

## Colored Train Patterns

### Connect The Blocks According To The Instructions:

**Train 1:** Take out 5 green and 5 yellow blocks.  
Make a train that looks like the one below.



**Train 2:** Take out 5 red blocks and 5 blue blocks.  
Make a train that looks like the one below.



**Train 3:** Take out 4 red blocks and 6 blue blocks.  
Use the blocks to make a train that looks like the one below:



### Questions:

How are the trains 1 and 2 alike?

How are they different?

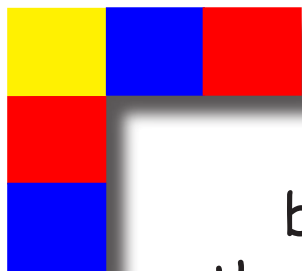
How are the trains 2 and 3 alike?

How are they different?

What color comes next on train 2? Why?

What color comes next on train 3? Why?

## Building Train Patterns

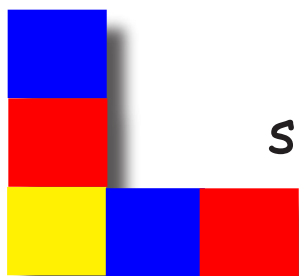


Using 2 or 3 colors,  
build a train of your own  
that is at least 10 blocks long.

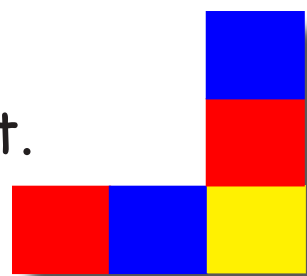


Your train should have a repeating unit.

Record your train and its repeating unit.



Be prepared to  
share your repeating unit.



## Snake Patterns



Common King Snake  
(*Lampropeltis getula*)  
Found in Baja & Mexico

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Western Coral Snake  
(*Micruroides euryxanthus*)  
Found in Arizona,  
New Mexico & Mexico

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Plains Milk Snake  
(*Lampropeltis triangulum gentilis*)  
Found in Colorado

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Sinaloan Milk Snake  
(*Lampropeltis triangulum sinaloae*)  
Found in Colorado

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## 100 Chart

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

- Find all the numbers that contain at least one zero and cover them.
- Find all the numbers that contain at least one 3 and cover them.
- Place a bean on 2, move 10 numbers and place another bean on that number. Now move 10 more and place another bean. Continue through the chart.
- Find all square that contain two of the same number. Place a bean on them..

## Helping My Child with Patterns

### Notes:

What did your child understand well during the workshop?

Where did your child get stuck?

Things you want to remember to use when helping your child:

About adding 9:

About adding 10:

About adding 11:

Ideas to make it fun:

What do you want your child to do with patterns?

- Recognize patterns in life.
- Build patterns.
- Identify the repeating unit.
- Record patterns.
- Use patterns to develop number sense.

Instructional programs from prekindergarten through grade 12 should enable all students to--

- Understand patterns, relations, and functions
- Represent and analyze mathematical situations and structures using algebraic symbols
- Use mathematical models to represent and understand quantitative relationships
- Analyze change in various contexts

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## Patterns at Home

### Ideas for Using Patterns at Home

#### Number Facts:

When your child is learning basic facts, write all of the facts for one number and look for patterns.

Example:

$$18 - 9 = 9$$

$$17 - 9 = 8$$

$$16 - 9 = 7$$

$$15 - 9 = 6$$

What do you notice about subtracting 9? Does it always work? What happens when you add 9 to a number? Sometimes there are clearer patterns than other times.

#### Creating Patterns:

At craft stores or Walmart, there are tubs of colored shapes in lightweight material. A tub costs about \$5 and contains hundreds of shapes. These can be arranged in patterns that can be color patterns, size patterns, shape patterns, or any combination. There could be a pattern of the day quiz, where your child makes a pattern for everyone to guess.

#### Hundred Chart:

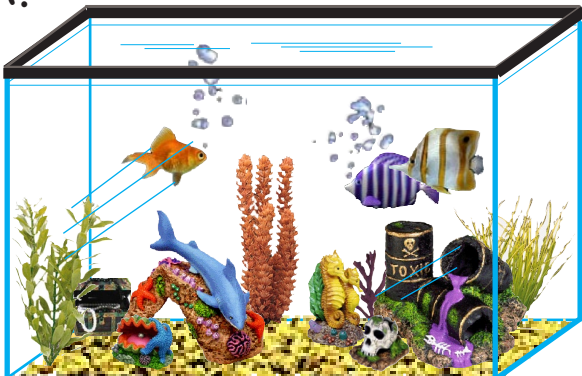
See **BLM 97: Hundred Chart at Home** for ideas.

#### Hocus Focus:

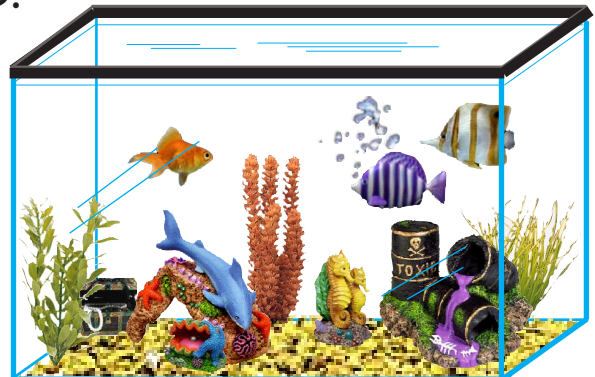
There is a section in the paper near the comics that is called Hocus Focus. Each day a picture is presented and then a second one of the same scene with 6 or more changes made. The goal is to find what is different between the two pictures. This is a great activity to do together each day. As students get more proficient at discriminating between the two scenes, they will be able to transfer that skill to mathematics.

For example find six differences in the pictures below:

A.



B.



## 100 Chart at Home

### Ideas For Using The Hundred Chart

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

#### Hundred Chart:

Some activities with the hundred chart could include starting at a specific number and adding, subtracting, doubling, halving, or multiplying to get to new numbers. When doing this activity, include many things to do with 10, as children need to get very comfortable with adding and subtracting 10. Advanced children can work with adding and subtracting 20, 30, or 40. What happens when you start with 3 and add 20? Start with 17 and add 30 then subtract 20.

#### Here are some sample activities:

Put your finger on the number of eyes that you have.

(2)

Add 10.

$$(2 + 10 = 12)$$

Take away 6.

$$(12 - 6 = 6)$$

Where are you? (on 6)

Start with the number of sides on a triangle.

(3)

Add 4.

$$(3 + 4 = 7)$$

Multiply by 10.

$$(7 \times 10 = 70)$$

Plus 5.

$$(70 + 5 = 75)$$

Where are you? (on 75)

Start with the product of  $6 \times 9$

(54)

Add 21.

$$(54 + 21 = 75)$$

Add the number of pennies in a quarter.

$$(75 + 25 = 100)$$

Half the number.

$$(Half\ of\ 100 = 50)$$

Where are you? (on 50)

#### Extension questions from our activity in the workshop:

a) Extension: Cover all the odd numbers that contain the number 3.

- How do you know if your numbers are odd?
- Does your rule work for all numbers?

(They should come to the conclusion that if the ones digit is odd, the number is odd.)

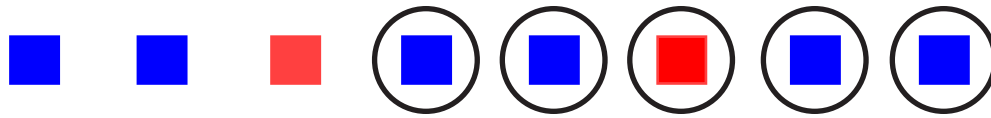
b) Extension: Find all the numbers whose digits add up to 15. (If necessary, model 78)  
Participants should mark 69, 78, 87, 96.

- What do you notice about these numbers?

(Some ideas might include that they come in pairs, 6 with 9 and 7 with 8, or that the smallest number is 69.)

- What would the next larger number be?
- Why is 69 the smallest number that we have?

## What's My Pattern?



Pattern Train

**Players:** 2

**Level:** Kindergarten/1st grade

**Materials:** 10-20 Dixie cups  
20-30 blocks (2 colors) for each player

**Goal:** To discover the hidden pattern

**Instructions:**

1. One player is the pattern maker. The other player turns around and closes his/her eyes. The pattern maker makes a repeating colored pattern train with his/her blocks and covers each block with a small Dixie cup turned upside down.
2. When the pattern guesser turns around, the pattern maker reveals the first block by lifting the Dixie cup off of it.
3. The guesser places the same color block in front of his/her area and places another block beside it, saying "I think your next block is red."
4. If the guesser is right, the pattern maker lifts off the cup on the second block. If not, the guesser guesses again. When the guesser has an idea of the whole pattern, he/she makes it with his/her blocks and asks if the pattern is right.
5. Trade roles for the next round.

**Extension:**

- Use more than 2 colors.
- Use a tub of colored shapes to add variety and many more patterning opportunities. These are available in the craft section of stores like Walmart.

Students were given the problem:

$$8 + 4 = \square + 5$$

Their responses varied. Here are the responses:

7

12

17

12 and 17

What were they thinking when they made each response?