4-group Math™ by Kuske Math™

Master the

Subtraction Facts from 9

4-group Math™ is a visual and kinesthetic method designed to develop number sense and fact fluency. It uses a unique set of number patterns to make math easy and fun.

For more information visit our website at **4groupmath.com.**

Lynn Kuske, M.Ed.

Level 3, Book 6 of 7

Contents

Introduction to 4-group Math 4

Subitizing 4

The 4-group Number Patterns 4

Addition and Subtraction 5

4-group Math Counting Order 5

Master the Subtraction Facts from 9

Activity 1 – Take Away *Partners* Directions 6

Activity 1 – Take Away *Partners* Block Board pg. 1 & 2 7-8

Activity 2 – Coloring Take Away *Partners* Directions 9

Worksheet for 9− pg. 1 - 3 10-12

Activity 3 – Playing Card Take Away *Partners* Directions 13

Activity 4 – Build & Color Take Away *Partners* Directions 14

Worksheet for 9− pg. 1 - 3 15-17

Activity 5 – *Partner* Flip Cards Directions 18

Activity 5 –*Partner* Flip Cards for 9 19-22

Activity 6 – Assessment Directions 23

Activity 6 – Assessment Sheet 24

Appendix - Extra Worksheet Copies

Worksheet for 9− pg. 1 - 3 25-27

Activity 6 – Assessment Sheet 29

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Introduction to 4-group Math

Mission statement: Creating a new generation of kids who love math.

To be successful in mathematics children must have **rapid** recall and know with **accuracy** and **confidence** their addition and subtraction facts.

Subitizing

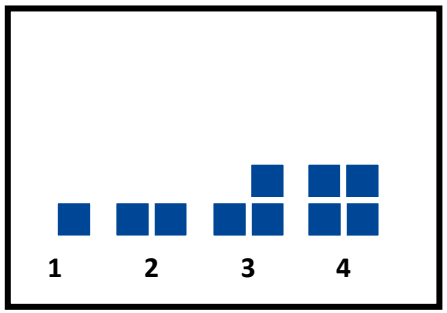
The science behind 4-group Math is called *subitizing* (pronounced *sue-bi-tie-zing*): the brain's **rapid**, **accurate** and **confident** judgment of the quantity of a set of objects without counting.

Young children can *subitize* a set of four objects when those objects are arranged in a square pattern.

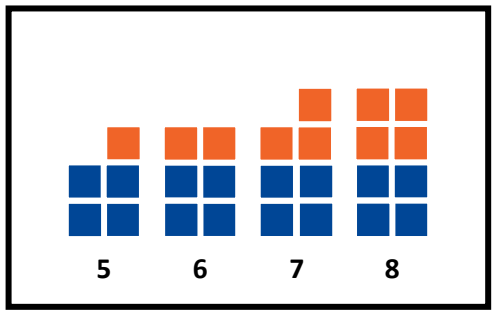
4-group Math, a visual and tactile model, uses this innate ability as an anchor to conceptualize the quantity of numbers.

The 4-group Number Patterns

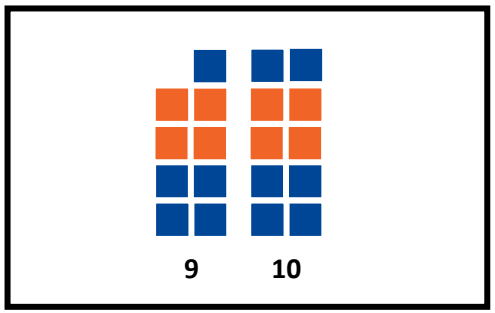
The 4-group Number Patterns
1-4 are easy to see and *subitize*.



1, 2, 3, & 4 are attached to another
4-pattern to create 5, 6, 7 and 8.



The 1- and 2- patterns are attached
to the 8-pattern to create 9 and 10.



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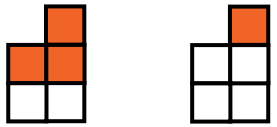
Addition and Subtraction

The 4-group Number Patterns are unique in that they are summative. They fit together like a puzzle to form the 4-group Number Pattern for their sum. For example; a 3-pattern and a 2-pattern combine to make the 5-pattern while the 4-pattern and 1-pattern combine to make the same 5-pattern. (FIGURE 1)

FIGURE 1

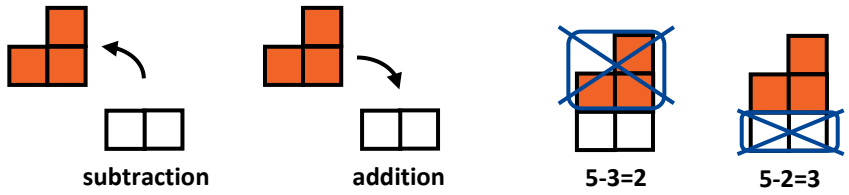


2+3=5
3+2=5

4+1=5
1+4=5

The 4-group Number Patterns are unique in that subtraction is modeled as the exact opposite of addition. (FIGURE 2)

FIGURE 2



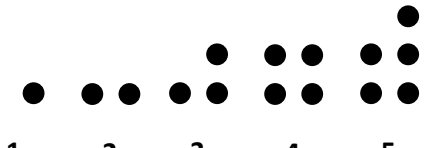
4-group Math Counting Order

4-group Math uses a unique counting order that starts at the bottom and counts up from right to left. We have found that children who count in this manner, make fewer mistakes in their counting.

We build the number patterns starting at the bottom and going up: right, left; right, left.

10 9
8 7
6 5
4 3
2 1

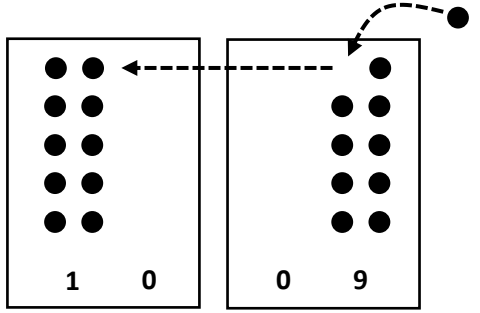
Children can stop their counting at any time and see the 4-group Number Pattern for the quantity.



When we add we regroup to the *left*.

$$\begin{array}{r} {\scriptstyle 1} \\ 2\ 8 \\ +\ 3\ 4 \\ \hline 2 \end{array}$$

We build right to left because numbers get bigger as the digits *move to the left*. For example, when 9 becomes a 10, the group moves left into the tens place.



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Activity 1 – Take Away *Partners* Directions

OBJECTIVE: Build, take away, and recite the subtraction equations from 9: 9-0=9, 9-9=0; 9-1=8, 9-8=1; 9-2=7, 9-7=2; 9-3=6, 9-6=3; 9-4=5, 9-5=4

MATERIALS: 4-group Number Blocks: one 1-block, one 2-block, one 3-block, one 4-block, one 5-block, one 6-block, one 7-block, one 8-block, and one 9-block
Activity 1 – Take Away *Partners* Block Board, pages 1 & 2

GROUP: Independent, 1 on 1, or small group

DIRECTIONS: Build the block combinations to show the *partners* for nine. Use two colors of blocks for each set of *partners*, except 9-0, 9-9.
Then, cover up the equations and Point and Say each equation to a friend.
Circle the whole 9-pattern with your finger and say, "*Nine*." (FIGURE 1)
Physically take away a block as you Point and Say each subtraction equation. (FIGURE 2)
Remember to switch the *partners*. (FIGURE 3)
Begin with the language, "__ *take away* __ *leaves* __," eventually switch to, "__ *minus* __ *equals* __."
When you complete this activity, put a sticker in the Sticker space.

FIGURE 1

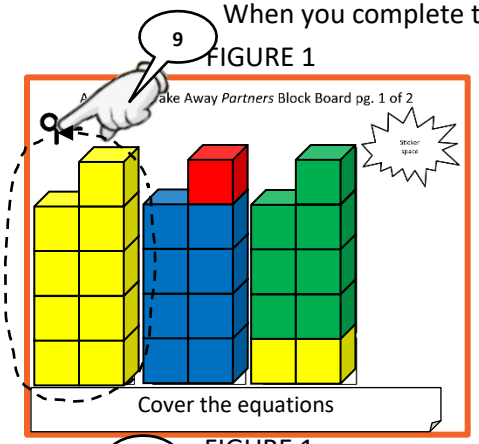


FIGURE 2

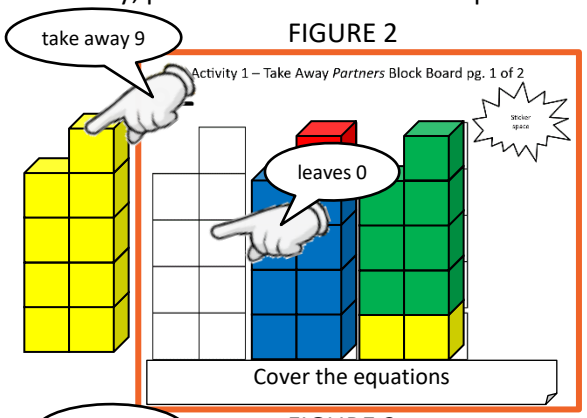
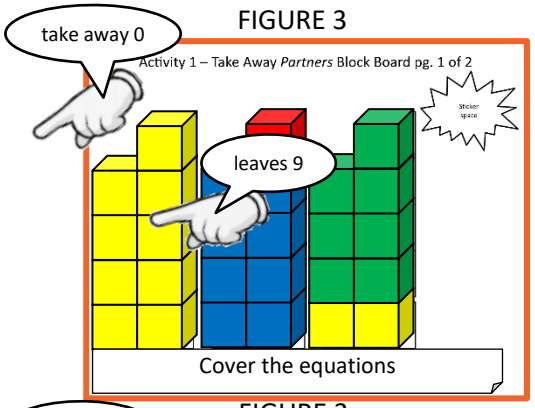


FIGURE 3



(Block Board pg.1 and two examples of Point and Say the equations are shown.)

FIGURE 1

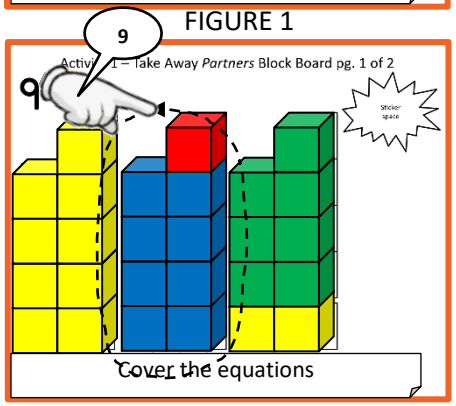


FIGURE 2

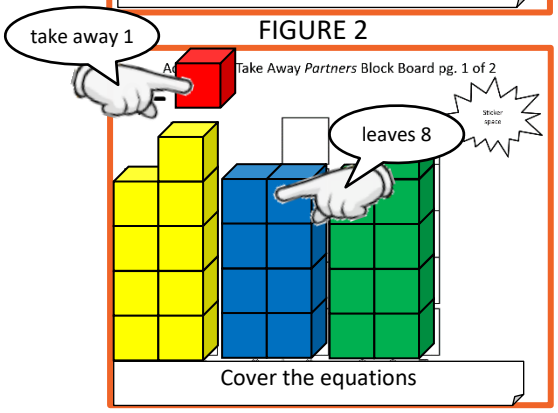
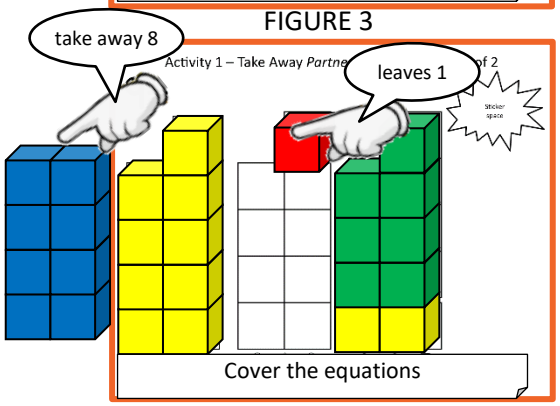


FIGURE 3



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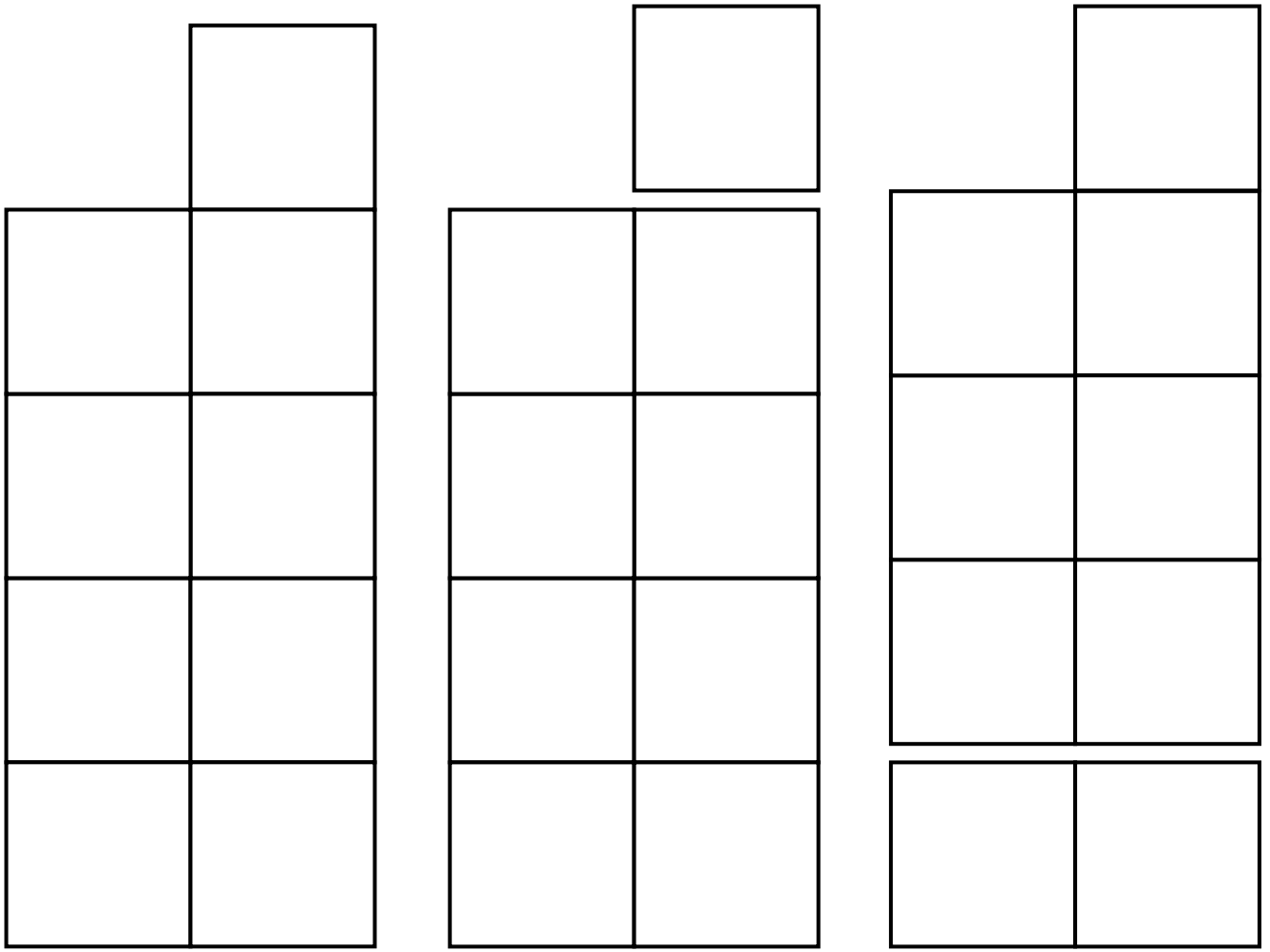
Activity 1 – Take Away *Partners* Block Board pg. 1 of 2

9–

Sticker space



9 – 0 = 9
9 – 9 = 0

9 – 1 = 8
9 – 8 = 1

9 – 2 = 7
9 – 7 = 2

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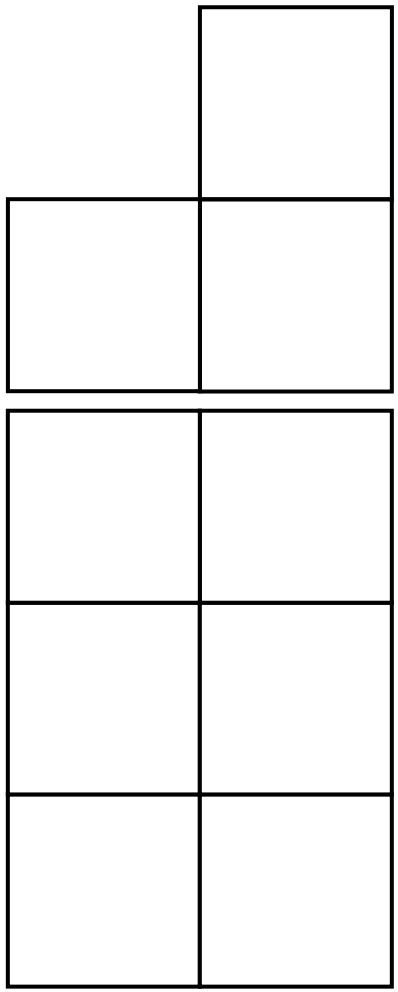
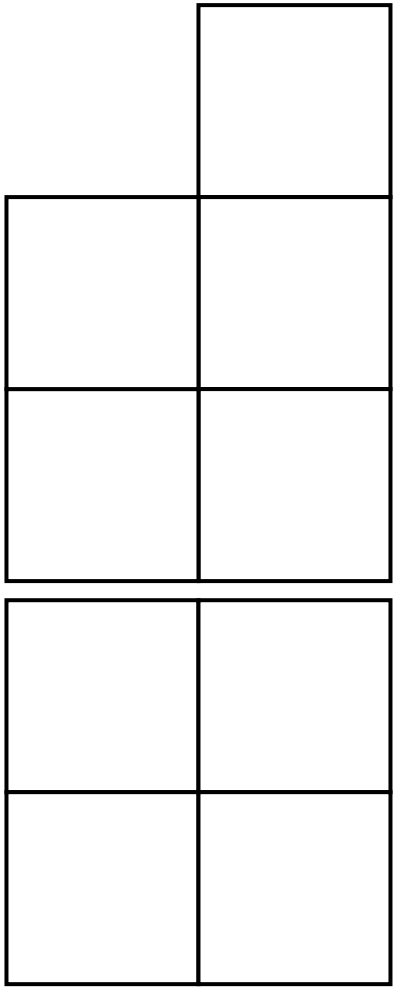
Activity 1 – Take Away *Partners* Block Board pg. 2 of 2

9 –



9 – 3 = 6

9 – 6 = 3



9 – 4 = 5

9 – 5 = 4

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Activity 2 – Coloring Take Away *Partners* Directions

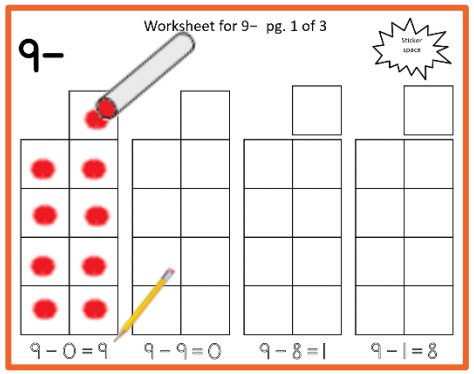
OBJECTIVE: Color, take away, and recite the subtraction equations from 9: 9-0=9, 9-9=0; 9-1=8, 9-8=1; 9-2=7, 9-7=2; 9-3=6, 9-6=3; 9-4=5, 9-5=4

MATERIALS: Two colors of crayons, markers, or stamps
Pencil
Worksheet for 9- pgs. 1-3

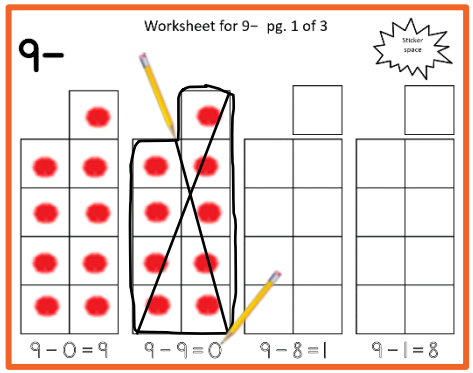
GROUP: Independent, 1 on 1, or small group

DIRECTIONS: Color to show the *partners* of nine. Use two colors for each set of *partners,* except 9-0, 9-9. (FIGURE 1)
Circle & then cross out the whole number pattern that represents the equation shown below the picture. (FIGURE 2)
In pencil, write over each equation after you finish its picture. (FIGURE 2)
Then, cover up the equations and Point and Say each subtraction equation to a friend. (FIGURE 3)
When you complete this activity, put a sticker in the Sticker space

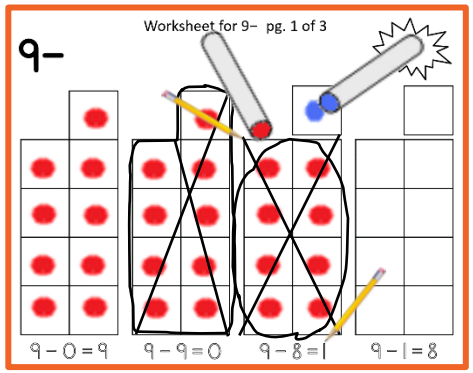
(FIGURE 1 and 2)



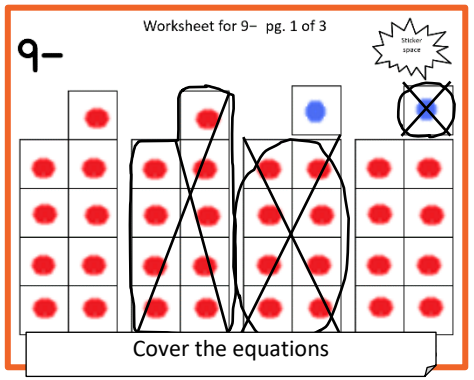
(FIGURE 1 and 2)



(FIGURE 1 and 2)



(FIGURE 3)



Point and Say:
Nine take away zero leaves nine.
Nine take away nine leaves zero.
Nine take away eight leaves one.
Nine take away one leaves eight.

(Worksheet pg.1 is shown.)

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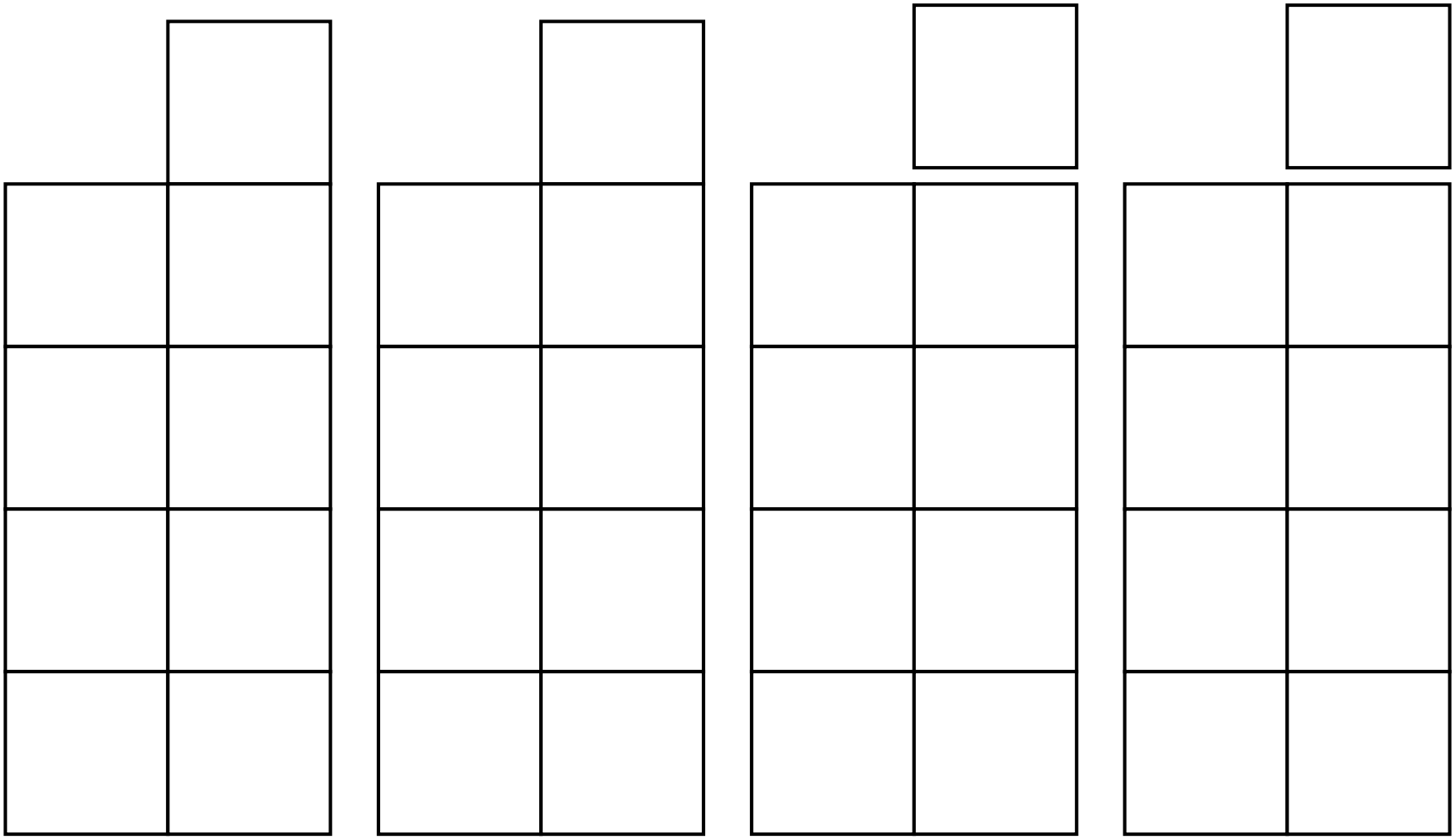
Worksheet for 9− pg. 1 of 3

9−

Sticker space



9 − 0 = 9

9 − 9 = 0

9 − 8 = 1

9 − 1 = 8

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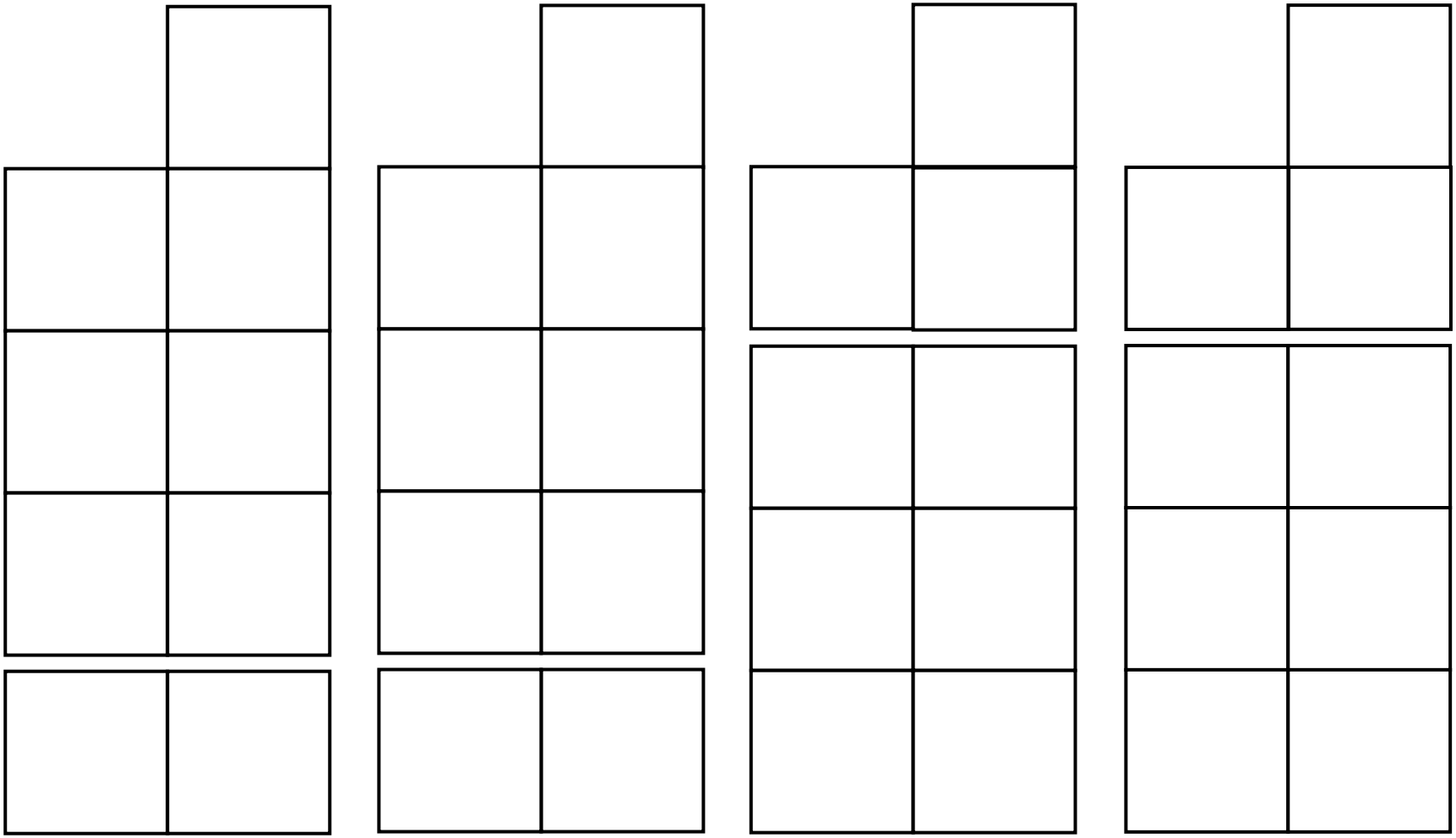
9−



9 − 7 = 2

9 − 2 = 7

9 − 6 = 3

9 − 3 = 6

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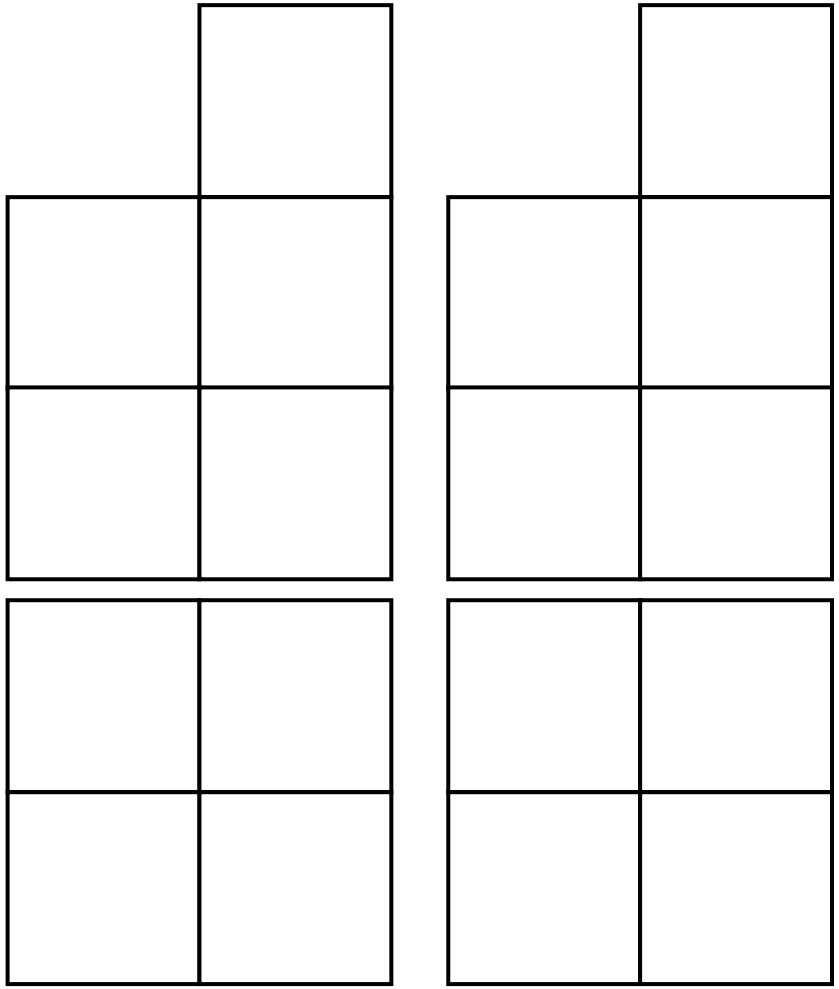
9−



9 − 5 = 4

9 − 4 = 5

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Activity 3 – Playing Card Take Away *Partners* Directions

OBJECTIVE: Make 9 with two cards, then recite the subtraction equations from 9: 9-0=9, 9-9=0; 9-1=8, 9-8=1; 9-2=7, 9-7=2; 9-3=6, 9-6=3; 9-4=5, 9-5=4

MATERIALS: One deck of 4-group Math Playing Cards; use only the cards 0-9. A clear "play" space to lay out the cards.

GROUP: Independent, 1 on 1, or small group

DIRECTIONS: Spread out the cards face up on your play space.
Make all the two card 4-group Number Pattern combinations to form the number pattern for nine.
Use all the cards. You will have multiple examples of each equation. (FIGURE 1)
Circle the 9-pattern with your finger and say, "*Nine*". (FIGURE 2)
Physically take away a card as you Point and Say each subtraction equation to a friend. (FIGURE 2)
Remember to switch the *partners*; taking the other card away. (FIGURE 3)
Begin with the language, "__ *take away* __ *leaves* __," eventually switch to, "__ *minus* __ *equals* __."
When you complete this activity, put a sticker in the Sticker space.

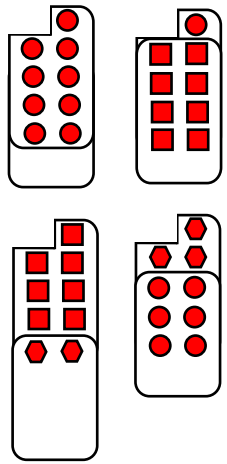


FIGURE 1

FIGURE 2

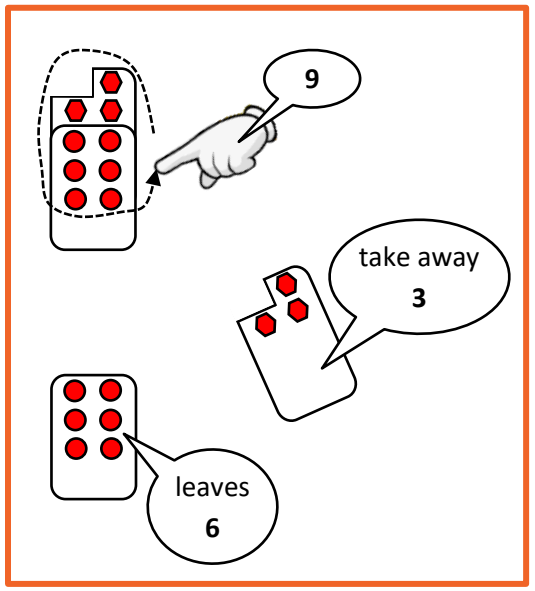
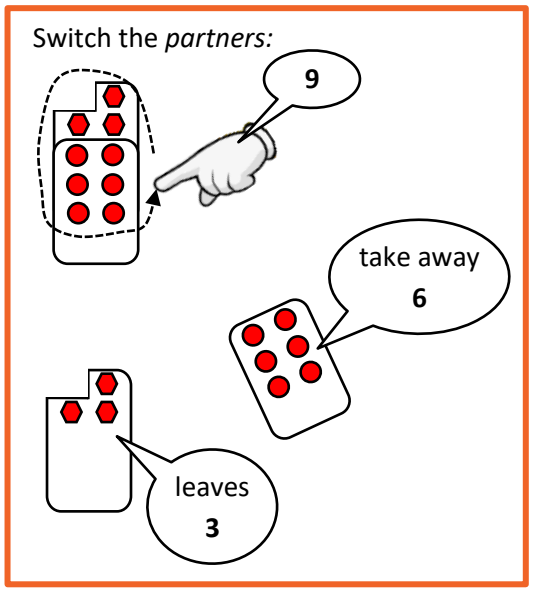
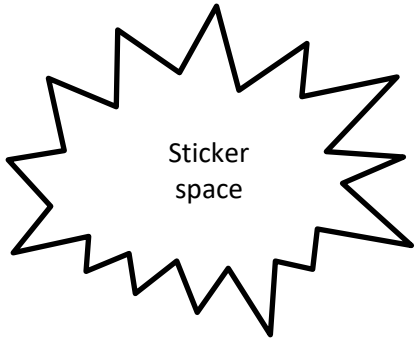


FIGURE 3



One example of Point and Say the subtraction equations is shown.



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Activity 4 – Build & Color Take Away *Partners* Directions

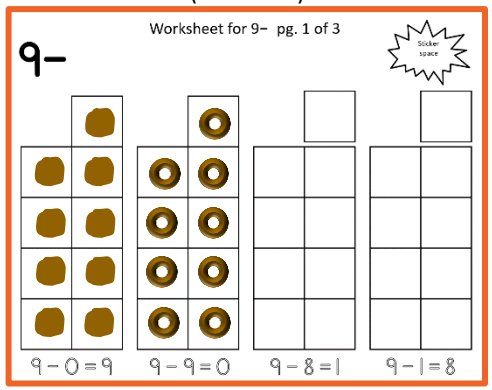
OBJECTIVE: Build, color, take away, and recite the subtraction equations from 9: 9-0=9, 9-9=0; 9-1=8, 9-8=1; 9-2=7, 9-7=2; 9-3=6, 9-6=3; 9-4=5, 9-5=4

MATERIALS: Two colors of a small manipulative; cubes, buttons, candies, crackers
Two crayons or markers to match the manipulatives' colors. Pencil
Worksheet for 9- pgs. 1-3

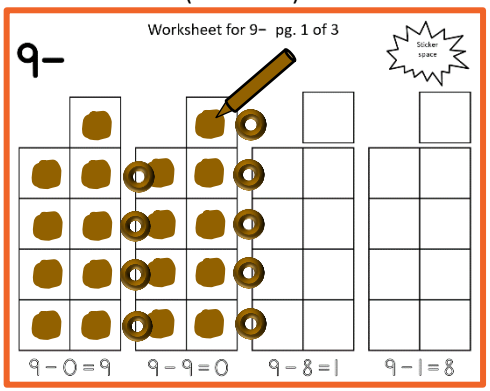
GROUP: Independent, 1 on 1, or small group

DIRECTIONS: Build with the manipulatives to show the *partners* of nine. Use two colors for each set of *partners*, except 9-0, 9-9. (FIGURE 1)
Then, push the items off each square as you record your work with the crayons. (FIGURE 2)
Circle & then cross out the whole number pattern that represents the equation shown below the picture. (FIGURE 3)
In pencil, write over each equation after you finish its picture. (FIGURE 3)
Then, cover up the equations and Point and Say each equation to a friend. (FIGURE 4)
When you complete this activity, put a sticker in the Sticker space.

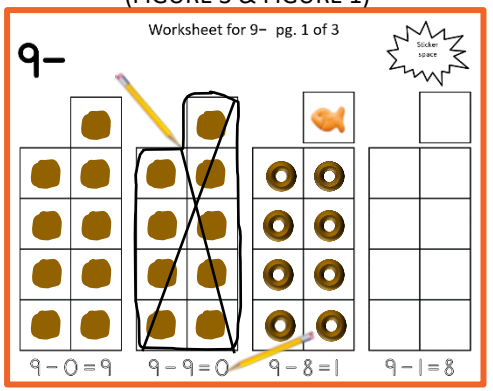
(FIGURE 1)



(FIGURE 2)

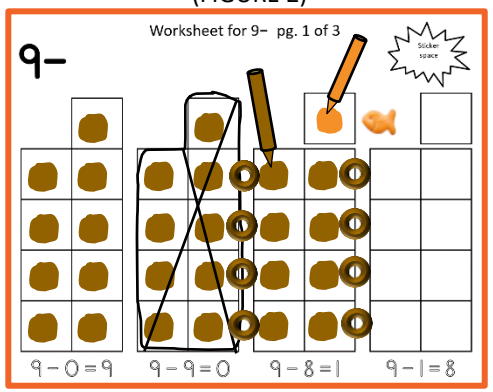


(FIGURE 3 & FIGURE 1)

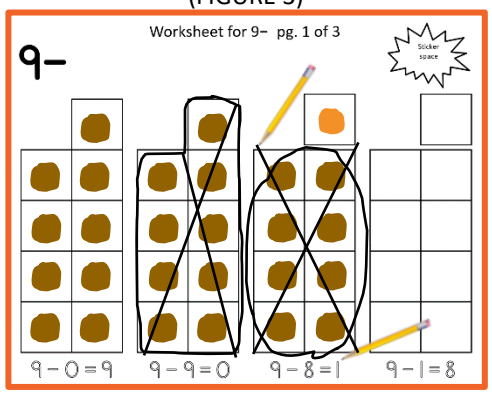


(Worksheet pg.1 is shown.)

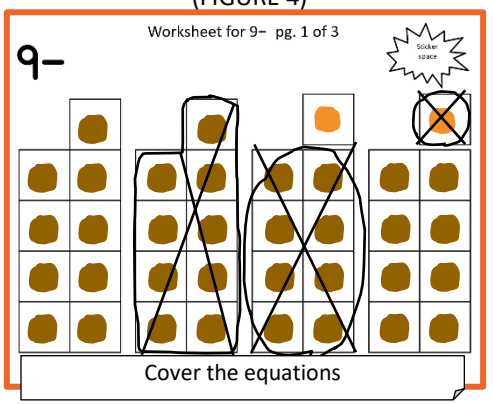
(FIGURE 2)



(FIGURE 3)



(FIGURE 4)



Point and Say:
Nine take away zero leaves nine.
Nine take away nine leaves zero.
Nine take away eight leaves one.
Nine take away one leaves eight.

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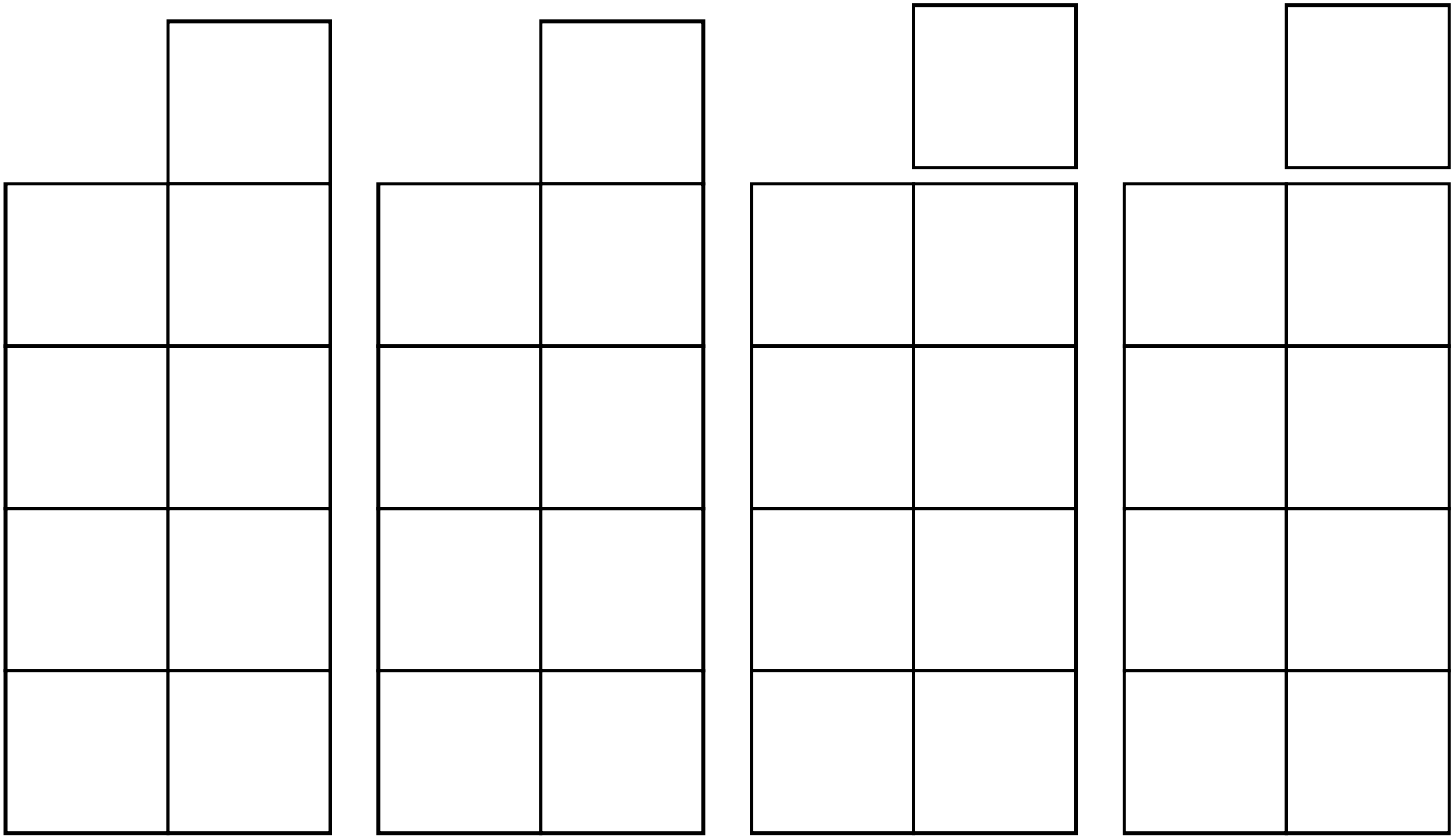
9−

Sticker space



9 − 0 = 9

9 − 9 = 0

9 − 8 = 1

9 − 1 = 8

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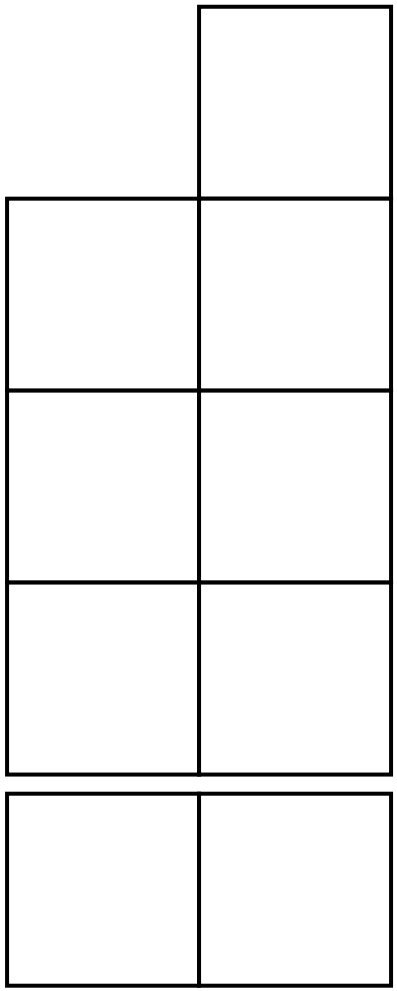
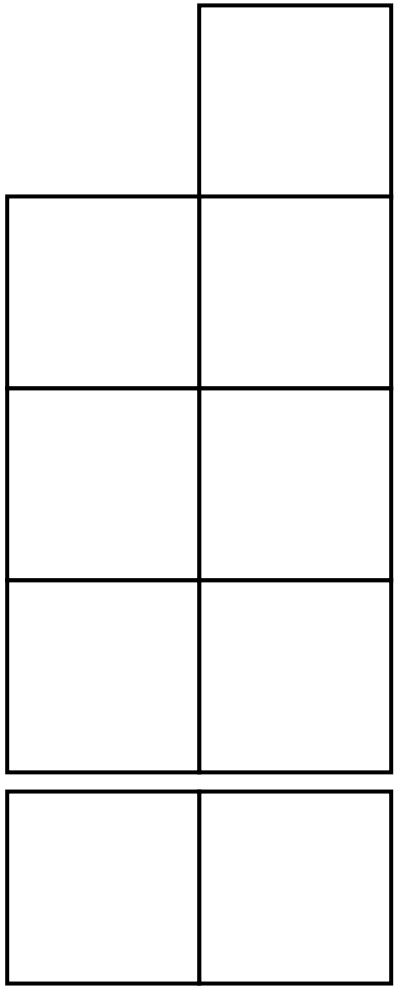
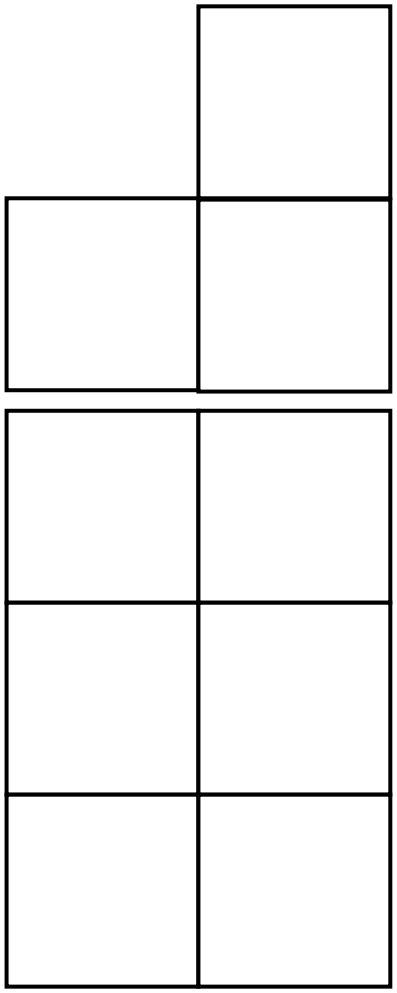
9−



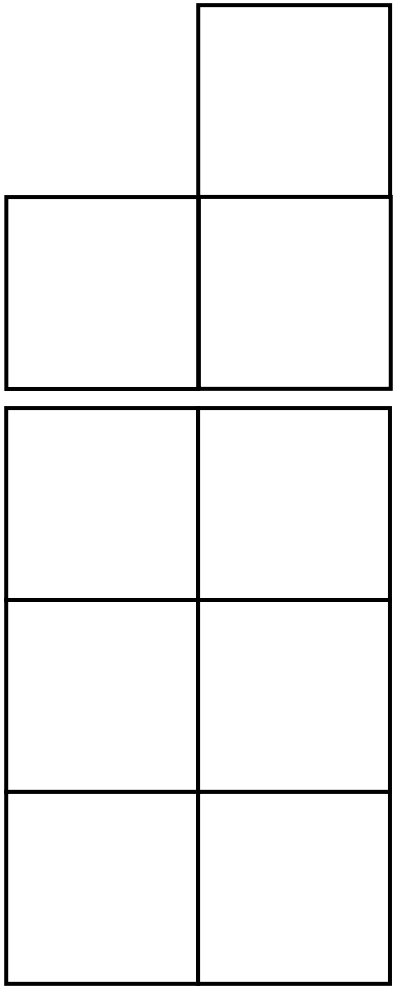
9 − 7 = 2



9 − 2 = 7



9 − 6 = 3



9 − 3 = 6

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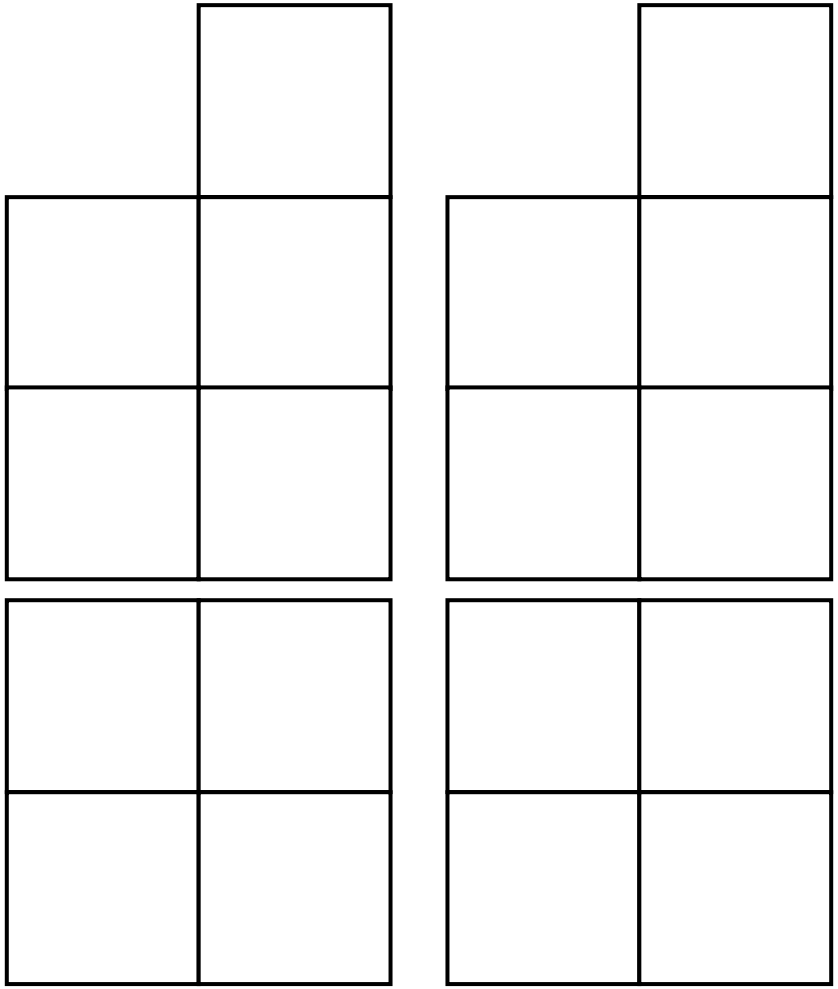
9−



9 − 5 = 4

9 − 4 = 5

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Activity 5 – *Partner* Flip Cards Directions

Sticker space

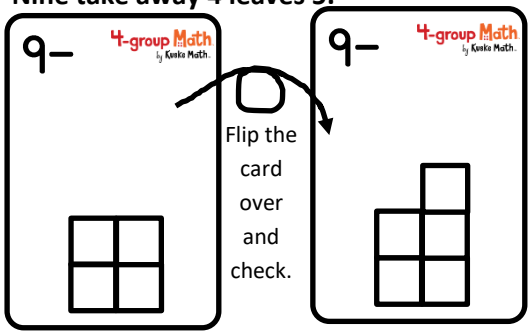
OBJECTIVE: Complete the subtraction equations from 9

MATERIALS: Activity 5 – *Partner* Flip Cards for 9

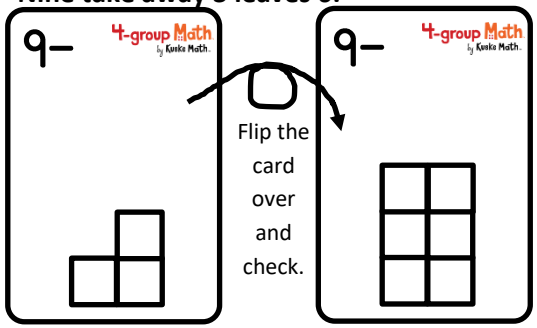
GROUP: Independent, 1 on 1, or small group

DIRECTIONS: Cut out the five cards on the following two pages. Lay the cards on the table in any order with either side facing up.
Look at one card. Say the equation that is represented: "Nine take away __ leaves __."
Flip the card over and check your answer. Continue for all the cards.
Beginning with the sides now facing up, repeat the process.
Continue until you give the correct answers for each card.
When you complete this activity, put a sticker in the Sticker space.

Look and Say:
Nine take away 4 leaves 5.



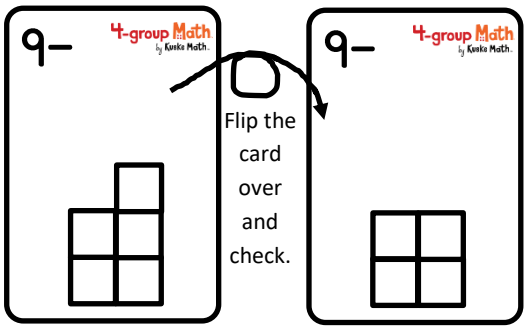
Look and Say:
Nine take away 3 leaves 6.



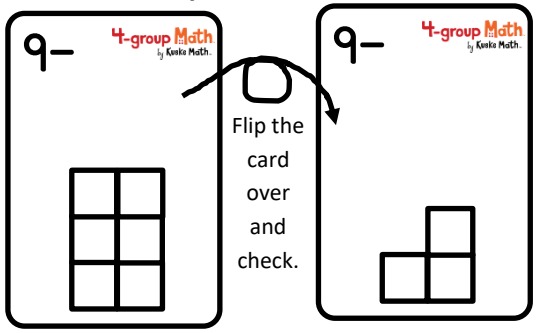
Two examples are shown.

Beginning with the sides now facing up, repeat the process:

Look and Say:
Nine take away 5 leaves 4.



Look and Say:
Nine take away 6 leaves 3.



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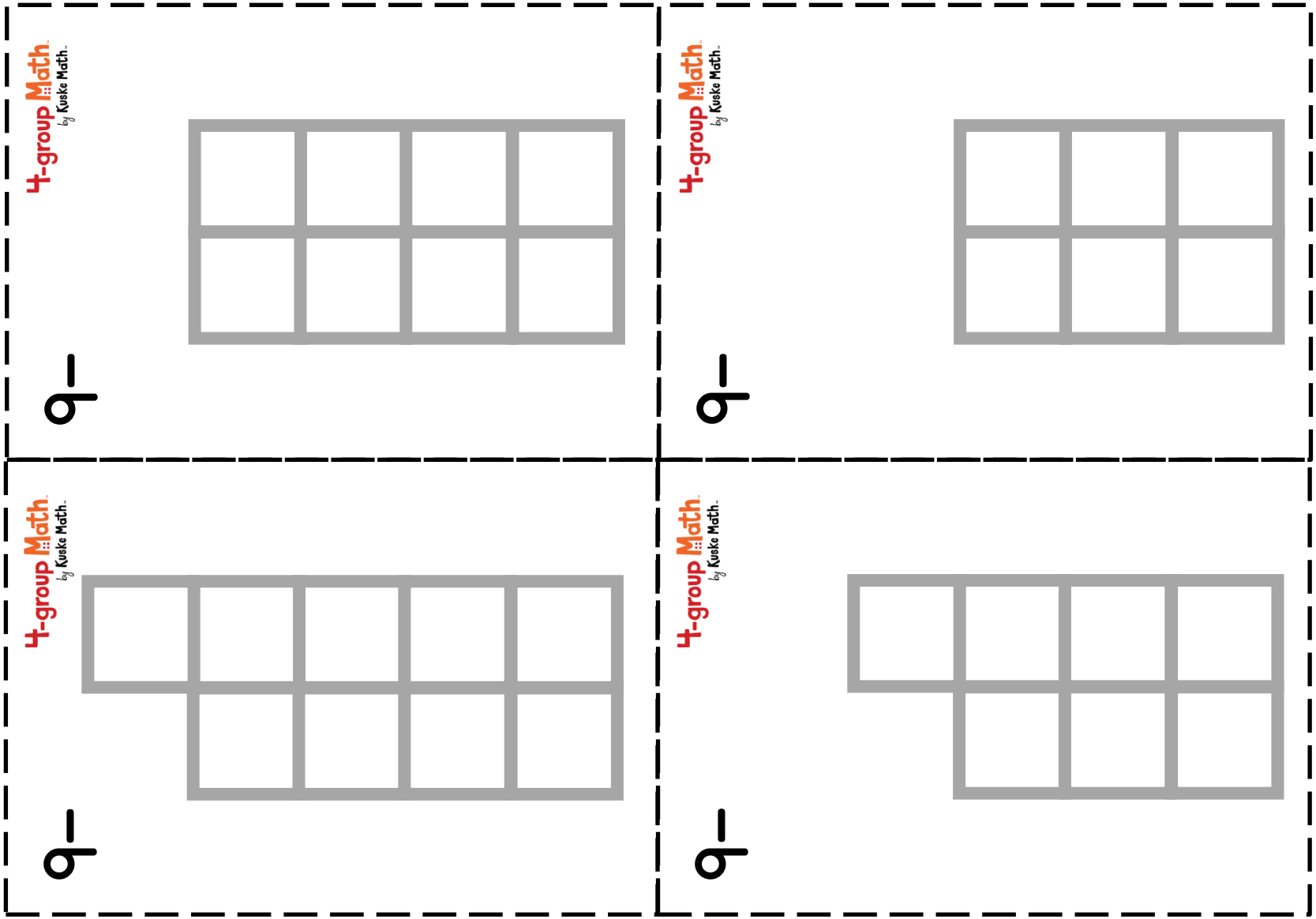
Activity 5 –*Partner* Flip Cards for 9



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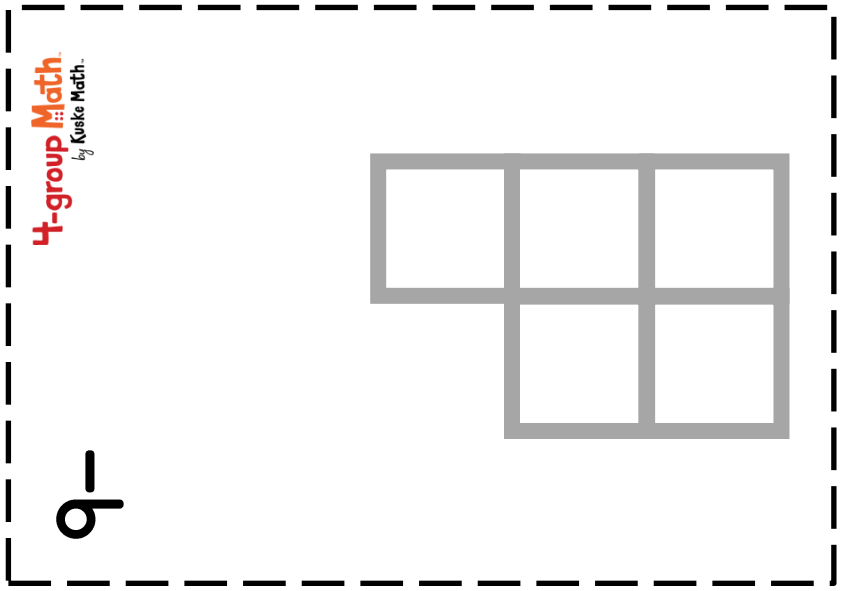
Activity 5 –*Partner* Flip Cards for 9



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9

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Activity 6 – Assessment Directions

OBJECTIVE: Write and recite from memory the subtraction equations from 9, including the switched *partners*

MATERIALS: Activity 6 – Assessment Sheet or a blank piece of paper
Pencil

GROUP: One child with teacher or another adult

DIRECTIONS: On the Assessment Sheet or a blank piece of paper, write from memory all the *subtraction* equations from nine, including the switched *partners*. It is okay for an adult to record for you if you tell them what to write. (FIGURE 1)
Find an adult to "test" you.
The adult asks you to recite all your equations (in any order). (FIGURE 2)
Then, the adult says one equation and you complete the equation by supplying the answer. (FIGURE 3)
Continue until all equations are said, including the switched *partners*.
If you pass, put a sticker in the Sticker space.
If you do not pass, practice a little more by repeating two activities from Activities 1-5.

FIGURE 1

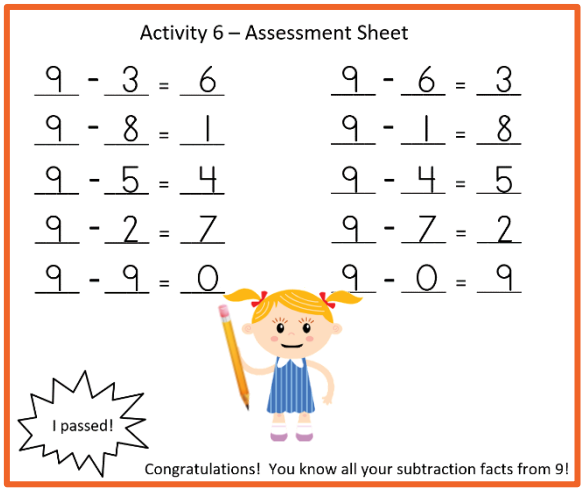


FIGURE 2

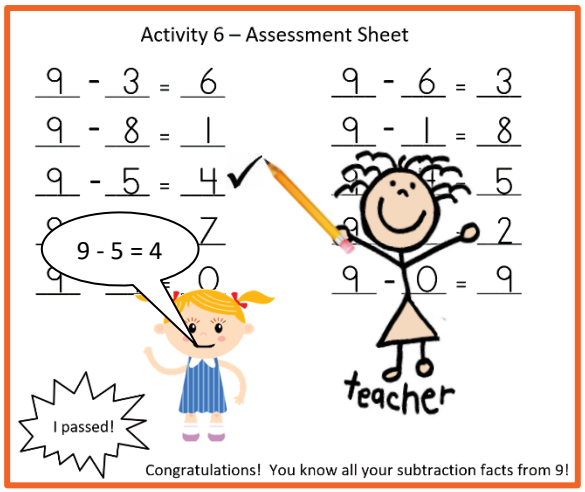
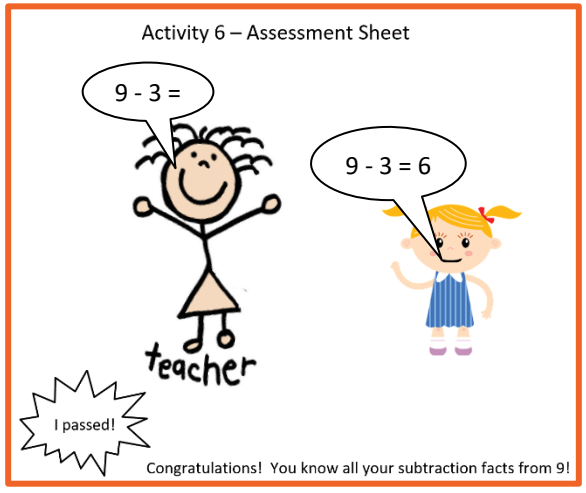


FIGURE 3



EXAMPLE:
The adult says, *"Nine take away three leaves__."*
Child says, "*Nine take away three leaves six."*

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Activity 6 – Assessment Sheet

____ - ____ = ____	____ - ____ = ____
____ - ____ = ____	____ - ____ = ____
____ - ____ = ____	____ - ____ = ____
____ - ____ = ____	____ - ____ = ____
____ - ____ = ____	____ - ____ = ____

Congratulations! You know all your subtraction facts from 9!

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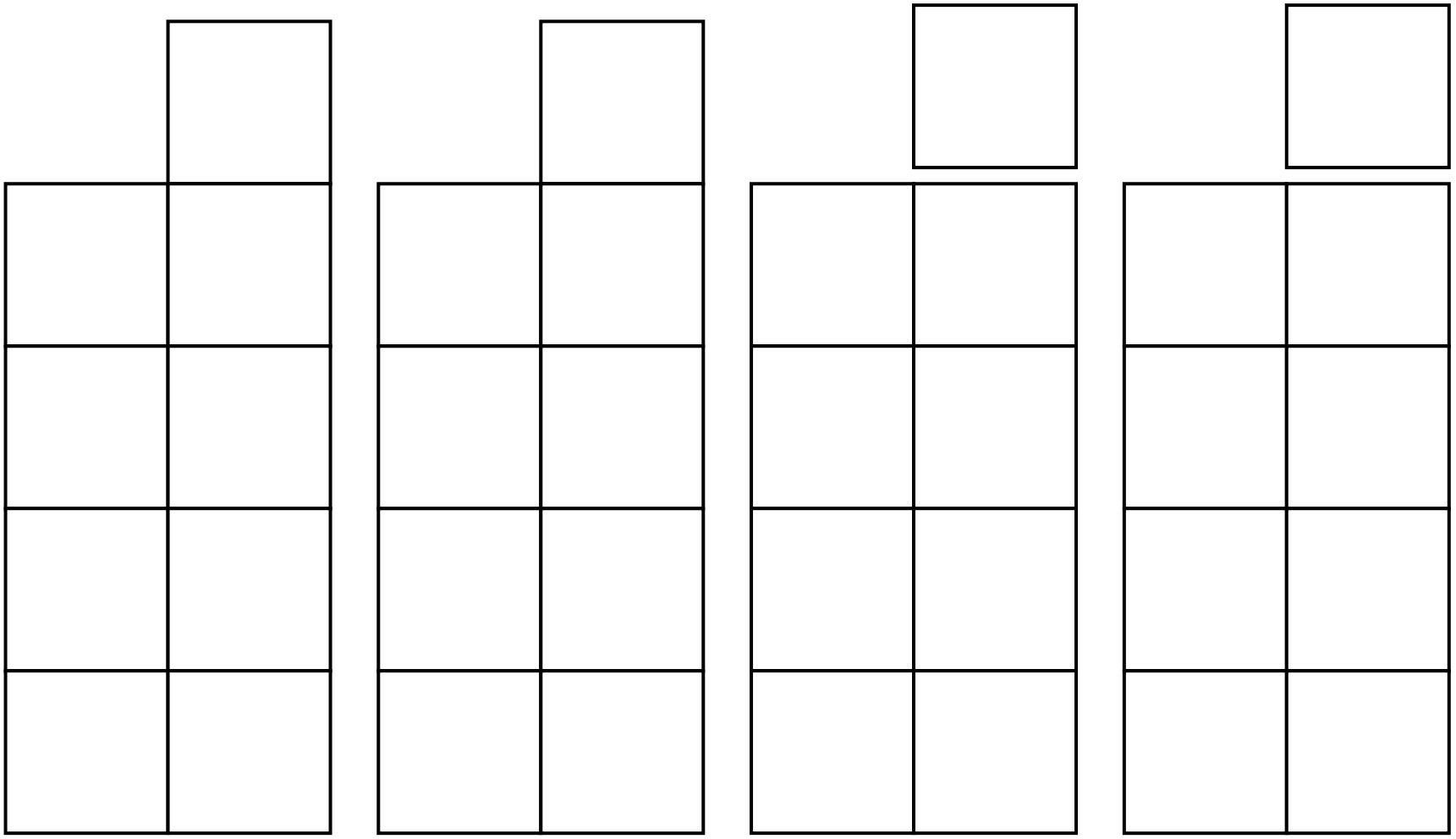
Worksheet for 9− pg. 1 of 3

9−

Sticker space



9 − 0 = 9

9 − 9 = 0

9 − 8 = 1

9 − 1 = 8

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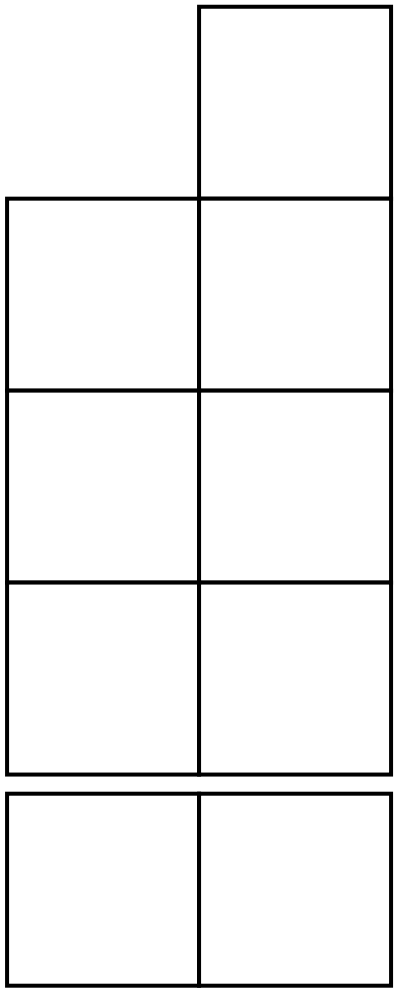
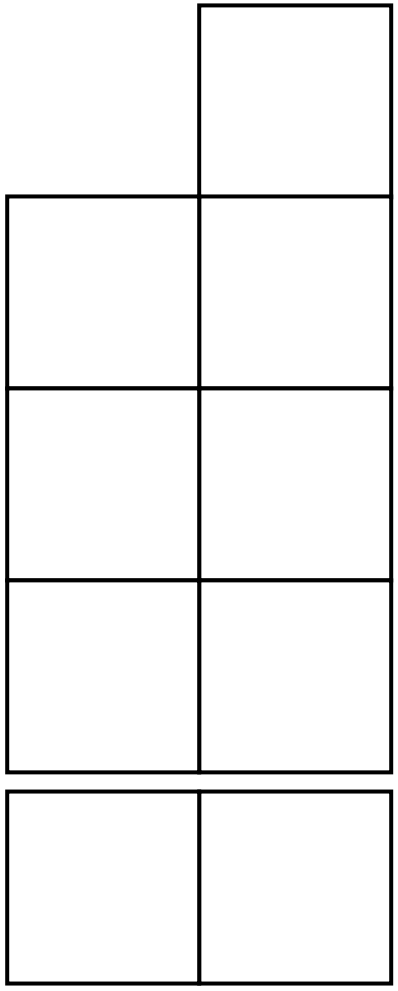
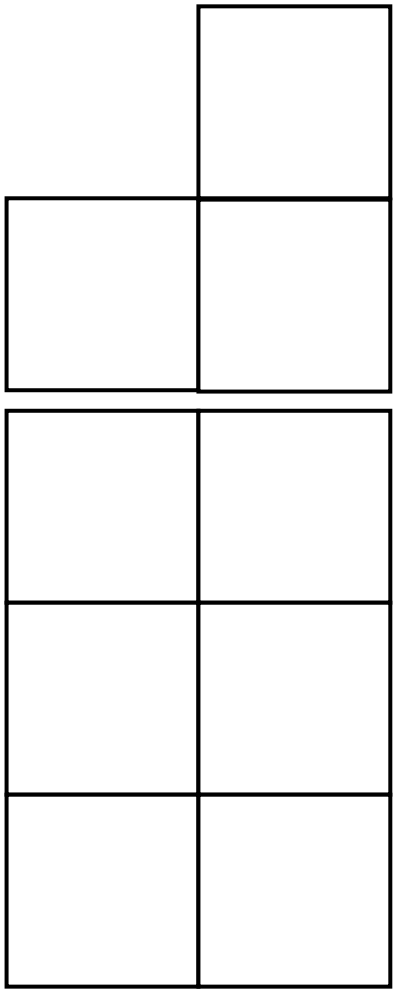


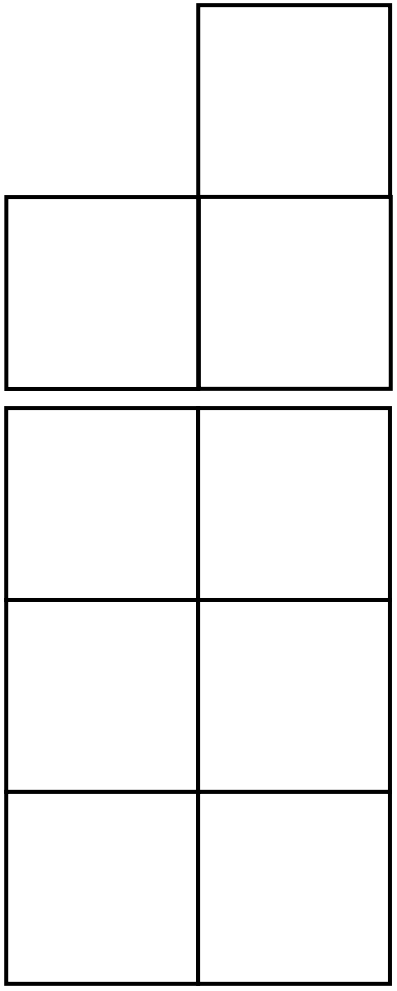
9 − 7 = 2



9 − 2 = 7



9 − 6 = 3



9 − 3 = 6

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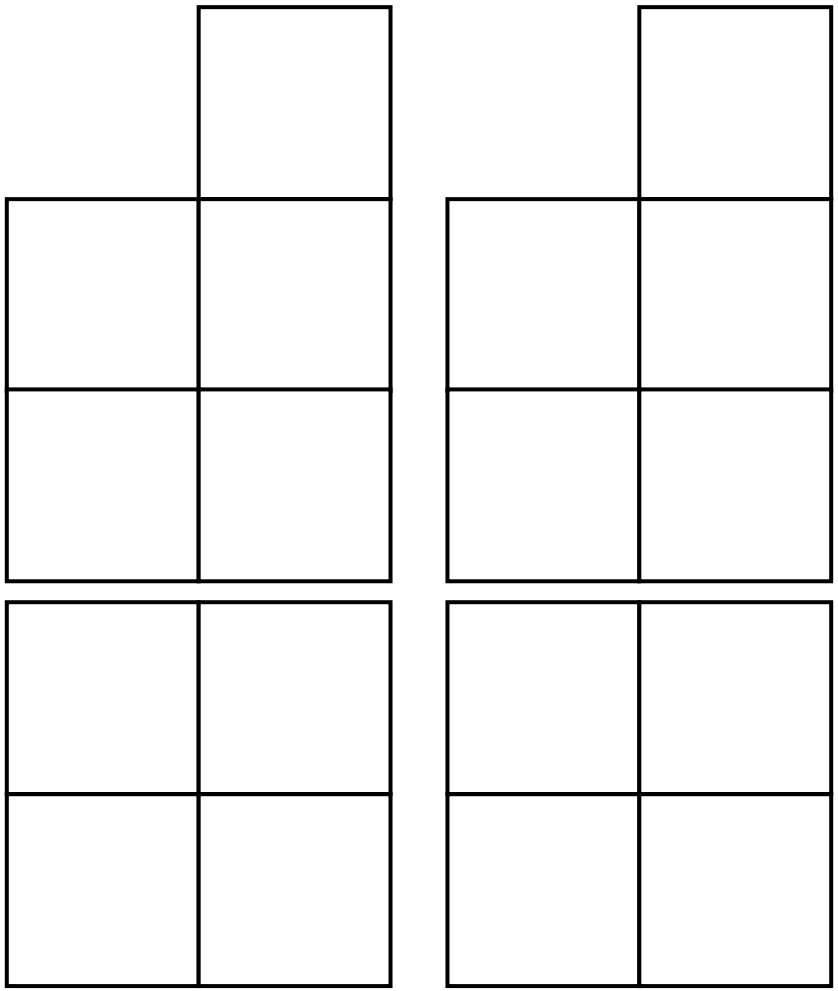

9 − 5 = 4

9 − 4 = 5

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Activity 6 – Assessment Sheet

____	-	____	=	____	____	-	____	=	____
____	-	____	=	____	____	-	____	=	____
____	-	____	=	____	____	-	____	=	____
____	-	____	=	____	____	-	____	=	____
____	-	____	=	____	____	-	____	=	____

Congratulations! You know all your subtraction facts from 9!

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