

## Cuisenaire® Rods



Cuisenaire Rods are a collection of rectangular rods of 10 colors, and each color is a different length. Because the lengths are proportional, Cuisenaire Rods can be used to develop a wide variety of mathematical skills at many different levels of complexity. They can be used for basic operations, fractions, decimals, and algebra.

### Build a Boat

**Overview:** In this activity, your child designs a boat with Cuisenaire Rods and estimates how many white Cuisenaire Rods it takes to cover their boat.

**Materials:** Cuisenaire Rods, paper, pencil

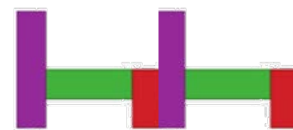
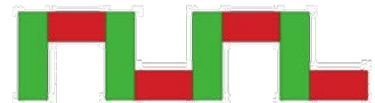
- ❖ On the paper, have your child arrange 5-10 Cuisenaire Rods so they look like a boat. They can use any rods you want, except the white ones.
- ❖ With a pencil, have your child carefully trace the boat on the paper.
- ❖ Remove the rods from the drawing.
- ❖ Have your child estimate (make a smart guess) how many white rods it takes to cover the drawing of your boat.
- ❖ Have your child cover the drawing with white rods and then count them. Was the estimate right?
- ❖ Repeat again with other shapes.

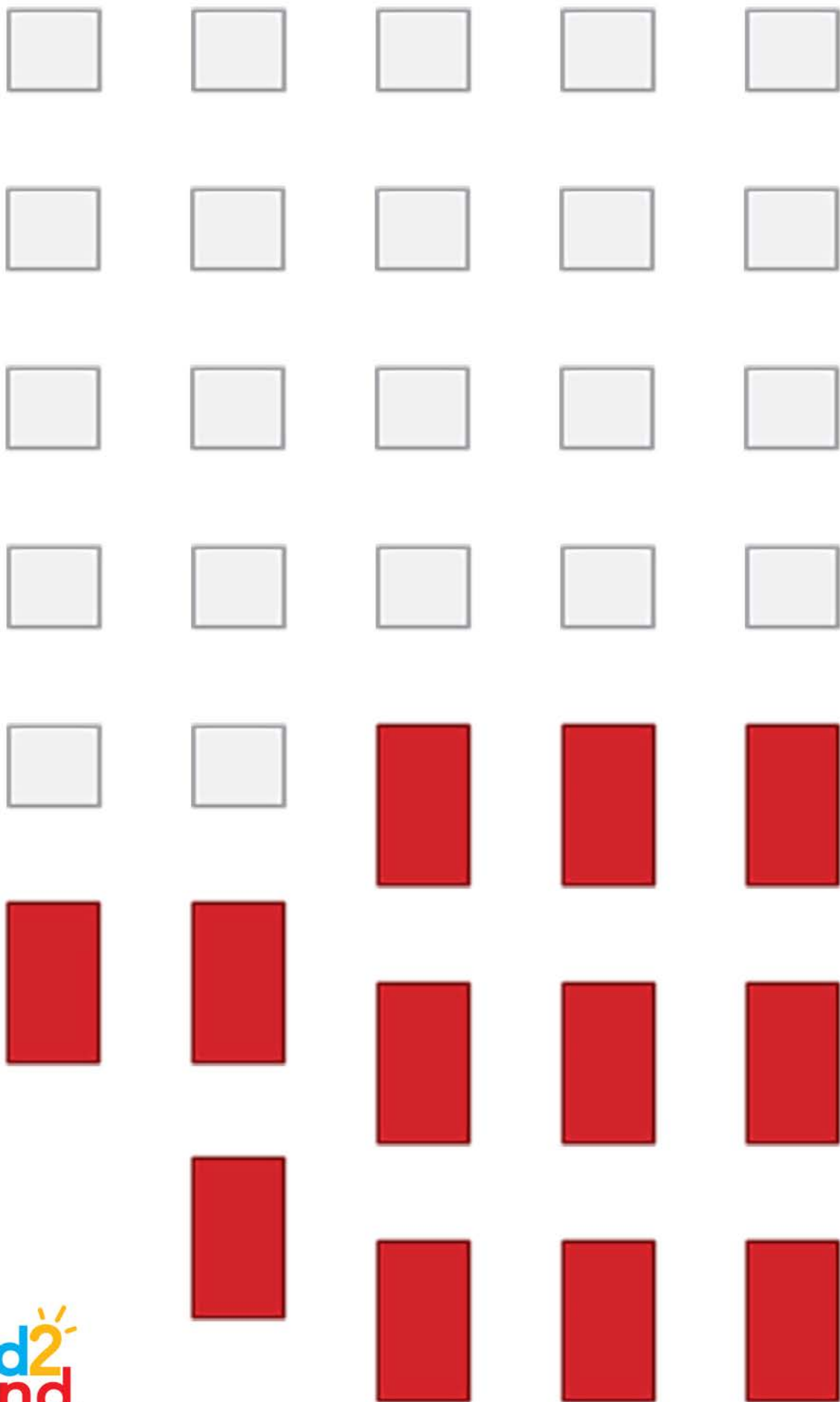
### Copy and Repeat

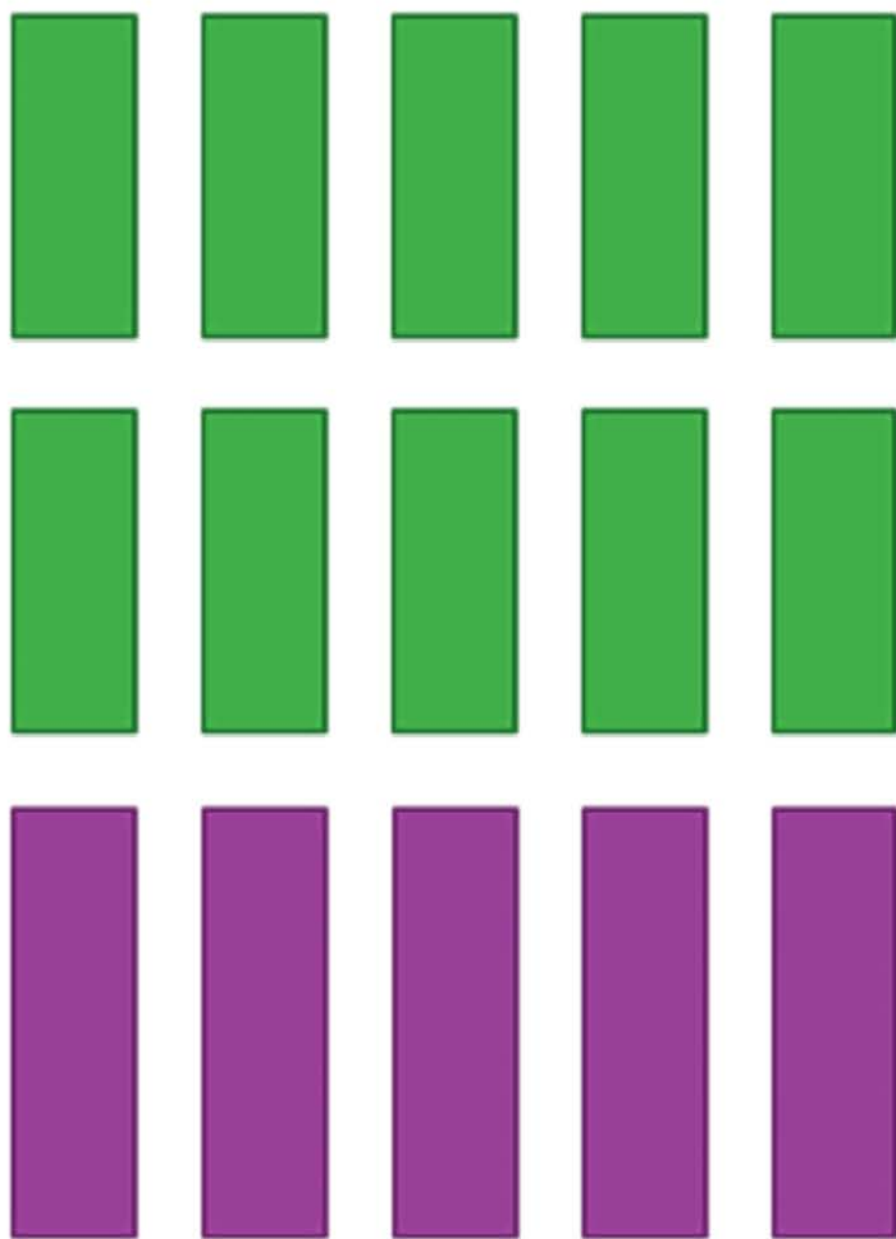
**Overview:** In this activity, your child creates patterns and converts those patterns to number sentences to estimate how many rods they need to repeat the pattern.

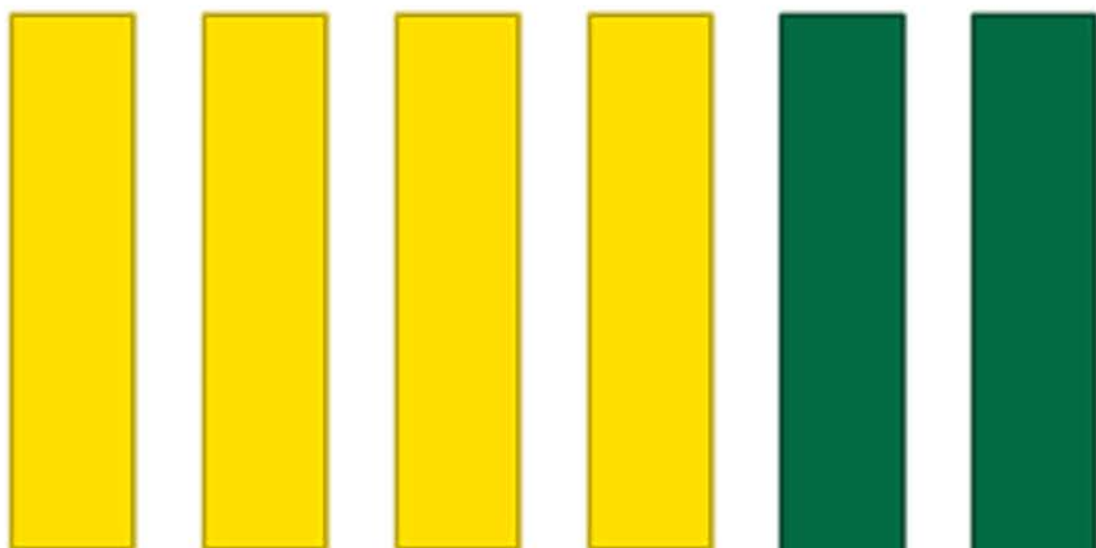
**Materials:** Cuisenaire Rods, paper, pencil

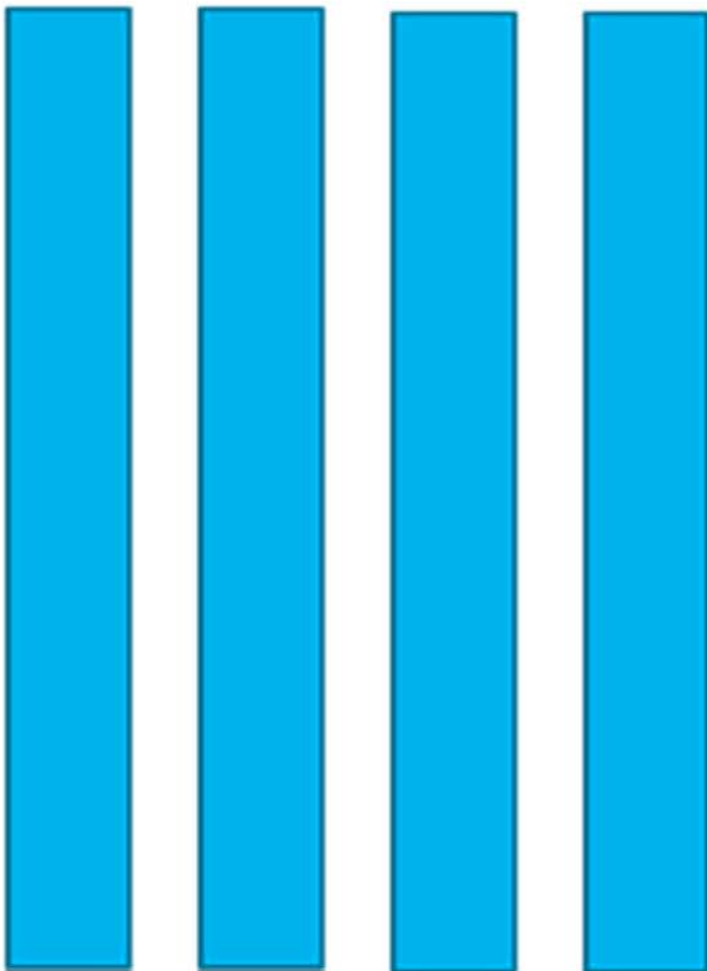
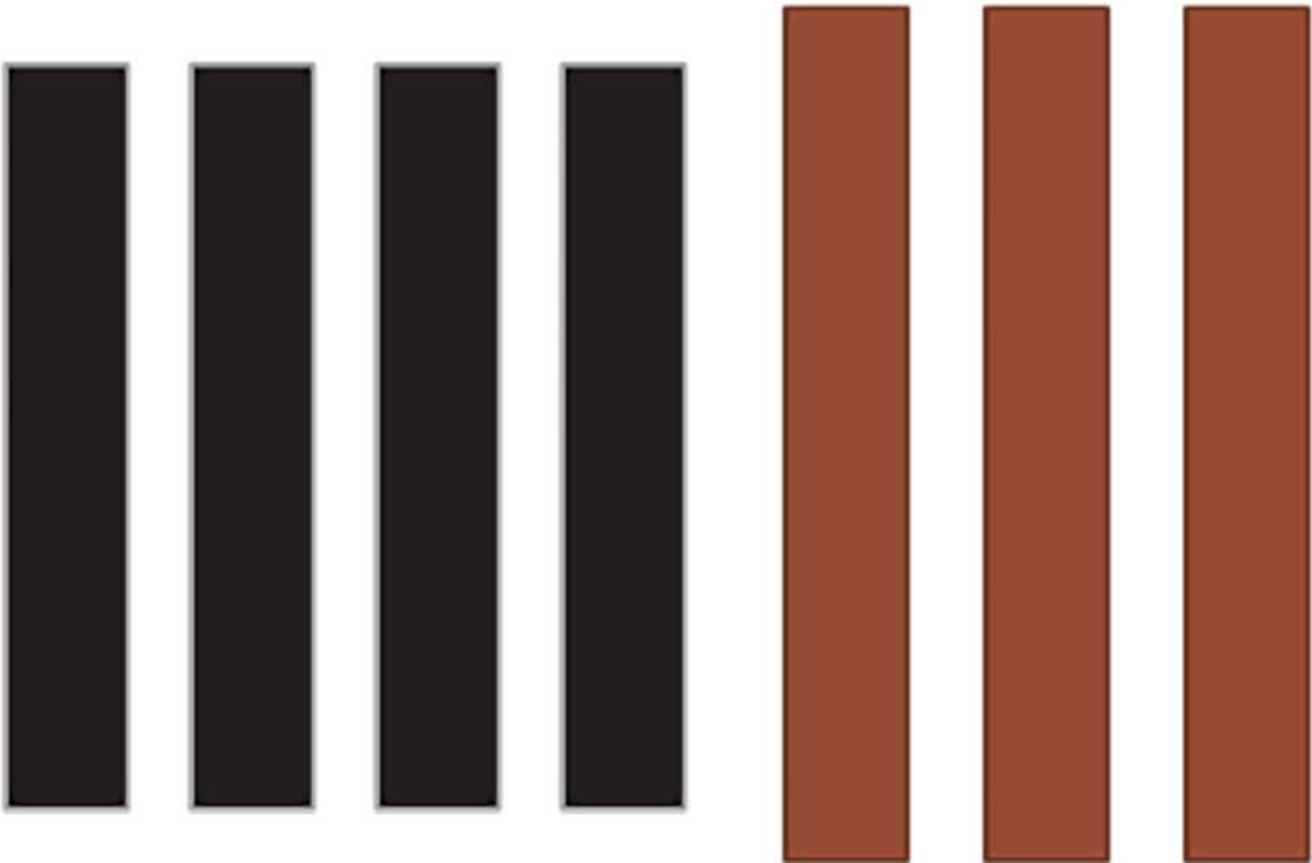
- ❖ Have your child use Cuisenaire Rods to create 1 of the patterns.
- ❖ Each pattern is repeated twice. The first pattern is green, red, green, red, repeat.
- ❖ If doing that pattern once, as shown, requires 2 reds and 2 greens, and doing it twice (as shown) requires 4 reds and 4 greens, how many rods of each color would you need to repeat 5 times? The number sentence might be  $(2r + 2g) + (2r + 2g) + (2r + 2g) + (2r + 2g) + (2r + 2g) = 10r + 10g$
- ❖ Have your child build the pattern so it repeats 10 times. Was the estimate correct?
- ❖ Have your child do this again with the other pattern.
- ❖ For extra fun:
  - On a paper, design a pattern with at least 3 repeats.
  - Trace it in onto the paper.
  - Remove the Cuisenaire Rods and give it to a friend. See if they can figure out how you made your pattern.

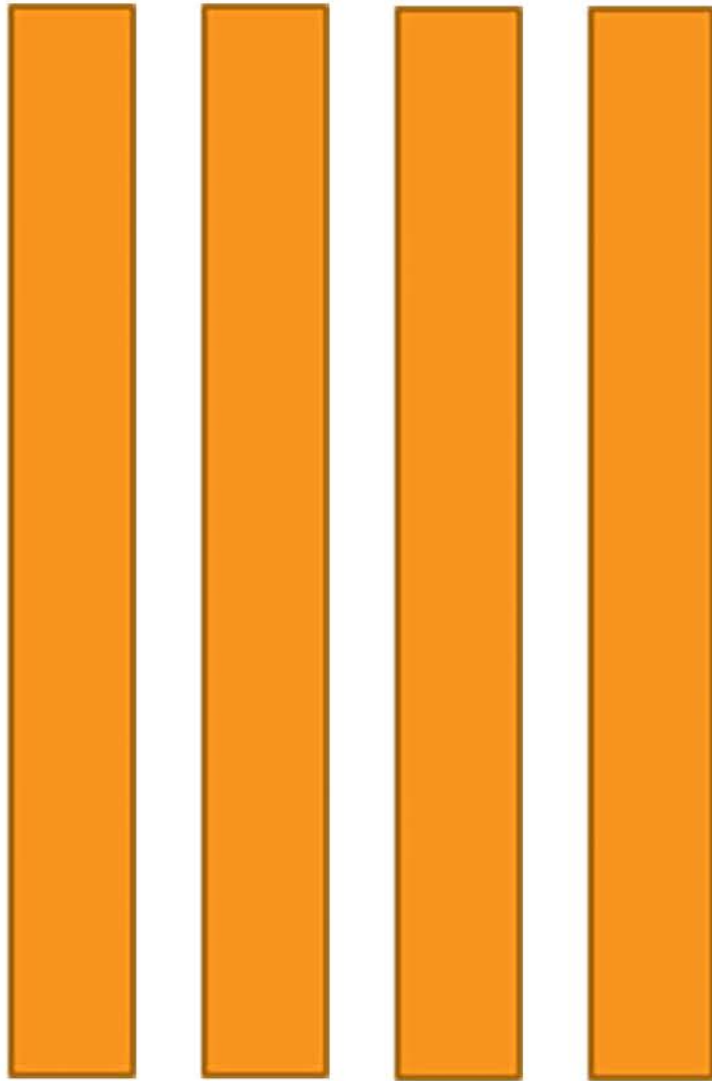






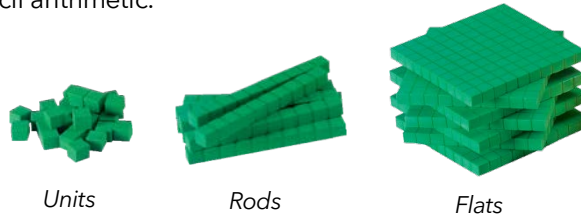






## Base Ten Blocks

Base Ten Blocks provide a 3-dimensional model of the Base Ten number system. They help physically represent concepts of place value, addition, subtraction, multiplication, and division of whole numbers. The blocks serve as visual models for understanding the processes your child uses when doing paper-and-pencil arithmetic.



## Beginning With Base Ten Blocks

**Overview:** In this activity, your child practices trading units for rods, rods for flats, etc.

**Materials:** Base Ten Blocks, 3 pieces of blank paper

- ❖ Take 3 pieces of paper, labeling them "1s", "10s", and "100s".
- ❖ Have your child place 1 unit at a time on the page labeled "1s" counting aloud for each unit.
- ❖ Once there are 10 units on that page trade them in for a rod and place the rod on the page labeled "10s".
- ❖ Continue placing units on the 1s page counting aloud (11, 12, 13, ...19, 20), trading 10 units for a rod once there are 10 units on the 1s page. Keep going. (21, 22, 23, ...29, 30, trade)
- ❖ When there are 10 rods on the page labeled "10s" (96, 97, 98, 99, 100) trade the rods for a flat and put the flat on the page labeled "100s." Keep going to 999.

## Sum It Up!

**Overview:** In this activity, your child uses Base Ten Blocks to model a number as the sum of 2 addends. Then they find ways to model the same number with different pairs of addends.

**Materials:** Base Ten Blocks, Sum it Up! Work Mat (see next page), 2 dice

- ❖ Make a copy of the Sum It Up! Work Mat so you can enjoy the activity more than once.
- ❖ Have your child roll the dice. Use the 2 numbers rolled to make a number using the Base Ten Blocks. If you roll a 3 and a 4, decide if you want 3 rods and 4 units or 4 rods and 3 units.
- ❖ Put the Base Ten Blocks at the top of the Sum It Up! Work Mat.
- ❖ Write the number on the worksheet as a sum (43).
- ❖ Rearrange the Base Ten Blocks 6 or more different ways to make number sentences that equal your sum. (40 + 3, 20 + 23, etc.) Remember you can trade 10 units for a rod or 1 rod for 10 units.

# SUM IT UP!

Put your blocks here:

Your Sum: \_\_\_\_\_

1. 

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\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

2. 

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\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

3. 

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\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

4. 

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\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

5. 

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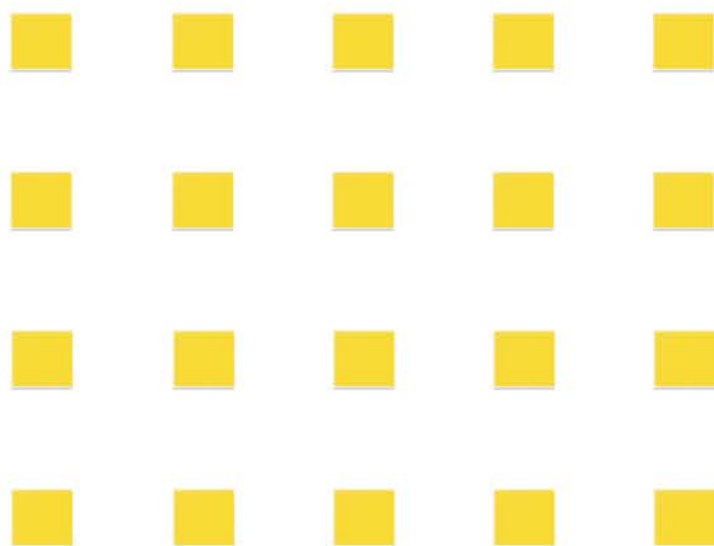
\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

6. 

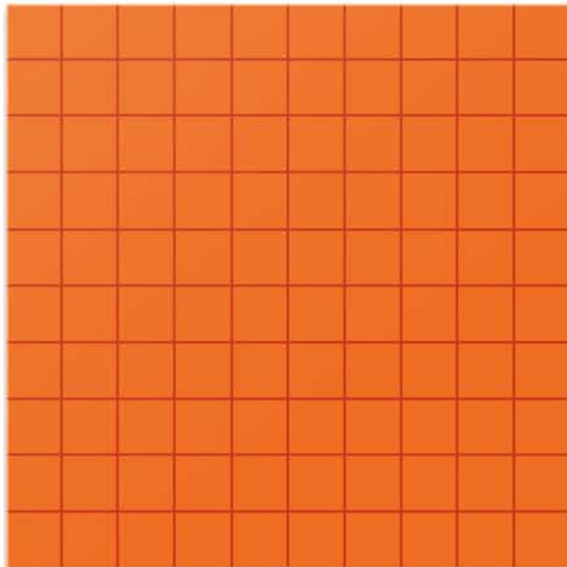
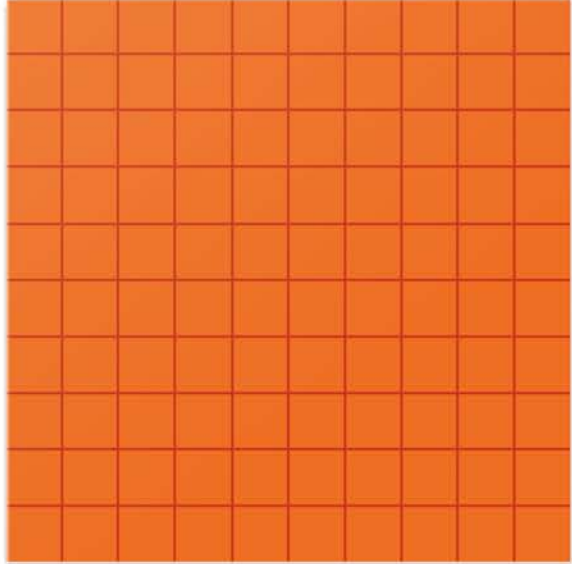
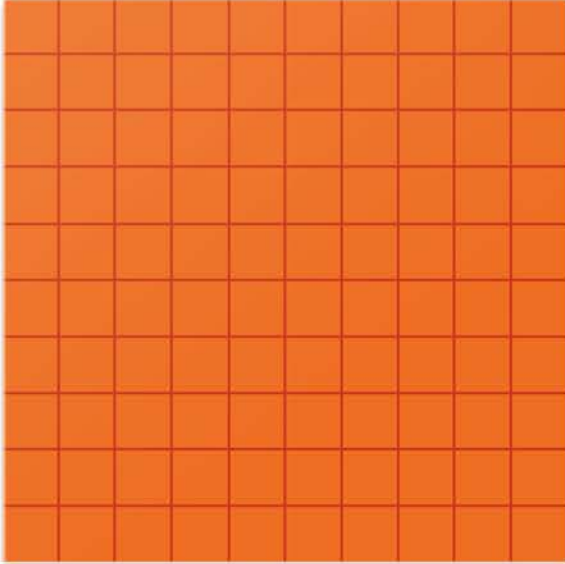
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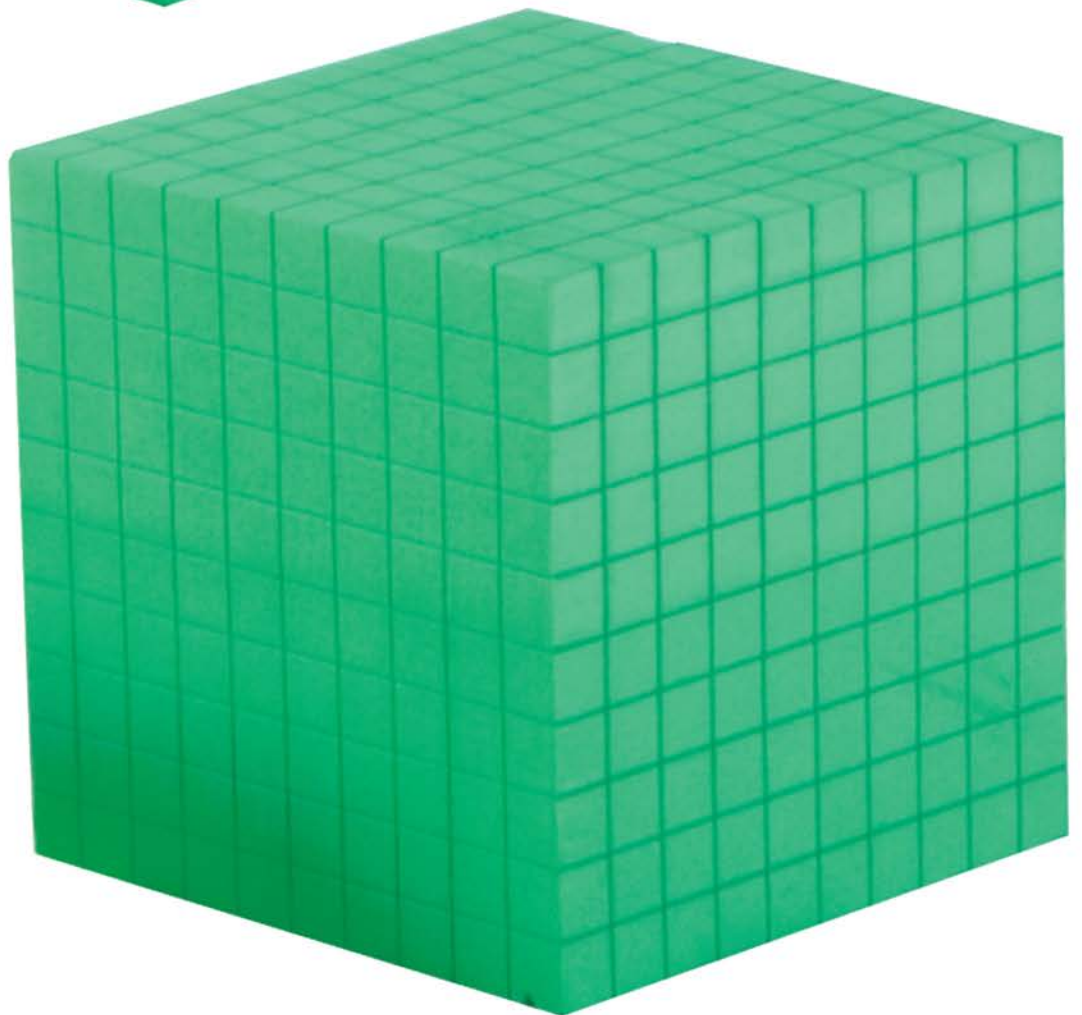
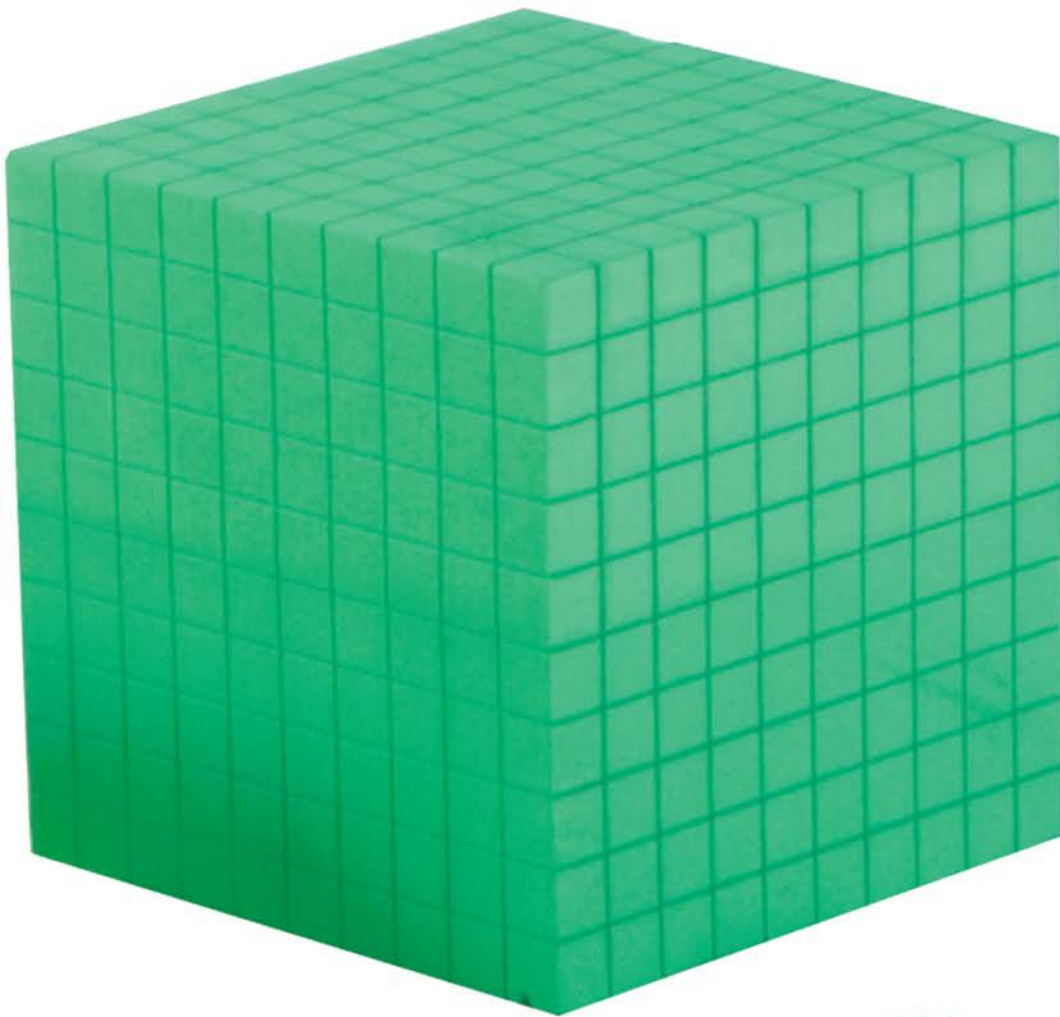
\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_



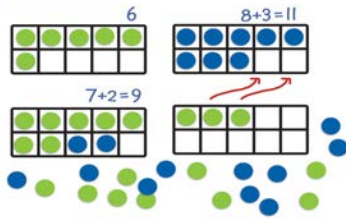








## Ten-Frames



Ten-frames provide a hands-on way to help your child learn counting, number correspondence, number patterns, addition, subtraction, and much more.

## Counting Cards

**Overview:** In this activity, your child builds number sense while practicing visualizing numbers as groups of 5s and 10s.

**Materials:** Ten-Frame, Counters, Deck of Cards (without face cards)

- ❖ Ask your child to select a card and then use the counters to show the number on the card by placing them into the spots on the ten-frame starting in the top row and moving left to right.
- ❖ The counters can be 2-color counters, buttons, or cereal.

## Making 10

**Overview:** In this activity, your child uses visualization instead of counting to compose numbers in different ways.

**Materials:** Ten-Frame, Counters, one die

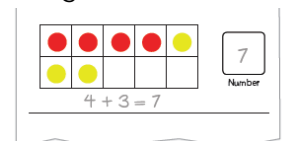
- ❖ Have your child roll the die and place counters on the ten-frame to match the number shown.
- ❖ Then ask your child to write down how many more counters they think are needed to make 10.
- ❖ Next have your child add a different color counter to the ten-frame until all the boxes are filled.
- ❖ Count the 2<sup>nd</sup> color of counters. Check the number written down to check if it was correct.
- ❖ Then your child can repeat these steps to make 10 in other ways.

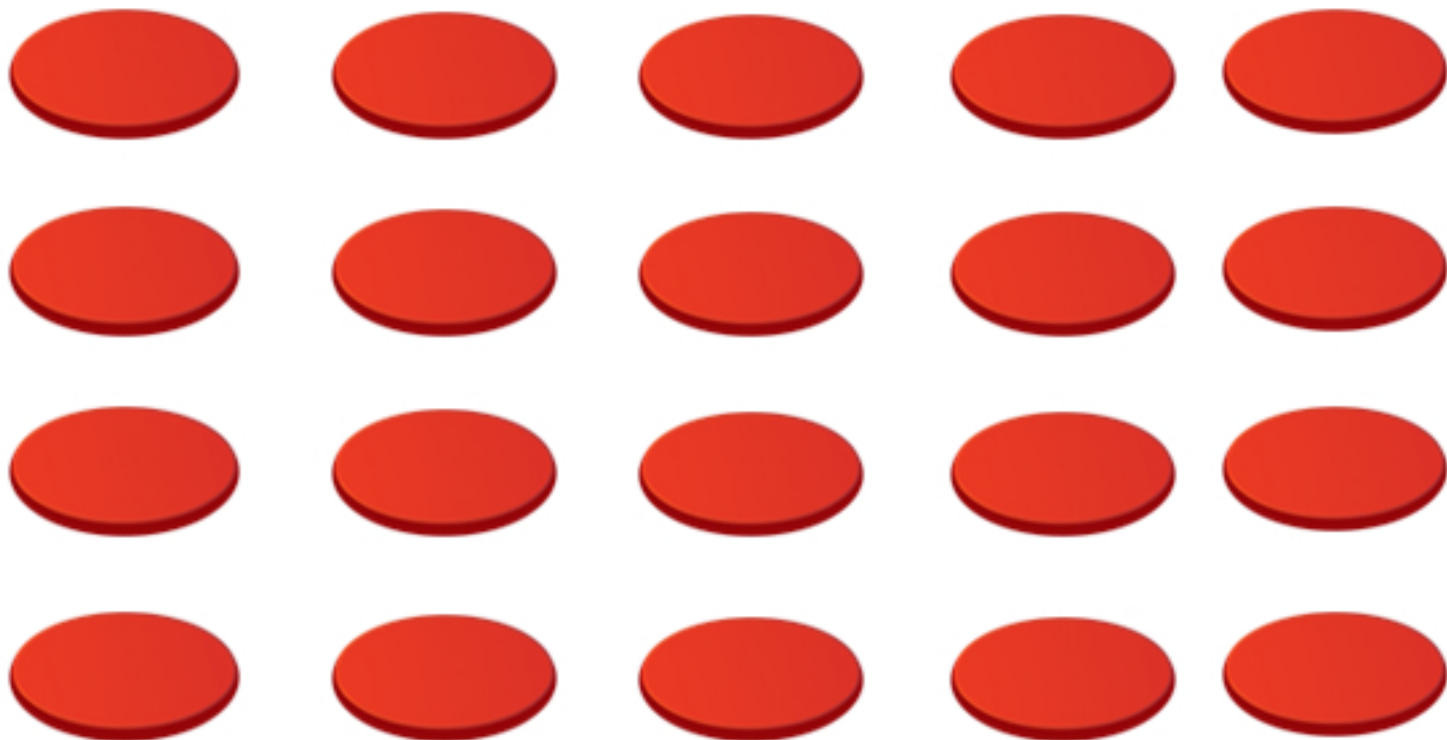
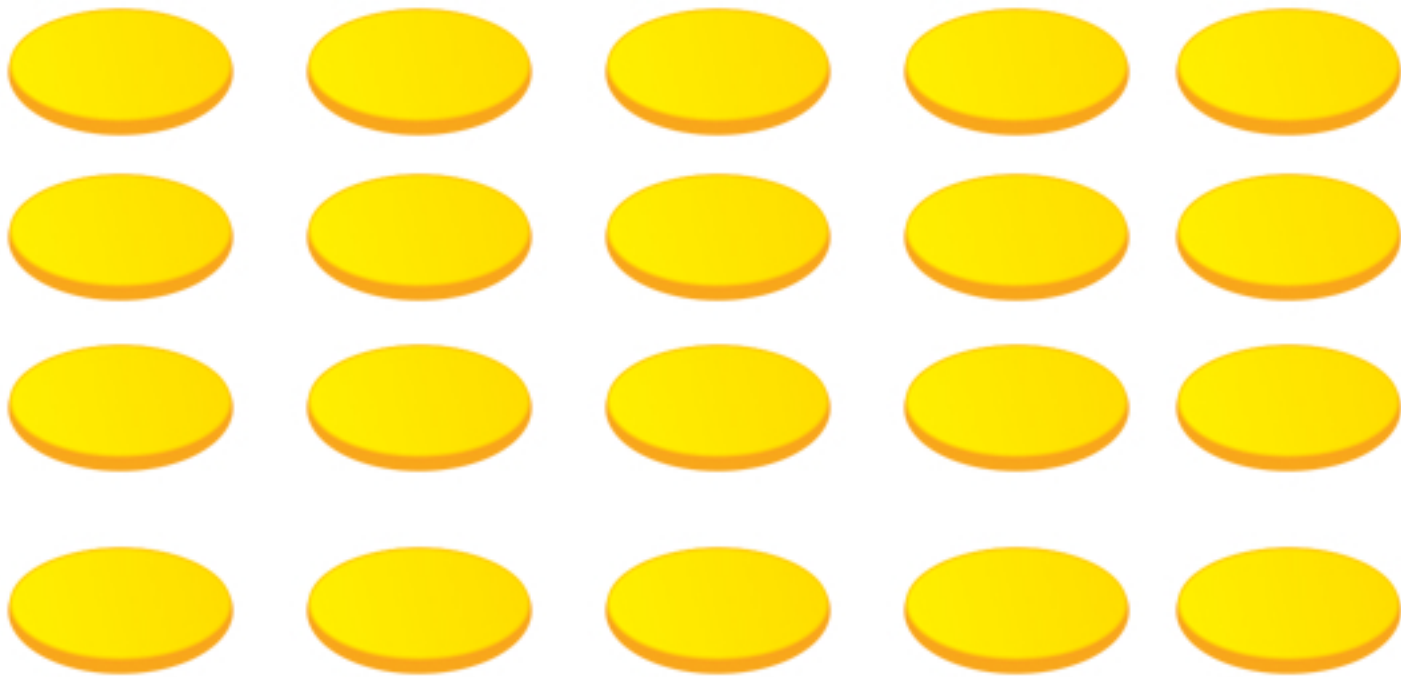
## Number Sentences

**Overview:** In this activity, your child practices composing numbers in different ways and writing number sentences.

**Materials:** Ten-Frame, 2-Color Counters, Cup, Deck of Cards (without face cards)

- ❖ Have your child select a card and place that many 2-color counters in a cup.
- ❖ Shake the cup and spill out the counters. Place the red counters on the ten-frame first and then the yellow counters.
- ❖ Write down the number of counters and the matching addition sentence.
- ❖ Put the 2-color counters back in the cup and repeat. How many ways can you make the number on the card you picked?







## Hundred Board



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

This versatile Hundred Board can be used for learning counting, number patterns, operations, and multiples!

## Evens and Odds

**Overview:** In this activity, your child identifies even and odd numbers.

**Materials:** Hundred Board, Counters, or Dry-Erase Markers

- ❖ On the Hundred Board ask your child to cover all the even numbers with 1 color counter and all the odd numbers with another color counter.
- ❖ Discuss how the different colors create columns within the board.

## Skip Counting

**Overview** - In this activity, your child practices skip counting by 2s, 5s, and 10s.

**Materials** - Hundred Board, Counters, or Dry-Erase Markers

- ❖ On the Hundred Board, ask your child to place counters on numbers as they skip count.
- ❖ They can practice counting by 2s (2, 4, 6, 8, etc.), 5s (5, 10, 15, 20, etc.), 10s (10, 20, 30, 40, etc.), and so on.
- ❖ Once they have mastered this, have them count by 5s or 10s starting at a number other than 1.

## Roll to 100

**Overview** - In this activity, your child practices counting on while playing a dice game.

**Materials** - Hundred Board, Two Dice, Crayons, Counters, or Dry-Erase Markers

- ❖ Your Hundred Board becomes a game board. Have your child roll both dice to determine how many spaces they are moving forward.
- ❖ If they roll a 7 (a 4 and a 3), they cover the number 7 square on the hundred board.
- ❖ On the next roll if they roll a 5 (a 1 and a 4) they move 5 more spaces from the 7 and cover the number 12 square on the board.
- ❖ If playing with 2 players, the first player to 100 wins!



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



## Rainbow Fraction® Tiles



Expand the possibilities of teaching fractions and equivalency with colorful, proportionally sized tiles. Rainbow Fraction Tiles represent a whole, halves, thirds, fourths, fifths, sixths, eighths, tenths, and twelfths.

### Introduction To Fractions

**Overview:** In this activity, your child explores the relationships of fractions and how fractions are named. They also practice using the terms numerator and denominator.

**Materials:** Rainbow Fraction Tiles

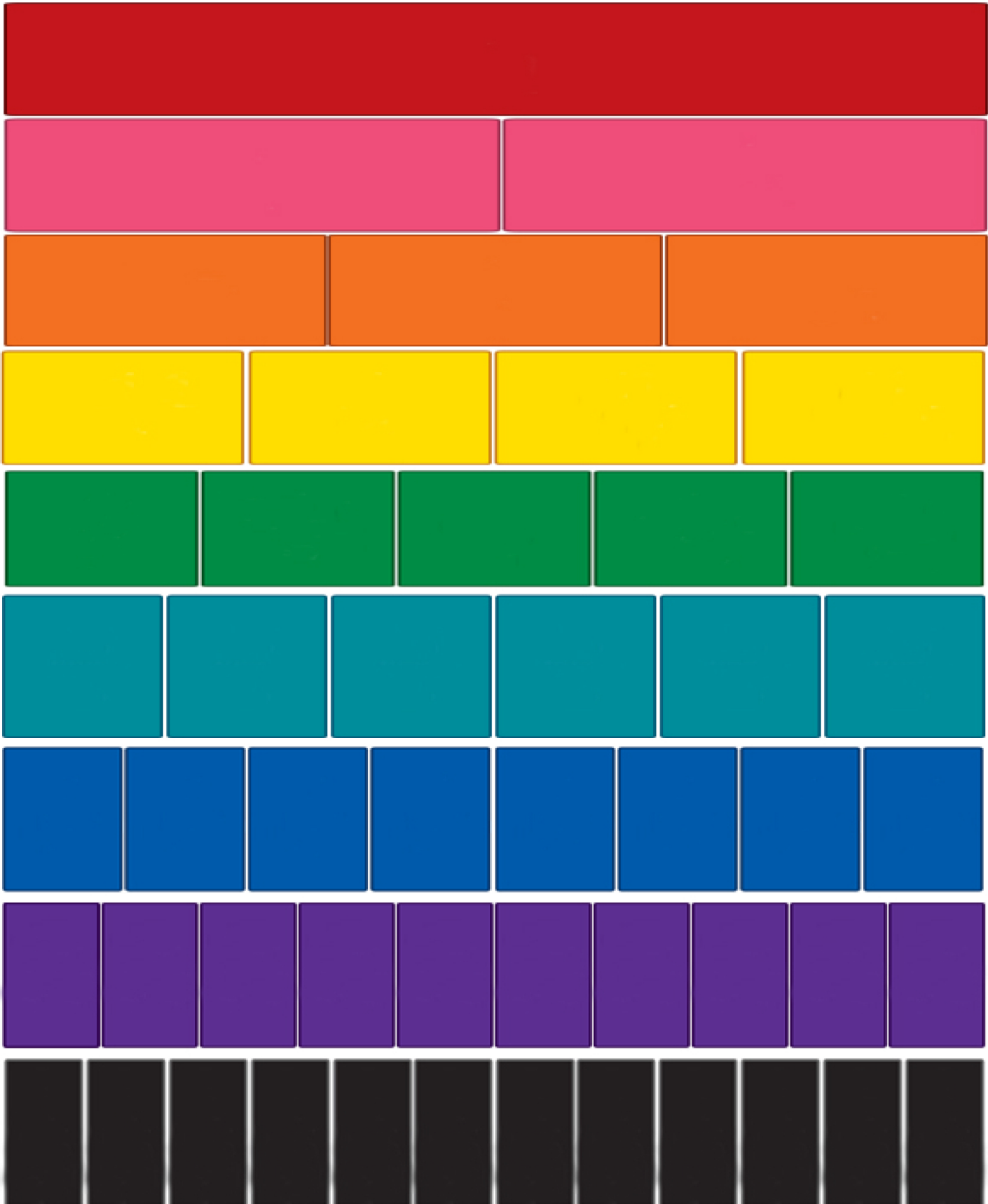
- ❖ Turn the Rainbow Fraction Tiles over so the tiles are blank, and the fractions are not displayed. Have your child pick up the red tile and inform them that it represents one whole unit.
- ❖ Using a pink tile, ask your child to determine how many pink tiles are needed to create a whole red tile. Have them verify this by placing 2 pink tiles together to completely cover the red tile.
- ❖ Have your child complete this task for all the colors, verifying their results along the way.
- ❖ The top number is called the numerator (which tells how many equal parts of a whole you have) and the bottom number is called the denominator (which tells how many of these equal parts are needed to create a whole).
- ❖ Discuss real world fractions. For example: 1 out of 5 fingers ( $\frac{1}{5}$ ), 1 out of 10 orange slices ( $\frac{1}{10}$ ), 4 out of 12 slices of pizza ( $\frac{4}{12}$ ), and so on.

### Finding Equivalent Fractions

**Overview:** In this activity, your child uses Rainbow Fraction Tiles to identify equivalent fractions.

**Materials:** Rainbow Fraction® Tiles

- ❖ Using one  $\frac{1}{2}$  pink tile ask your child to find the other fraction tiles that can be combined to equal  $\frac{1}{2}$ .
- ❖ Your child can measure equivalencies by placing tiles together to completely cover the 1 pink tile. For example, 2 yellow  $\frac{1}{4}$  tiles are equivalent to  $\frac{1}{2}$ .
- ❖ Have your child continue to work on  $\frac{1}{2}$  finding all equivalent fractions ( $\frac{2}{4}, \frac{3}{6}, \frac{4}{8}, \frac{5}{10}, \frac{6}{12}$ )
- ❖ Continue with other fractions such as  $\frac{1}{3}$  ( $\frac{2}{6}, \frac{4}{12}$ ),  $\frac{3}{4}$  ( $\frac{6}{8}, \frac{9}{12}$ )
- ❖ Have your child record each equivalent fraction as they work.
- ❖ When complete you can discuss the activity and have your child describe the patterns they noticed in the numerators and denominators of their equivalent fractions.



## Pattern Blocks



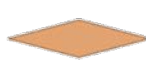
Green  
Triangle



Orange  
Square



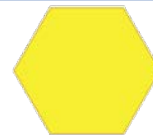
Blue  
Parallelogram  
(Rhombus)



Tan  
Rhombus



Red  
Trapezoid



Yellow  
Hexagon

A set of Pattern Blocks consists of blocks in 6 geometric, color-coded shapes. Pattern Blocks help your child explore many mathematical topics, including congruence, similarity, symmetry, area, perimeter, patterns, fractions, and graphing. They can also be used to explore spatial relations and designing patterns.

## Discover Pattern Blocks

**Overview:** In this activity, your child discovers the relationships between the different Pattern Blocks and expresses them as equations.

**Materials:** Pattern Blocks, paper, pencil

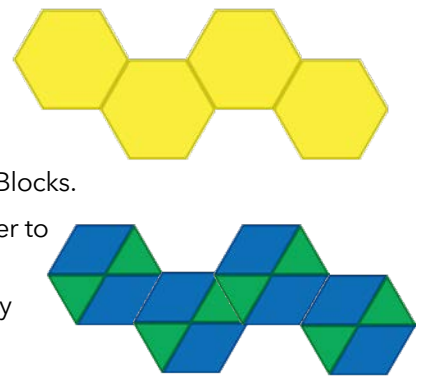
- ❖ Have your child sort the Pattern Blocks by color. Take 1 yellow hexagon.
- ❖ Have your child make a hexagon from the red trapezoids. How many red trapezoids did it take?
- ❖ On the paper, have your child write: 1 yellow hexagon = 2 red trapezoids.
- ❖ Now have your child use a different color Pattern Block to make a hexagon and write the "formula" on your paper.
- ❖ Now that your child has figured out how all the Pattern Blocks relate to the hexagon, see if they can figure out how the Pattern Blocks relate to each other.

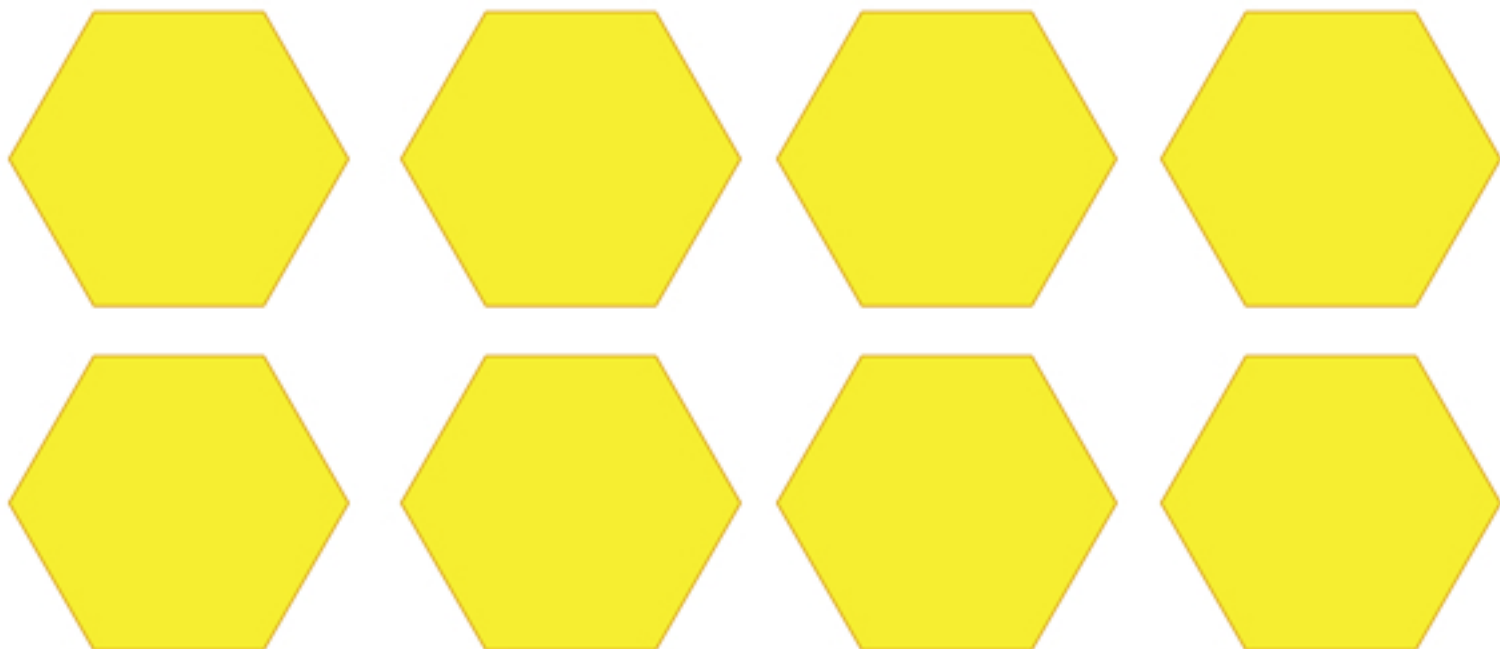
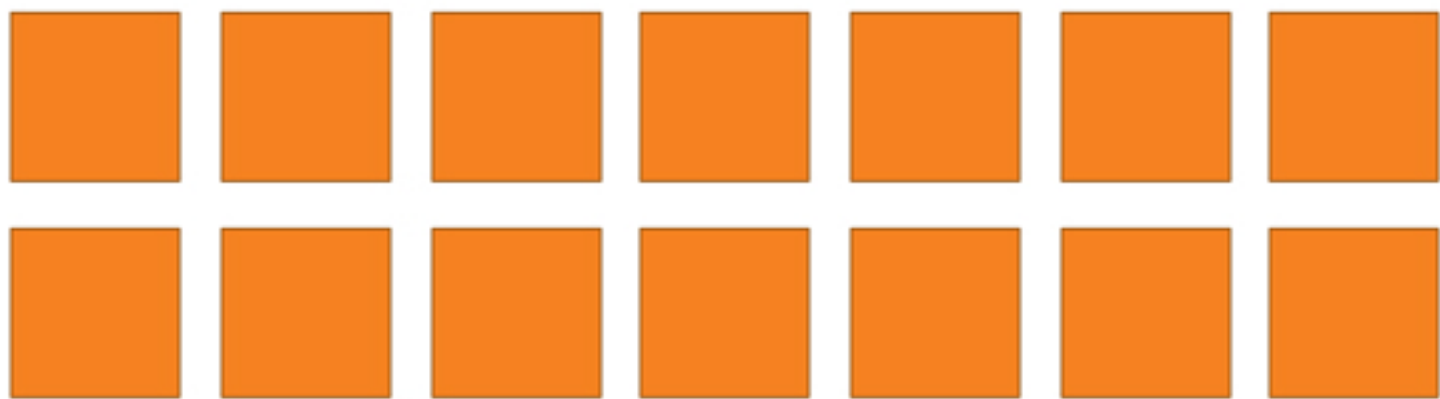
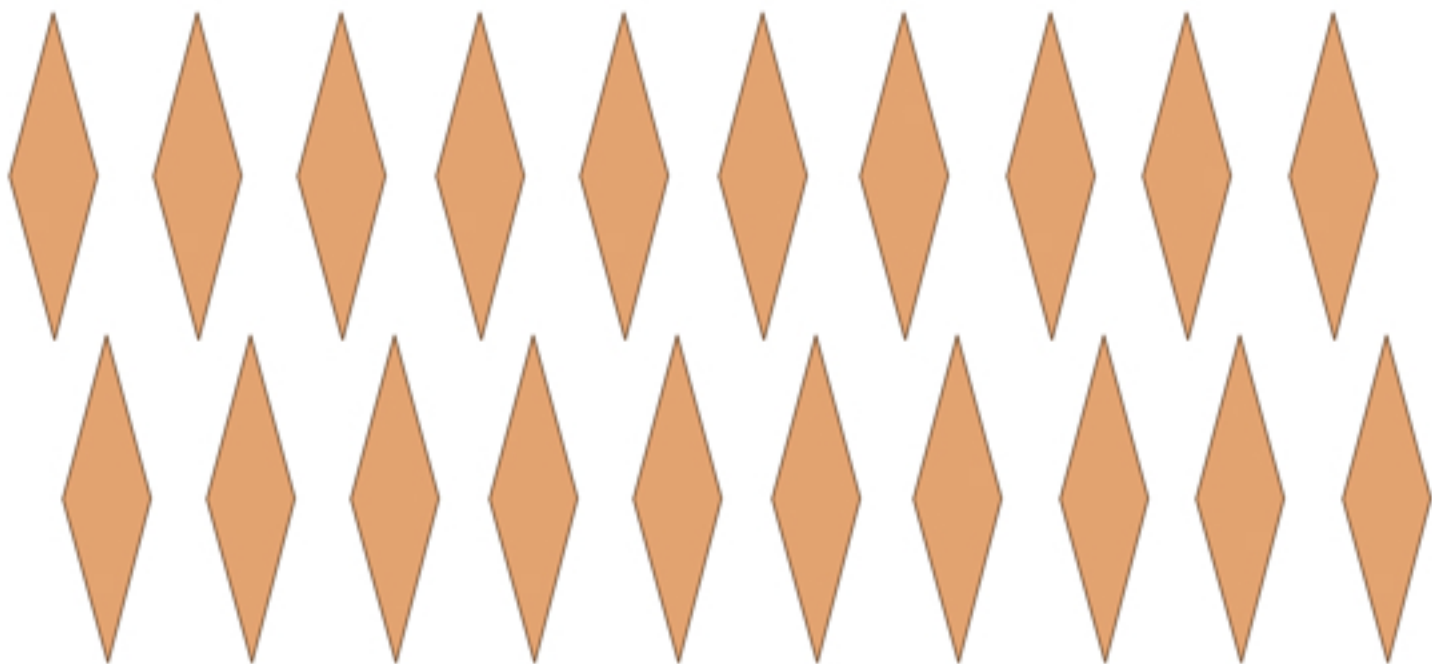
## Copy and Repeat

**Overview:** In this activity, your child learns how to record and observe how different patterns can create the same shape.

**Materials:** Pattern Blocks, paper, crayons

- ❖ Have your child put 4 yellow hexagons together horizontally to make your caterpillar.
- ❖ Have your child cover the caterpillar using only blue and green Pattern Blocks.
- ❖ Have your child trace and color the caterpillar outline on a sheet of paper to record your solution.
- ❖ Have your child record the number of blue blocks and green blocks they used to color the caterpillar.
- ❖ Have your child repeat the activity using a different number of blue and green blocks to cover the caterpillar and then record these results.
- ❖ Now have your child use red and green blocks and record the results.



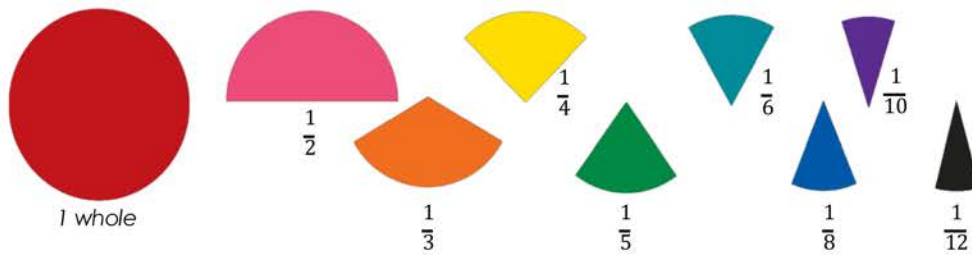








## Rainbow Fraction® Circles



Rainbow Fraction Circles represent different fractions as part of a whole. They help your child understand how to compare and construct fractions, work with mixed numbers, and add/subtract fractions with like and unlike denominators. Rainbow Fraction Circles also help your child learn how to name fractions; relate fractions to a whole unit; compare and order fractions; show equivalent fractions, improper fractions and mixed numbers; and model operations involving fractions.

## All Things Being Equal

**Overview:** In this activity, your child practices using Rainbow Fraction Circles to explore equivalent fractions.

**Materials:** Rainbow Fraction Circles, paper, pencil

- ❖ Have your child lay 1 pink Rainbow Fraction Circle on the table. Ask how many yellow Rainbow Fraction Circles will it take to cover the pink one? (2)
- ❖ Have your child write  $\frac{1}{2} = \frac{2}{4}$ .
- ❖ Ask your child what other pieces can be used to cover the pink Rainbow Fraction Circle? Have your child write all those equivalent fractions.
- ❖ Have your child repeat these steps with the orange, yellow, and green Rainbow Fraction Circles.

## All Mixed Up

**Overview:** In this activity, your child practices adding fractions with different denominators.

**Materials:** Rainbow Fraction Circles, paper, pencil

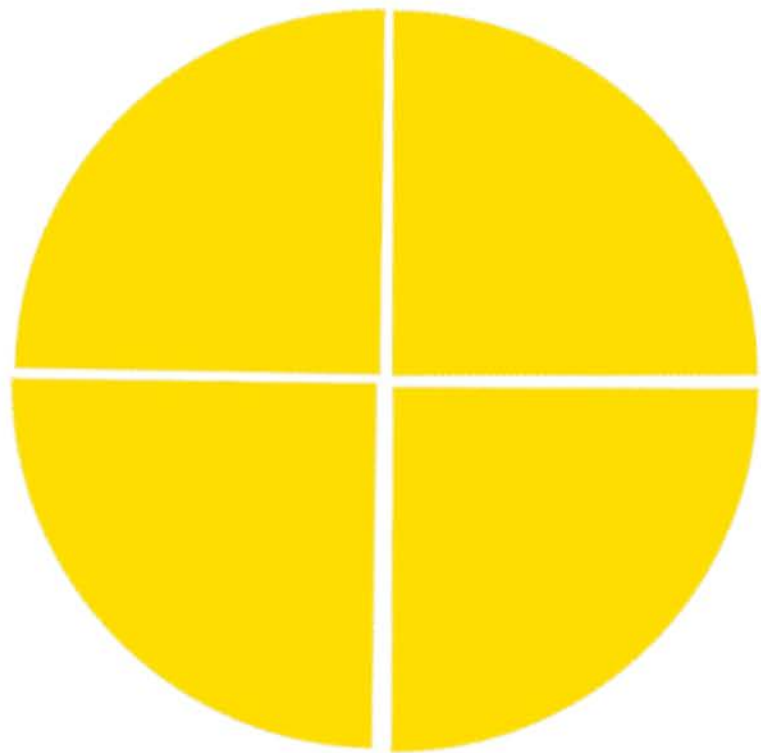
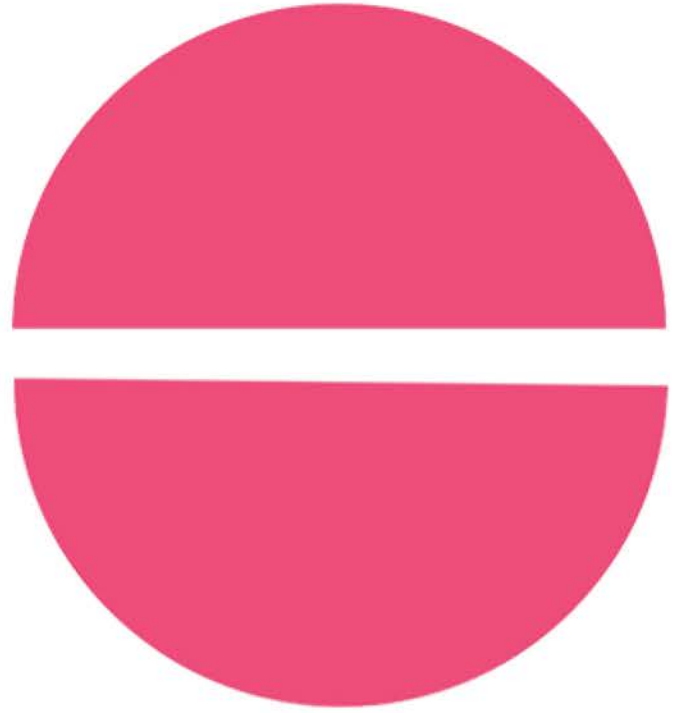
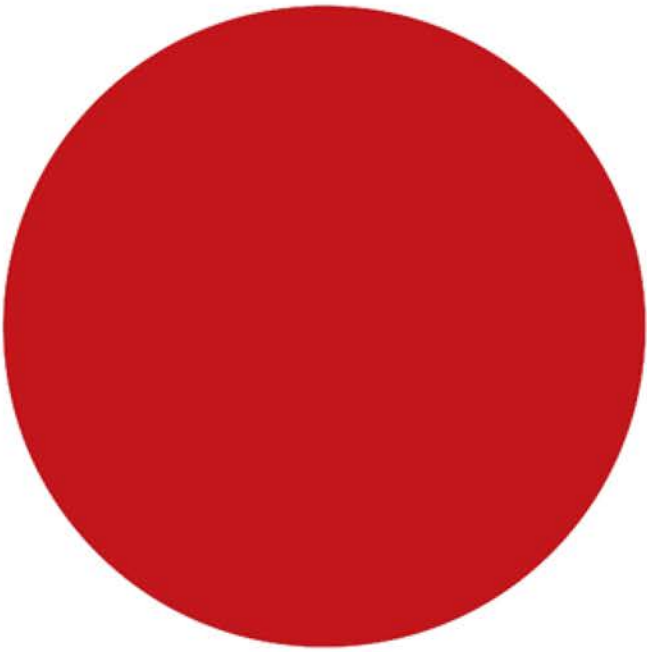
- ❖ Have your child write  $\frac{1}{2} + \frac{1}{4}$  on your paper.
- ❖ Ask your child what they notice. (denominators are different)
- ❖ Have your child model this problem with your Rainbow Fraction Circles. Ask how can we name the answer if the Rainbow Fraction Circles have different denominators?
- ❖ Ask your child if they can rename 1 of the fractions in the problem so they both have the same denominator?  $\frac{1}{2} = \frac{2}{4}$
- ❖ Now your child can name the answer.  $\frac{3}{4}$
- ❖ Have your child try these problems:

$$\frac{2}{3} + \frac{5}{6}$$

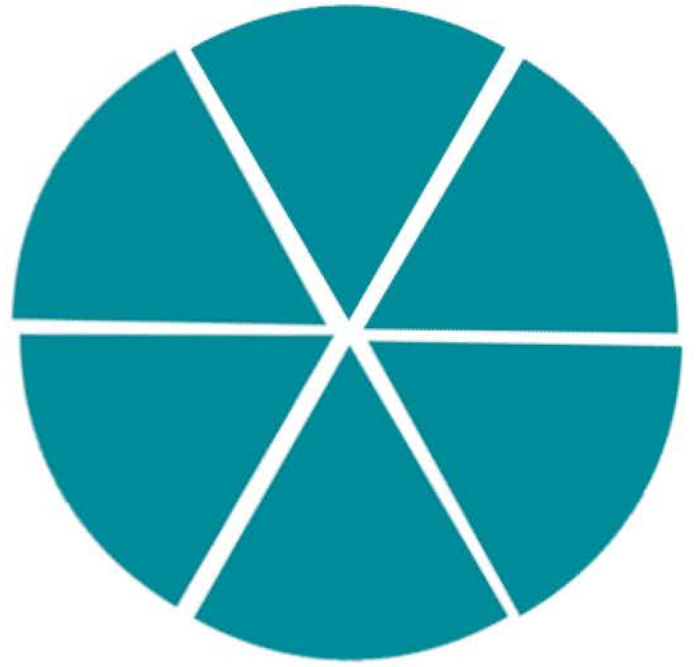
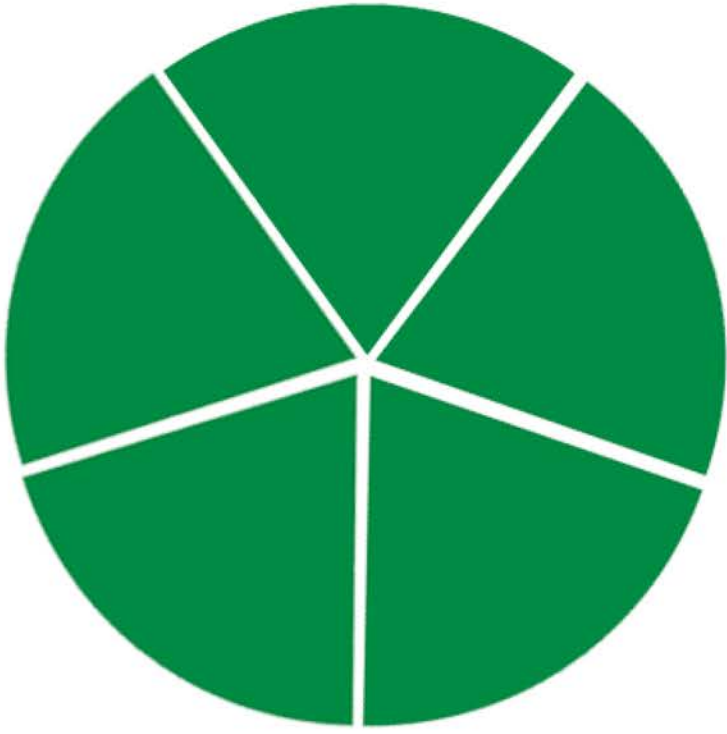
$$\frac{5}{12} + \frac{1}{4}$$

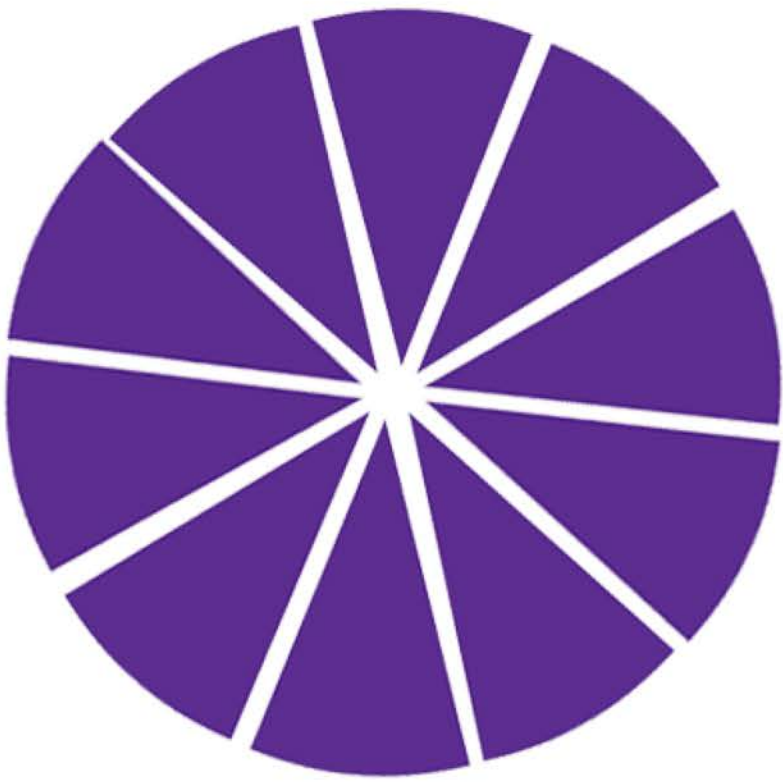
$$\frac{3}{5} + \frac{3}{10}$$

$$\frac{3}{8} + \frac{1}{4}$$









## Color Tiles



Color Tiles are 1-inch squares, which come in 4 colors. Young children start by using Color Tiles to recognize and build patterns. As their mathematical understanding grows, they can use them for addition, subtraction, multiplication, and division. Color Tiles can represent numbers in a number sentence or objects in a word problem.

## Estimation Jars

**Overview:** In this activity, your child estimates and then counts the number of Color Tiles that fill a variety of containers.

**Materials:** Color Tiles, plastic containers of different sizes (3 or more)

- ❖ Put an assortment of Color Tiles in each container.
- ❖ Ask your child how many Color Tiles they think are in each container. List the guesses, each time asking your child to explain why their guesses or estimates make sense.
- ❖ Begin counting the contents of each container aloud. Halfway through each container, ask your child whether they would like to change their estimates and, if so, why. Record your child's new estimates next to the original ones.
- ❖ Finish counting the Color Tiles and ask your child to compare their estimates with the actual number of Color Tiles. Try this activity with Snap Cubes instead of Color Tiles.

## Follow Me!

**Overview:** In this activity, your child uses spatial visualization skills to compose shapes, think strategically, and uses transformations (reflections and rotations) to determine congruence.

**Materials:** Color Tiles, large book or box

- ❖ Put a large book or box up between you and the child.
- ❖ Make a simple secret design using with some Color Tiles.
- ❖ Give clues to your child so the design can be duplicated.
- ❖ Here are some sample clues:
  - Clue 1: The design makes a letter of the alphabet.
  - Clue 2: It has 3 Color Tiles of 1 color in the top row.
  - Clue 3: The top Color Tiles are not red, green, or blue.
  - Clue 4: It has 2 Color Tiles going down from the middle tile.
  - Clue 5: For those Color Tiles, 1 Color Tile is blue, and 1 is red. Blue is not the bottom Color Tile.
- ❖ When you're done, reveal the design and see if the 2 designs are the same.
- ❖ Take turns making designs and giving clues.

