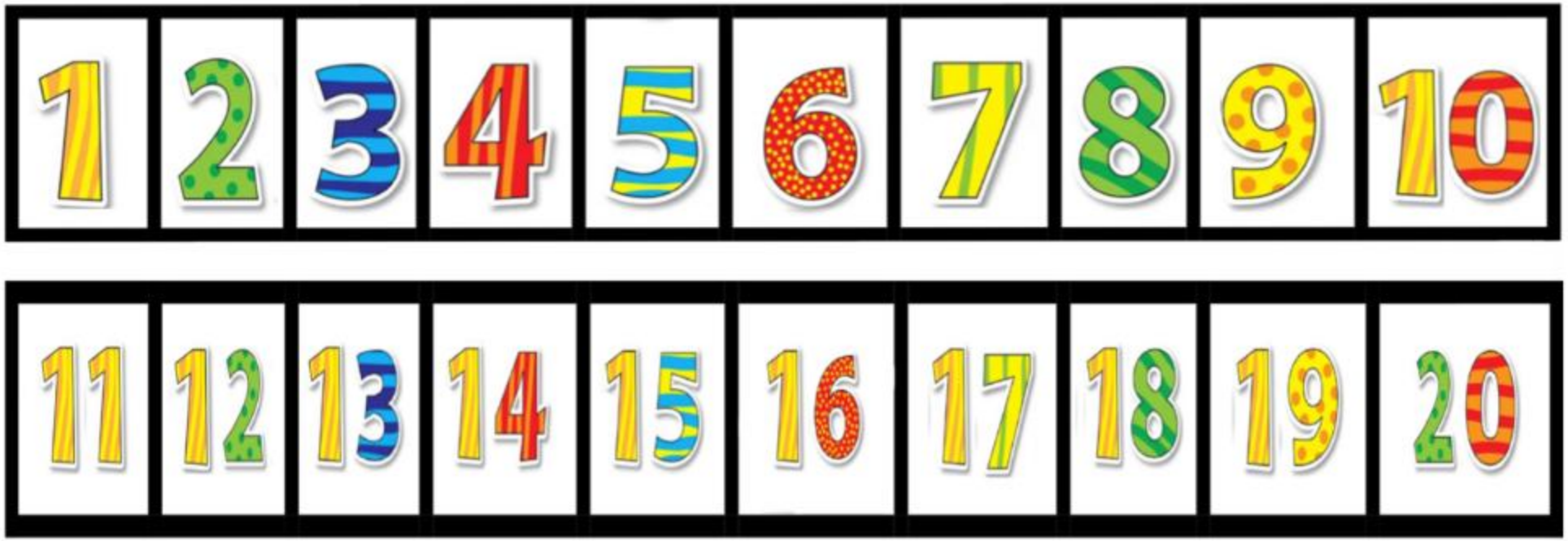


NUMBER LADDERS TO 10

10
9
8
7
6
5
4
3
2
1
0



NUMBER PATH TO 20



Number Paths

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Addition Number Paths

____ + ____ = ____

____ + ____ = ____

____ + ____ = ____

+ =

Addition Number Paths

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

____ + ____ = ____

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

____ + ____ = ____

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

____ + ____ = ____

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

\+ =

Subtraction Number Paths

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

____ - ____ = ____

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

____ - ____ = ____

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

____ - ____ = ____

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

- =

Subtraction Number Paths 2

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

____ − ____ = ____ ____ − ____ = ____

____ − ____ = ____ ____ − ____ = ____

____ − ____ = ____ ____ − ____ = ____

____ − ____ = ____ ____ − ____ = ____

Build a Big Number Path

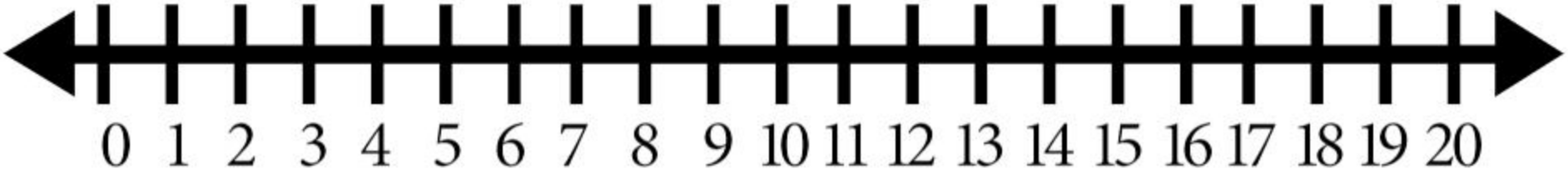
1	2	3	4	5	6	7	8	9	10	

11	12	13	14	15	16	17	18	19	20

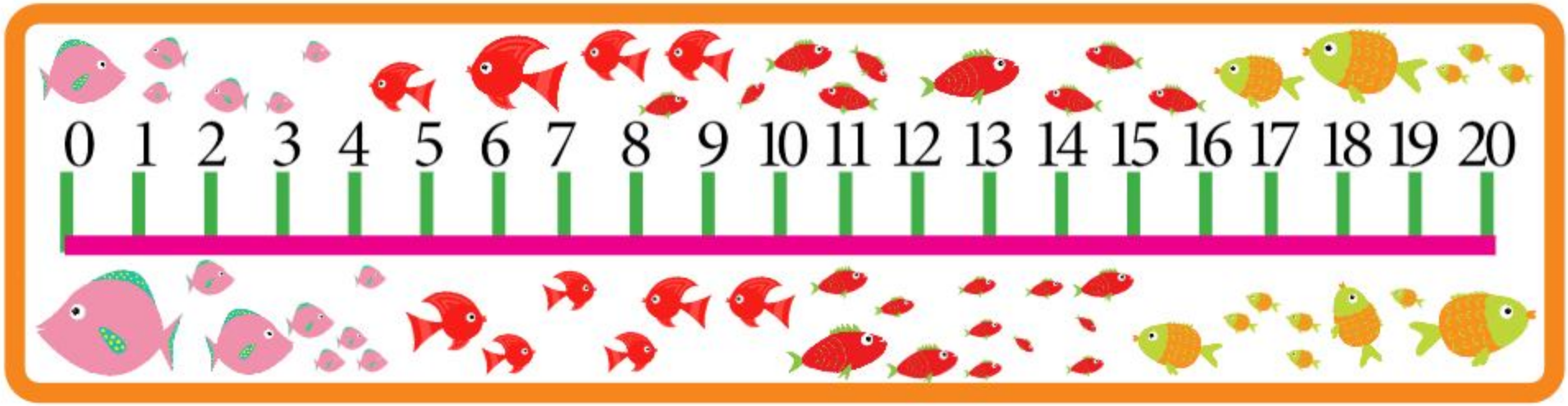
1	2	3	4	5	6	7	8	9	10	

11	12	13	14	15	16	17	18	19	20

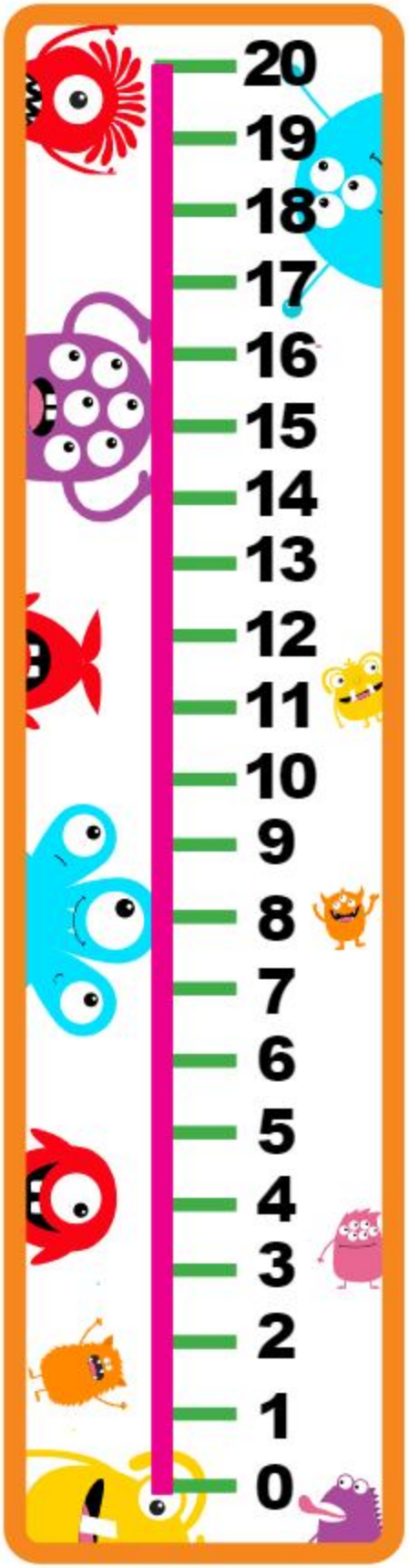
NUMBER LINE TO 20

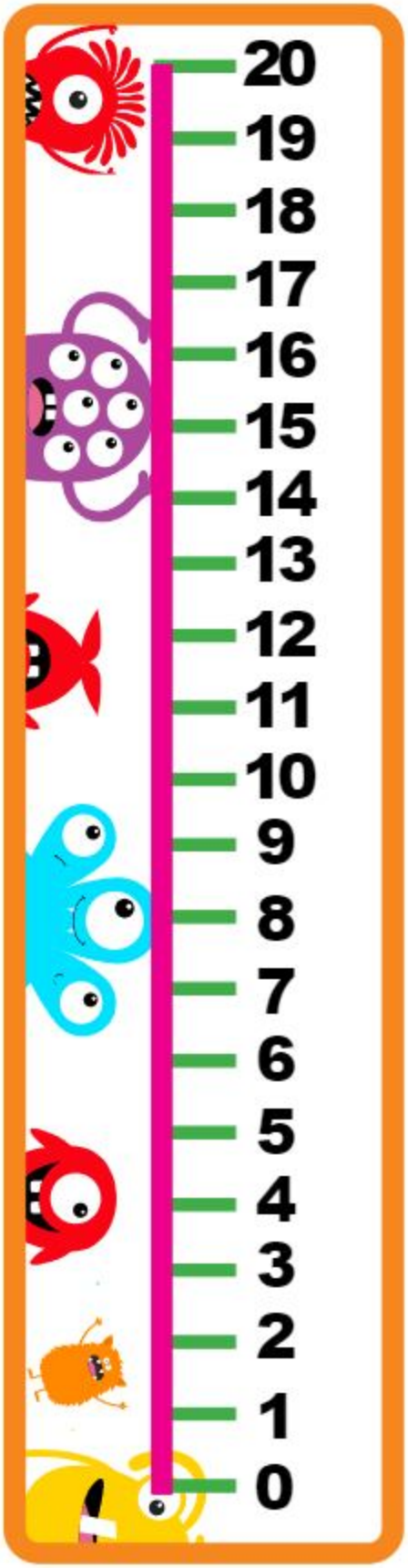


NUMBER LINES TO 20



NUMBER LADDERS TO 20





Build a Big Number Path

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	

Build a Big Number Path

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	

Build a Big Number Path

81	82	83	84	85	86	87	88	89	90	

91	92	93	94	95	96	97	98	99	100	

BUILD A NUMBER LADDER

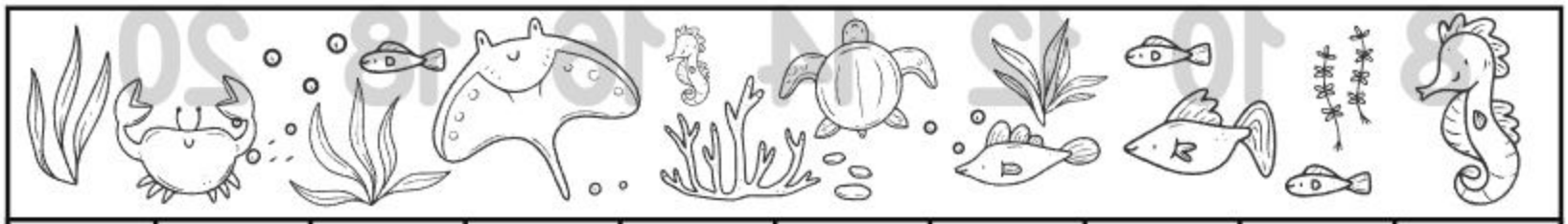
1	24	47	70	93	117
2	25	48	71	94	118
3	26	49	72	95	119
4	27	50	73	96	120
5	28	51	74	97	121
6	29	52	75	98	122
7	30	53	76	99	123
8	31	54	77	100	124
9	32	55	78	101	125
10	33	56	79	102	126
11	34	57	80	103	127
12	35	58	81	104	128
13	36	59	82	105	129
14	37	60	83	106	130
15	38	61	84	107	131
16	39	62	85	108	132
17	40	63	86	109	133
18	41	64	87	110	134
19	42	65	88	111	135
20	43	66	89	113	136
21	44	67	90	114	137
22	45	68	91	115	138
23	46	69	92	116	139
					

SKIP COUNTING BY 2s

2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
5	10	15	20	25	30	35	40	45	50
10	20	30	40	50	60	70	80	90	100

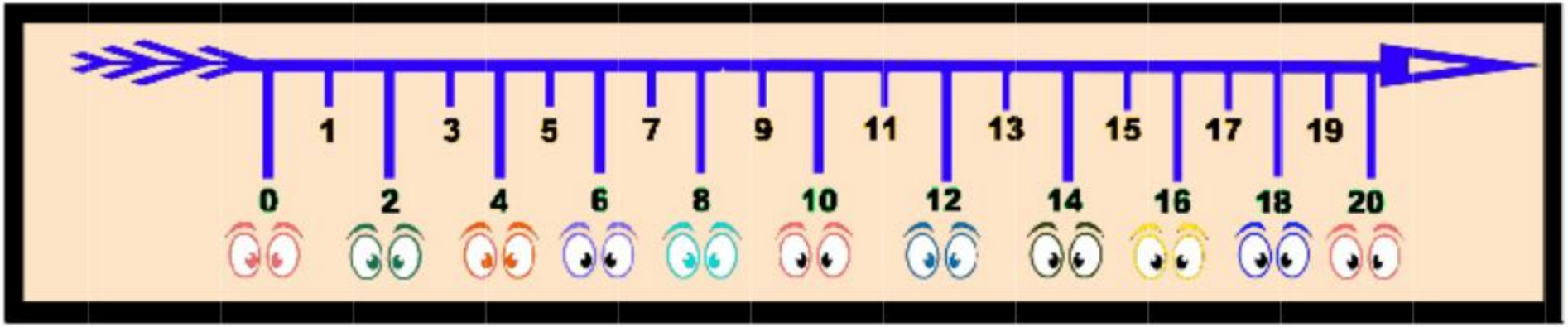
SKIP COUNTING BY 2s

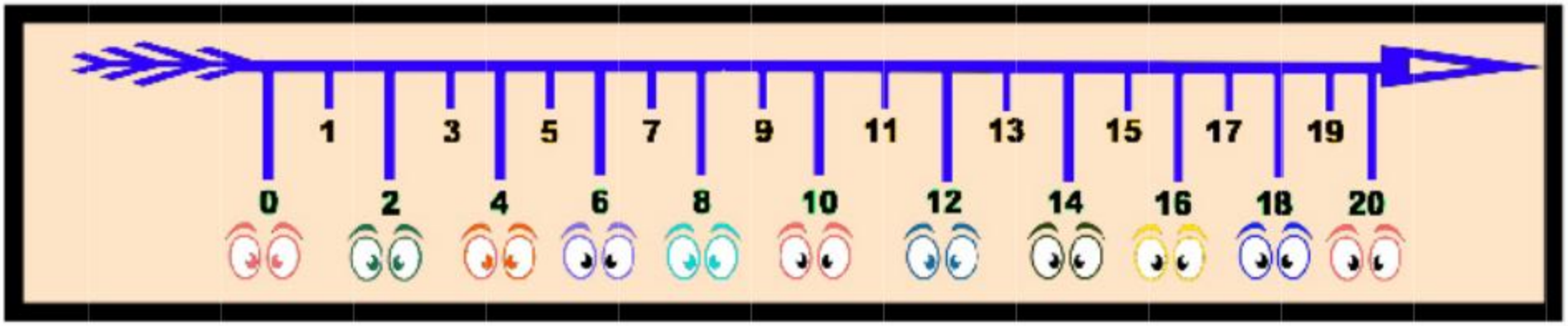
2	4	6	8	10	12	14	16	18	20



2	4	6	8	10	12	14	16	18	20

SKIP COUNTING BY 2s





SKIP COUNTING BY 2s

2	4	6	8	10	12	14	16	18	20

3	6	9	12	15	18	21	24	27	30

5	10	15	20	25	30	35	40	45	50

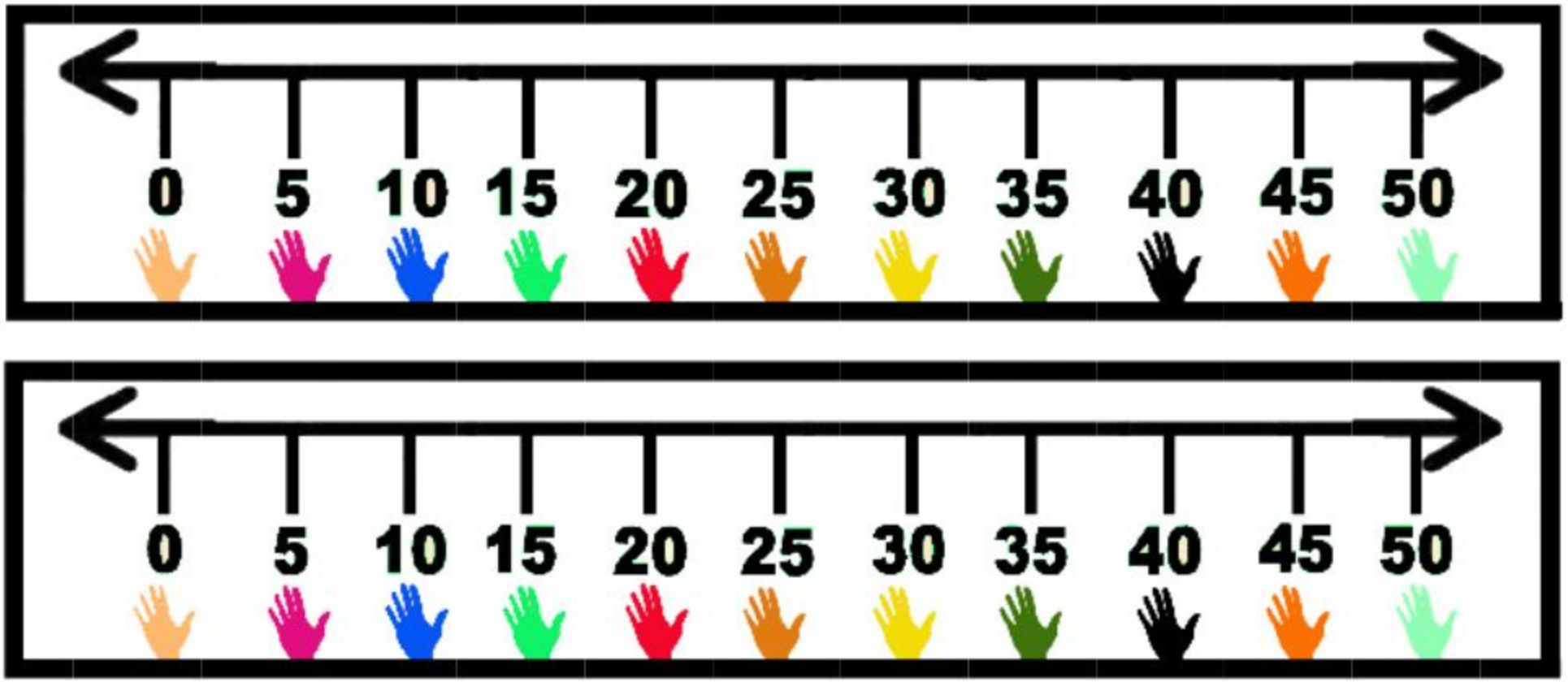
10	20	30	40	50	60	70	80	90	100

SKIP COUNTING BY 2s

3	6	9	12	15	18	21	24	27	30

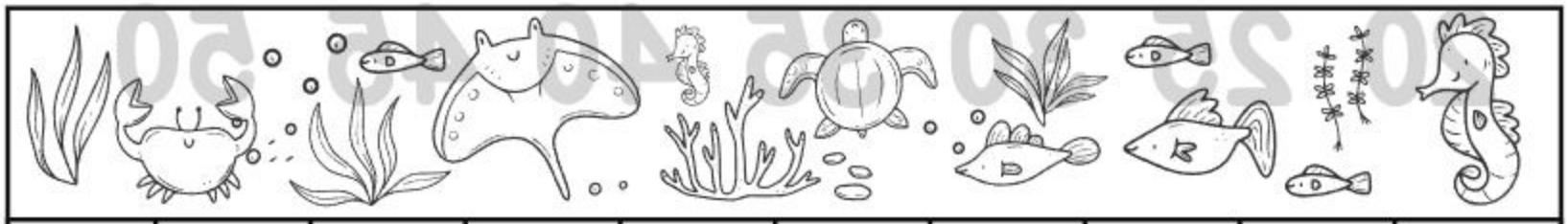
3	6	9	12	15	18	21	24	27	30

SKIP COUNTING BY 5s



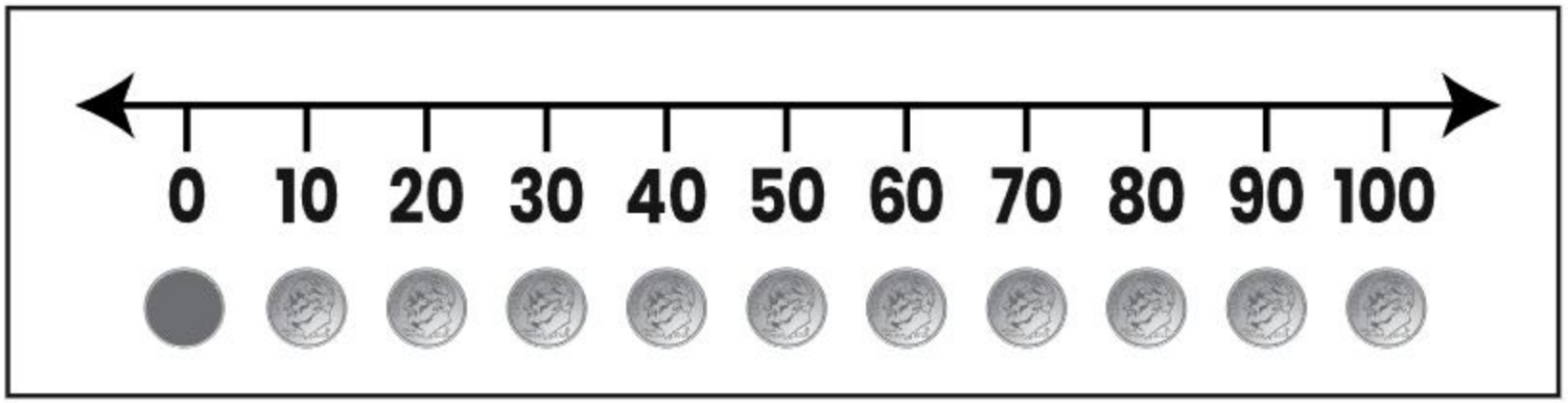
SKIP COUNTING BY 5s

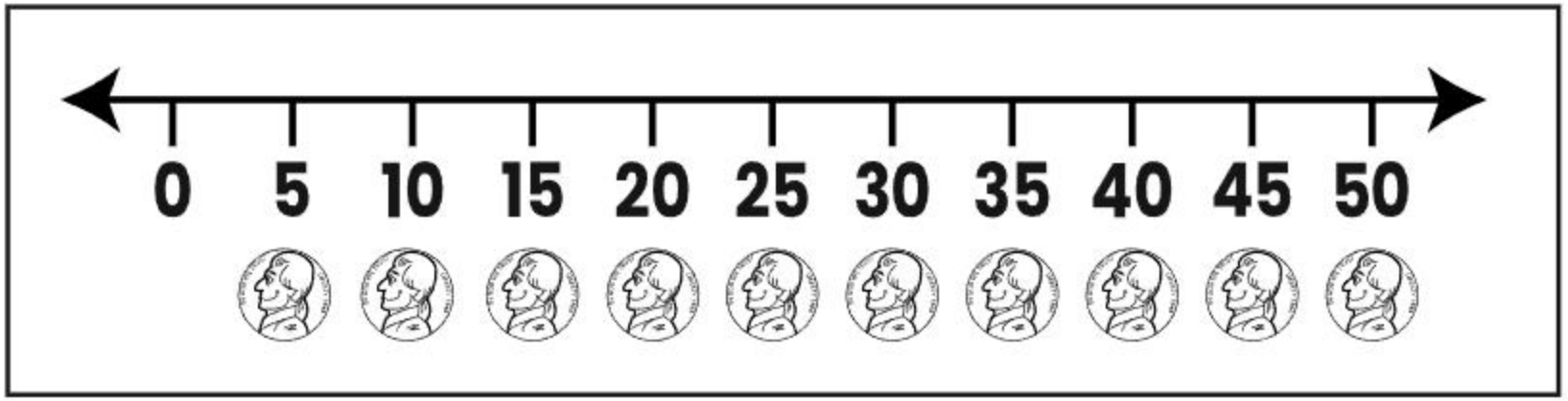
5	10	15	20	25	30	35	40	45	50



5	10	15	20	25	30	35	40	45	50

Skip Counting with Coins



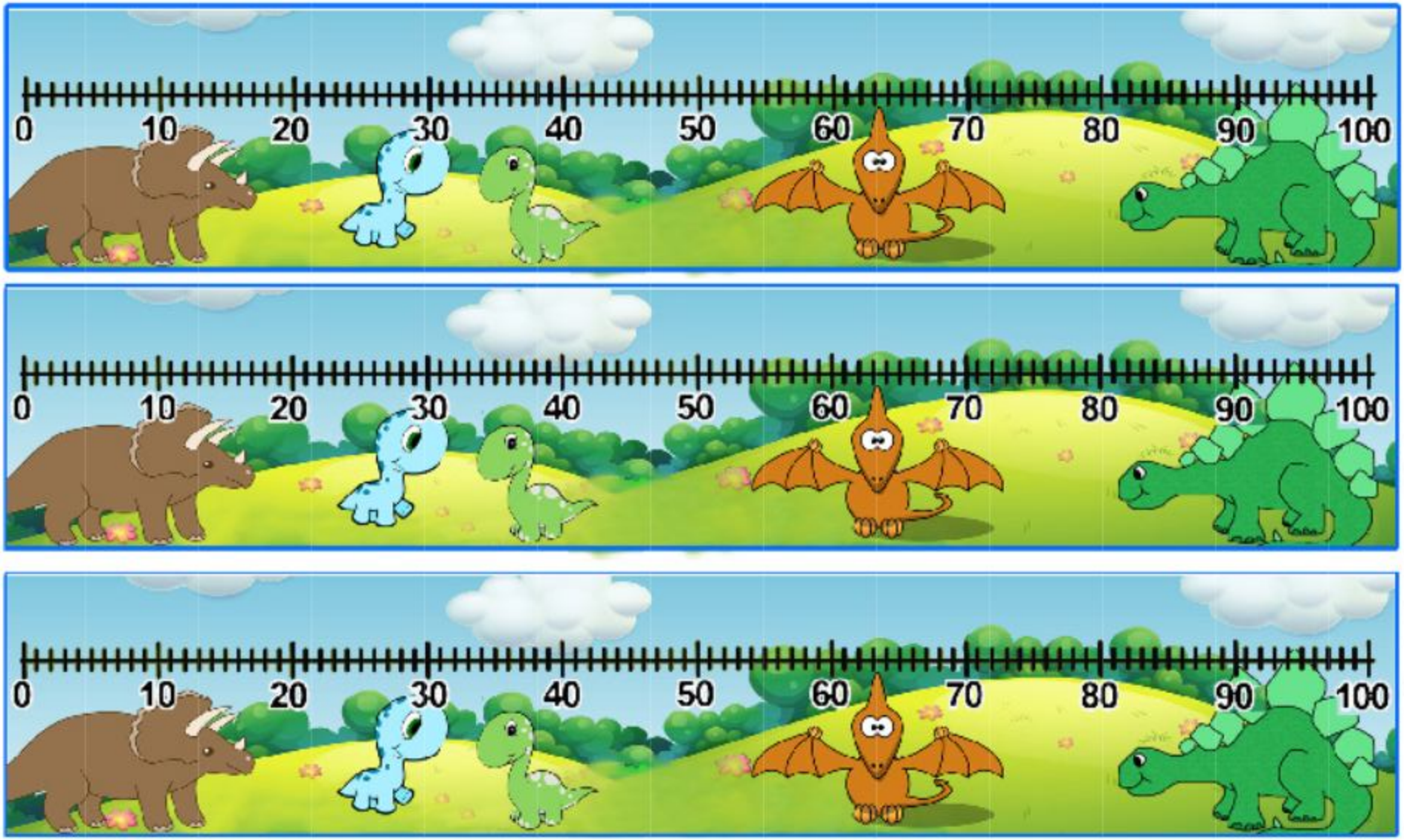


SKIP COUNTING BY 10s

10	20	30	40	50	60	70	80	90	100

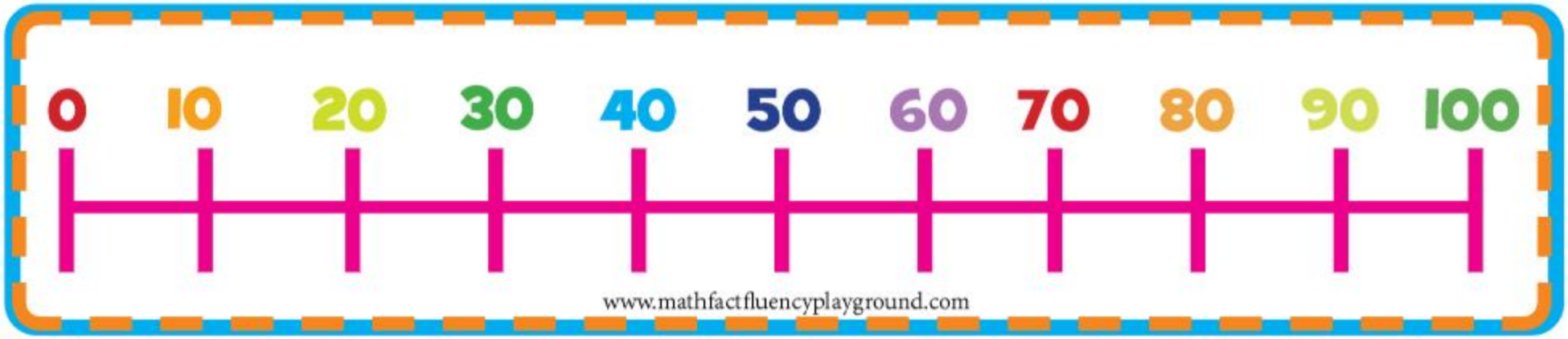
10	20	30	40	50	60	70	80	90	100

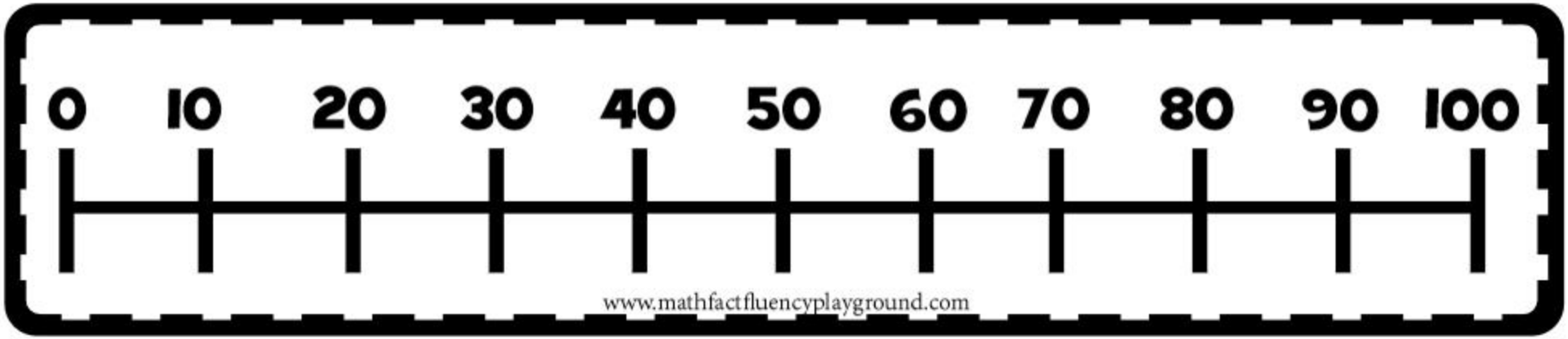
SKIP COUNTING BY 10s

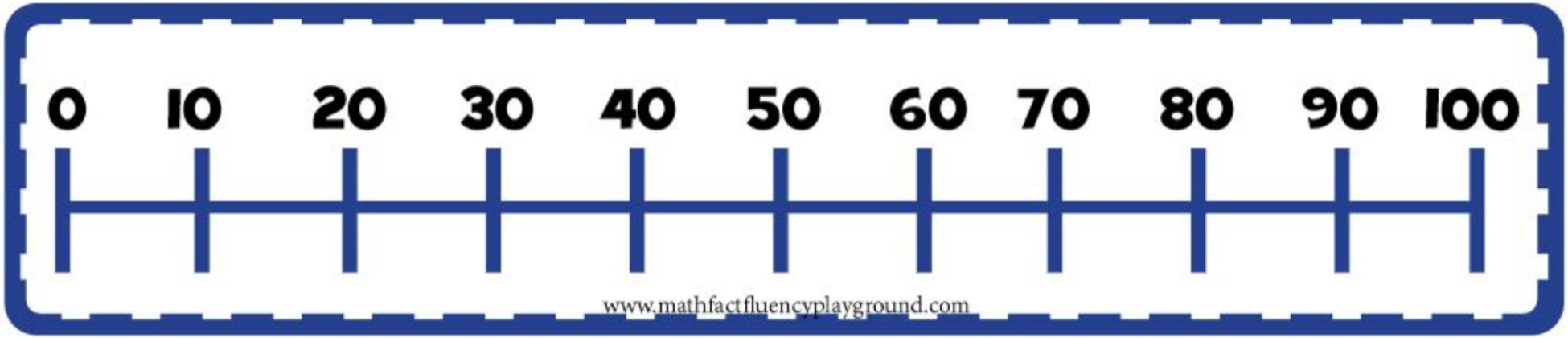


SKIP COUNTING BY 10s

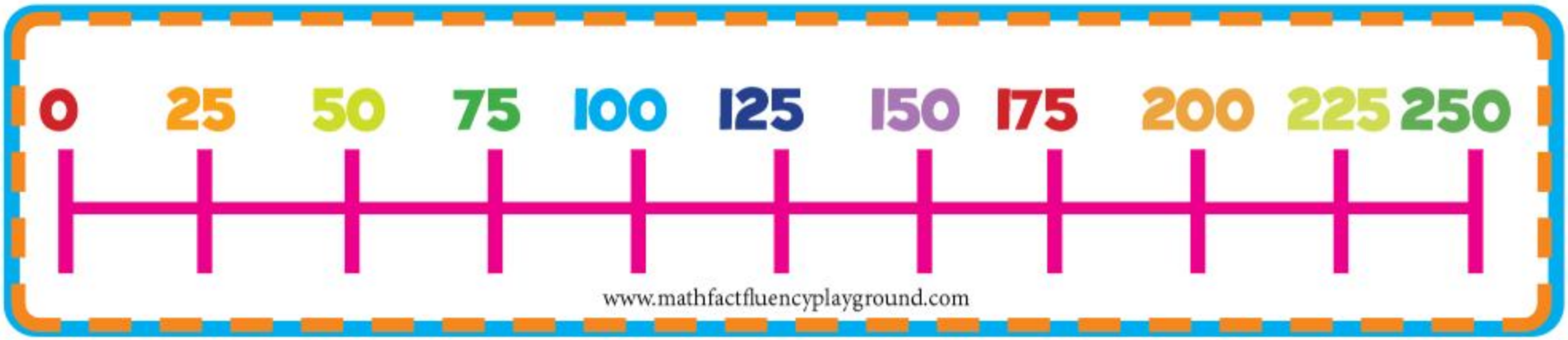
SKIP COUNTING BY 10s

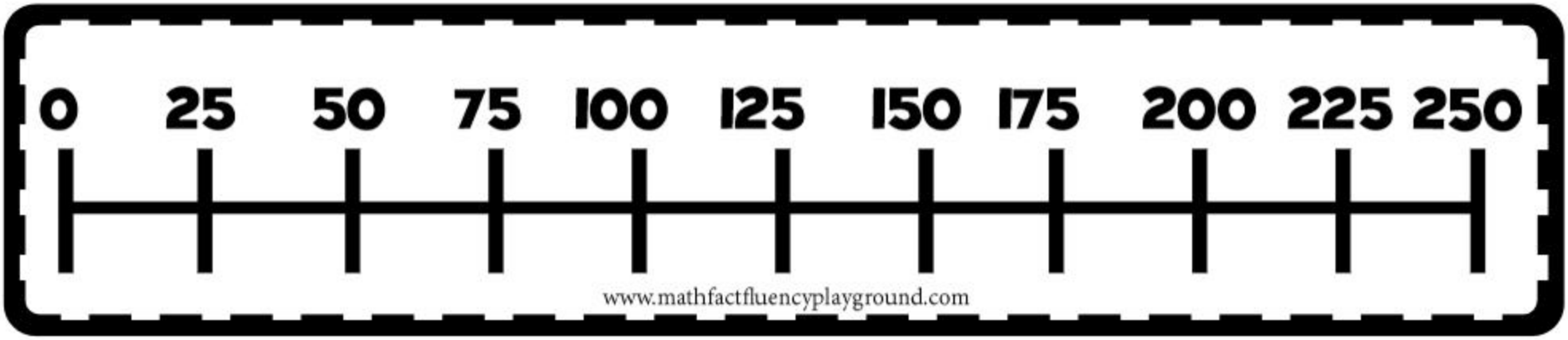


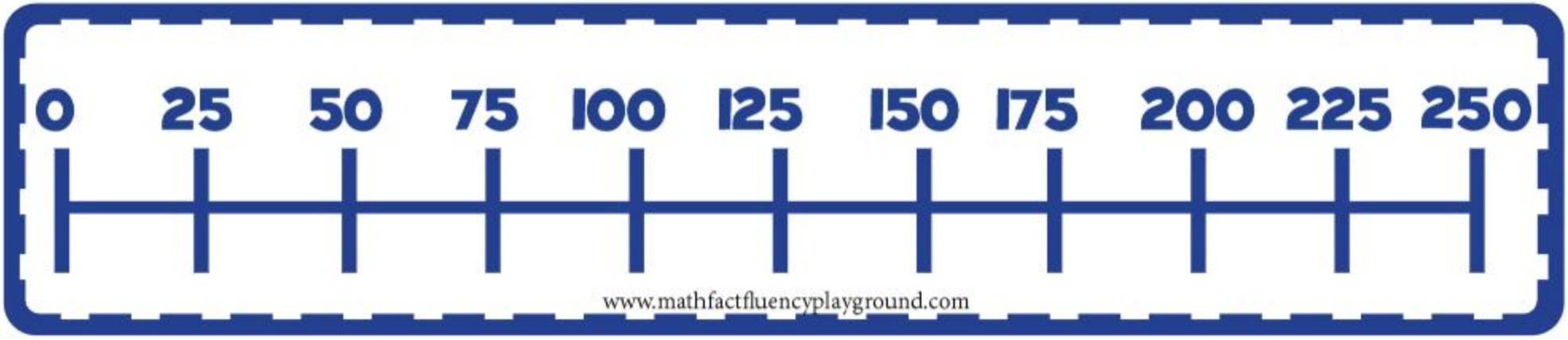




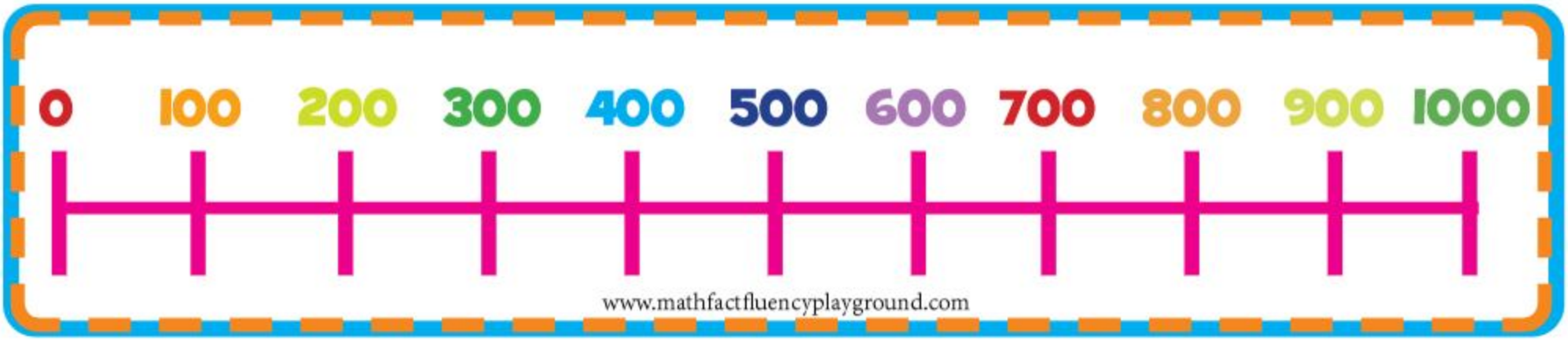
SKIP COUNTING BY 25s

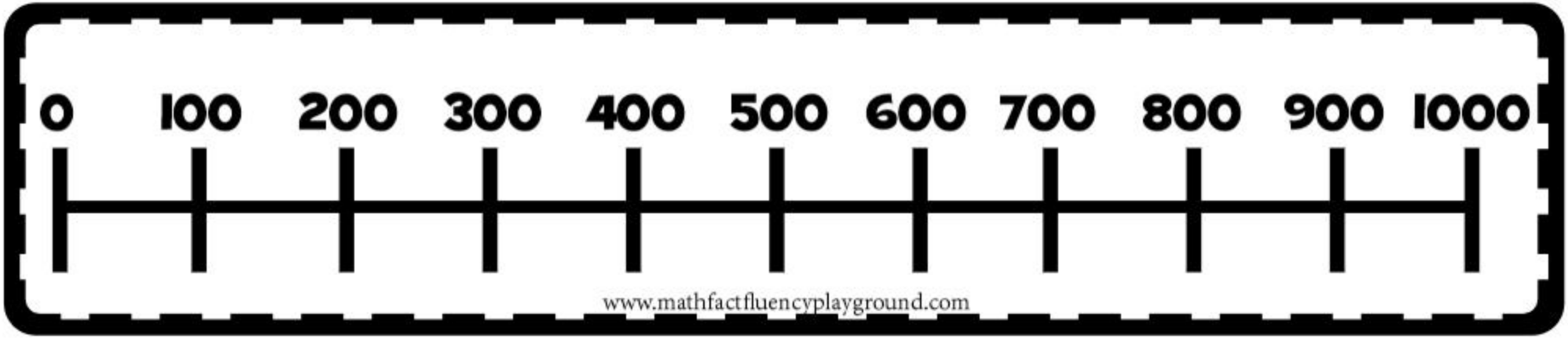


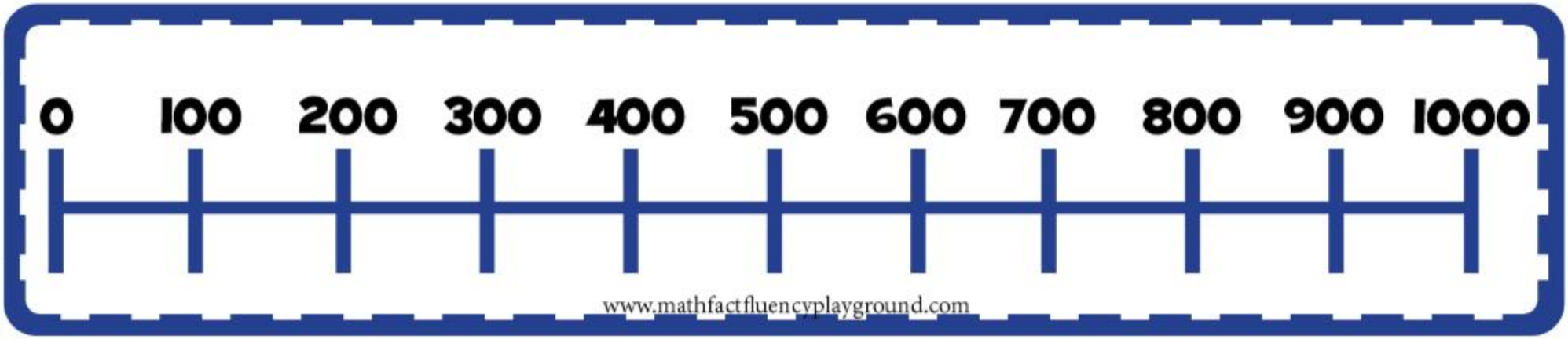




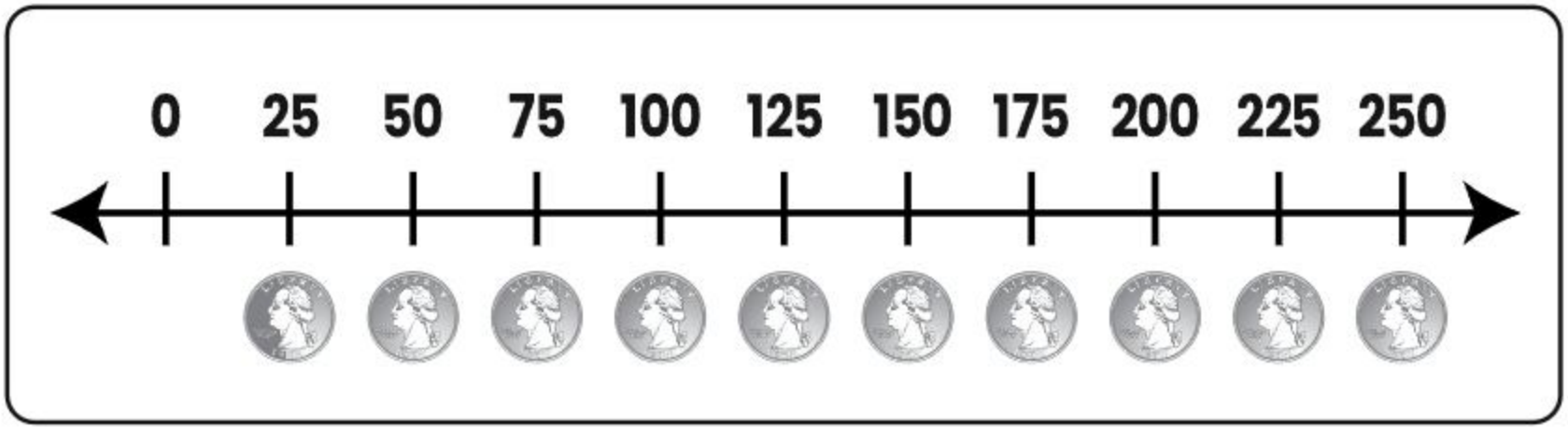
SKIP COUNTING BY 100s



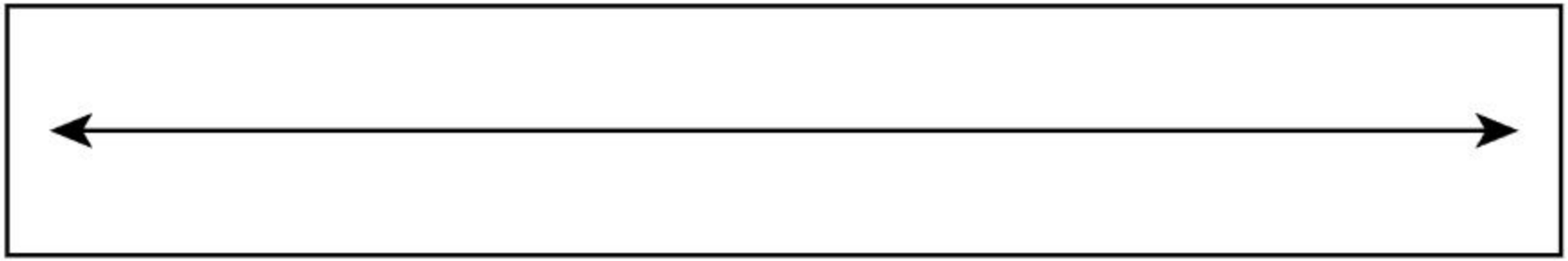


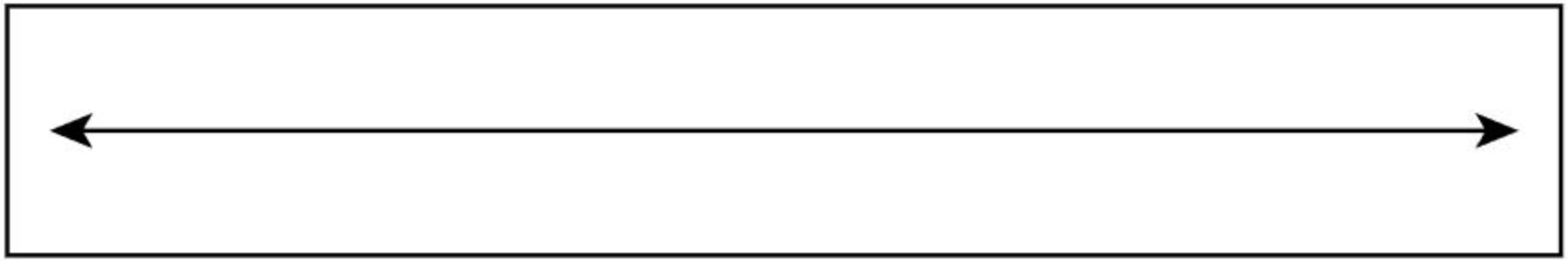


Number Line 0 to 250

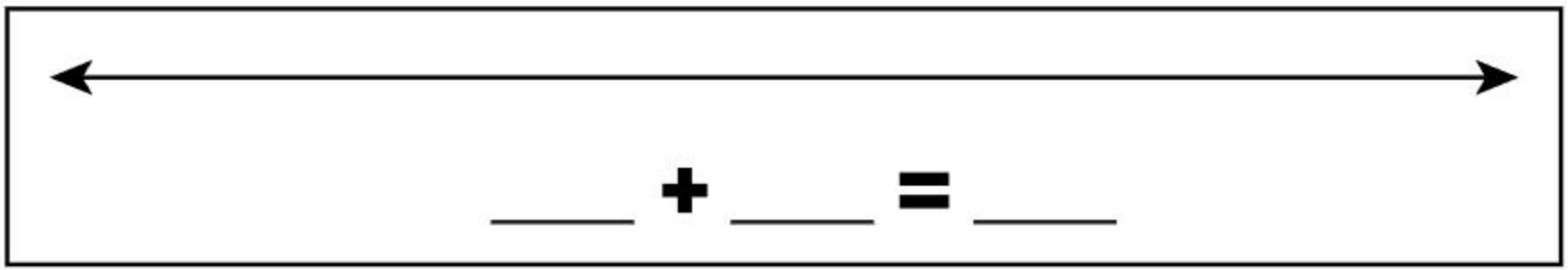


Open Number Lines

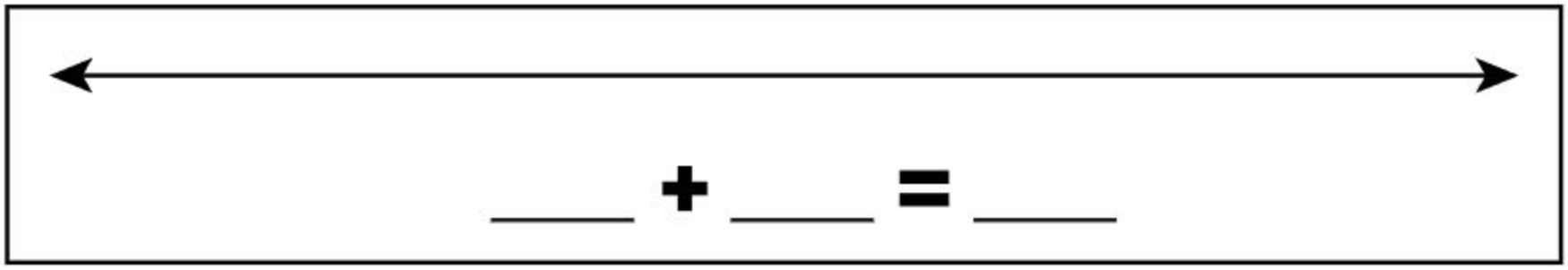




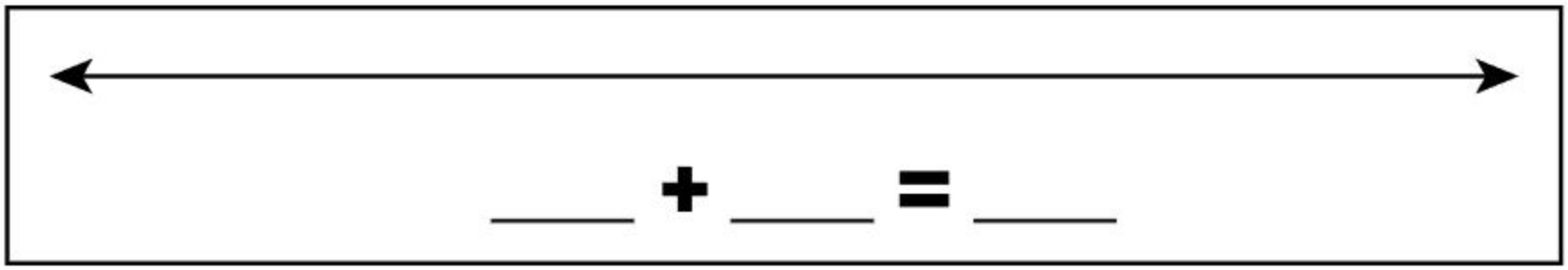
Addition Open Number Line Mat



____ + ____ = ____

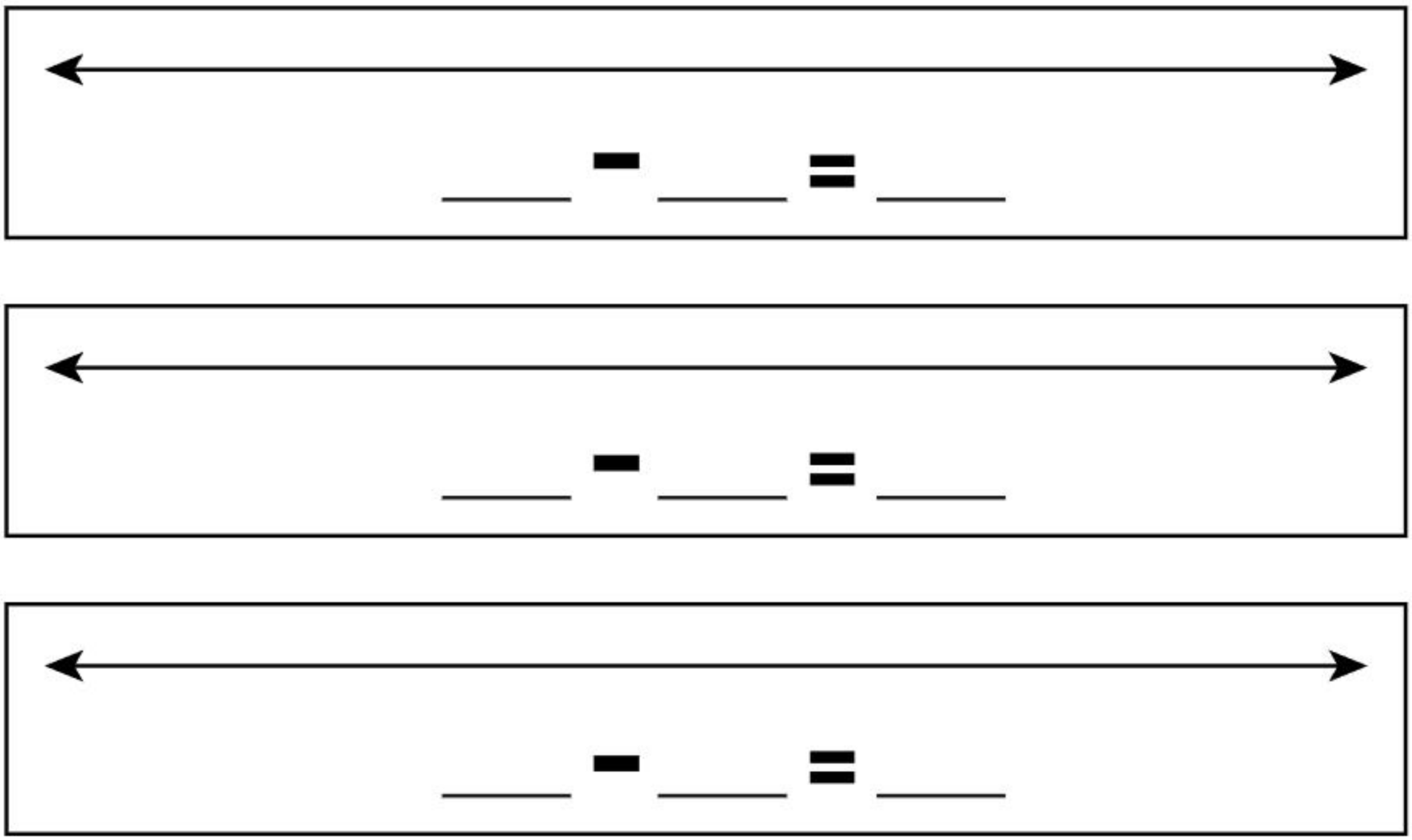


____ + ____ = ____



____ + ____ = ____

Subtraction Open Number Line Mat



REFERENCES

Bruner, J. S. (1973). Beyond the Information Given: Studies in the Psychology of Knowing. New York: Norton.

Bruner, J. (1990). Acts of Meaning. Cambridge, MA: Harvard University Press.

Dewey, J. (1933). How We Think. A restatement of the relation of reflective thinking to the educative process (Revised ed.), Boston: M.A.

Dewey, J. (1998). Experience and Education: The 60th anniversary Edition. Kappa Delta Pi. Nov. 1st.

National Council of Teachers of Mathematics (1991). Professional standards for teaching mathematics. Reston, VA.

Piaget, J. (1972). To Understand Is To Invent. New York: The Viking Press, Inc.

Robb, L. (2008). Differentiating reading instruction: How to teach reading to meet the needs of each student. New York. New York: Scholastic.

Serravallo, J. (2010) Teaching Reading in Small Groups: Differentiated Instruction for Building Strategic, Independent Readers. Nh: Heinemann.

Tomlinson , C.A. (1999). How to differentiate instruction in mixed-ability classrooms. Alexandria , VA : ASCD.

Tomlinson, C. A. (2001). How to Differentiate Instruction in Mixed-Ability Classrooms. Upper Saddle River, NJ: Pearson Education.

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Massachusetts: Harvard University Press.

Tomlinson (2001)

BE SURE TO CHECK OUT OTHER FLUENCY ACTIVITIES AT WWW.MATHFACTFLUENCYPLAYGROUND.COM

A GIFT FOR YOU

Thank you so much for buying this book!
We have a gift for you! Use this code to get some EXTRA FREE GOODIES for them to download and continue practicing their math facts!

Open the camera on your phone (just like if you are going to take a picture.) Hold the phone over the qr code (picture here on the right.) Tap the link that appears on your screen for your free download.

www.mathfactfluencyplayground.com

GUIDED MATH TEACHER'S NUMBER PATHS. NUMBER LADDERS & NUMBER LINES TOOL KIT

This Teacher's Number paths. Number Ladders & Number Lines Resource Toolkit was created to help teach addition. There are many different templates. activity sheets and backline masters to use to differentiate instruction. Use these resources to scaffold access to grade level content for all your students!