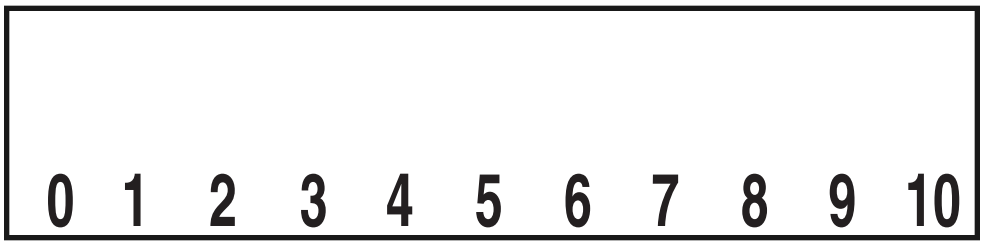
Walk the Number Line for Research-Based Results! Let's Go!



Download the Handout @
www.creativemathematics.com
in the
Freebies!

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Walk the Number Line

Math Tools:

- **Kim's Number Line** with colored dots
- Number Line Petite
- **Magic Finger of Math**
- Pointer(s) for Number Line
- Adding Machine Tape
- Paper Clips
- **Decahedron Double Dice**

Mathematical Intent:

The class number line is the single most important visual for students to see and work with daily. The concepts that can generate from the number line include skip counting, factors and multiples, subtraction, making change, elapsed time, fractions, decimals and rounding numbers. The teacher should get comfortable asking daily questions about numbers on the number line like before, after, between, closest to, round, factors and fractional parts of the whole.

Vocabulary:

multiples
factor
product
skip counting
growth pattern

Ron Brown Song Suggestions:

"Alien Tens!"
(**Skip Counting**)

"In Between"
(**Mighty Math**)

The first growth pattern that children meet is counting numbers. A class number line is the most important visual as a classroom tool. Early learners will work with counting forward and backward with counting songs and activities.

To introduce the idea of multiples the teacher will use objects that come in a constant of count to create a picture in the mind's eye. To introduce multiples of two, I recommend playing the game called **The Stand Up Game.** One student stands up. The teacher directs the activity by asking, "How many students are standing?" The relationship between the number of students standing to the number of eyes is made through the meaning of multiplication in groups.

As the game is played the teacher will add a red dot above the multiples of two. Students will add a red dot above the multiples of two on the Number Line Petite (**Number Line Workbook**).

Read ***Cat Up a Tree*** by John and Ann Hassett to introduce counting in groups of or skip counting with the students. Yellow dots will be added for multiples of five on **Kim's Number Line**. Other books can introduce other skip counting patterns.

A color-coded number line can be used as a larger visual tool for the classroom. This extends the skip counting. For primary students, the number line would start at zero and go to one hundred. For older students, the number line would start at zero and go to one hundred forty four. The number line is color-coded so that all of the multiples of two would have the same colored dot above them. Each different multiple would have a different colored dot above it.

The color patterns are:

2---red (The Stand Up Game)
3---green (The Triangle Game)
4---orange (The Quadrilateral Game)
5---yellow (The Hands Up Game)
6---light blue (The Hexagon Game)
7---neon orange (The Days in a Week Game)
8---neon green (The Spider/Octagon Game)
9---black (The Nonagon Game)
10---navy blue (The Roller Coaster Game)
11---purple (Hendecagon or Undecagon Game)
12---gold star (The Dodecahedron Game)

Students will use the Number Line Petite Mat to do the same color-coding as the dots on the class number line. This tool will be amazing for simplifying fractions.

The standard algorithm for subtraction of large numbers is the borrowing or regrouping method of starting with the ones. Students often refer to this as the "slash and burn" method. By using number reference points or benchmarks, students can make the subtraction situation less stressful. This model is extremely helpful for students who have difficulties with regrouping.

To model this process with students, the teacher needs a transparency of the practice sheet called "Walking the Line." Using the **Decahedron Double Dice**, two numbers are rolled. The big mathematical question is, "What is the difference between the two numbers?" For example:

The thinking behind this task is the mental process of dealing with simpler differences and then adding and subtracting around those reference points or benchmarks. If students are using the adding machine tape scraps, they can use the paper clips as number sliders and place the paper clips from the bottom of the number line to mark the reference points or benchmarks.

The class number line will also provide repeated practice with the idea behind this process and can used as a focus activity throughout the week. It is very exciting to watch students get better and better with the mental process and logical thinking skills.

0	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	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144							

0 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

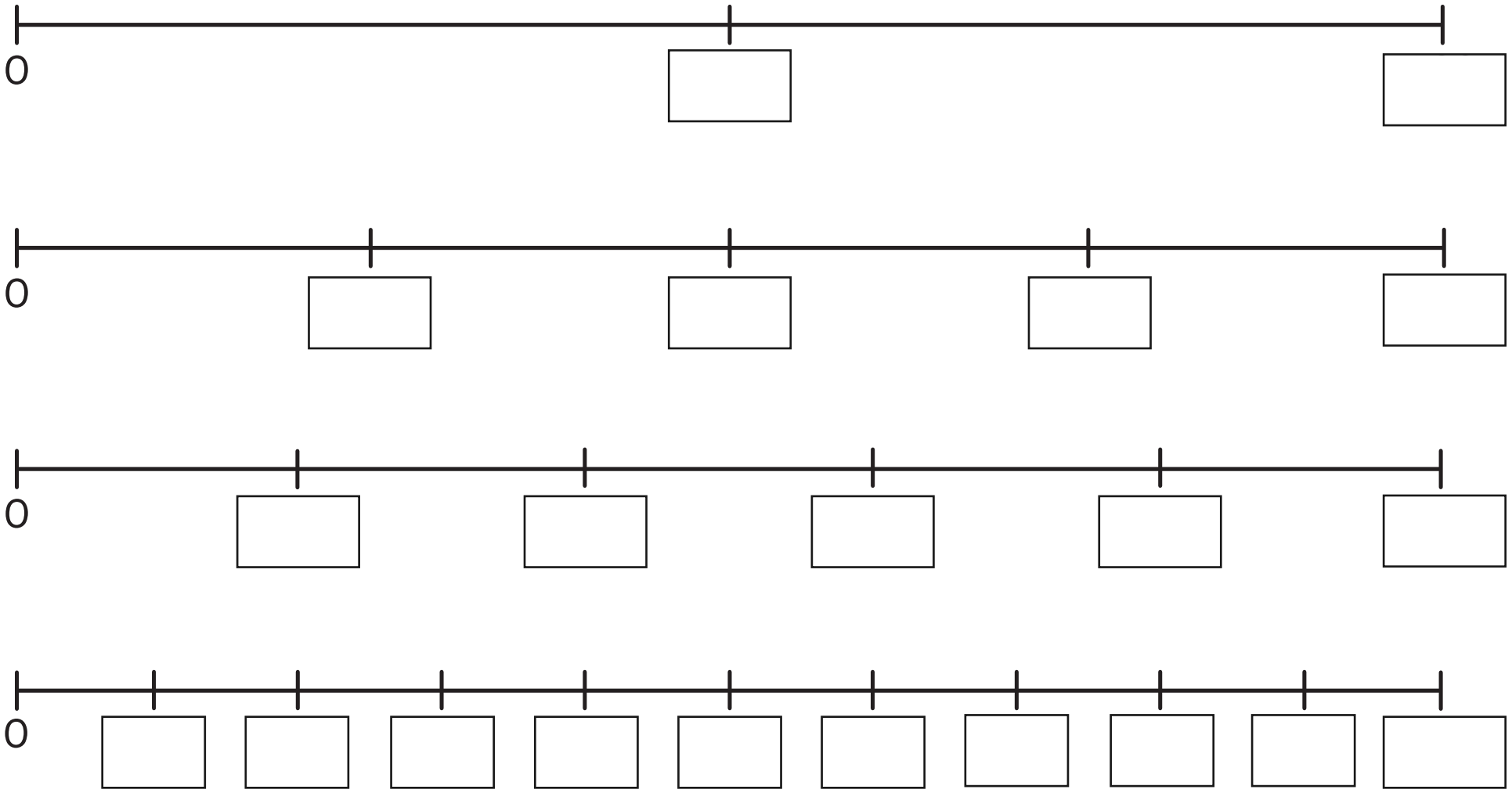
61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90

91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120

121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144

You a Question!

Name:



Alien Tens

Ron Brown

Skip Counting

Alien tens!

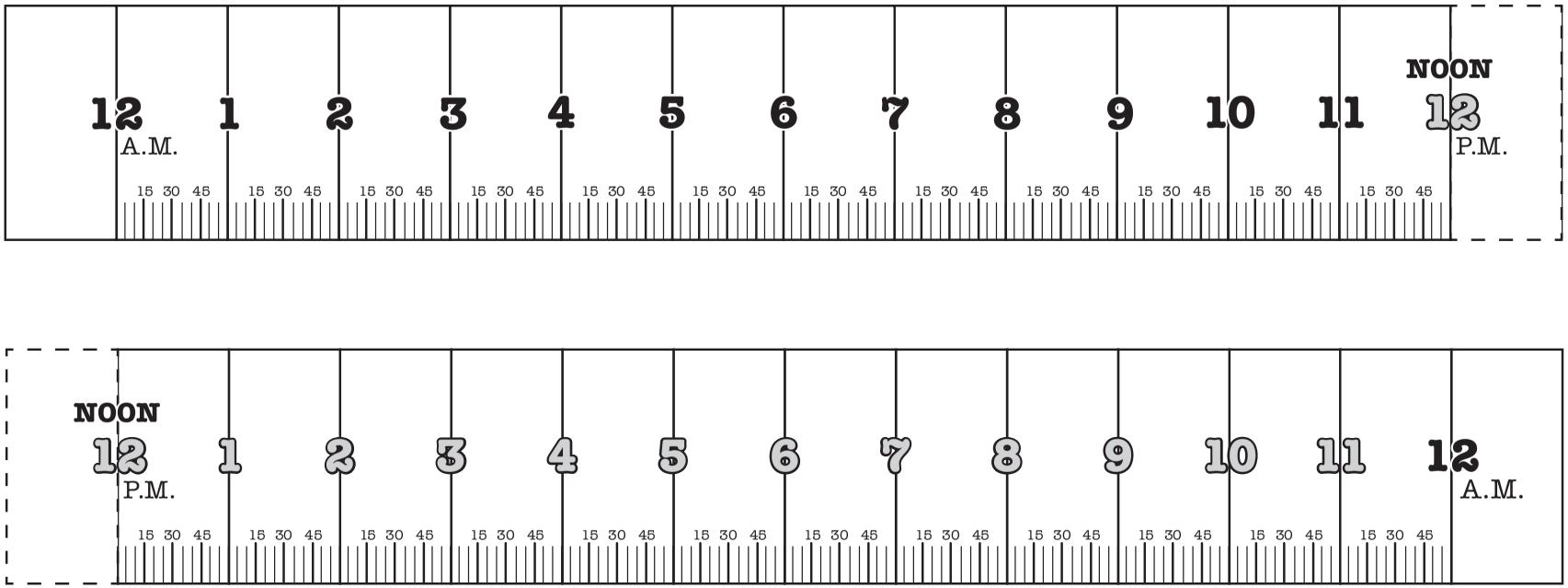
10 20 30
40 50 60 70
80 90 100 110 120

I'm an alien from outer space,
Doin' my tens right in their place.

10 20 30
40 50 60 70
80 90 100 110 120

I'm an alien from outer space,
And now I know my tens
Right in their place.

Elapsed Time Tool



This tool is amazing for solving elapsed time problems. It is 24 hours on a line. If students have used the empty number line, this becomes a natural!

I like to run this on a transparency so that students can write on it with a water-based pen.

Race Track Facts 0-12

An amazing game to play is called **Race Track Facts 0-12**! This game is played with the Race Track game board, **Double Dice** and 5 transparent chips. Find a partner or two. Order of play is determined. For each turn, the **Double Dice** are rolled and a chip is moved to the correct sum or addends that make that sum. For example, player A rolls 3 and 4. The player can move one chip to 7 or separate moves that make 7. Chips can only be moved the exact number of spots. The object of the game is to move the five chips from the starting positions to the finish line first.

Race Track Facts 0-18

Let's play a game called **Race Track Facts 0-18**! This game is played with the Race Track game board, **Decahedron Double Dice** and 5 transparent chips. Find a partner or two. Order of play is determined. For each turn, the **Decahedron Double Dice** are rolled and a chip is moved to the correct sum or addends that make that sum. For example, player A rolls 5 and 8. The player can move one chip to 13 or separate moves that make 13. Chips can only be moved the exact number of spots. The object of the game is to move the five chips from the starting positions to the finish line first.

Race Track Fractions

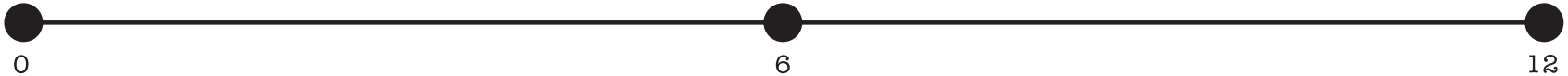
An amazing game to play is called **Race Track Fractions**! This game is played with the Race Track game board, **Double Dice** and 5 transparent chips. Find a partner or two. Order of play is determined. For each turn, the **Double Dice** are rolled. The greater number rolled of the two, is always the denominator. The lesser number is the numerator. For example, player A rolls 3 and 4. This makes the fraction 3/4. The player can move to 3/4 or break the fraction into 1/2 + 1/4. The object of the game is to move the five chips from the starting positions to the finish line (one whole) first. Play again using the inverse operation.

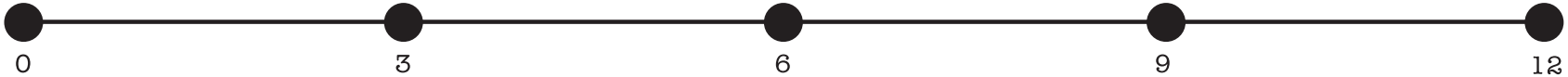
Race Track Fractions

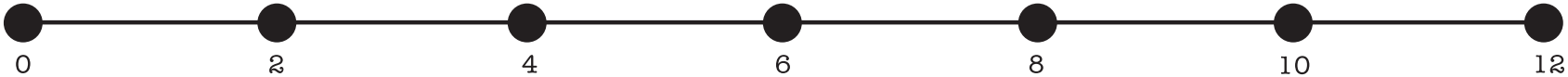
Let's play a game called **Race Track Fractions**! This game is played with the Race Track game board, **Decahedron Double Dice** and 9 transparent chips. Find a partner or two. Order of play is determined. For each turn, the **Decahedron Double Dice** are rolled and a chip is moved to the correct fraction or break the fraction. For example, player A rolls 5 and 8. This makes the fraction 5/8. The player can move one chip to 5/8 or break the fraction into smaller fractions like 1/2 + 1/8. The object of the game is to move the nine chips from the starting positions to the finish line (one whole) first. Play again using the inverse operation.

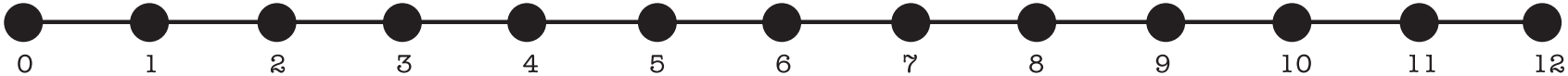
Race Track Facts 0-12

Name	Date



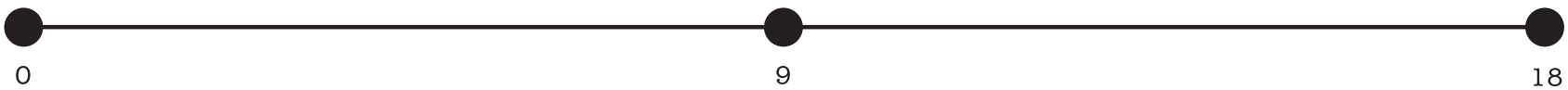


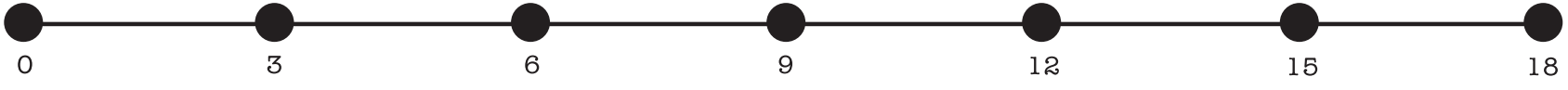


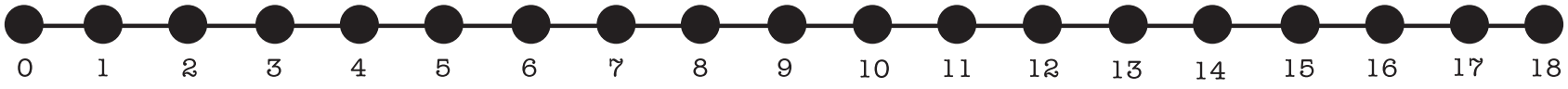


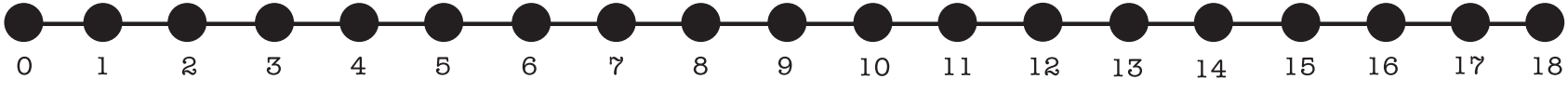
Race Track Facts 0-18

Name	Date









Race Track Fractions

0 $\frac{1}{2}$ $\frac{2}{2}$

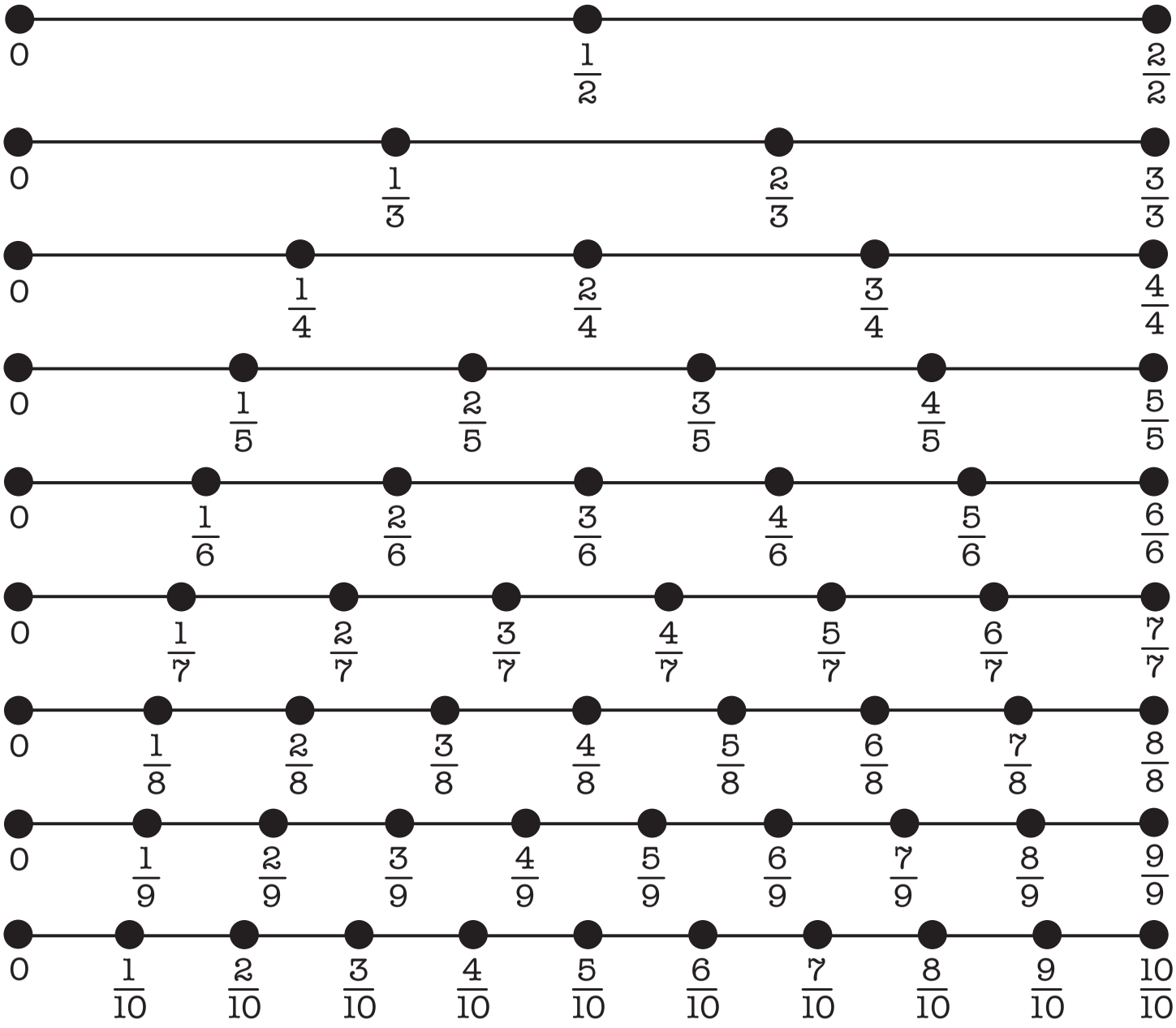
0 $\frac{1}{3}$ $\frac{2}{3}$ $\frac{3}{3}$

0 $\frac{1}{4}$ $\frac{2}{4}$ $\frac{3}{4}$ $\frac{4}{4}$

0 $\frac{1}{5}$ $\frac{2}{5}$ $\frac{3}{5}$ $\frac{4}{5}$ $\frac{5}{5}$

0 $\frac{1}{6}$ $\frac{2}{6}$ $\frac{3}{6}$ $\frac{4}{6}$ $\frac{5}{6}$ $\frac{6}{6}$

Race Track Fractions



The Famous "Bump It" Rule

Your classroom is about to undergo a huge transformation! Students love any game that includes these rules. You will experience the "Bump It" rule many times in this workshop. It can be used on any partner game. You will see several of the "Bump It" rules applied to grid games, the Pattern Stick Game, and with many other games. These rules increase the motivation of any game along with the frequency in which students play the games.

The kicker that makes any game fun is the "Bump It" rule. If a player rolls a number and the opponent's chip is on the answer, the player can bump the chip off the board. (There must be no other open answer!)

An additional rule will evolve. Students call it "Bump It Protection!" This is when a player's chip is already on the sum. An additional chip is stacked on top of the original chip. If the opponent needs that sum, only one of the chips can be bumped. A third rule can be added. It is called "Bump It Protection With a Lock." When a third chip is stacked, that sum is locked. All chips count in determining the winner.

The "Bump It" rule always promotes fluency because students want to increase their speed to get to "Bump It!"

Bump It! Fractions I

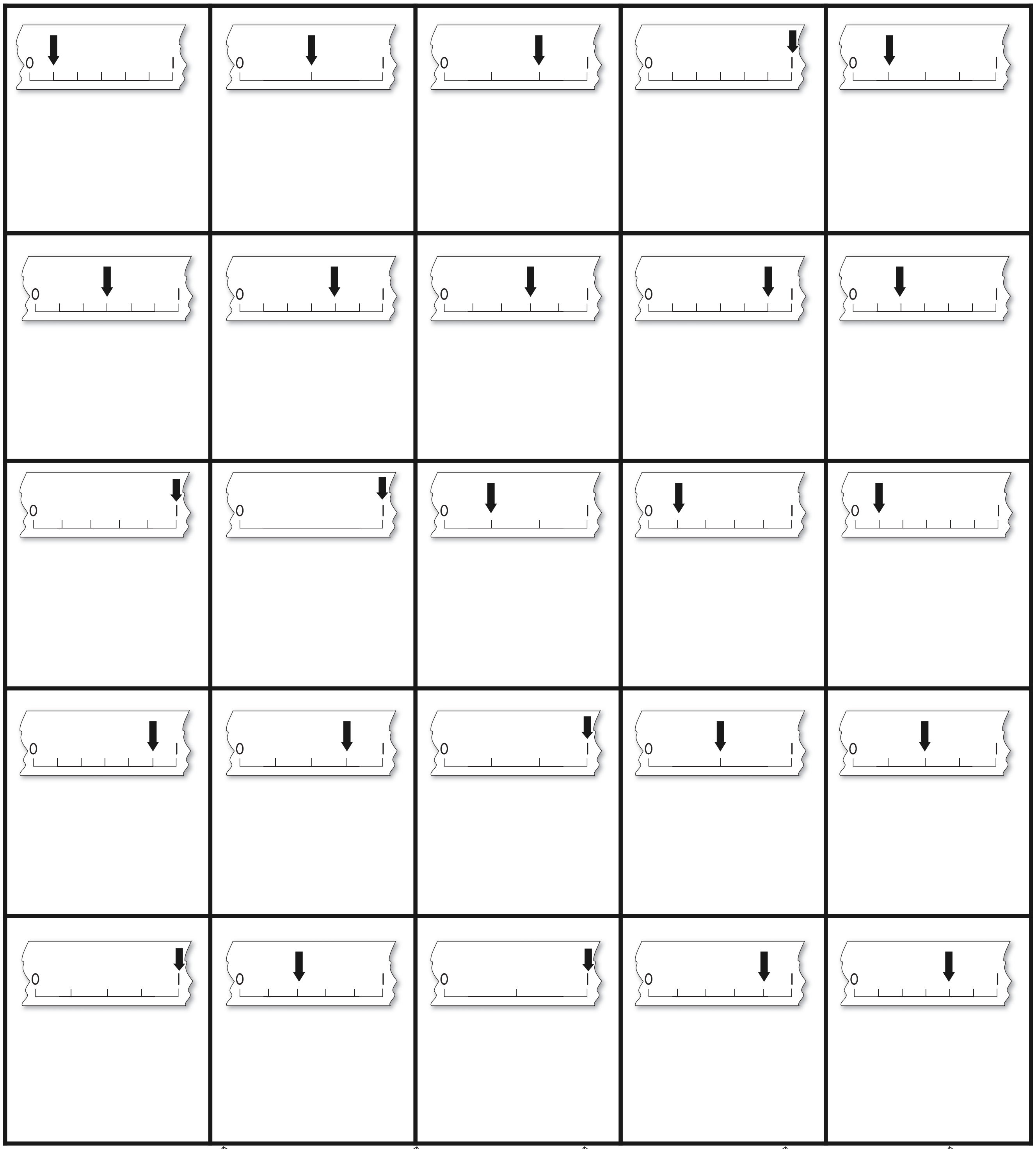
The game of **Bump It! Fractions I** will test your knowledge of fractions on a number line! You need the **Double Dice**, transparent chips and a game board. Find a friend or friends to play with. Decide order of play. Each player will claim a color of chips for the game. Player A will roll the **Double Dice**. The least number is the numerator and the greater is the denominator. Player A finds that fraction and covers with Player A's chip. Player B repeats the process of rolling a numerator and denominator and covering with a chip. The "Bump It" rules apply. The game is over when every fraction has a chip. The player with the most chips wins!

Bump It! Fractions II

The game of **Bump It! Fractions II** will test your knowledge of fractions on a number line! You need the **Decahedron Double Dice**, transparent chips and a game board. Find a friend or friends to play with. Decide order of play. Each player will claim a color of chips for the game. Player A will roll the **Double Dice**. The least number is the numerator and the greater is the denominator. Player A finds that fraction and covers with Player A's chip. Player B repeats the process of rolling a numerator and denominator and covering with a chip. The "Bump It" rules apply. The game is over when every fraction has a chip. The player with the most chips wins!

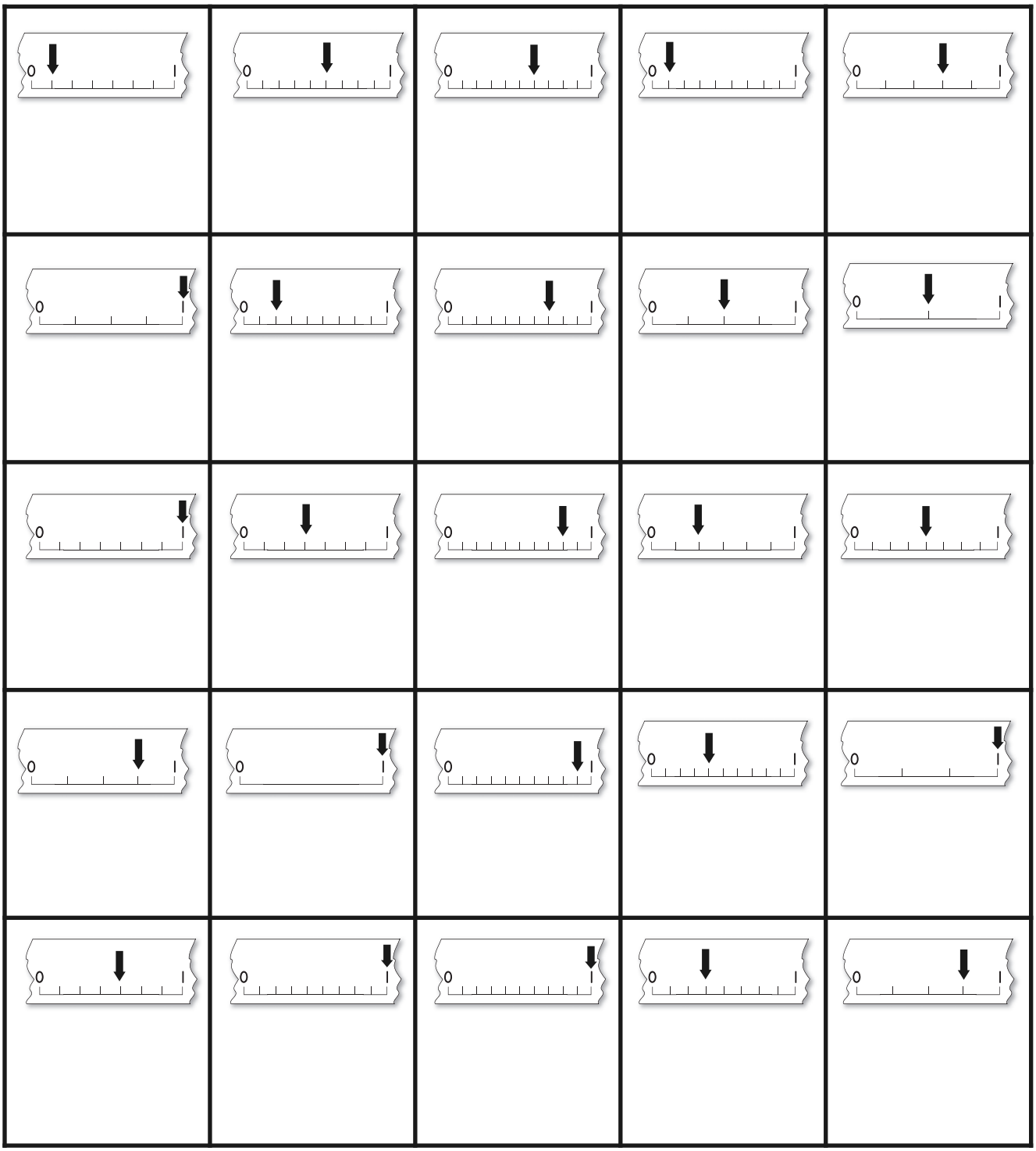
Bump It! Level 1 Fraction

Number Lines



Bump It! Level 2 Fraction

Number Lines

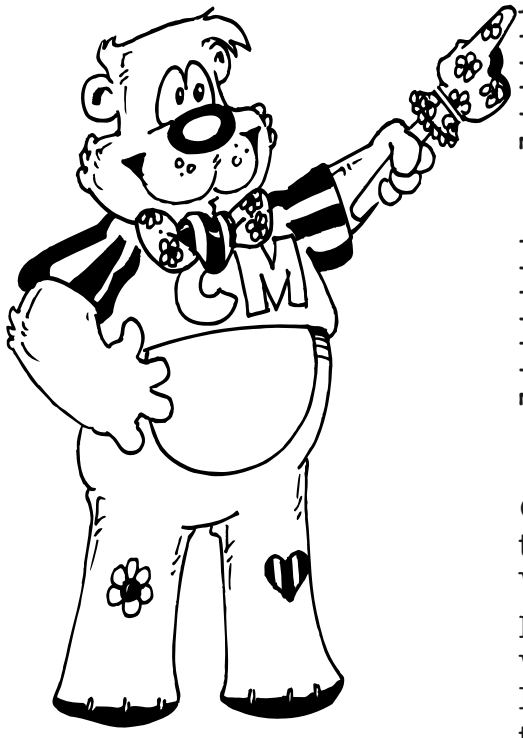


Walk the Line!

I keep a close watch on this number line
I keep my eyes wide open all the time.
I notice all the dots – they are a sign.
The turn is mine, I'll walk the line.

I find math very, very easy to be true.
I find myself with facts when days are through.
Yes, I'll admit the digital root for you.
The turn is mine, I'll walk the line.

I keep my eyes peeled on our math.
From addition to division is our path.
I'd rather add instead of take a bath.
The turn is mine, I'll walk the line.



All the dots keep me on their side.
My love for math I'll never, ever hide.
Digital root I'd even turn the time.
The turn is mine, I'll walk the line.

I keep a close watch on this number line
I keep my eyes wide open all the time.
I notice all the dots – they are a sign.
The turn is mine, I'll walk the line.

(This famous song by Johnny Cash was rewritten by two amazing teachers! The first teacher was Marsha Williams from Toronto, Ontario who wrote the first paragraph with her students. The second teacher who finished this with her class was Janeen Tope-Lehn from Tangent, Oregon. I am so appreciative to them for their creativity!)

