LETTER HOME

Think About Addition and Subtraction

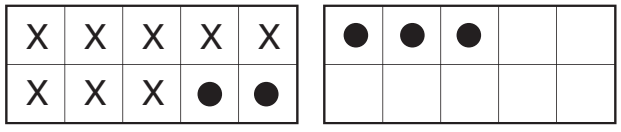
Dear Family Member:

What do twins, feet, gloves, and wings all have in common? These are just some examples of familiar things that come in pairs, or doubles. Over the next two weeks, your child will double numbers to solve a variety of problems.

This unit continues to develop strategies for learning basic math facts and computing larger numbers. We focus on several strategies including doubling, halving, making ten, and reasoning from facts already known.

Doubling is a natural strategy that many children easily develop. Children tend to remember doubles (5 + 5, 12 + 12, and so on) with little difficulty. Your child can use his or her knowledge of 12 + 12, for example, to solve a problem that is a "near double," such as 12 + 11. Halving, or finding half of a number, is a strategy closely related to doubling. Doubling and halving numbers also helps prepare your child to learn multiplication and division.

The making-ten strategy builds on your child's experience with partitioning numbers and with using ten frames. To solve a problem such as 8 + 5, a child learns to recogize that 8 plus 2 more will make ten. Then the problem changes as follows:

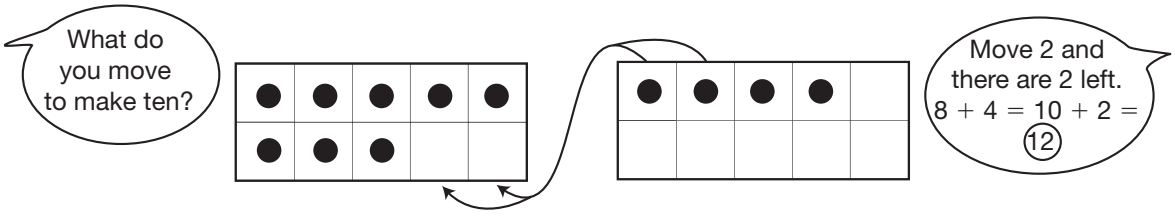


8 + 5 = 8 + 2 + 3 = (8 + 2) + 3 = 10 + 3 = 13

Using making-ten to solve a problem

You can provide addition support at home by doing activities such as the following:

- **Move It to Make Ten.** Use the *0–10 Small Ten Frame Cards* to practice using the make-ten strategy to solve addition problems. Show your child two cards and ask what they would move to make ten.



- **Play How Many in the Bag.** Gather up to 20 counters and place them in a bag or container your child cannot see into. Tell them how many counters are in the bag and then grab a handful of counters. Ask your child to count them, and then ask them how many counters are left in the bag.

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Math Facts and Mental Math

Students' fluency with addition facts in Group A and the related subtraction facts will be assessed in this unit.

Group A:

You can help your child review these facts using the flash cards the teacher sent home or by making a set of flash cards from index cards or scrap paper. Study the facts in small groups each night. As your child goes through the flash cards, put the cards in three stacks: Facts I Know Quickly, Facts I Can Figure Out, and Facts I Need to Learn.

For Facts I Need to Learn, work on strategies for figuring them out.

For Facts I Can Figure Out, use the flash cards to practice the facts for fluency.

For Facts I Know Quickly, help your child use strategies to solve problems like these using mental math: $23 + 2$, $12 + 3$, $24 - 2$

Grade 1 Math Facts Overview

The goal of the math facts development in *Math Trailblazers* is for students to learn the basic facts efficiently, gain fluency with their use, and retain that fluency over time. A large body of research supports an approach in which students develop strategies for figuring out the facts rather than relying on rote memorization. This not only leads to more effective learning and better retention but also to the development of mental math skills. In fact, too much drill before conceptual understanding may interfere with a child's ability to understand concepts at a later date. Therefore, the teaching of the basic facts in *Math Trailblazers* is characterized by the following elements:

Use of Strategies. Students first approach the basic facts as problems to be solved rather than as facts to be memorized. In all grades, students are encouraged to use strategies to find facts, so they become confident that they can find answers to facts problems that they do not immediately recall. In this way, students learn that math is more than memorizing facts and rules which "you either get or you don't."

Distributed Facts Practice. Students study small groups of facts that can be found using similar strategies. In first grade, they practice the addition facts with sums to ten, then the related subtraction facts to those facts, then all the addition facts. See Figure 1.

Unit	Subtraction Facts	Focus
12	Group A	Use strategies fluently for facts with sums to ten. Develop mental math strategies and number sense and solve fact families for facts with sums more than ten.
13	Group B	
14	Group C	
15	Group D	
16	Group E	
17	Group F	

Figure 1: *Development of addition facts and the related subtraction facts in Grade 1*

Practice in Context. Students continue to practice all the facts as they use them to solve problems, investigate math concepts, and play math games.

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Appropriate Assessment. Students are regularly assessed to see if they can find answers to facts problems quickly and accurately and retain this skill over time. They take a short quiz on each group of facts. Since Unit 9, students have recorded their progress on *Addition Facts I Know* charts and have determined which facts they need to study.

A Multiyear Approach. In Grades 1 and 2, the curriculum emphasizes the use of strategies that enable students to develop proficiency with addition and subtraction facts by the end of second grade. Students focus on gaining proficiency with the facts with sums to ten in Grade 1 and on facts with sums more than 10 in Grade 2. In Grade 3, students review the subtraction facts and develop proficiency with the multiplication facts. In Grade 4, the addition and subtraction facts are checked, the multiplication facts are reviewed, and students develop fluency with the division facts. In Grade 5, students review the multiplication and division facts.

Facts Will Not Act as Gatekeepers. Use of strategies and calculators allow students to continue to work on interesting problems and experiments while learning the facts. Lacking quick recall of the facts does not prevent students from learning more complex mathematics.

Thank you for taking time to talk with your child about what he or she is doing in math.

Sincerely,

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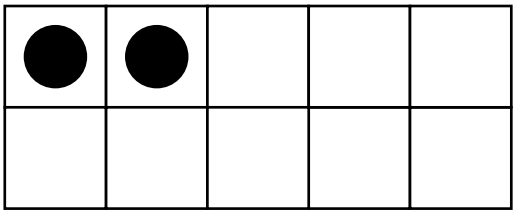
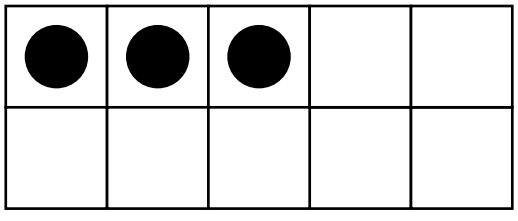
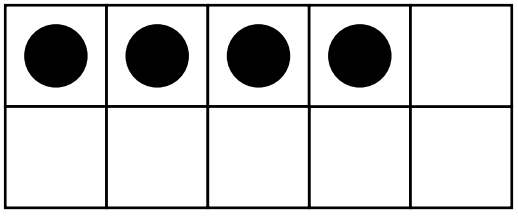
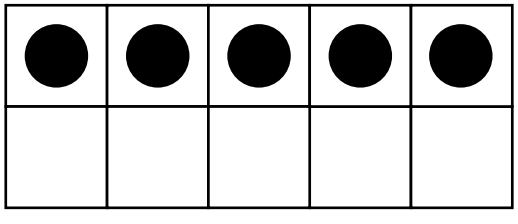
0–10 Small Ten Frame Cards









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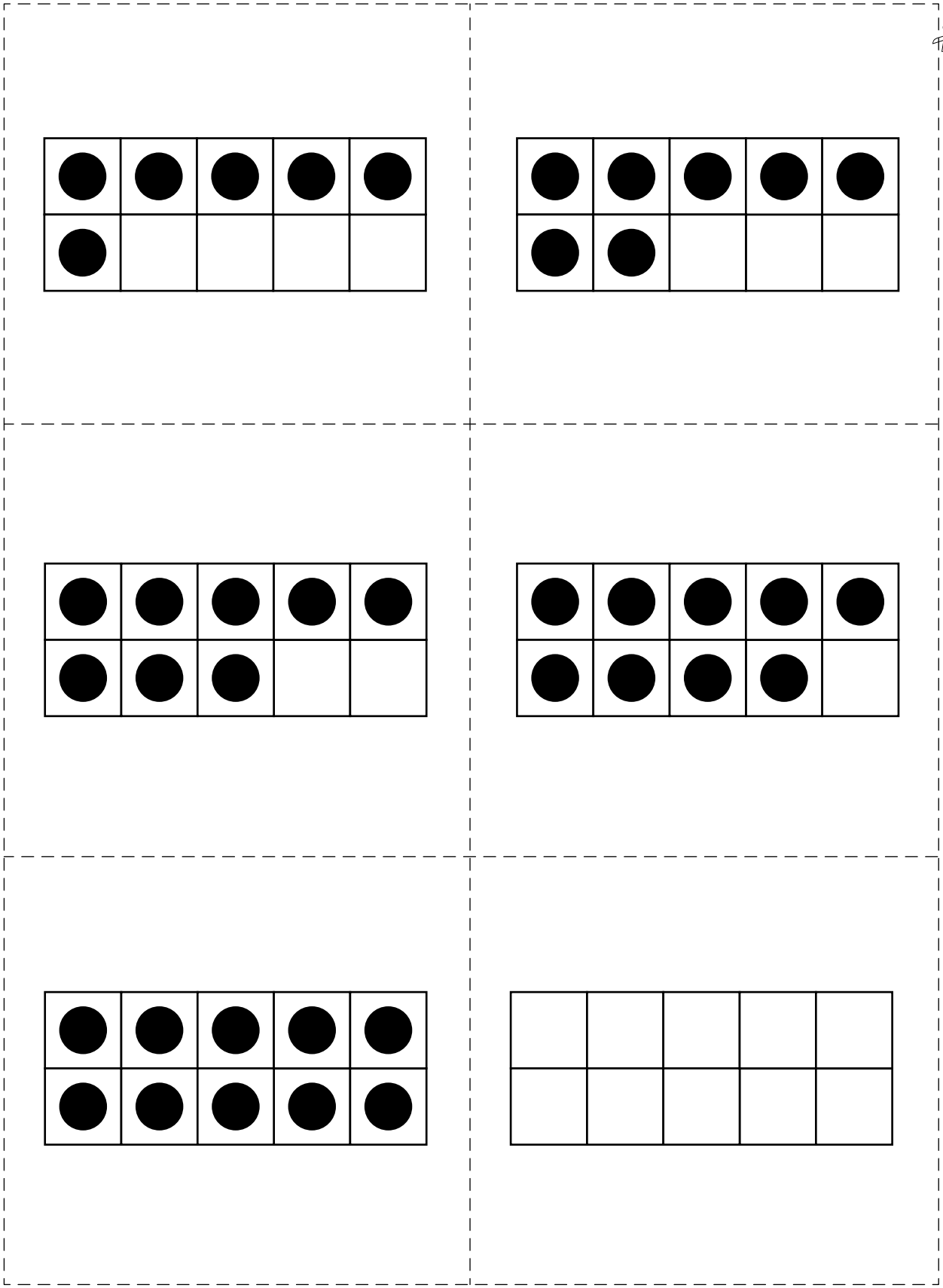

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Unit 12: Home Practice

Part 1 Addition Flash Cards: Group A

Take home your Addition Flash Cards: Group A. Ask a family member to choose one flash card at a time for you to solve. Sort the flash cards into three piles: Facts I Know Quickly, Facts I Can Figure Out, and Facts I Need to Learn. Clip the cards in the Facts I Know Quickly pile together and place them back into the envelope. Practice the facts in the last two piles again.

Part 2 Fact Families: Group A

Write the fact family for each fact.

A. $3 + 1 =$ _____

_____

_____

_____

B. $4 + 2 =$ _____

_____

_____

_____

C. $3 + 2 =$ _____

_____

_____

_____

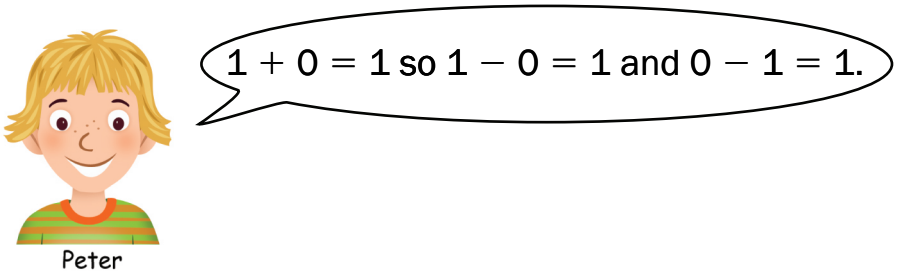
D. $2 + 2 =$ _____

_____

_____

_____

E. Do you agree with Peter? Why or why not?



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Part 3 Addition Facts to Practice

A. $2 + 1 = \square$

B. $0 + 2 = \square$

C. $\square = 2 + 2$

D. $1 + 1 = \square$

E. $0 + 1 = \square$

F. $\square = 3 + 1$

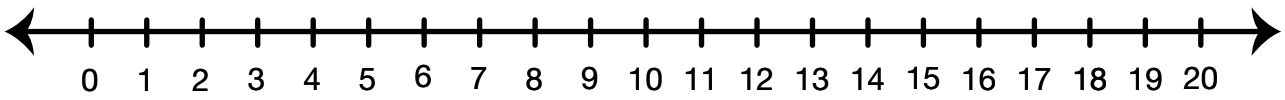
G. $\square = 4 + 2$

H. $3 + 2 = \square$

I. $2 + 4 = \square$

J. $\square = 1 + 2$

K. Show or tell how you solved Question G.



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Part 4 Problems

Show how you solve each problem. Write a number sentence.

1. Shannon had 7 stickers. Mrs. Root gave her 8 more. How many did Shannon have in all?

Number sentence: _____

2. Nila is 6 years old. Her sister Ann is 14 years old. How much older is Ann?

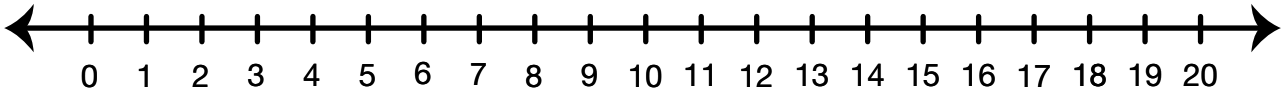
Number sentence: _____

3. Sam has $6. He wants an action figure that costs $15. How much more money does he need?

Number sentence: _____

4. Frank has 14 action figures. Three are bad guys. The rest are good guys. How many good guys does he have?

Number sentence: _____



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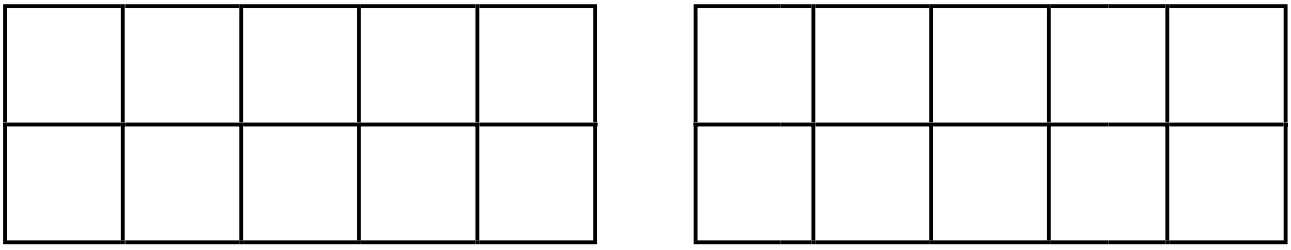
Part 5 Making Ten

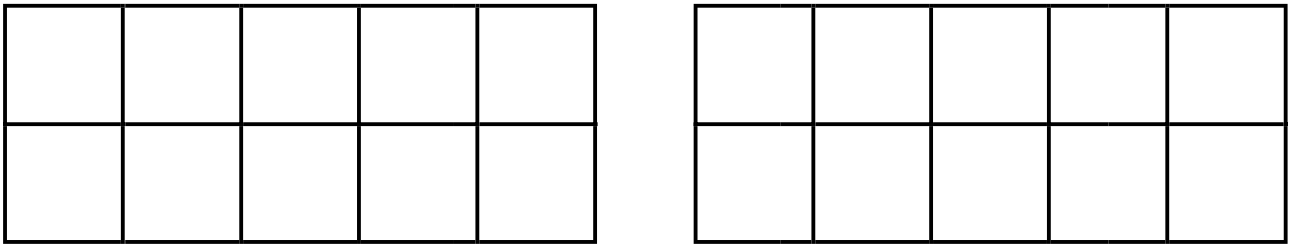
Show how to solve each problem on ten frames.

1. Keenya had 6 quarters. Her aunts gave her 8 more to buy hair ties. How many quarters did Keenya have altogether?



Number sentence: _____

2. Ming's sister has 8 toy cars. Ming has 5 more than his sister. How many cars does Ming have?



Number sentence: _____

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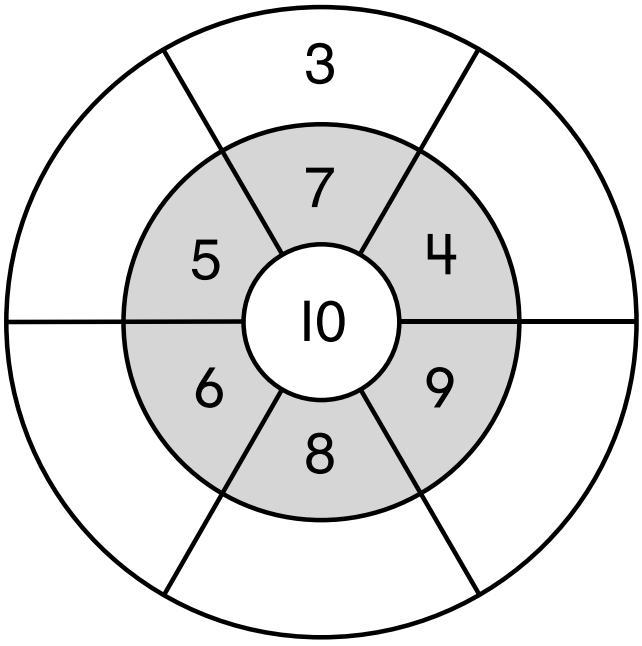
Part 6 Subtraction Circles

Subtract the number in the gray circle from 10. Write number sentences. Follow the example.

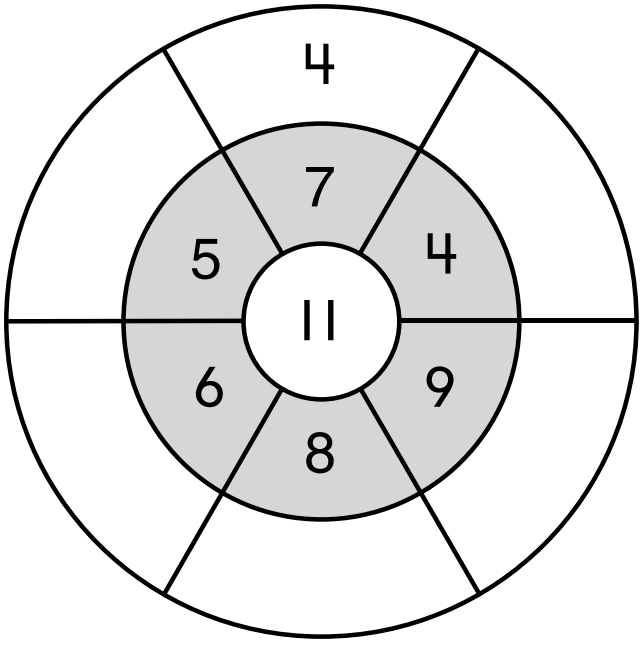
1.



10 – 7 = 3

Subtract the number in the gray circle from 11. Write number sentences. Follow the example.

2.



11 – 7 = 4

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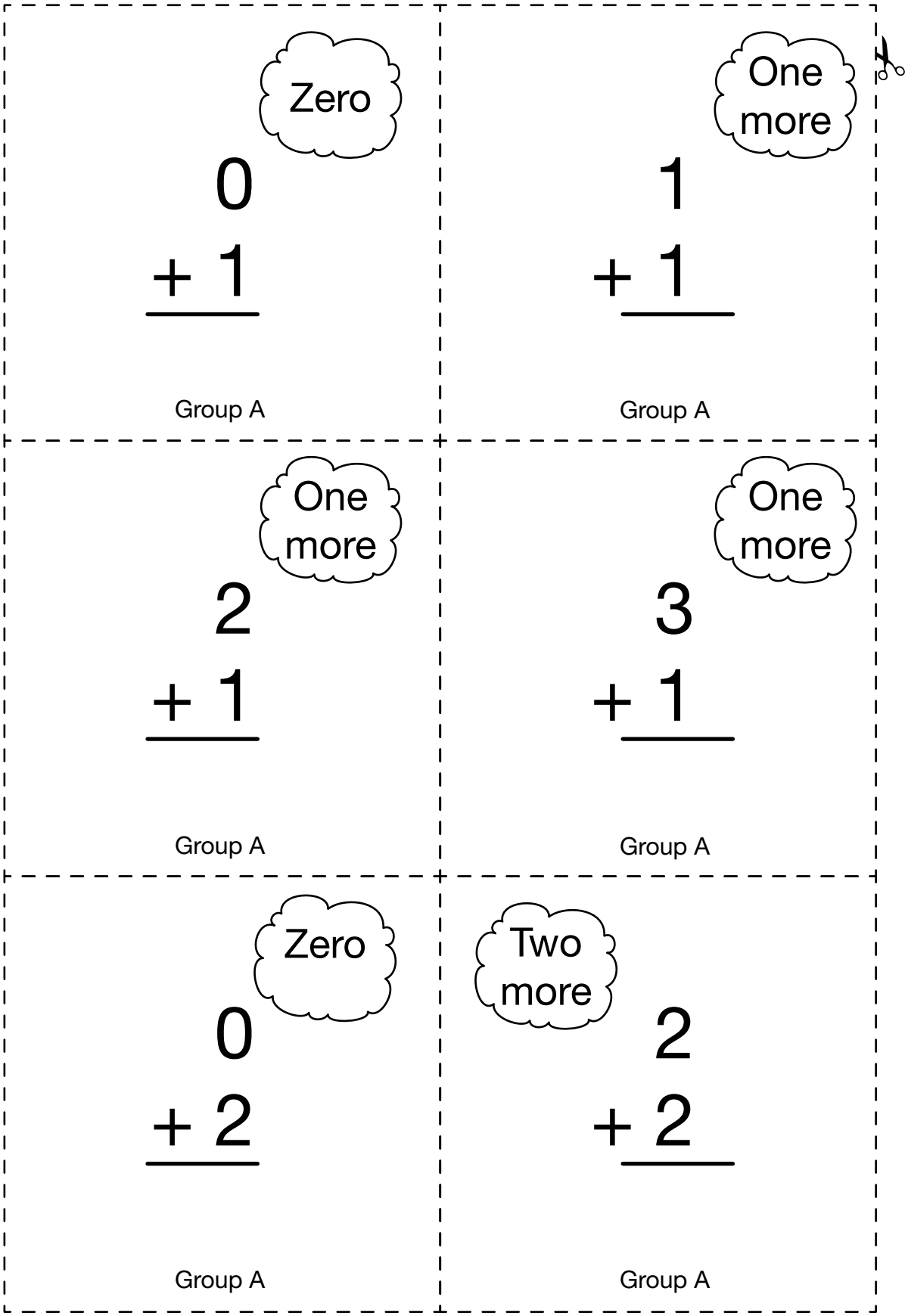
Addition Flash Cards: Group A



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Two more

3
+ 2

Group A

Two more

4
+ 2

Group A

Two more

2
+ 4

Group A

One more

1
+ 3

Group A

Two More

2
+ 3

Group A

One More

1
+ 2

Group A

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Addition Facts I Know

Circle the facts you know quickly.

0 + 1	1 + 1	2 + 2	3 + 3	4 + 4	5 + 5
0 + 2	1 + 2	2 + 3	3 + 4	4 + 5	
0 + 3	1 + 3	2 + 4	3 + 5	4 + 6	
0 + 4	1 + 4	2 + 5	3 + 6		
0 + 5	1 + 5	2 + 6	3 + 7		
0 + 6	1 + 6	2 + 7			
0 + 7	1 + 7	2 + 8			
0 + 8	1 + 8				
0 + 9	1 + 9				

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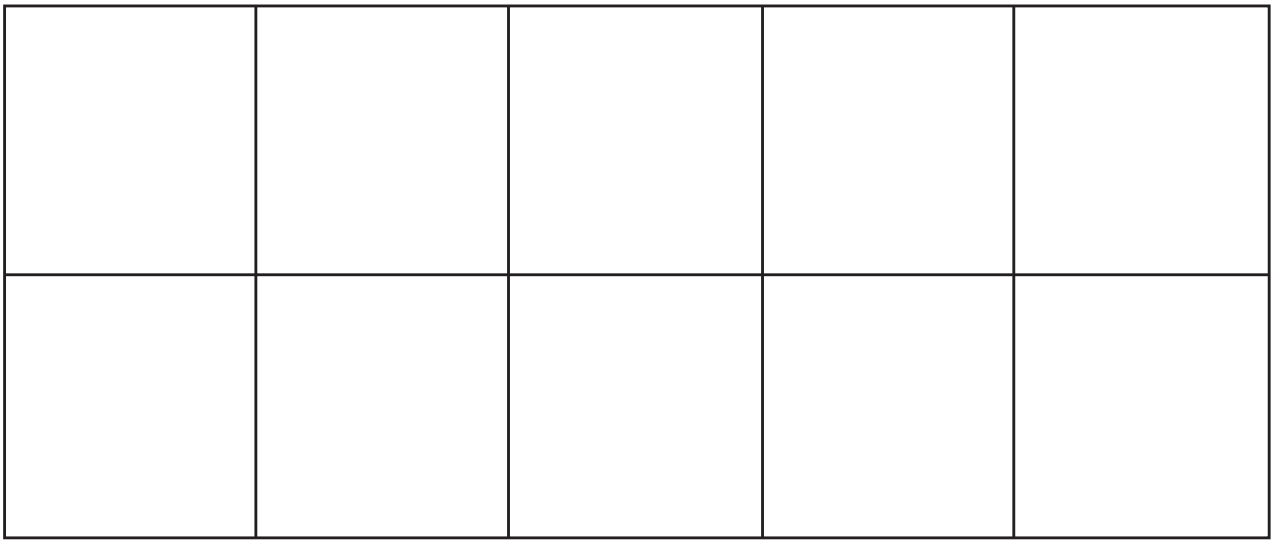
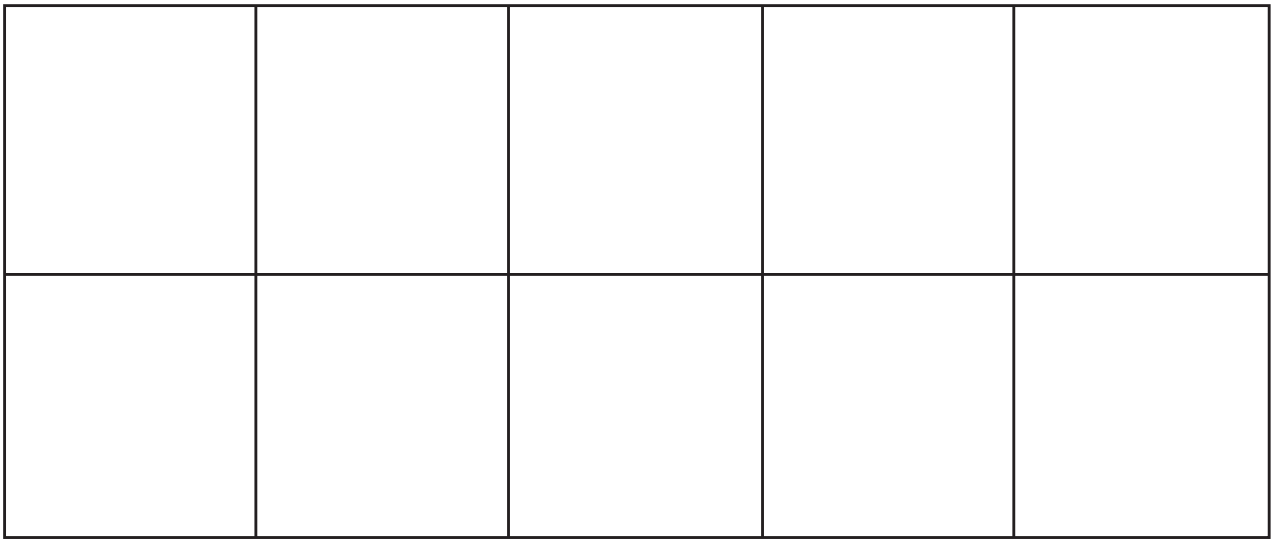
Two Ten Frames





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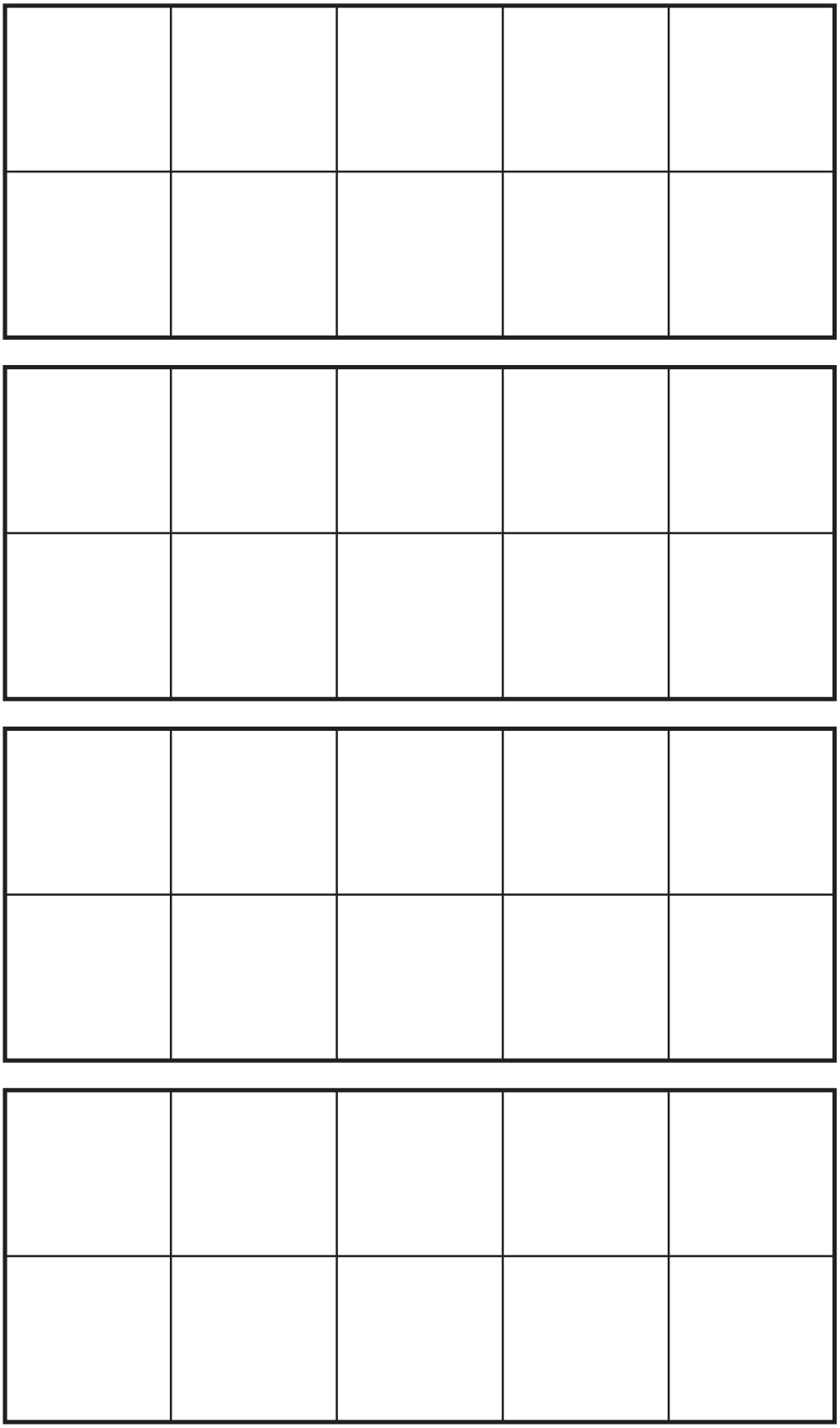
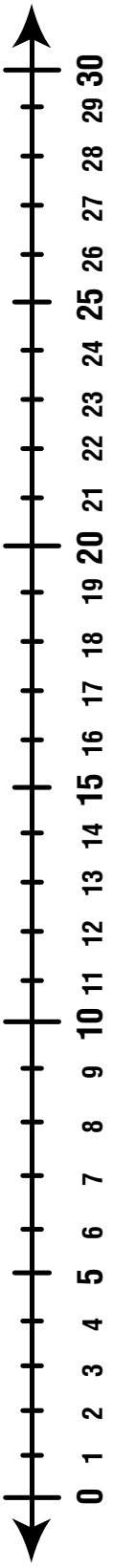
Ten Frames and Number Line





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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

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Addition Cards for Larger Sums 1

8 + 8	9 + 3	
4 + 8	2 + 9	6 + 9
8 + 3	9 + 8	4 + 9

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Addition Cards for Larger Sums 2

5 + 8	6 + 7	7 + 7	4 + 7
7 + 5	6 + 6	6 + 6	7 + 6
5 + 6	6 + 5	8 + 6	8 + 7

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Addition Cards for Larger Sums 3

10 + 7	10 + 10	4 + 10
6 + 10	10 + 9	10 + 2
10 + 5	8 + 10	1 + 10

10 + 3

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Sorting Mat for Larger Sums

11	16
12	17
13	18
14	19
15	20

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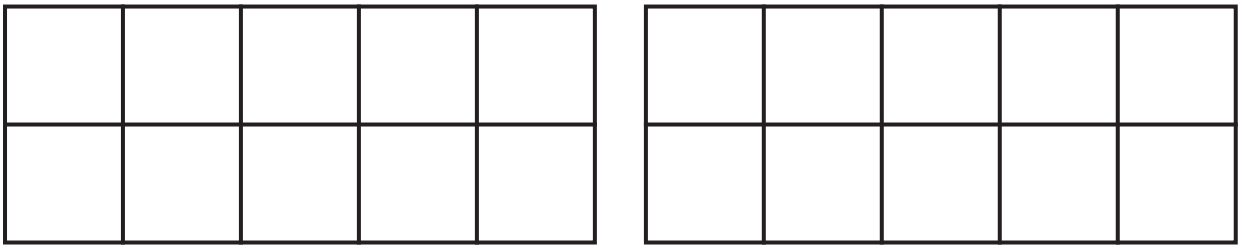
Grace and Jerome Problems

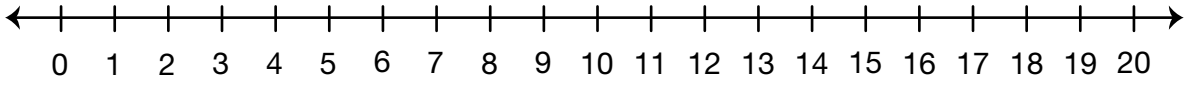
Homework

Dear Family Member:

We have been working on different types of word problems. Your child may use ten frames, counters, the number line, drawings, or mental math to solve the problems. He or she should write a number sentence for each problem.

Thank you.





1. Grace has 12 pencils. Jerome has 5 pencils. How many more pencils does Grace have?

Number Sentence: _____

2. Grace has 5 nickels. Jerome has 7 more nickels than Grace. How many nickels does Jerome have?

Number Sentence: _____

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3. Grace has 12 books. Eight are hardcover books. The rest of the books are paperbacks. How many paperbacks does she have?

Number Sentence: _____

4. Jerome had $8. He got more money for helping his aunt. Now he has $11. How much did he get for helping his aunt?

Number Sentence: _____

5. Grace had some money. She spent $8 and now she has $7 left. How much money did she start with?

Number Sentence: _____

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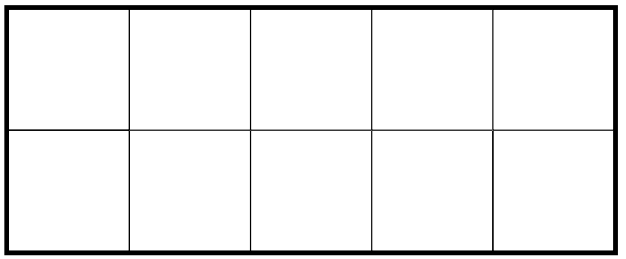
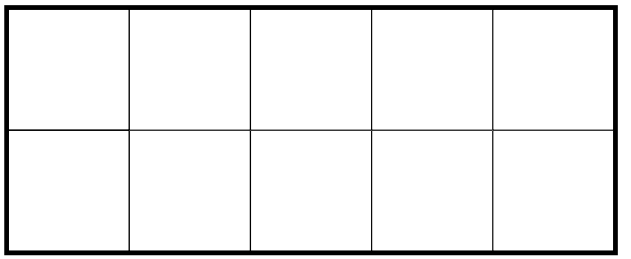
More Grace and Jerome Problems

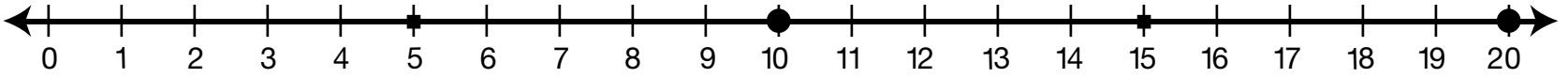
Homework

Dear Family Member:

Grace and Jerome like to collect things. Help your child solve each problem about their collections. Your child should write a number sentence for each. He or she may use counters (pennies or beans), the number line, or ten frames. A picture or diagram may also help. Thank you.







1. Grace and Jerome have 9 bugs in their insect collection. If they find 3 more, how many will they have?

Number Sentence: _____

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Name _____ Date _____

2. Grace has 4 rocks. Jerome has 8. How many do they have altogether? Show or tell how you know.

Number Sentence: _____

3. Grace has 7 baseball cards. Jerome has 5.

A. Who has more? _____

B. How many more? _____

Number Sentence: _____

C. How many cards do they have altogether? _____

Number Sentence: _____

Name _____ Date _____

Doubles Board

Dear Family Member:

Your child is studying ways to represent doubling numbers in class.

Things that occur in pairs show doubles: twins, feet, gloves, and shoes. Help your child find or create a picture showing a double number, and help write a number sentence for the picture. An example number sentence for a picture of two feet would be 5 toes + 5 toes = 10 toes.

Thank you.

Draw or paste a picture of a double. Write a number sentence for your double. Bring this page to school for our Doubles Board.

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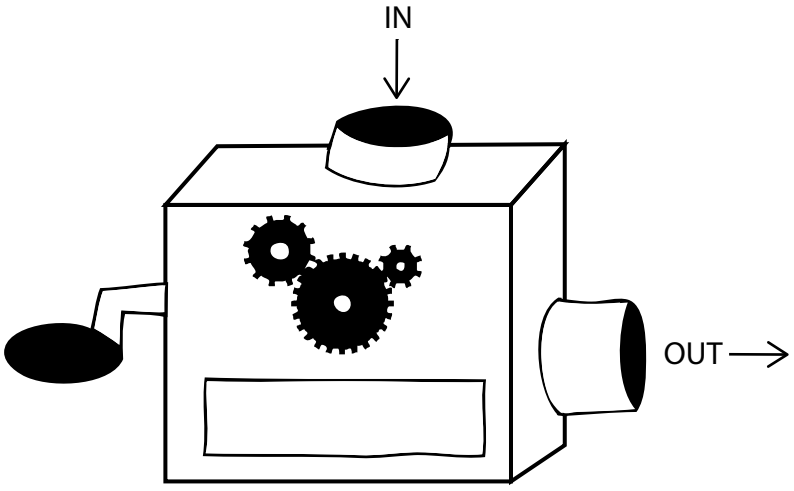
Guess My Rule Machine



Rule:	
Input	**Output**

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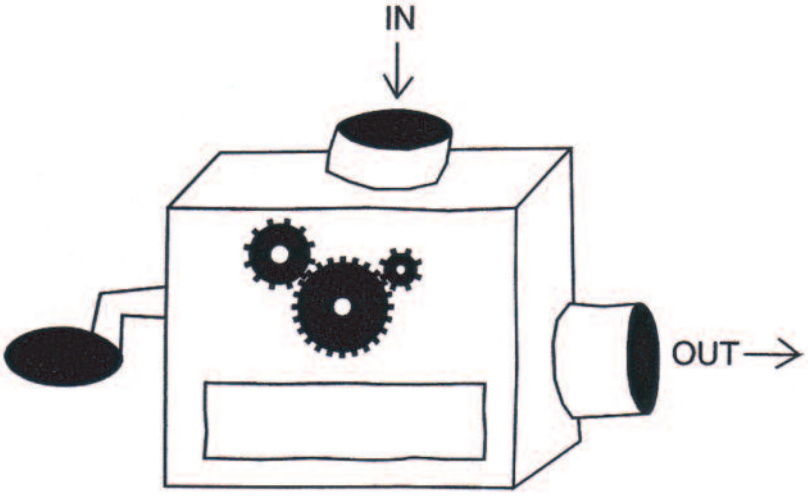
Guess the Output

Homework

Dear Family Member:

In class, your child played a game called *Guess My Rule*. In this game, students are told the rule and the input. Help your child figure out the output. Your child may use coins or other counters and the *100 Chart* in the *Student Activity Book* Reference section.

Thank you.



A.

Rule: Subtract 1	
Input	**Output**
30	
20	
10	
25	

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B.

Rule: Add 5	
Input	**Output**
15	
25	
35	
45	

C.

Rule: Add ten	
Input	**Output**
13	
28	
37	
49	

D.

Rule: Add three	
Input	**Output**
7	
2	
16	
13	

E. Circle the odd numbers in the Output column in Question D. What do you notice?

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Doubles Cards

3 + 3	6 + 6	9 + 9	12 + 12	15 + 15
2 + 2	5 + 5	8 + 8	11 + 11	14 + 14
1 + 1	4 + 4	7 + 7	10 + 10	13 + 13

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Number Cards 1–10

5	10
4	9
3	8
2	7
1	6

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Name _____ Date _____

Using Doubles

Homework

Dear Family Member:

We have been studying addition with doubles. For example, 3 + 3 = 6 is a doubles problem. We have also been studying addition with near doubles. An example of a near double is 3 + 4 = 7. Students can use the fact that they know the doubles to solve the near doubles problem. Please help your child solve the problems below and write an explanation for one problem. He or she may use counters such as pennies or beans to help.

Thank you.

A. 7 + 7 = _____

B. 7 + 8 = _____

C. _____ = 4 + 4

D. _____ = 5 + 4

E. _____ = 9 + 9

F. _____ = 10 + 9

G. 12 + 12 = _____

H. 12 + 13 = _____

I. Explain how you solved 12 + 13.

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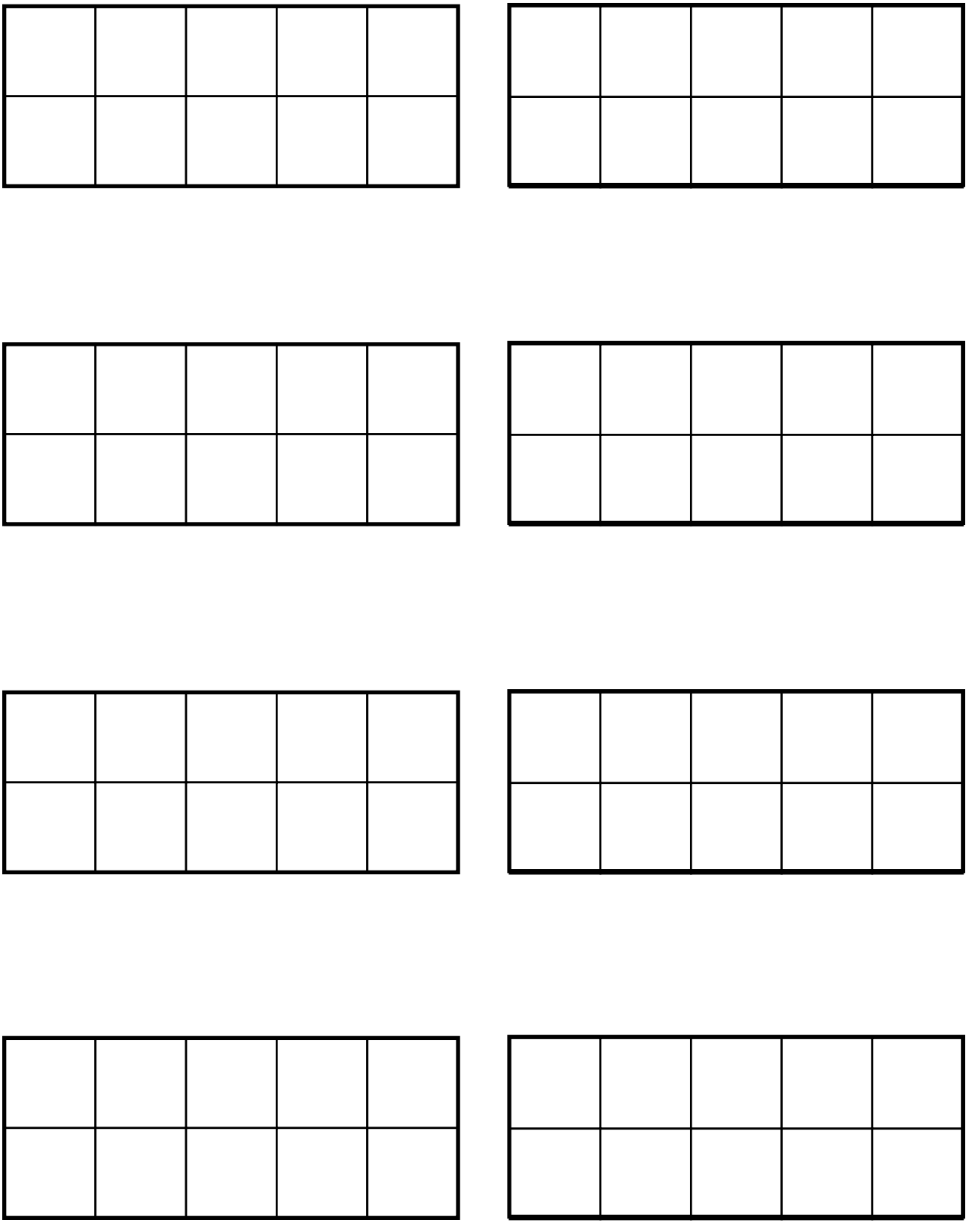
Eight Ten Frames



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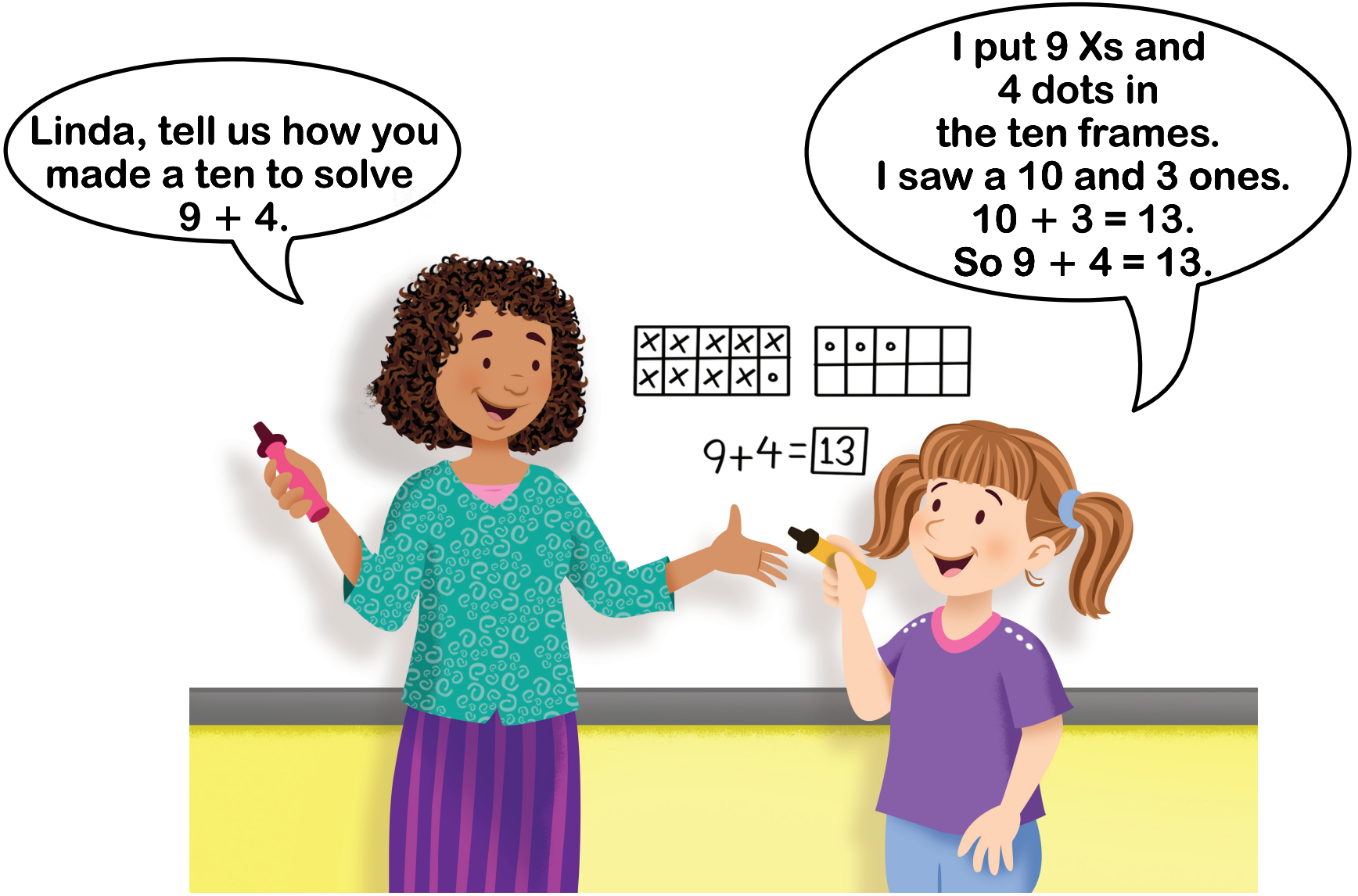
Linda's Strategy



Name _____ Date _____

How Many Homework

Dear Family Member:

In class we are working on strategies for adding. Ask your child how he or she solves the problems. He or she may use counters such as beans or pennies, ten frames, or pictures.

Thank you.

A. 2 + 9 = ☐

B. 7 + 7 = ☐

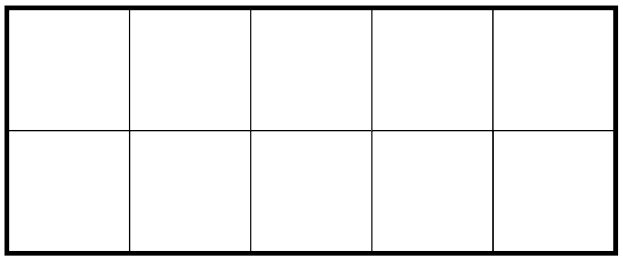
C. 6 + 7 = ☐

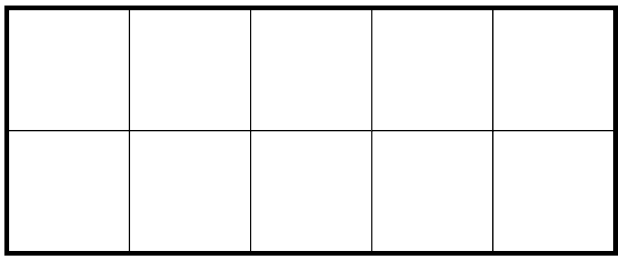
D. 9 + 7 = ☐

E. 4 + 9 = ☐

F. 8 + 5 = ☐

G. Show or tell how you solved 8 + 5.





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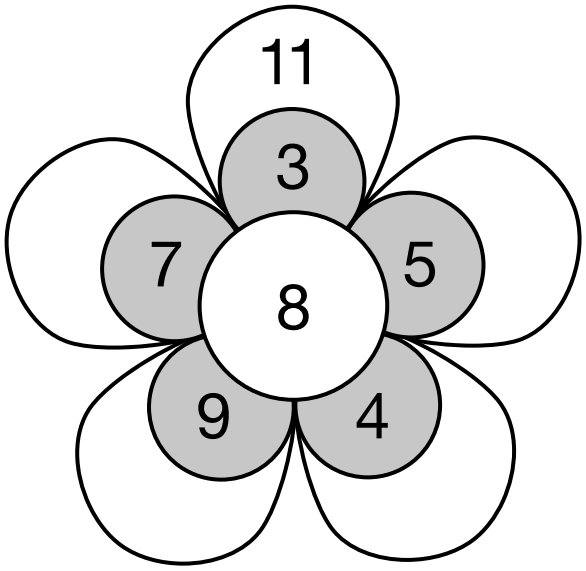
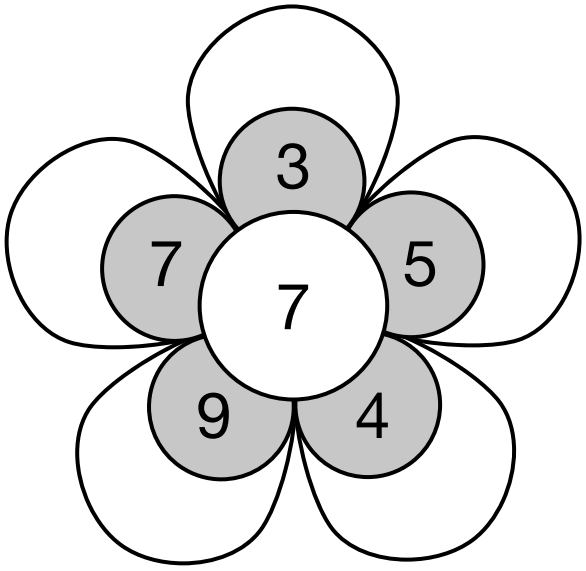
H. Add to find the outside numbers. Write number sentences.



$8 + 3 = 11$

I. Add to find the outside numbers. Write number sentences.



J. Talk with a family member. What is the same about the two flowers? What is different? What pattern do you see in the outside petals? Be ready to discuss these questions with the class.

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Missing Numbers

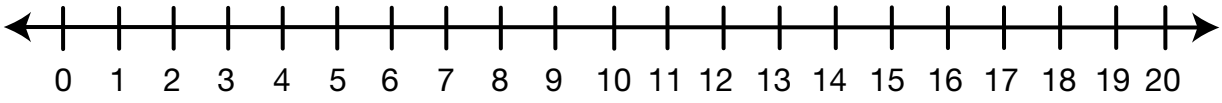
Homework

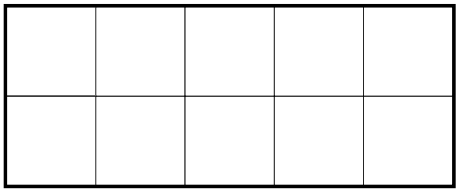
Dear Family Member:

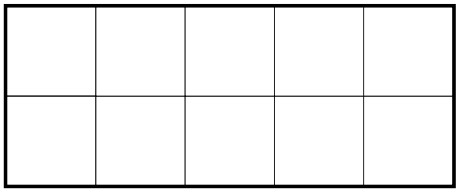
On this page, students find missing numbers in number sentences. Help your child find the number that will make both sides of the equal sign have the same value.

Thank you.

Find the missing numbers. You may use the number line, ten frames, or counters to help you.







A. $2 + 7 = \square$

B. $3 + \square = 10$

C. $11 = 3 + \square$

D. $11 = 2 + \square$

E. $5 + \square = 15$

F. $5 + \square = 14$

G. $16 = \square + 6$

H. $16 = \square + 10$

I. Show or tell how you solved Question D.

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More Missing Numbers

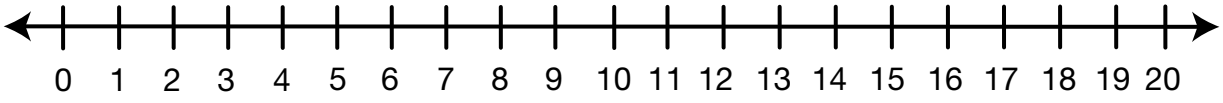
Homework

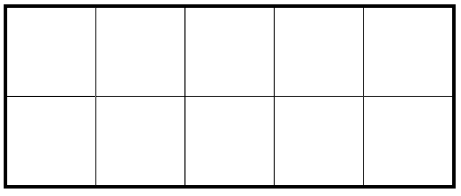
Dear Family Member:

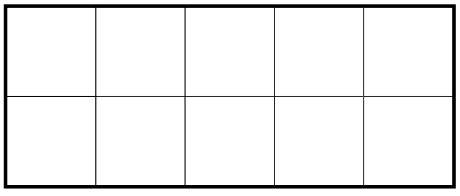
On this page, students find missing numbers in more complex number sentences. Help your child find the number that will make both sides of the equal sign have the same value.

Thank you.

Find the missing numbers. You may use the number line, ten frames, or counters to help you.







A. $9 + 8 = 10 + \square$

B. $8 + 9 = 8 + 8 + \square$

C. $5 + 6 = 5 + \square + 1$

D. $7 + 5 = 7 + 3 + \square$

E. $7 + 5 = 12 + \square$

F. $9 + 5 = 10 + 5 - \square$

G. $4 + 8 = \square + 2 + 8$

H. $9 + 6 = 10 + \square$

I. Show or tell how you know H is now a true number sentence.

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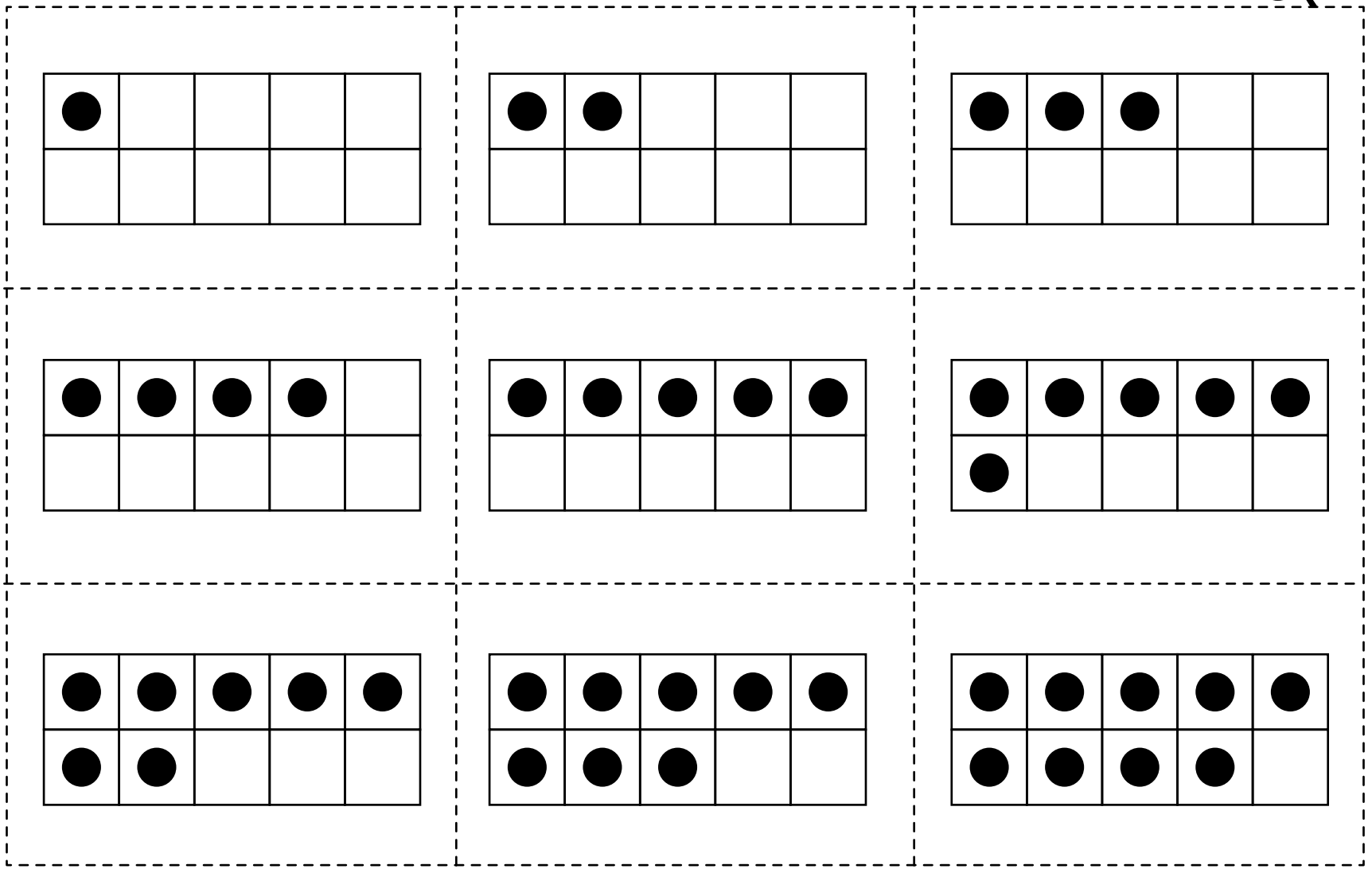
Ten Frame Cards 1–9



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Near Doubles Match Board

Place the near-double card on the double fact that helps.

$5 + 5$	$8 + 8$	$4 + 4$
$3 + 3$	$9 + 9$	$7 + 7$
$1 + 1$	$6 + 6$	$2 + 2$

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Near Doubles Cards

1 + 2	2 + 3	4 + 3	4 + 5	6 + 5
7 + 6	7 + 8	9 + 8	10 + 9	9 + 10
8 + 9	8 + 7	6 + 7	5 + 6	5 + 4

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Sandwich Recipe

Homework

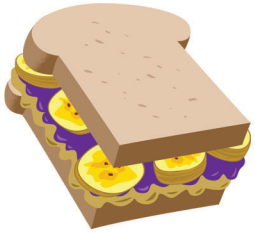
For One Class

20 slices of bread

10 tablespoons of jelly

4 bananas

12 tablespoons of peanut butter



1. Pretend you need to serve sandwiches to two classes. How many of each ingredient will you need to double the recipe?

_____ slices of bread

_____ tablespoons of jelly

_____ bananas

_____ tablespoons of peanut butter

2. Pretend you need to serve sandwiches to only half the class. How many of each ingredient will you need to make only half the recipe?

_____ slices of bread

_____ tablespoons of jelly

_____ bananas

_____ tablespoons of peanut butter

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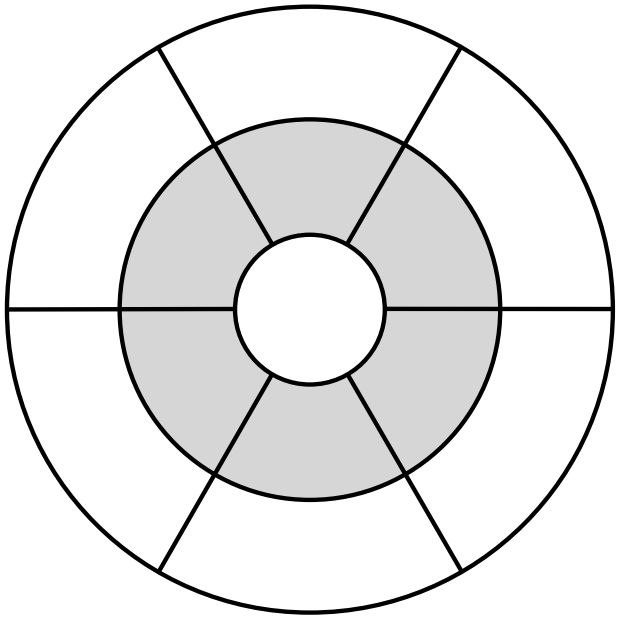
Subtraction Circles

Subtract the numbers in the gray circle from _____ .
Write number sentences.

1.



_____

_____

_____

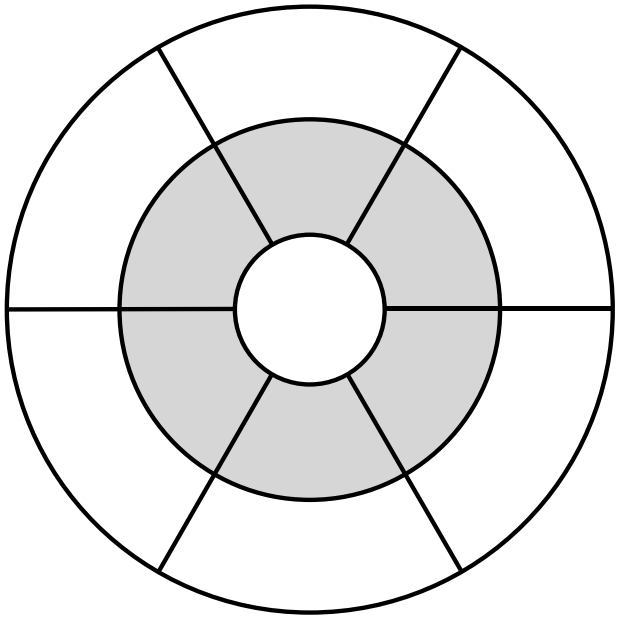
_____

_____

_____

Subtract the numbers in the gray circle from _____ .
Write number sentences.

2.



_____

_____

_____

_____

_____

_____

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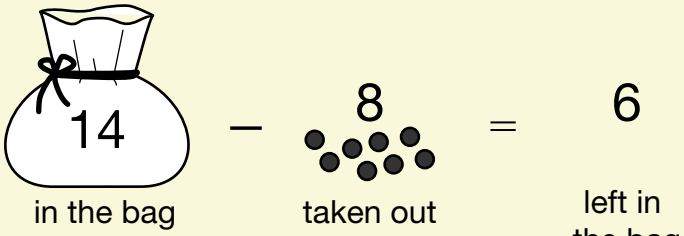
It Is in the Bag

Homework

Dear Family Member:

Your child played a game called How Many in the Bag to practice using strategies to solve subtraction problems with larger numbers. Help your child find the missing number in each number sentence. They can use any strategies or tools they like. For example, to solve 14 − 8, they may think about the related facts in a fact family: 8 + 6 = 14, so 14 − 8 = 6. They may use drawings, number lines, ten frames, and counters.



14 in the bag − 8 taken out = 6 left in the bag

Thank you.

Find the missing numbers.

A. 12 (in the bag) − _____ (taken out) = 8 (left in the bag)

B. 14 (in the bag) − 12 (taken out) = _____ (left in the bag)

C. _____ (in the bag) − 6 (taken out) = 10 (left in the bag)

D. 15 (in the bag) − _____ (taken out) = 13 (left in the bag)

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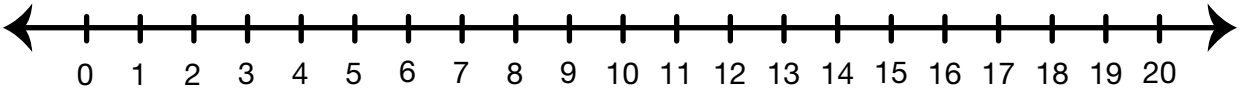
E. 20 (in the bag) − 10 (taken out) = _____ (left in the bag)

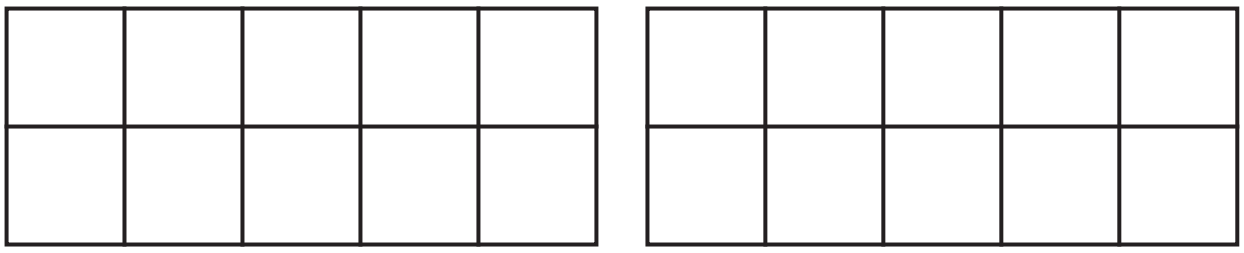
F. _____ (in the bag) − 9 (taken out) = 8 (left in the bag)

G. Choose one of the number sentences.

_____ (in the bag) − _____ (taken out) = _____ (left in the bag)

Show or tell how you solved it.





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Solve More Problems

Dear Family Member:

We have been working on using strategies to solve problems. Your child may use counters, ten frames, number lines, or pictures to solve these problems. For each problem, your child should write a number sentence and put a box around the answer. Your child should explain to you how he or she solved the problem (counting up, counting back, using ten, using doubles, using a number line).

Thank you.

1. There are 11 oranges and 5 apples in a box. How many more oranges than apples are in the box?

Number Sentence: _____

2. Sixteen boys and 8 girls are at the playground. How many more boys than girls are at the playground?

Number Sentence: _____

3. Grace has 12 pencils and Joey has 3 pencils. How many more pencils does Grace have than Joey?

Number Sentence: _____

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4. Maria has 14 pet fish. Jake has 6 pet fish. How many more fish does Maria have than Jake?

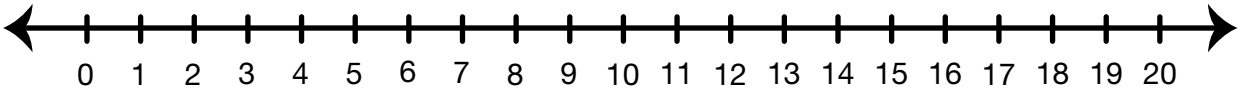
Number Sentence: _____

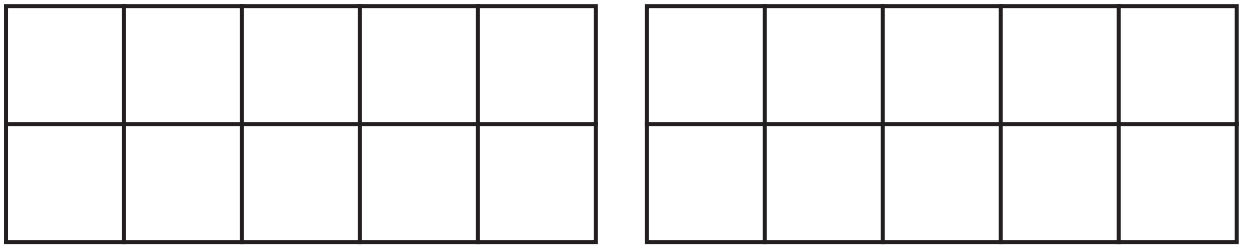
5. There are 15 books on the red bookshelf and 8 books on the blue bookshelf. How many more books are on the red bookshelf than the blue bookshelf?

Number Sentence: _____

6. There are 12 birds in a tree and 9 birds on a fence. How many more birds are in the tree than on the fence? Show or tell how you solved the problem.

Number Sentence: _____





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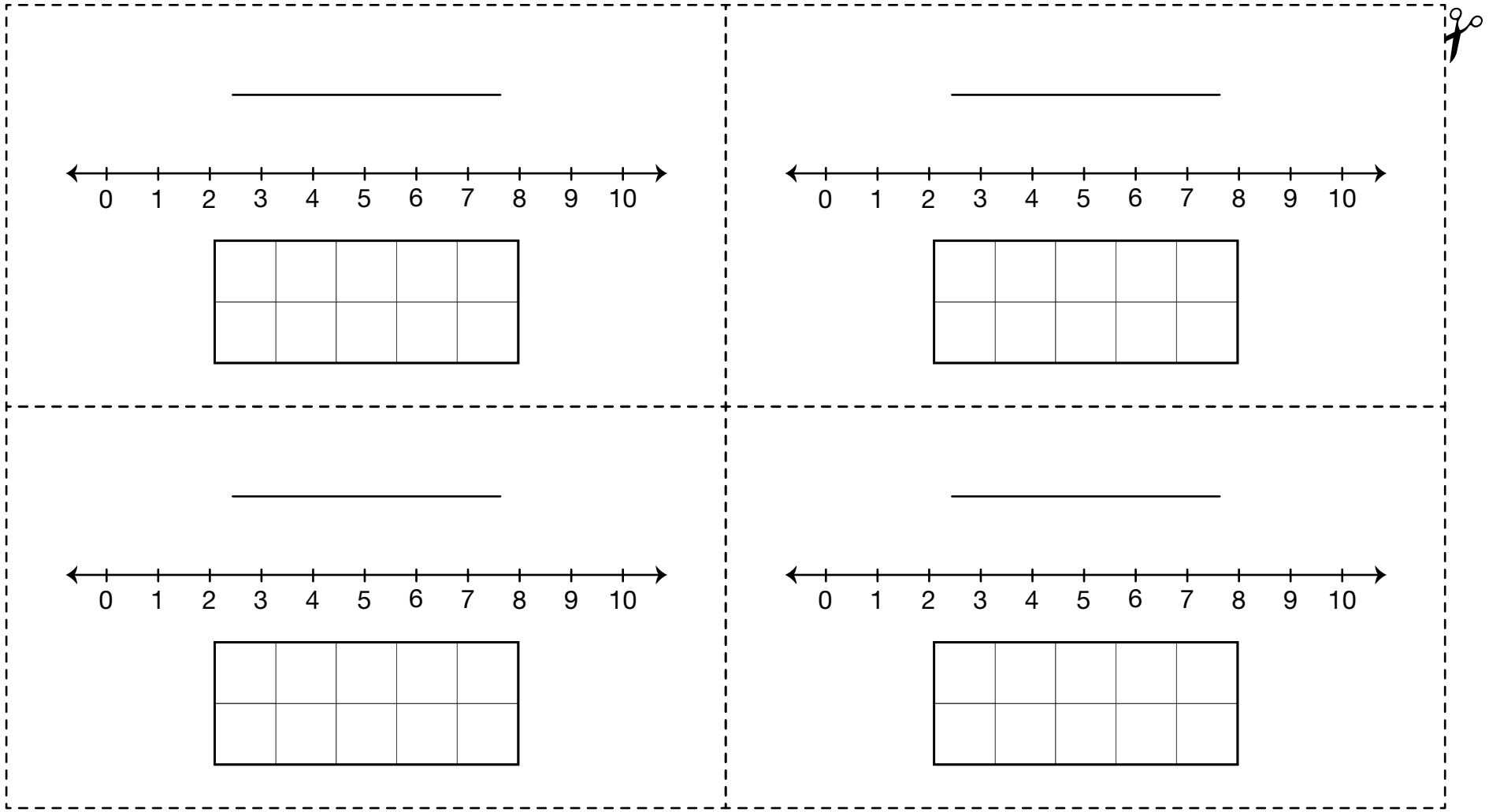
Show Your Strategy Cards



Subtraction Cards for Small Numbers 1

1 − 0	1 − 1	2 − 1	3 − 1
4 − 1	2 − 0	2 − 2	3 − 2
3 − 0	4 − 0	5 − 0	

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Subtraction Cards for Small Numbers 2

7 − 1	6 − 2	5 − 3	4 − 4
6 − 1	5 − 2	4 − 3	8 − 0
6 − 0	5 − 1	4 − 2	3 − 3

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Subtraction Cards for Small Numbers 3

	$9 - 1 = \square$	$8 - 2 = \square$	$7 - 3 = \square$
$6 - 4 = \square$	$5 - 5 = \square$	$8 - 1 = \square$	$7 - 2 = \square$
$6 - 3 = \square$	$5 - 4 = \square$	$9 - 0 = \square$	$7 - 0 = \square$

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Subtraction Cards for Small Numbers 4

$8 - 5$	$8 - 6$	$8 - 7$	$8 - 8$
$7 - 6$	$7 - 7$	$8 - 3$	$8 - 4$
$6 - 5$	$6 - 6$	$7 - 4$	$7 - 5$

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Subtraction Cards for Small Numbers 5

$\begin{array}{r} 2 \\ - \\ \hline \end{array}$	$\begin{array}{r} 3 \\ - \\ \hline \end{array}$	$\begin{array}{r} 4 \\ - \\ \hline \end{array}$	$\begin{array}{r} 5 \\ - \\ \hline \end{array}$
$\begin{array}{r} \\ - \\ \hline \end{array}$	$\begin{array}{r} \\ - \\ \hline \end{array}$	$\begin{array}{r} \\ - \\ \hline \end{array}$	$\begin{array}{r} \\ - \\ \hline \end{array}$
$\begin{array}{r} \\ - \\ \hline \end{array}$	$\begin{array}{r} 7 \\ - \\ \hline \end{array}$	$\begin{array}{r} 8 \\ - \\ \hline \end{array}$	$\begin{array}{r} \\ - \\ \hline \end{array}$

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Subtraction Cards for Small Numbers 6

$10 - 0$	$10 - 1$	$10 - 2$	$10 - 3$
$10 - 4$	$10 - 5$	$10 - 6$	$10 - 7$
$10 - 8$	$10 - 9$	$10 - 10$	

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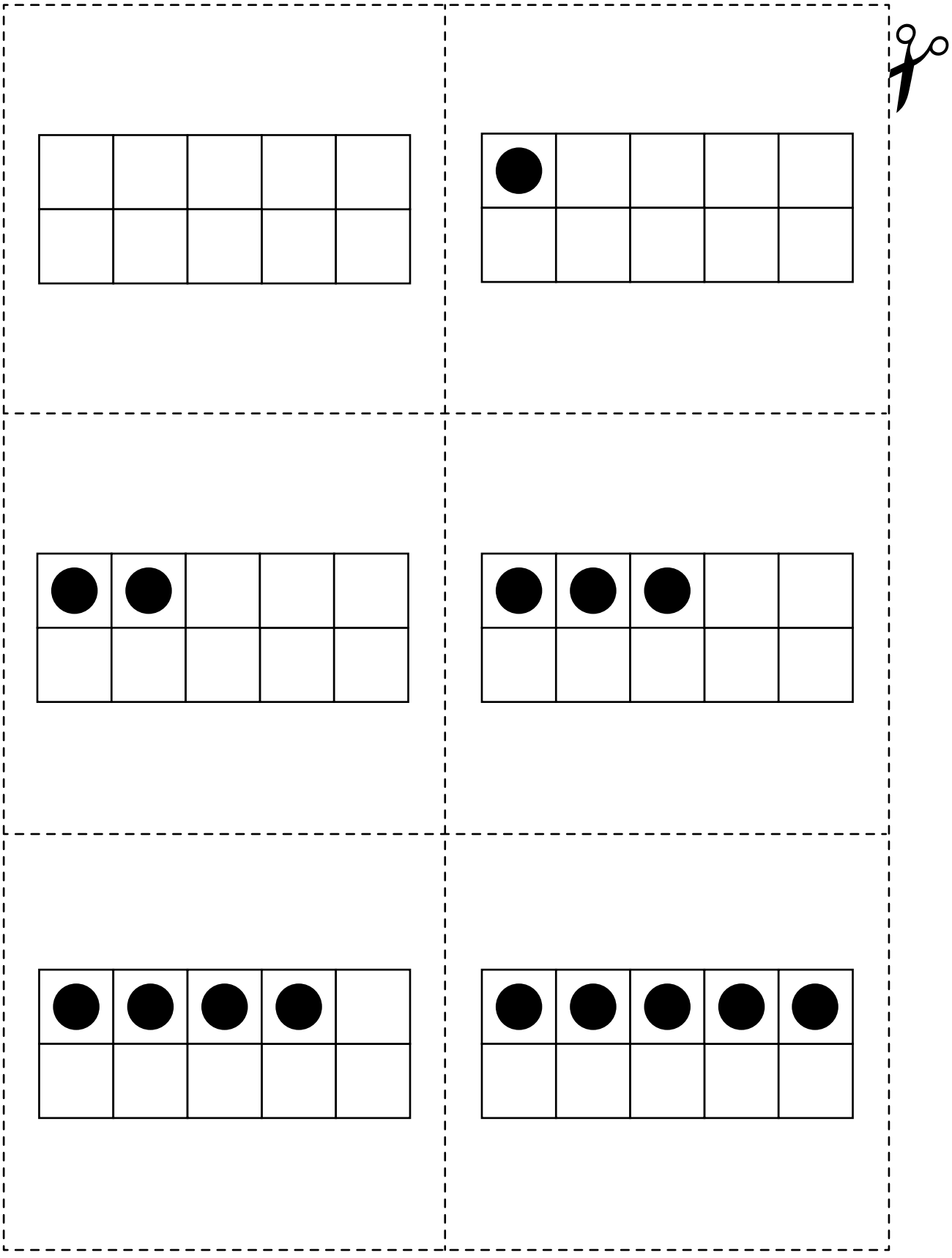
0–10 Small Ten Frame Cards



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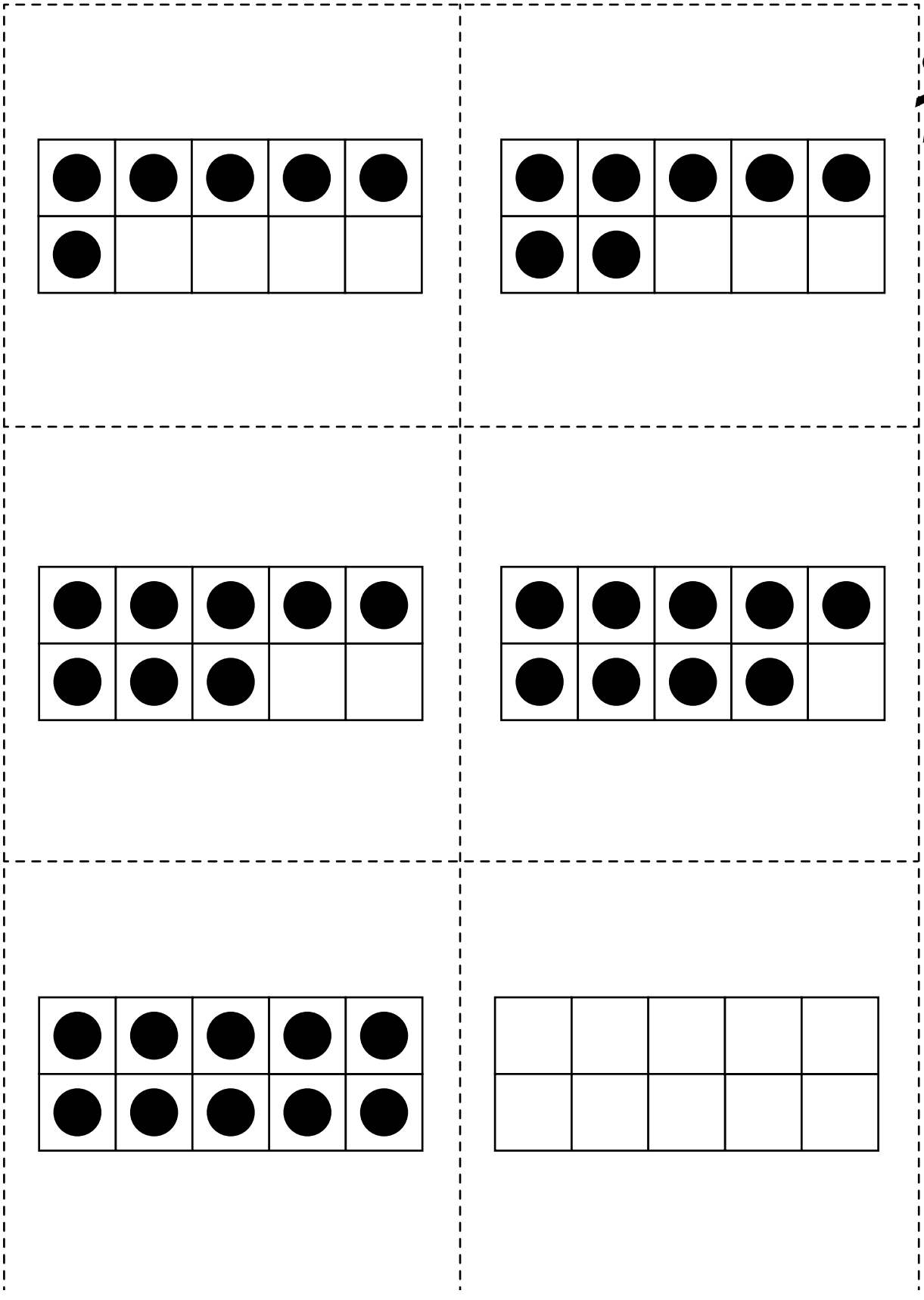

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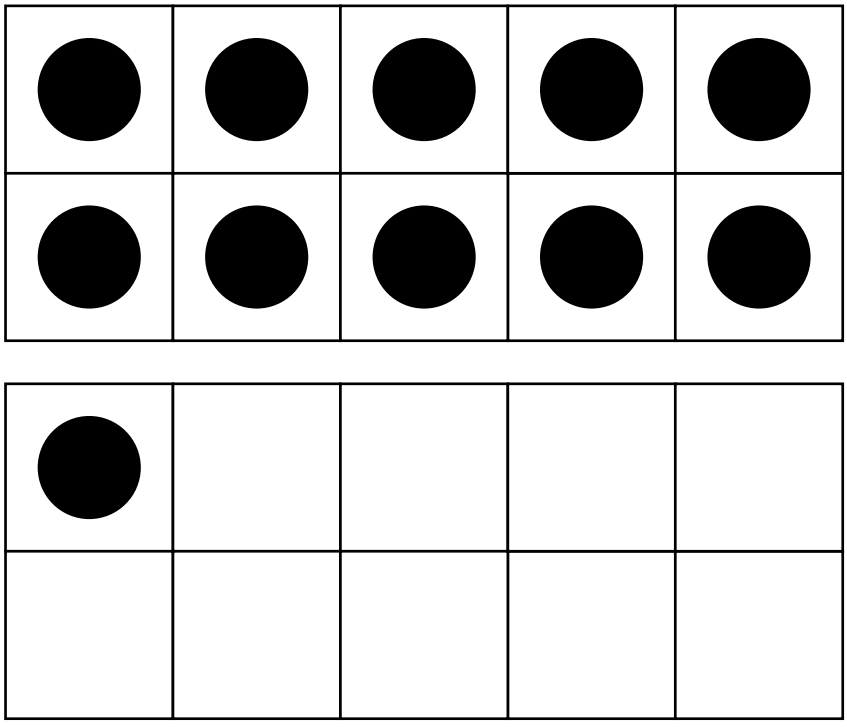
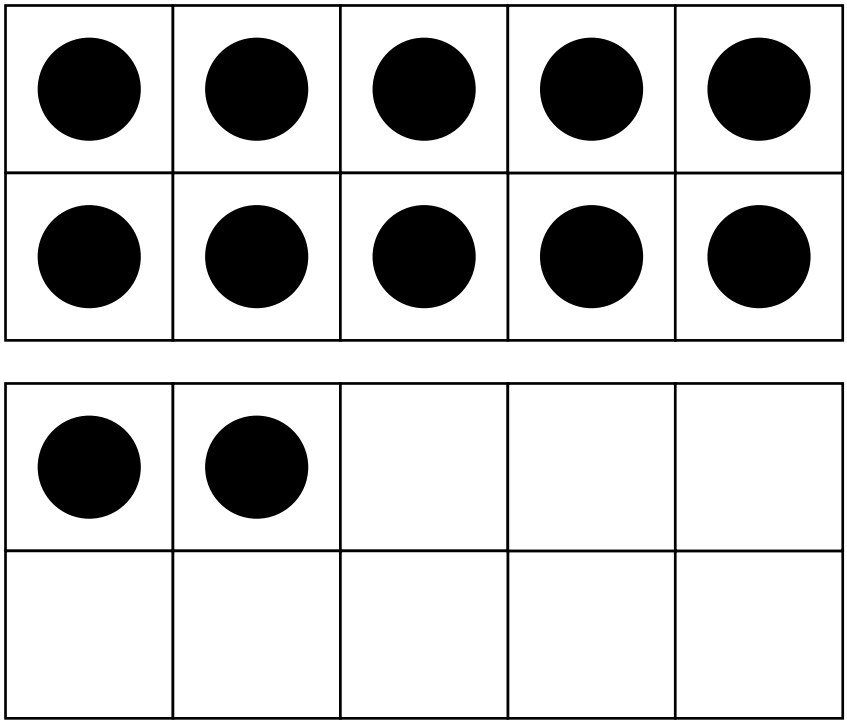
11–20 Ten Frame Flash Cards





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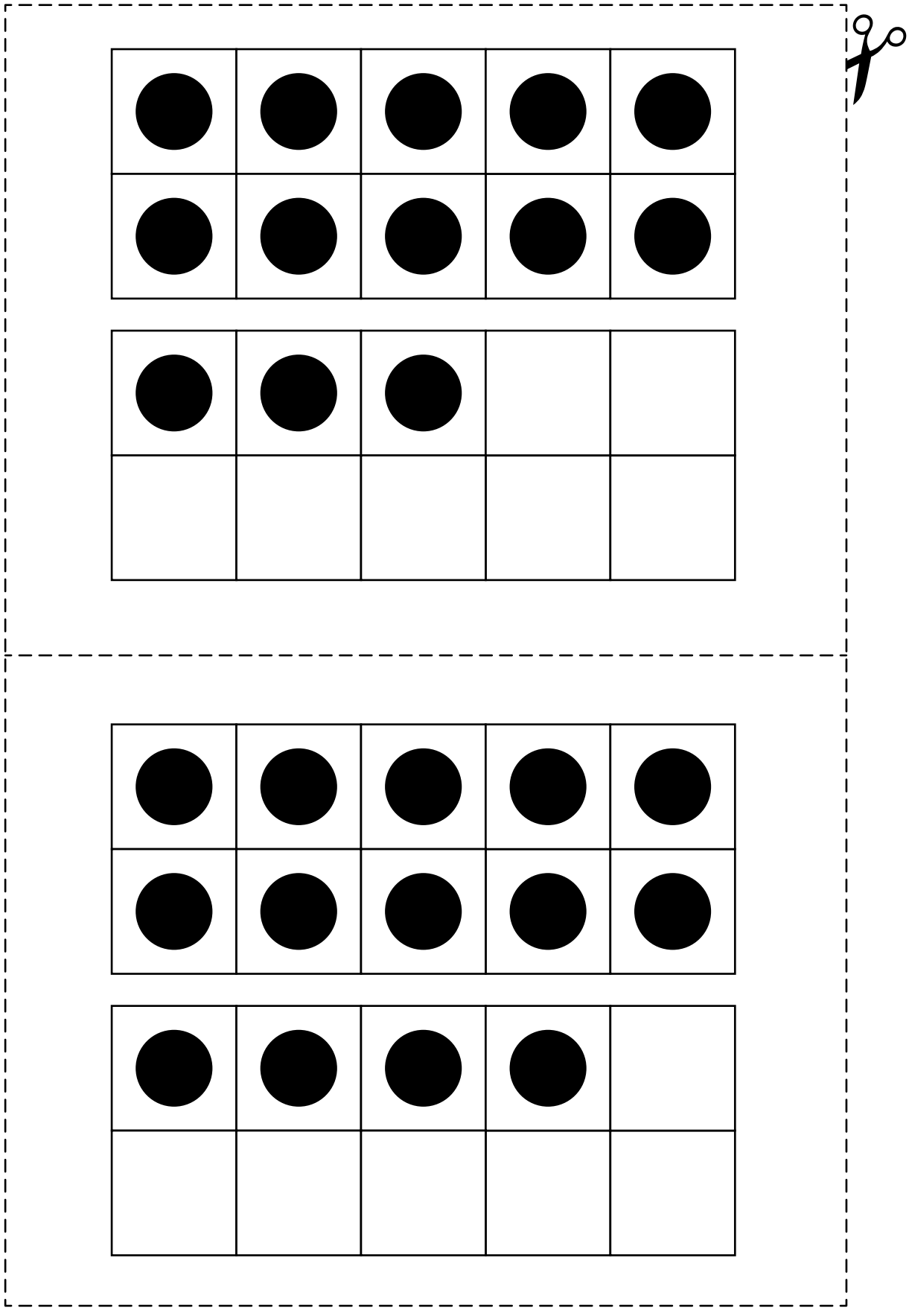

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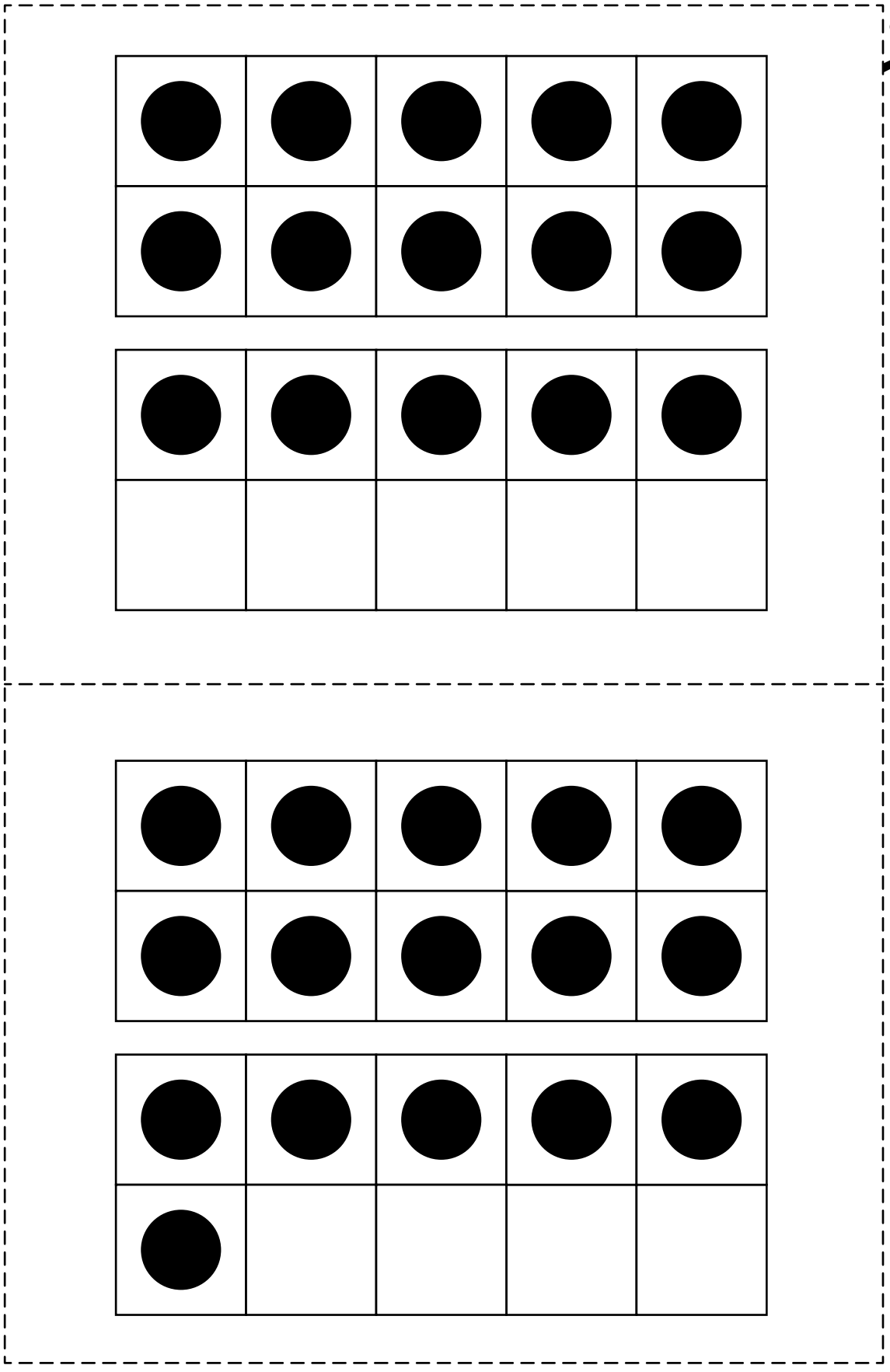

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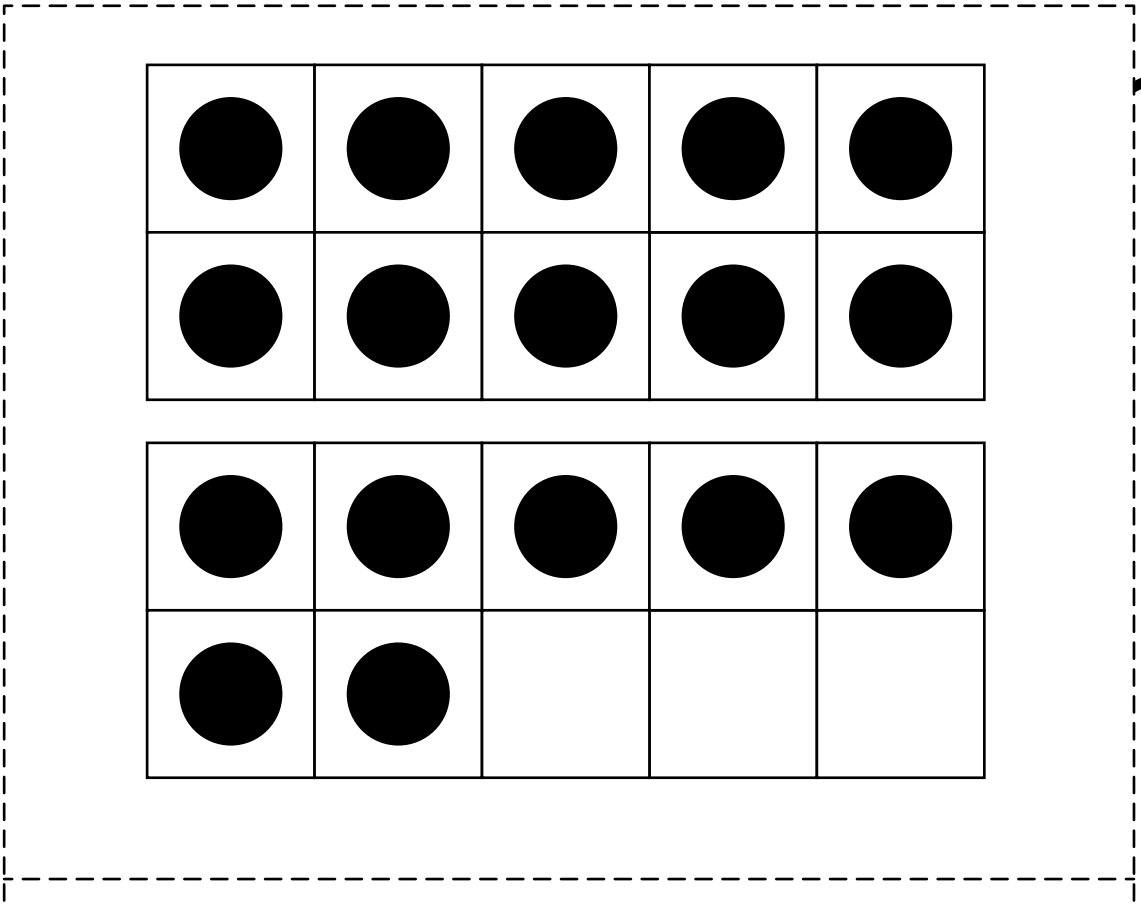

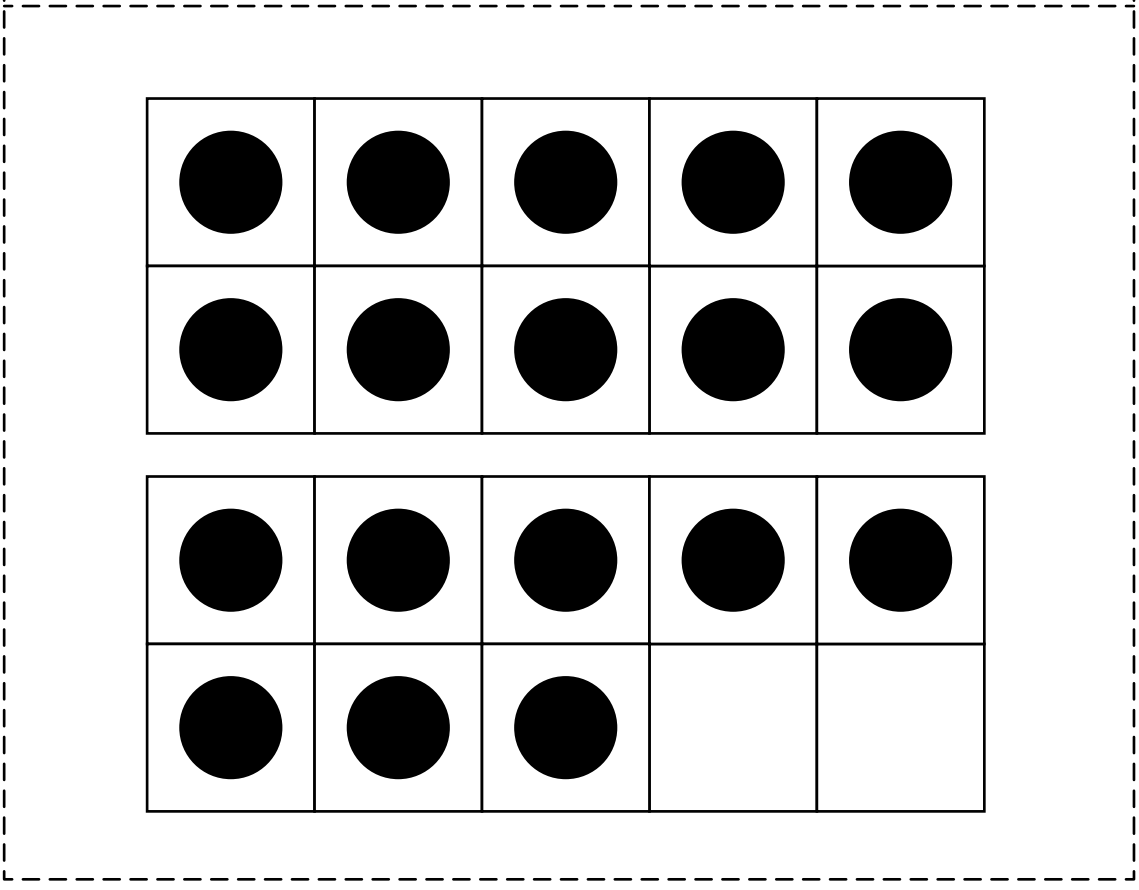

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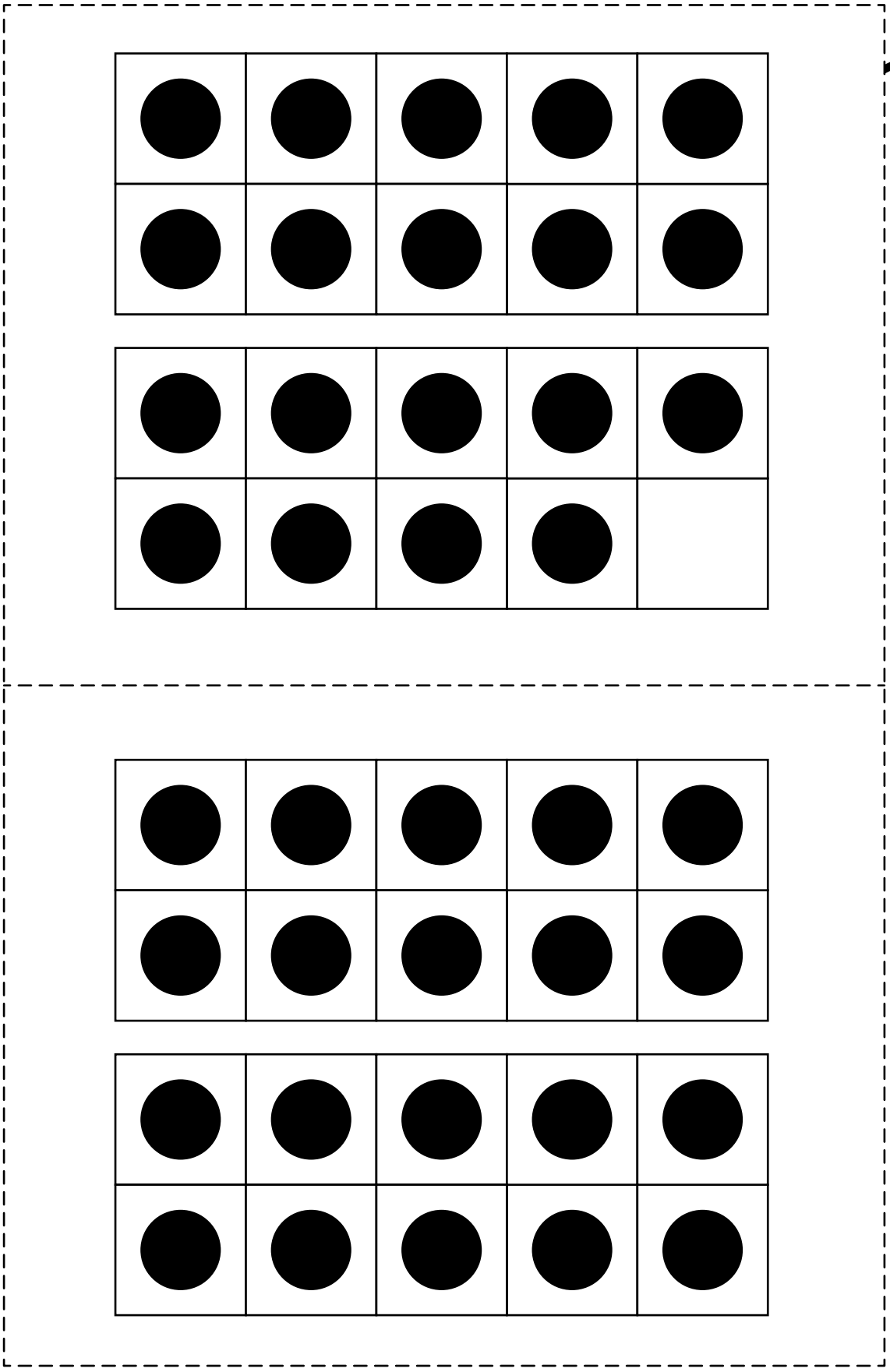

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