

The Mini Board

Ongoing, “in the moment” assessments may be the most powerful tool teachers have for improving student performance. For students to get better at anything, they need lots of quick rigorous practice, spaced over time, with immediate feedback. The Mini Boards can do just that.

Examples

What follows are some sample word problems that can be solved with a bar model.

Common Core Math Standards 1.OA

Operations and Algebraic Thinking

1.OA

Represent and solve problems involving addition and subtraction.

1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.²
2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Additional Standards Addressed:

1.OA: 3, 4, 7, 8

Operations and Algebraic Thinking

1.OA

Understand and apply properties of operations and the relationship between addition and subtraction.

3. Apply properties of operations as strategies to add and subtract.³ *Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.)*
4. Understand subtraction as an unknown-addend problem. *For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8.*

Work with addition and subtraction equations.

7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.*
8. Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 = \square - 3$, $6 + 6 = \square$.*

Table 1 Common Core Standards Glossary

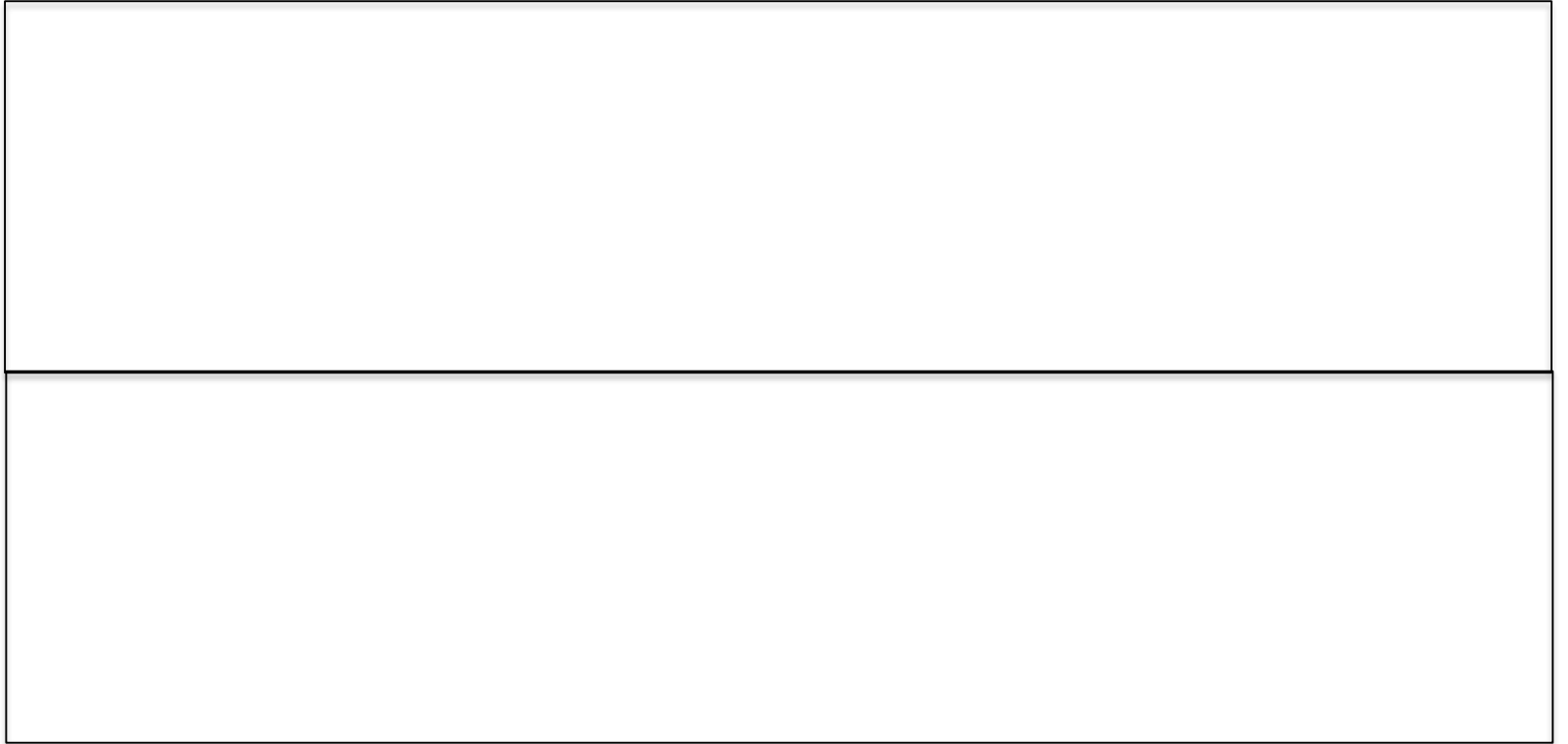
TABLE 1. Common addition and subtraction situations.⁶

	Result Unknown	Change Unknown	Start Unknown
Add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? $2 + 3 = ?$	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? $2 + ? = 5$	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? $? + 3 = 5$
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? $5 - 2 = ?$	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? $5 - ? = 3$	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? $? - 2 = 3$
	Total Unknown	Addend Unknown	Both Addends Unknown ¹
Put Together/ Take Apart ²	Three red apples and two green apples are on the table. How many apples are on the table? $3 + 2 = ?$	Five apples are on the table. Three are red and the rest are green. How many apples are green? $3 + ? = 5$, $5 - 3 = ?$	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? $5 = 0 + 5$, $5 = 5 + 0$ $5 = 1 + 4$, $5 = 4 + 1$ $5 = 2 + 3$, $5 = 3 + 2$
	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare ³	(“How many more?” version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? (“How many fewer?” version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? $2 + ? = 5$, $5 - 2 = ?$	(Version with “more”): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with “fewer”): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? $2 + 3 = ?$, $3 + 2 = ?$	(Version with “more”): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with “fewer”): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? $5 - 3 = ?$, $? + 3 = 5$

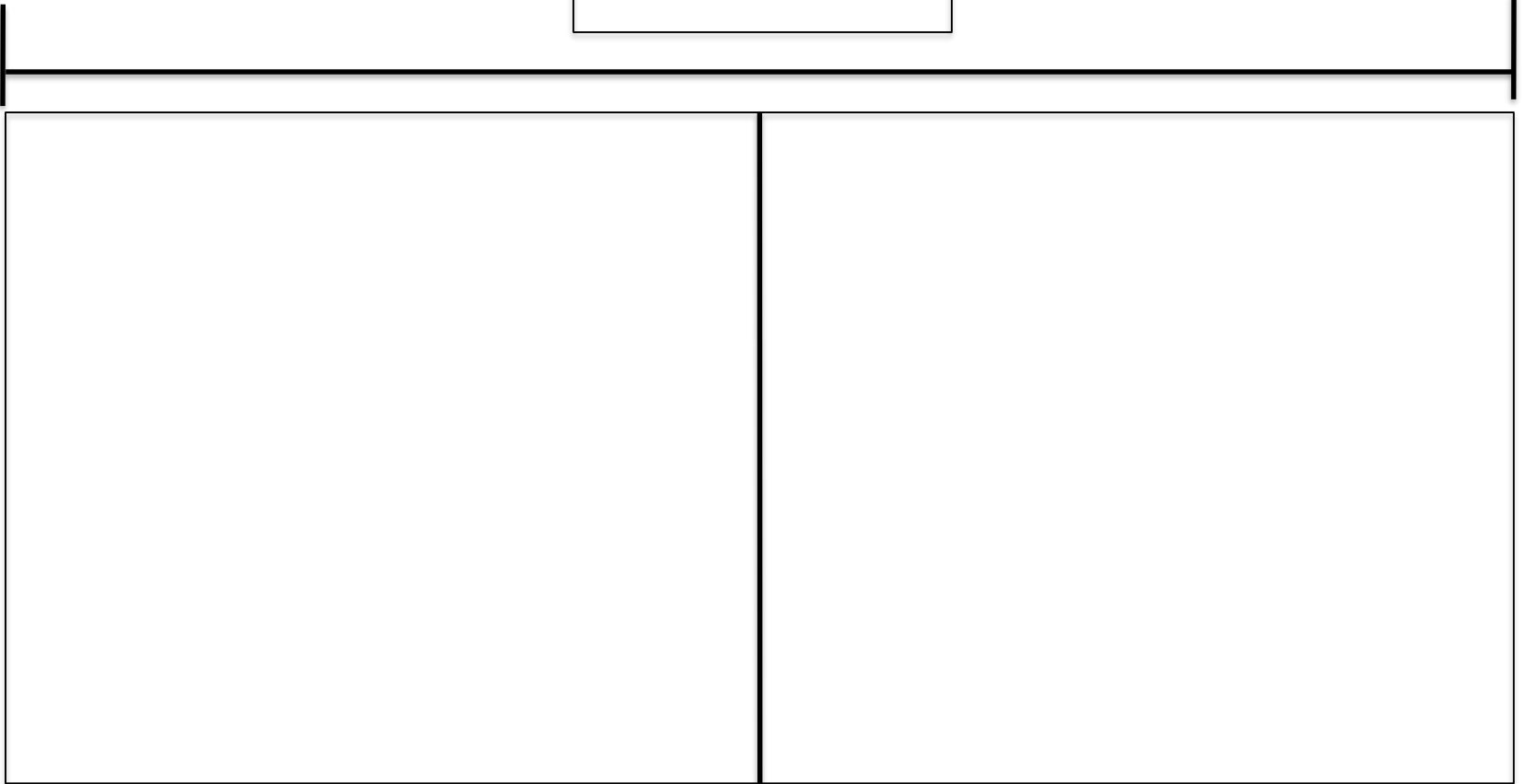
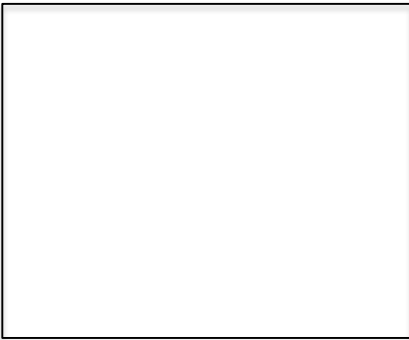
Teachers: Print the following slides (as needed), and then have students insert it into their Mini Board.

Note: On some word problems near the beginning, I have modeled how to mark up the questions:

1. Underline what you KNOW! (the key information)
2. Use parenthesis for the question or task. (What you NEED to find.)

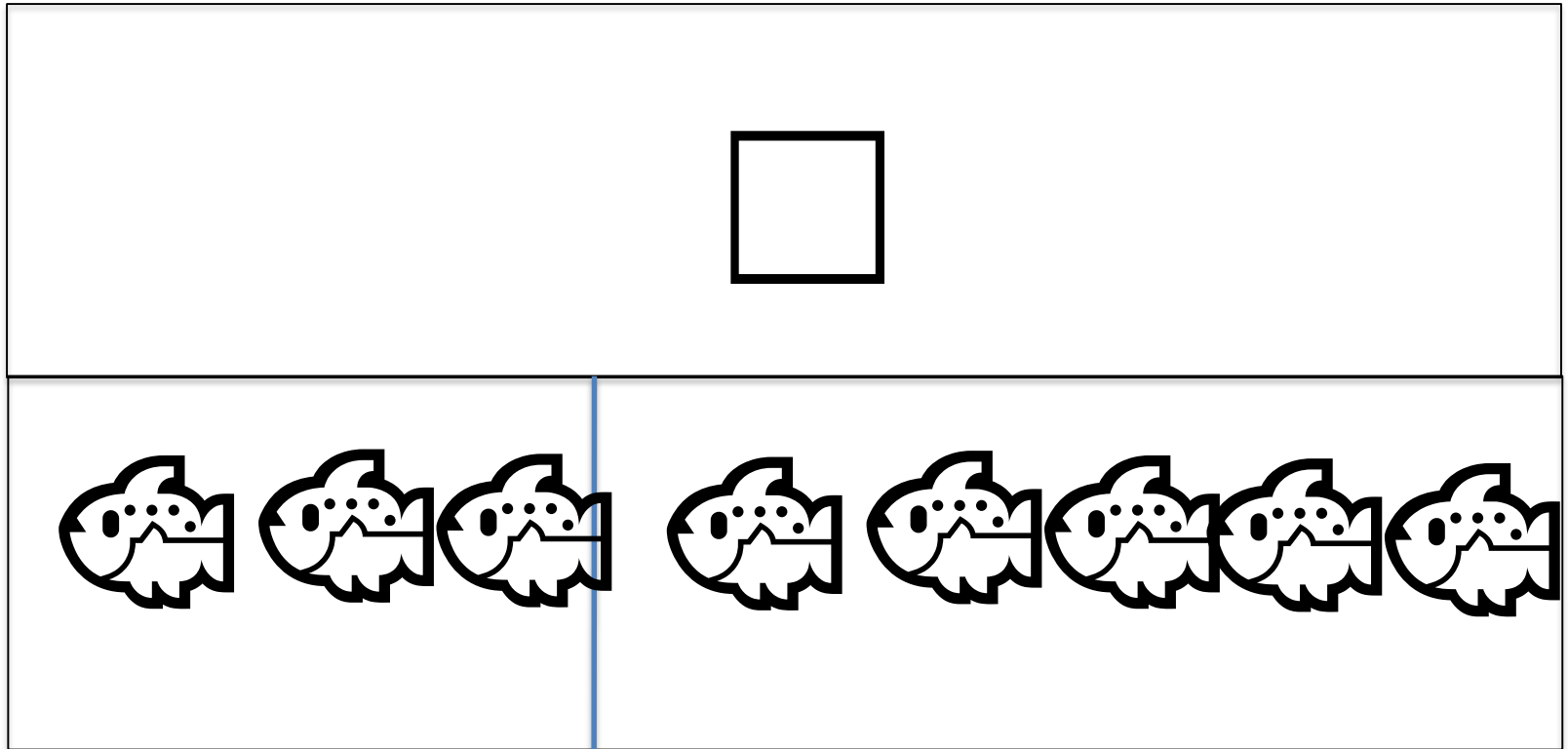


whole



I have 3 fish. I got 5 more fish at the store.

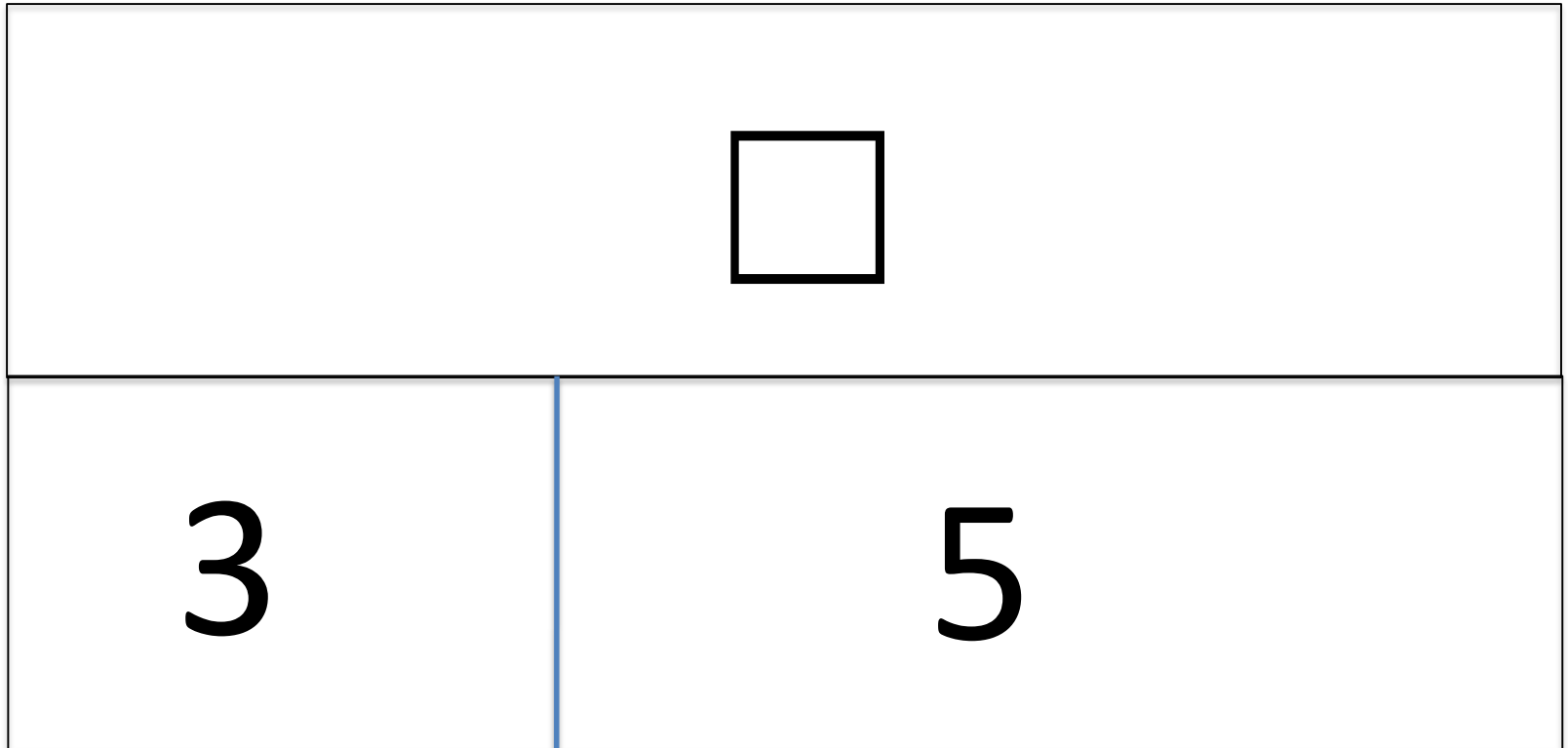
(How many do I have now?)



$$3 + 5 = \square$$

$$5 + 3 = \square$$

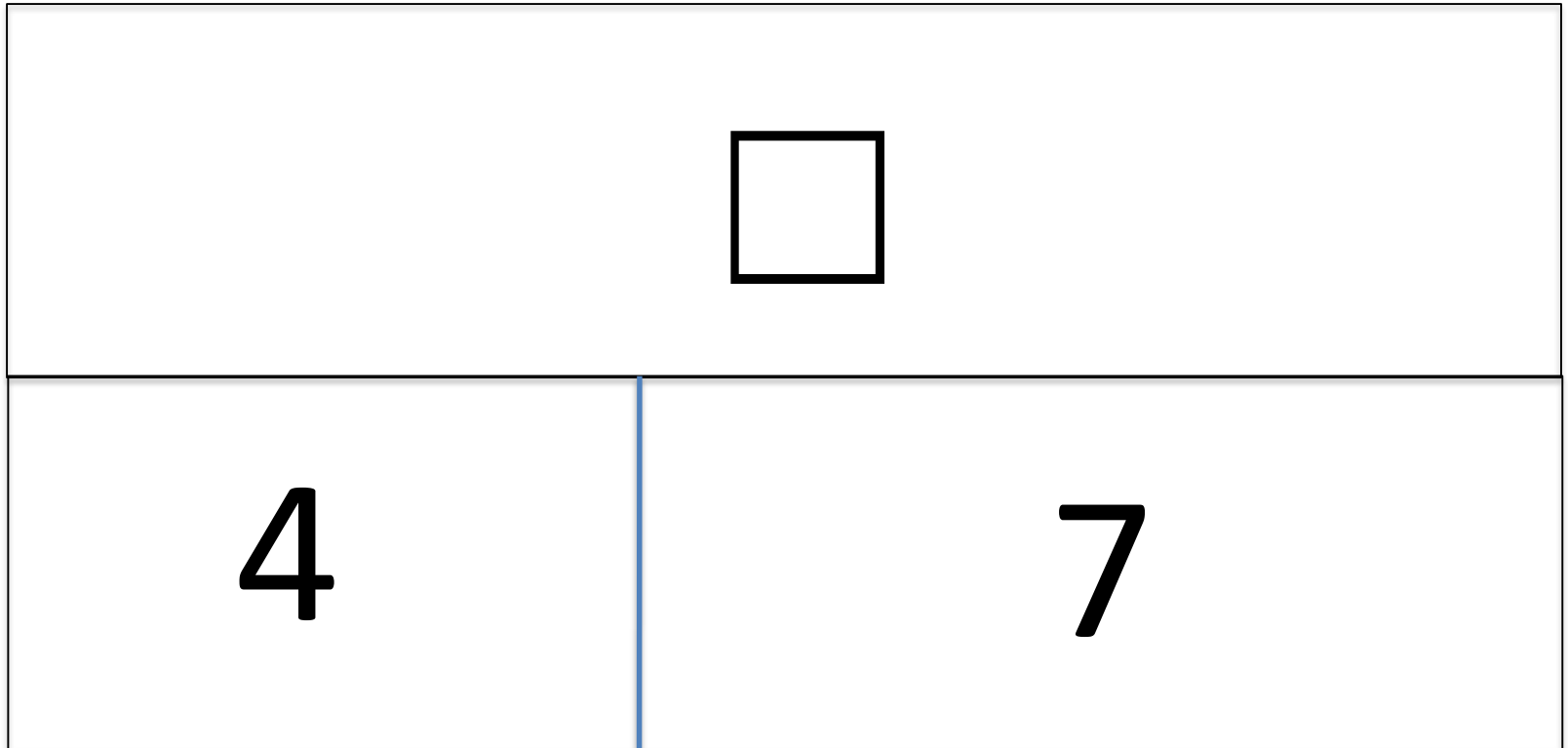
I have 3 fish. I got 5 more fish at the store.
(How many do I have now?)



$$3 + 5 = \square$$

$$5 + 3 = \square$$

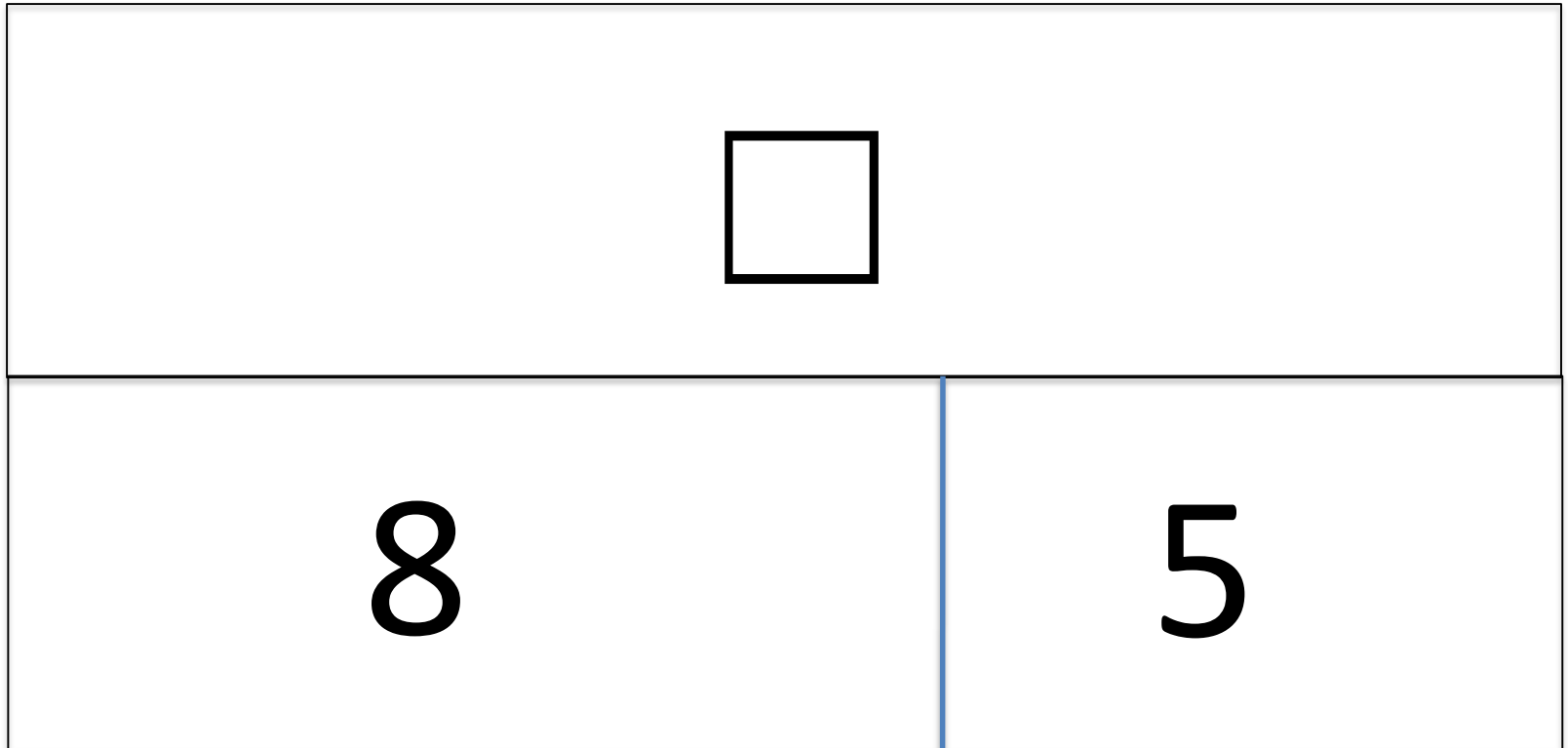
There were 4 cats in the house. Then, 7 more came in. (How many are in the house now?)



$$4 + 7 = \square$$

$$7 + 4 = \square$$

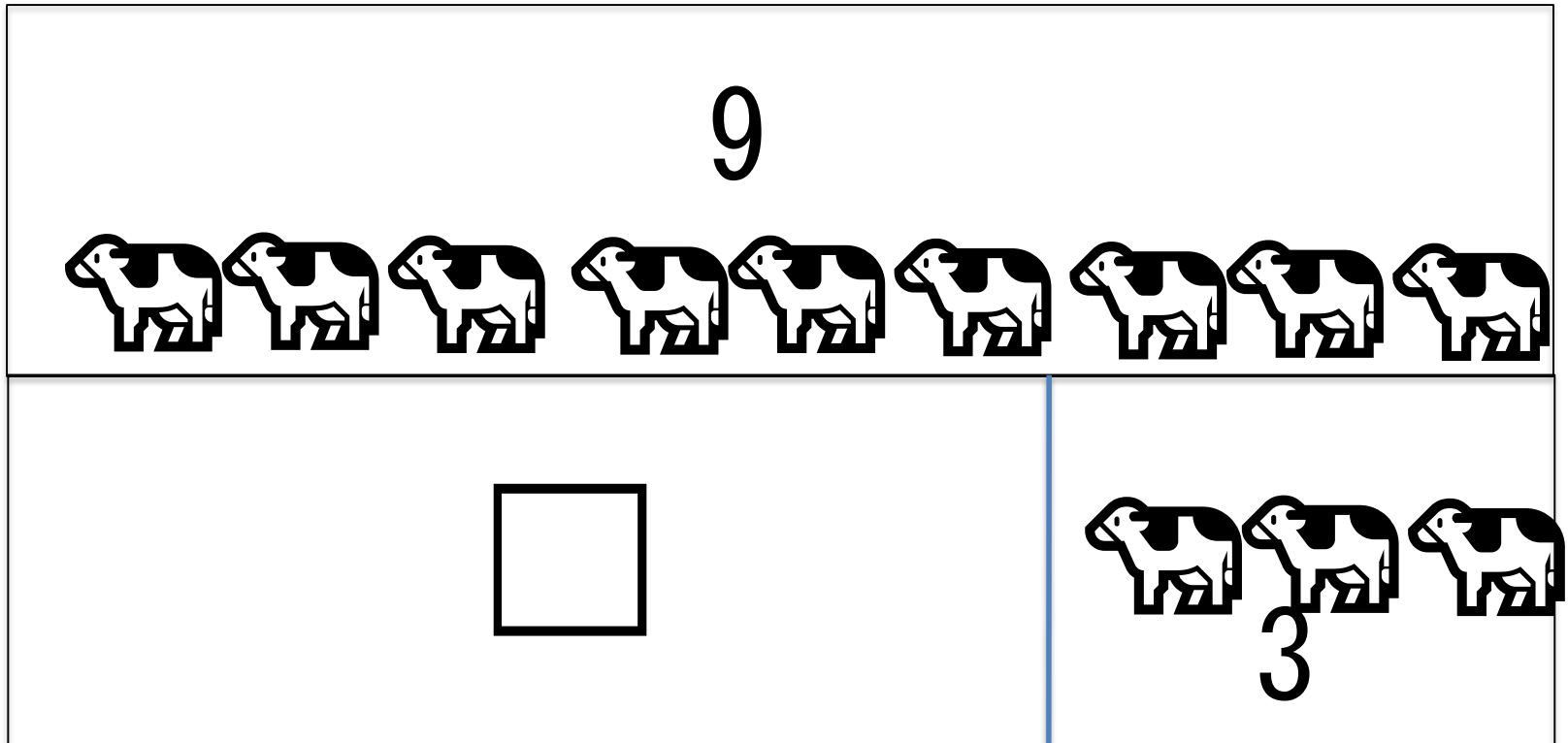
Bill has 8 pennies. I have 5 pennies.
(How many do we have in all?)



$$8 + 5 = \square$$

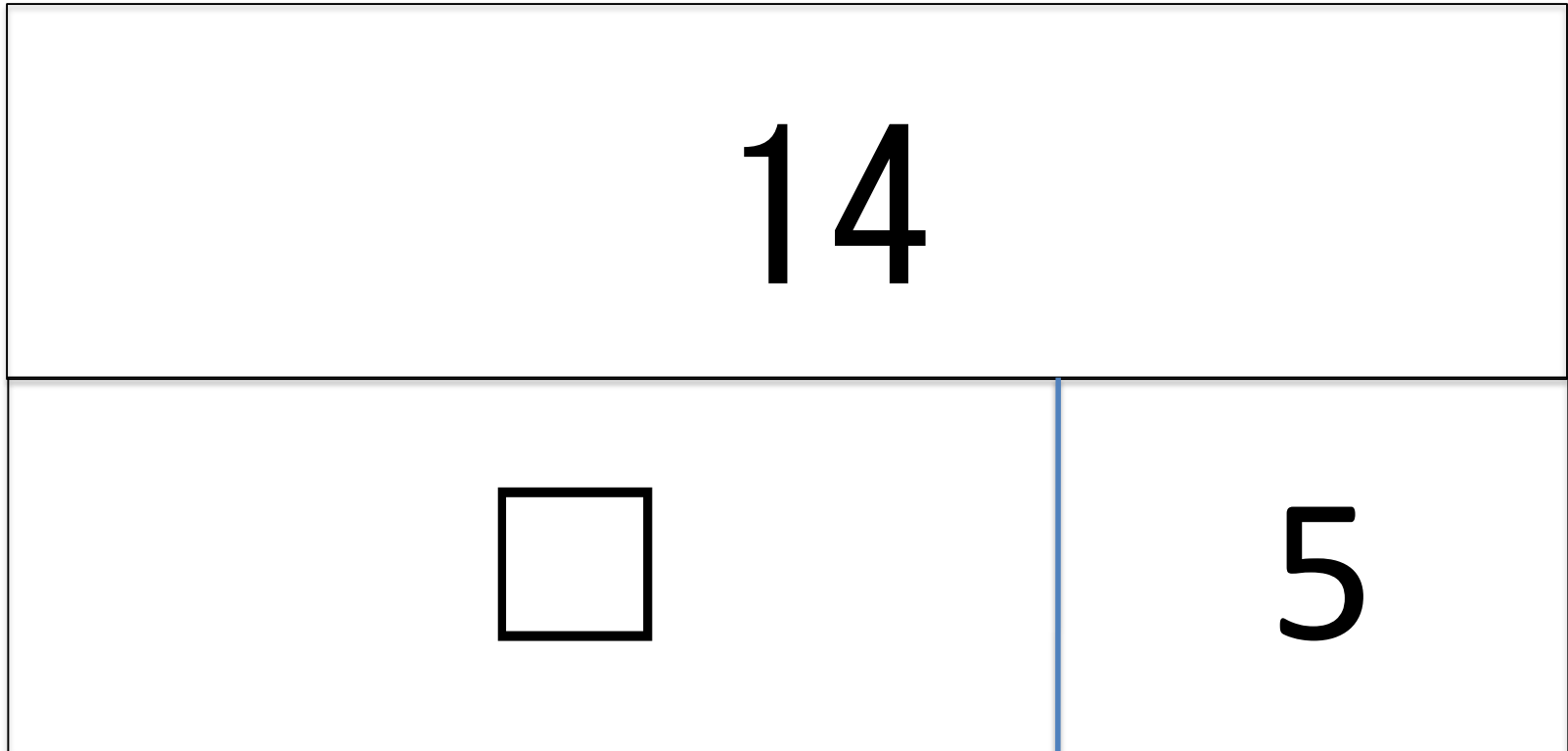
$$5 + 8 = \square$$

There were some cows in my yard. Then 3 more cows came. Now there are 9. (How many were there before?)



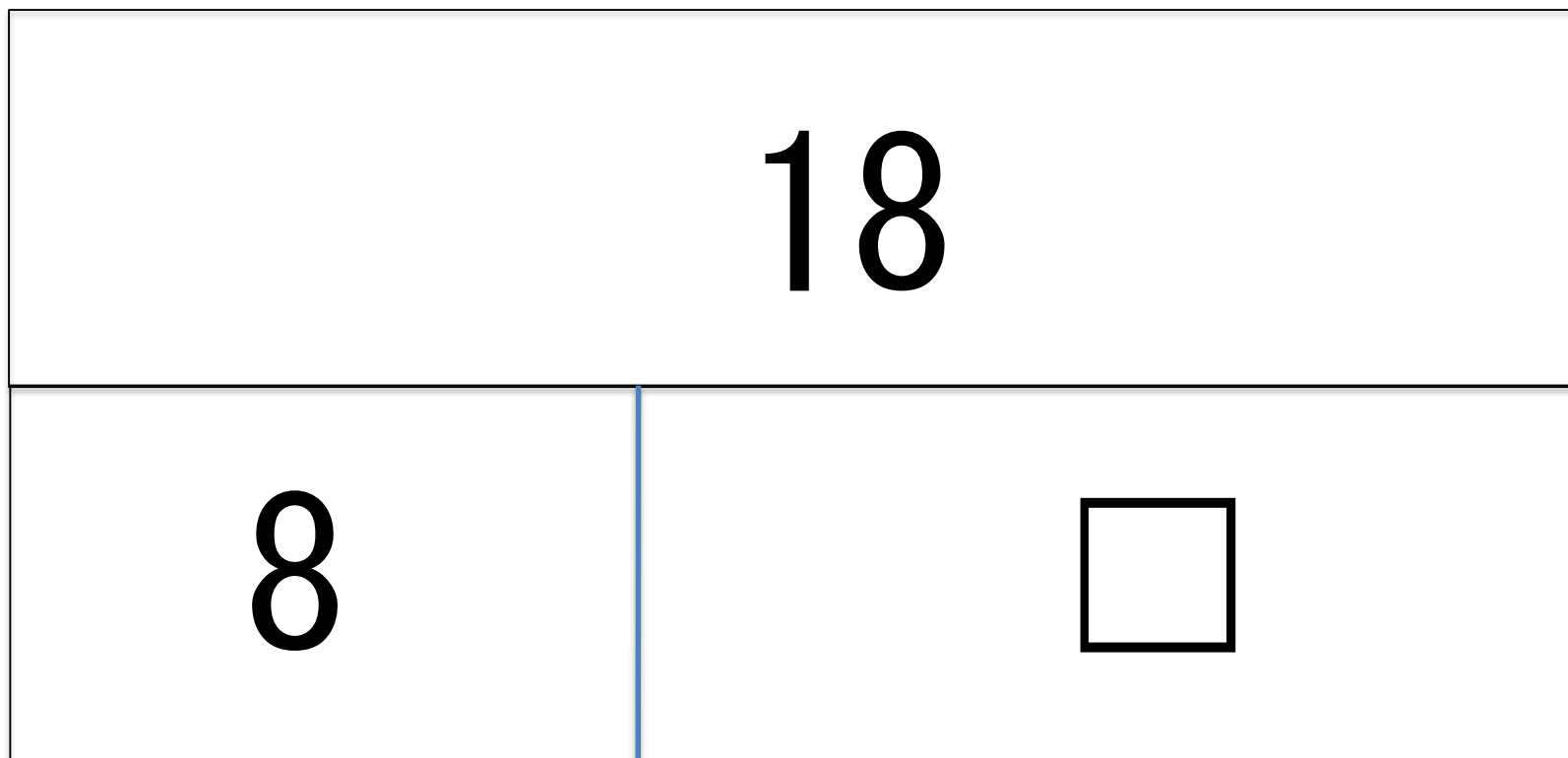
$$\square + 3 = 9 \quad \text{or} \quad 9 - 3 = \square$$

There were some deer in my yard. Then 5 more deer came. Now there are 14. (How many were there before?)



$$\square + 5 = 14 \quad \text{or} \quad 14 - 5 = \square$$

There were 8 kids in my class. Then some more kids came. Now there are 18. (How many came in?)

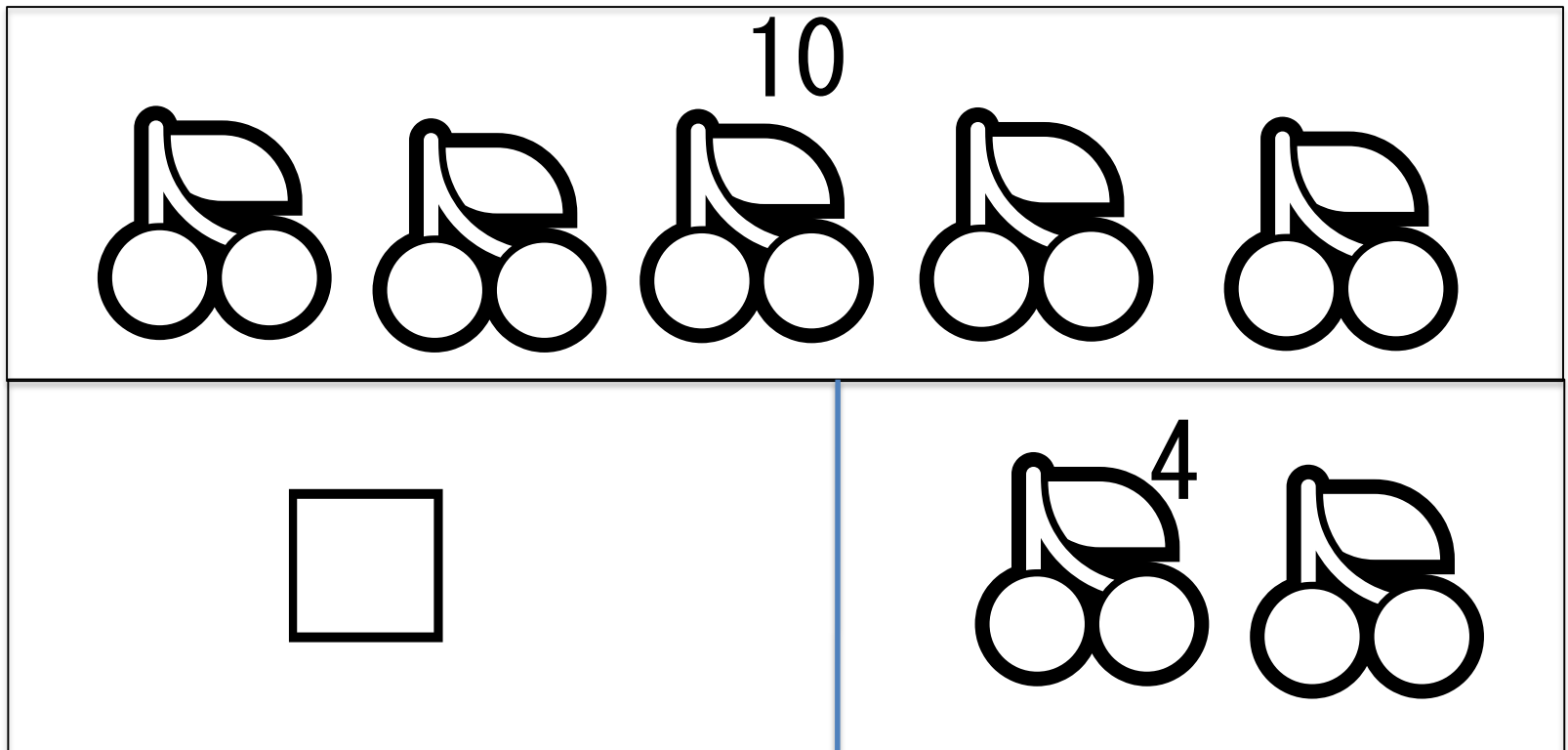


$$8 + \square = 18$$

$$18 - 8 = \square$$

There were 10 grapes on the table. I ate some of them. Now there are 4.

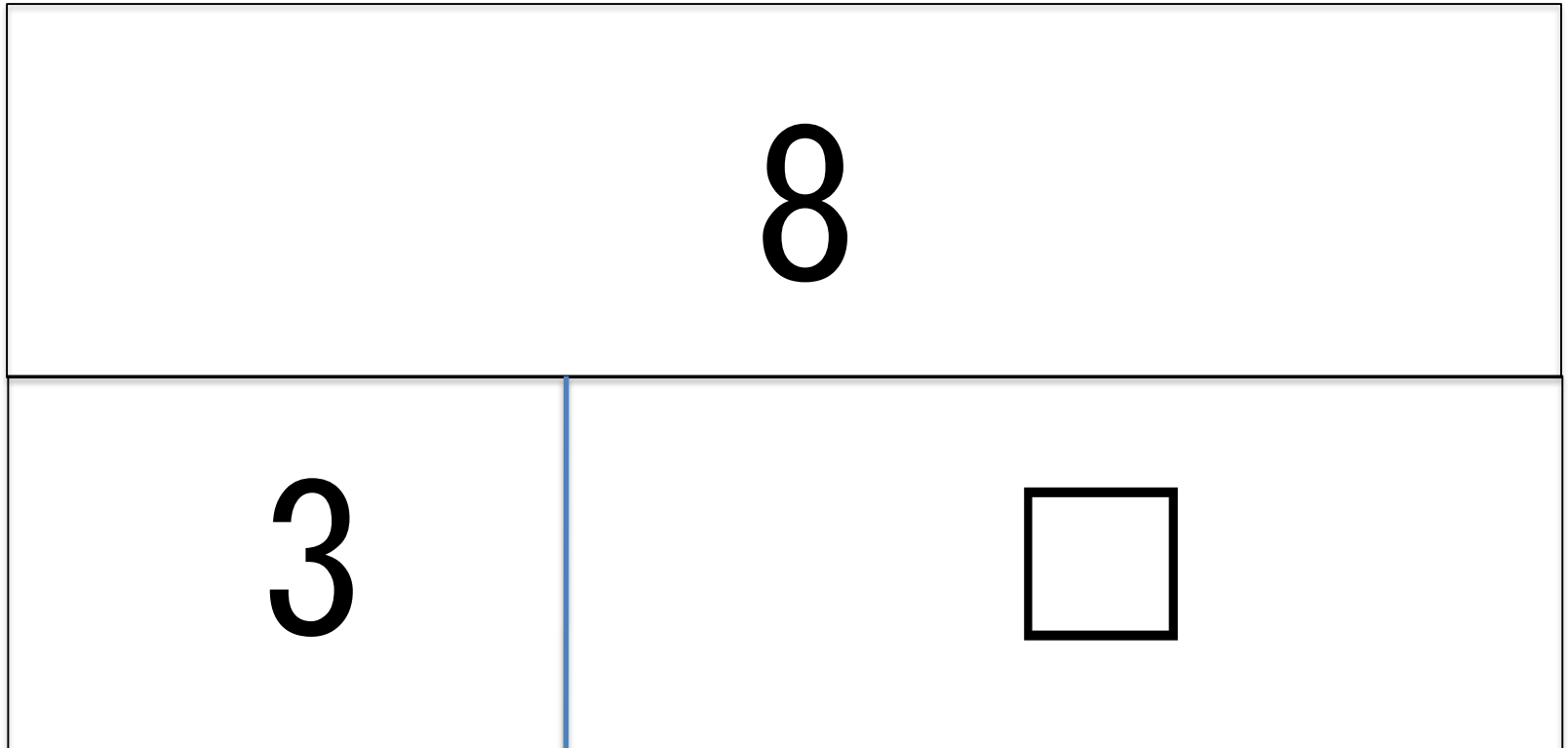
(How many did I eat?)



$$10 - 4 = \square$$

$$\square + 4 = 10$$

There were 8 cookies on the table. I ate 3 cookies. (How many are left?)

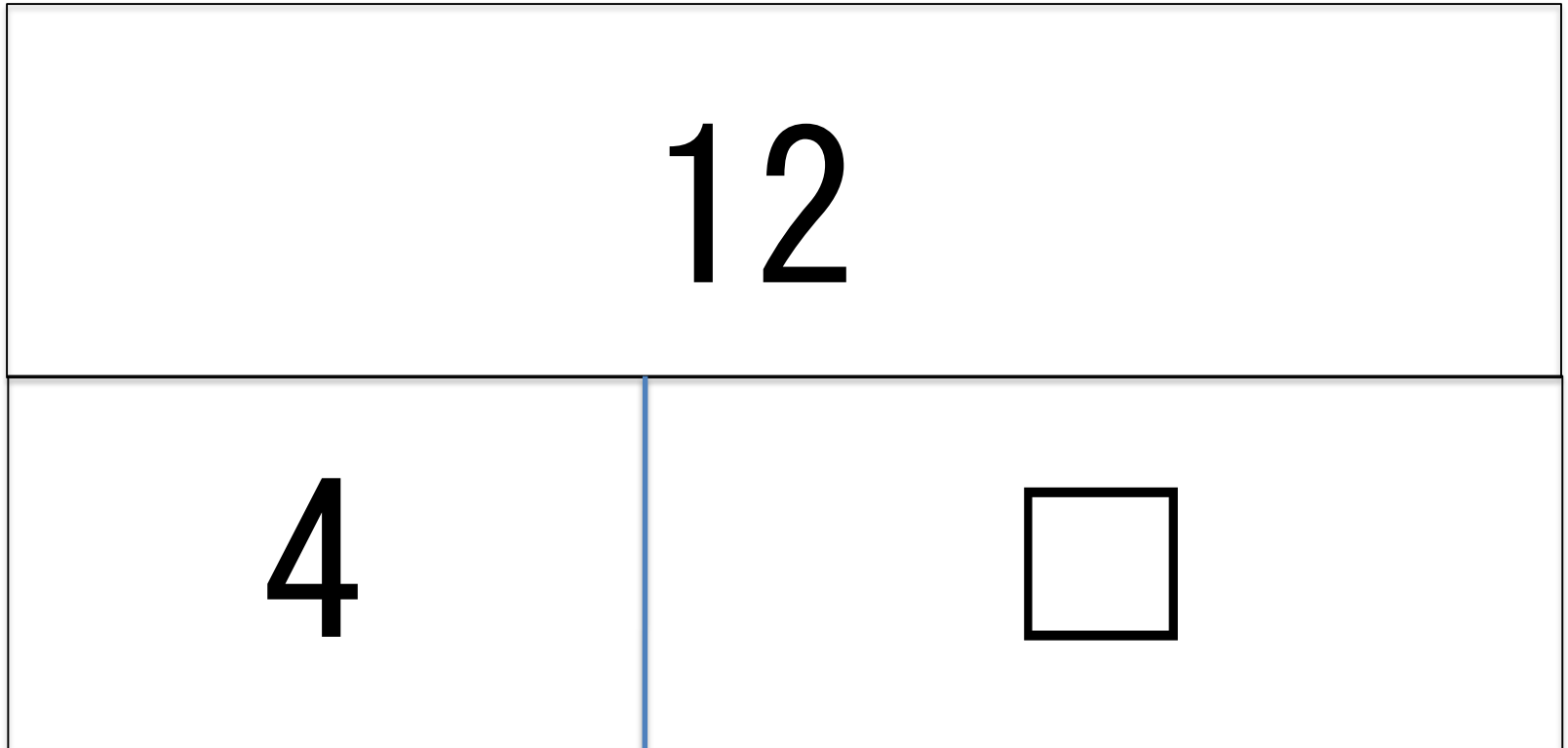


$$3 + \square = 8$$

$$8 - 3 = \square$$

There were 12 flowers in the garden.

I picked 4 of them. (How many are left?)

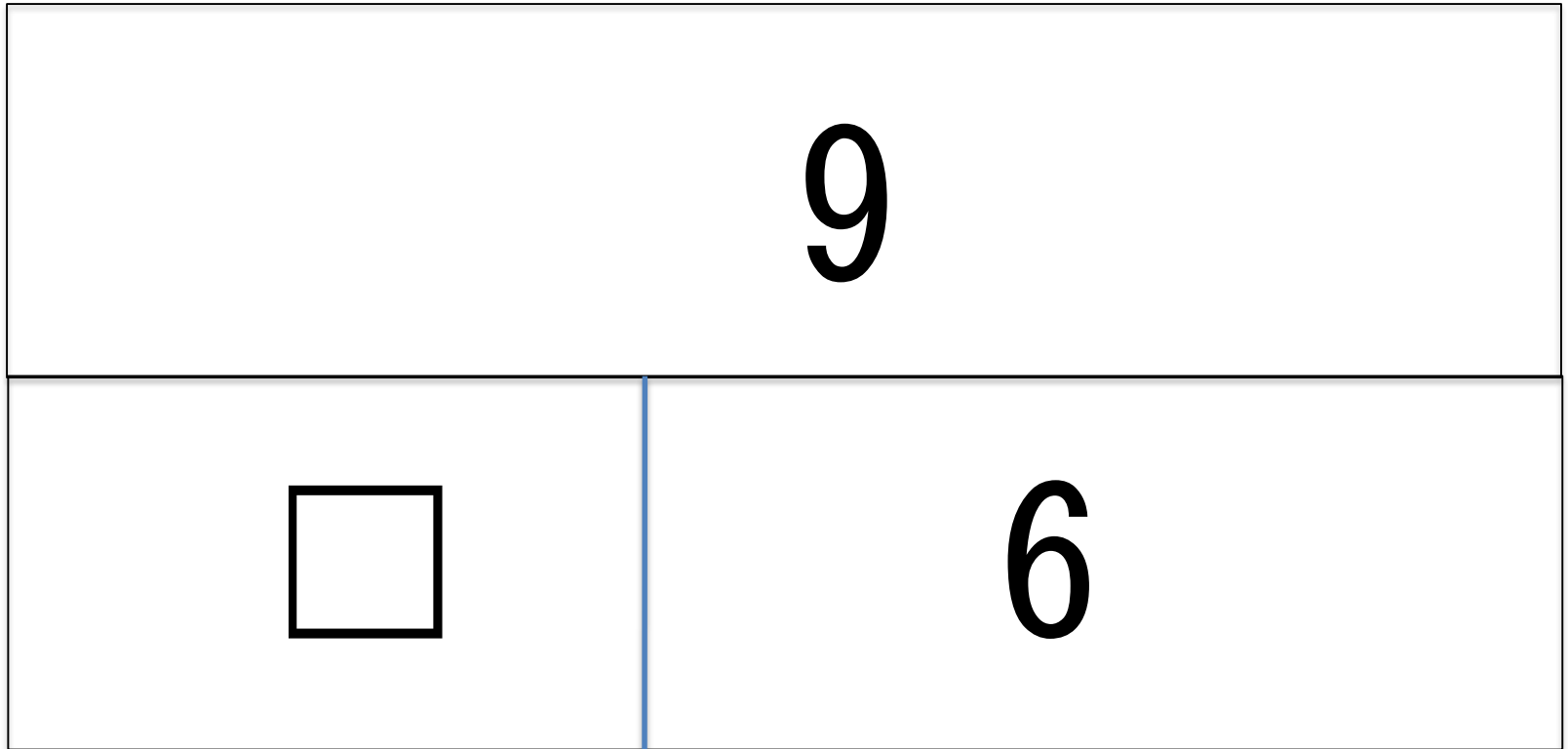


$$4 + \square = 12$$

$$12 - 4 = \square$$

There were 9 grapes on the table. I ate
some of them. Now there are 6.

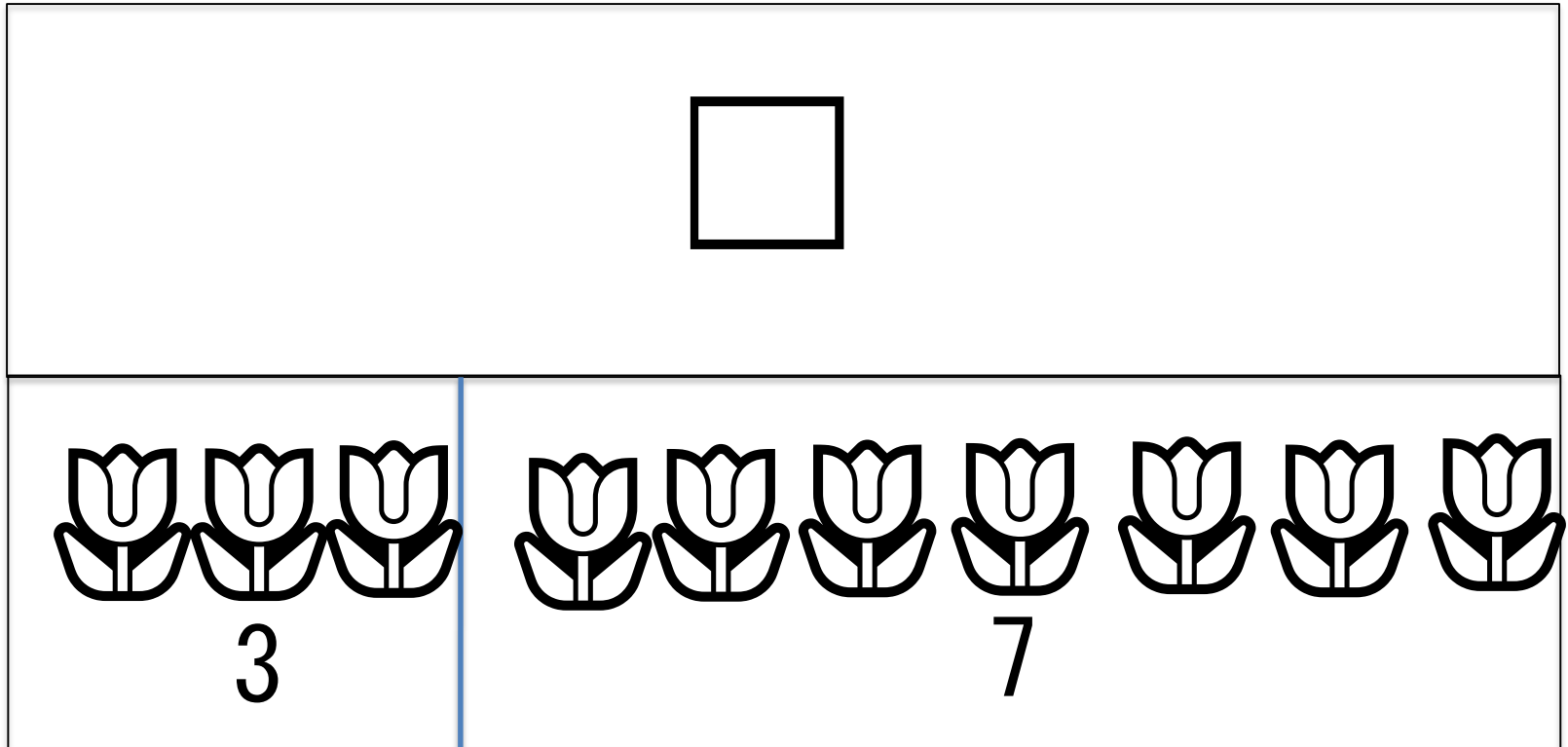
(How many did I eat?)



$$9 - 6 = \square$$

$$\square + 6 = 9$$

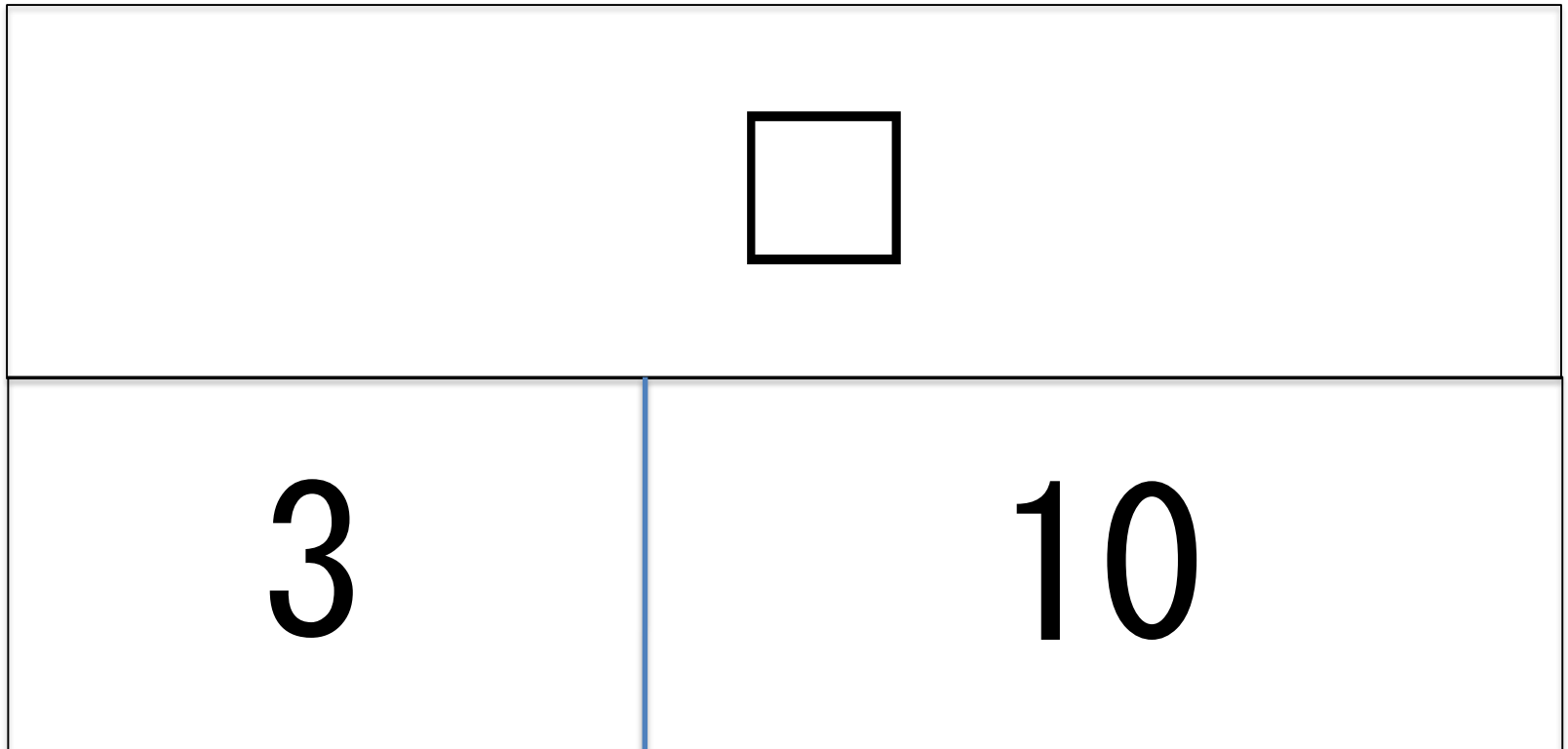
There were some flowers in the garden. I picked 3 of them. Now there are 7 left.
(How many were there before?)



$$\square - 3 = 7$$

$$3 + 7 = \square$$

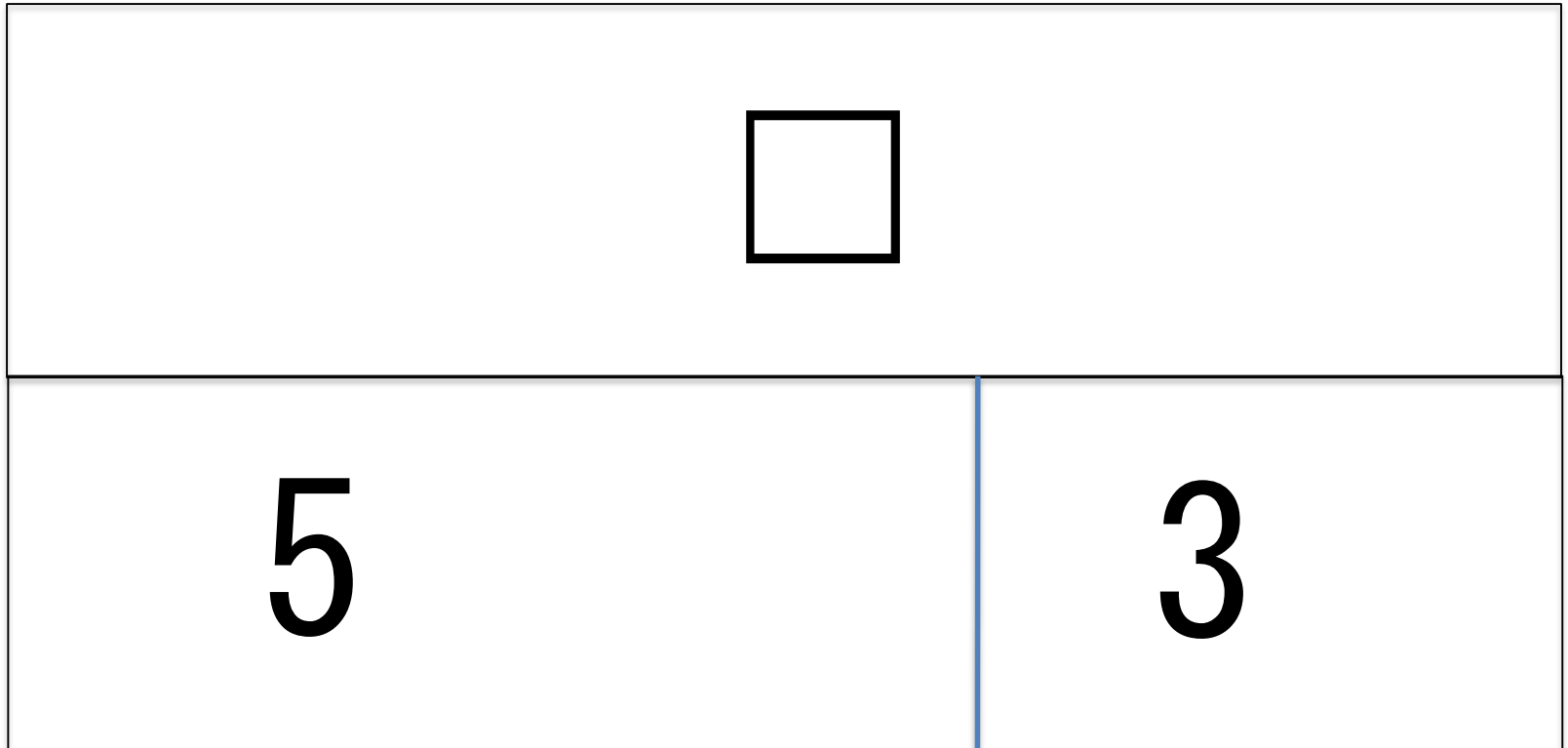
There were some flowers in the garden. I picked 3 of them. Now there are 10.
(How many were there before?)



$$\square - 3 = 10$$

$$3 + 10 = \square$$

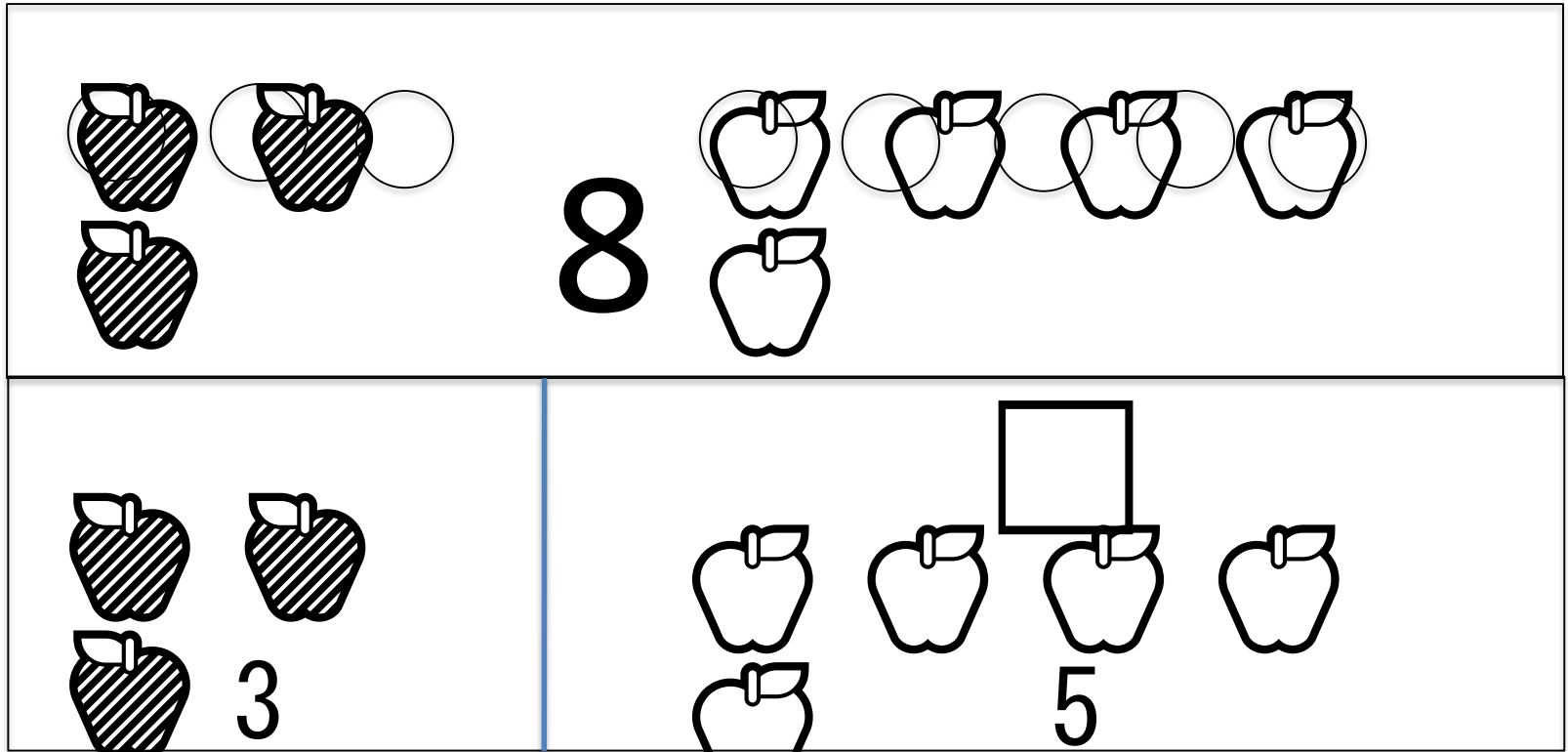
There were some apples in the tree. I picked 5 of them. Now there are 3.
(How many were there before?)



$$\square - 5 = 3$$

$$5 + 3 = \square$$

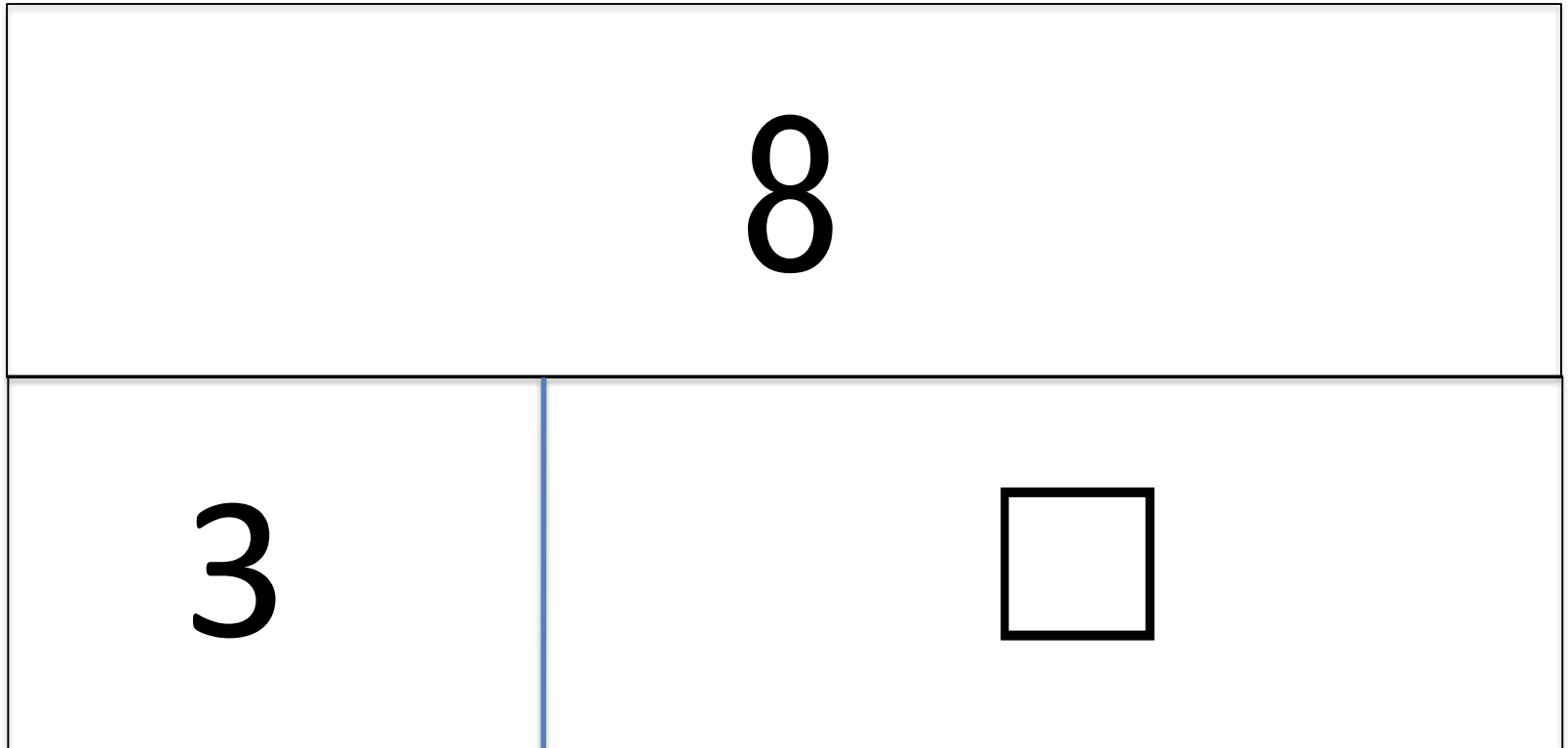
There are 8 apples on the table. 3 of them are red, and the rest are green. (How many are green?)



$$3 + \square = 8$$

$$8 - \square = 3$$

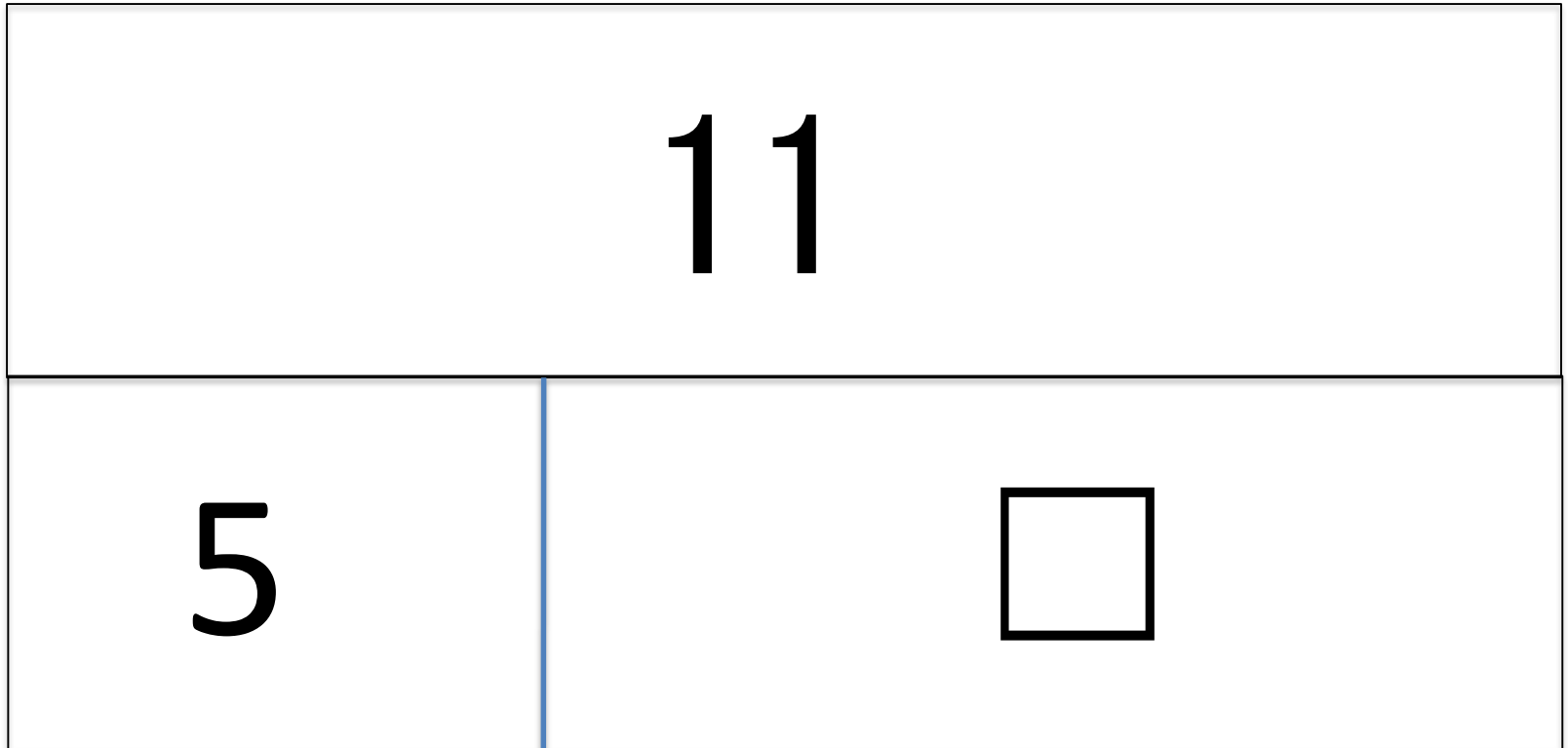
There are 8 apples on the table. 3 of them are red, and the rest are green. (How many are green?)



$$3 + \square = 8$$

$$8 - \square = 3$$

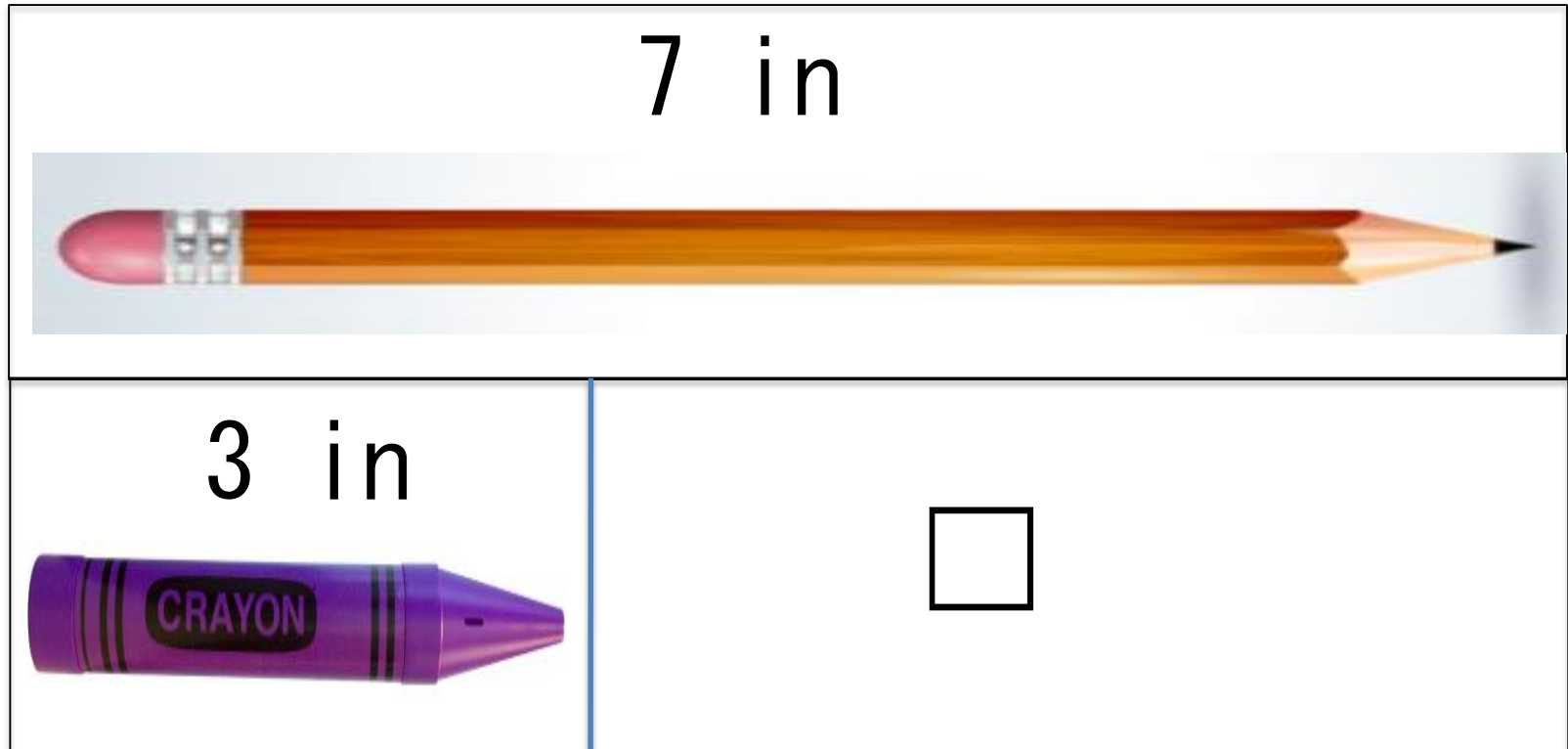
There are 11 hats on the bed. 5 of them are red, and the rest are green. (How many are green?)



$$5 + \square = 11$$

$$11 - \square = 5$$

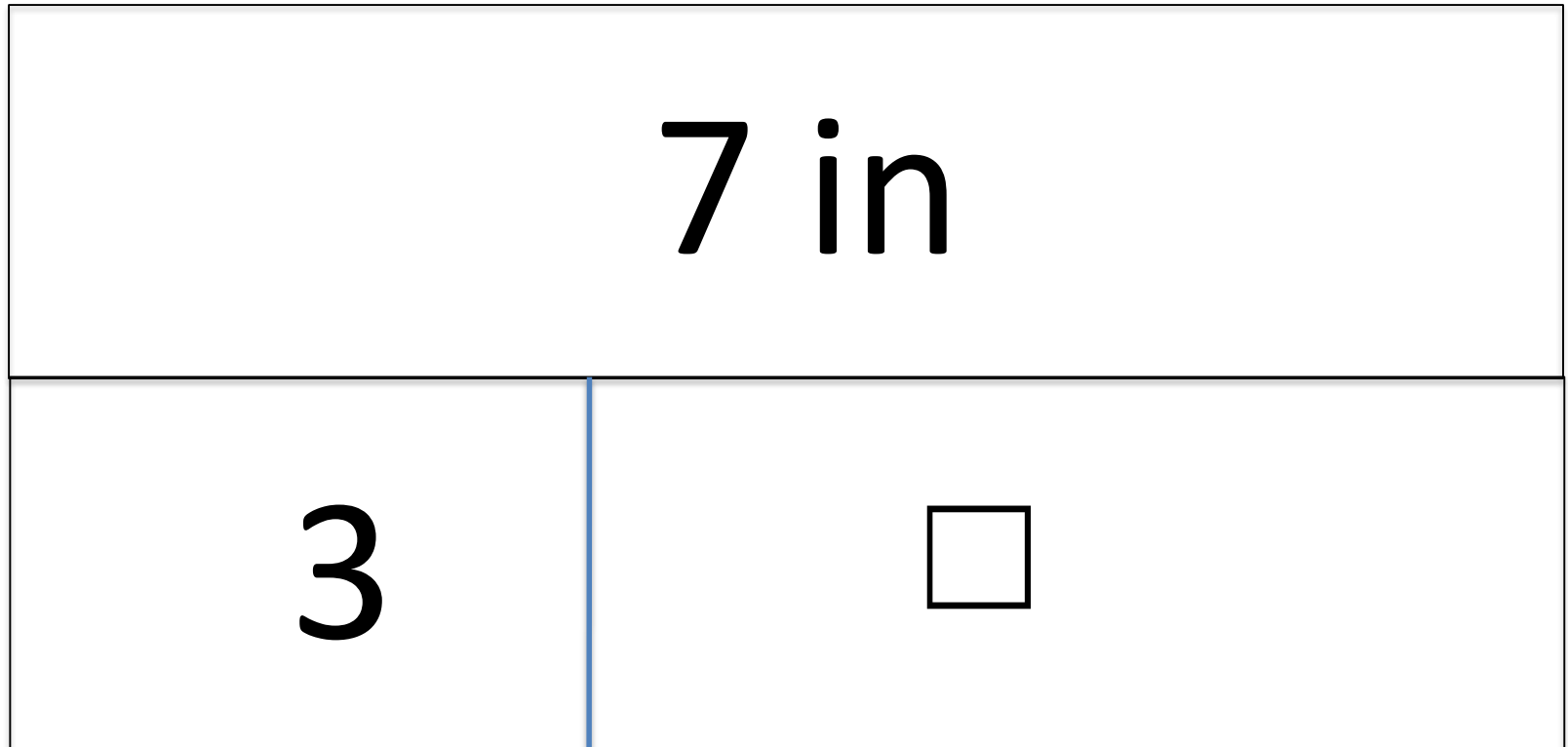
My pencil is 7 inches long. My crayon is 3 inches long. (How much longer is my pencil?)



$$3 + \square = 7$$

$$7 - \square = 3$$

My pencil is 7 inches long. My crayon is 3 inches long. (How much longer is my pencil?)

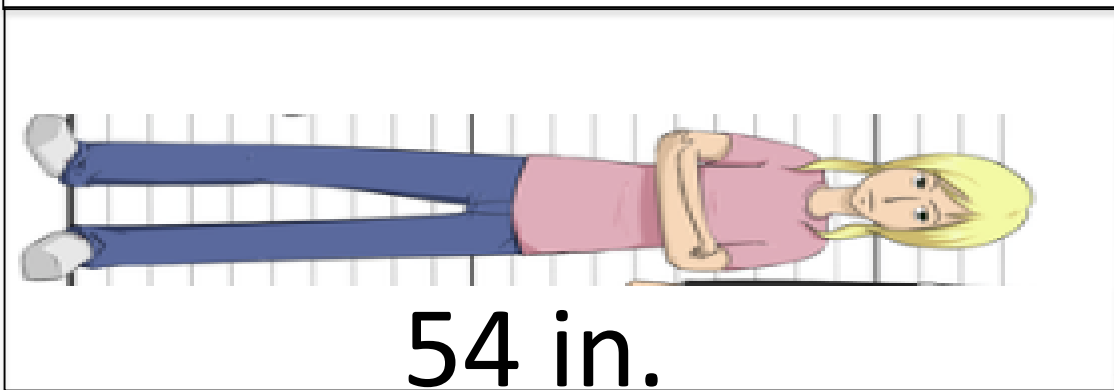
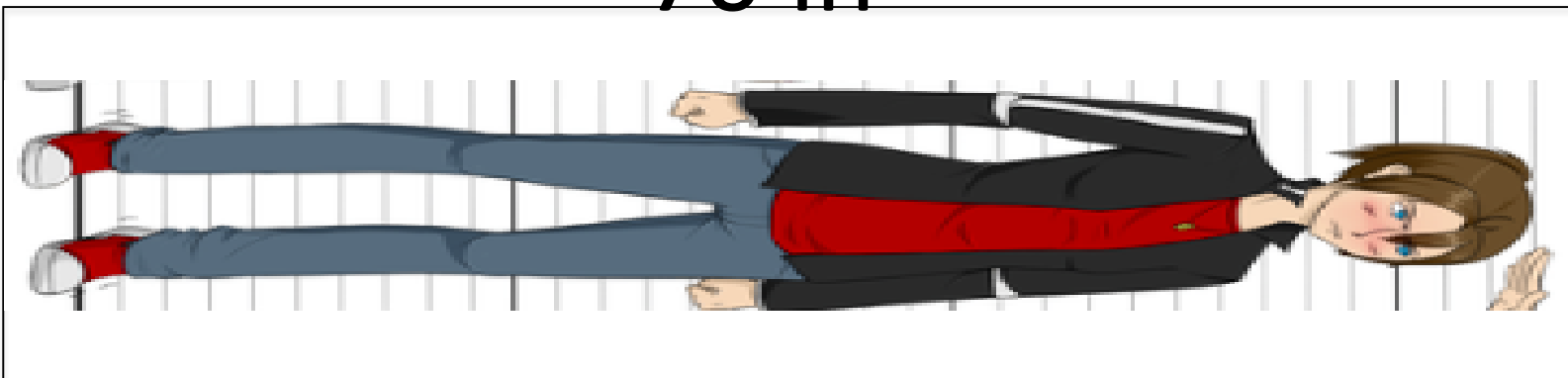


$$3 + \square = 7$$

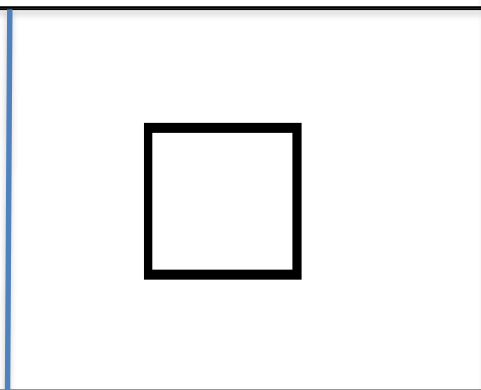
$$7 - \square = 3$$

My mom is 70 inches tall. I am 54 inches tall.
(How much taller is my mom?)

70 in



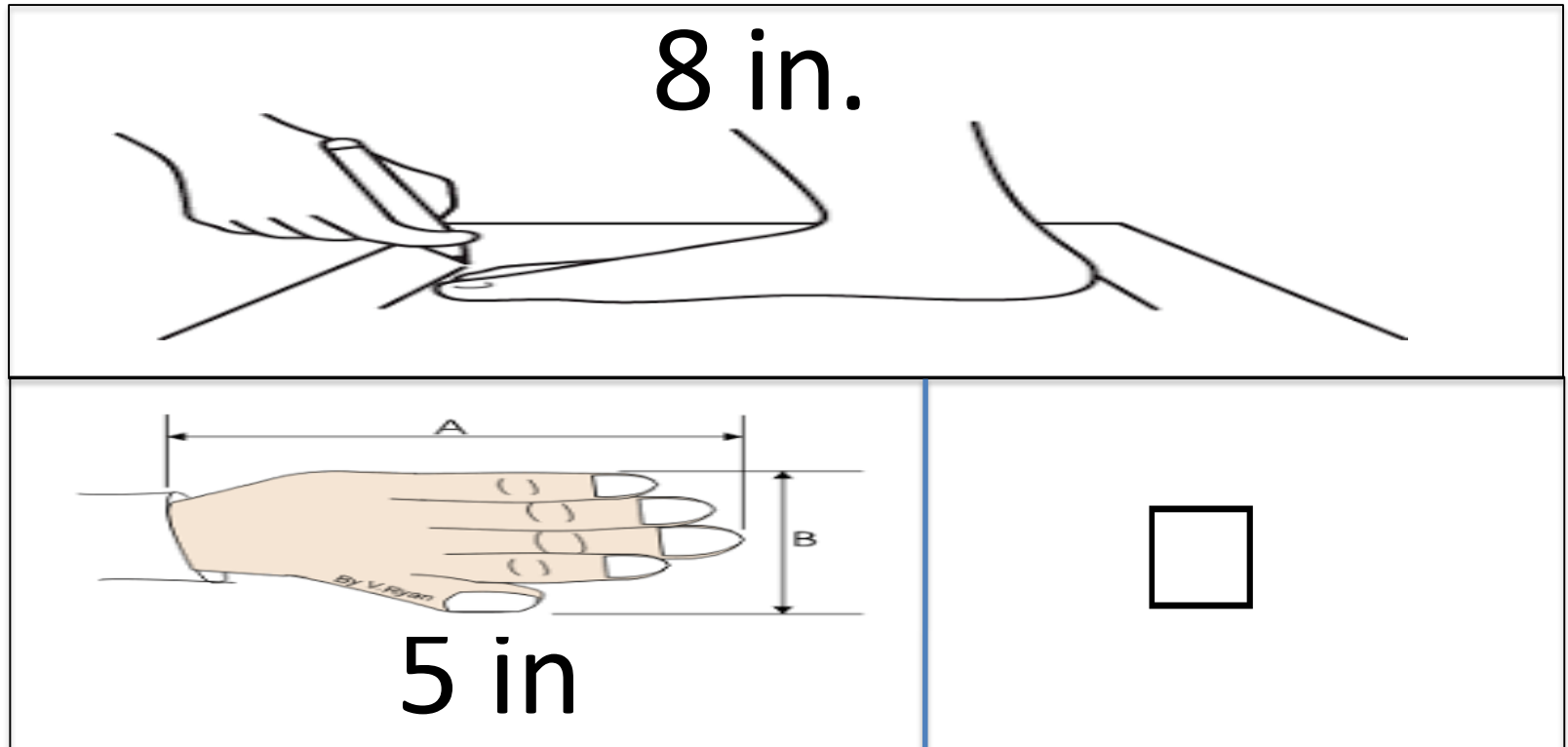
54 in.



$$54 + \square = 70$$

$$70 - 54 = \square$$

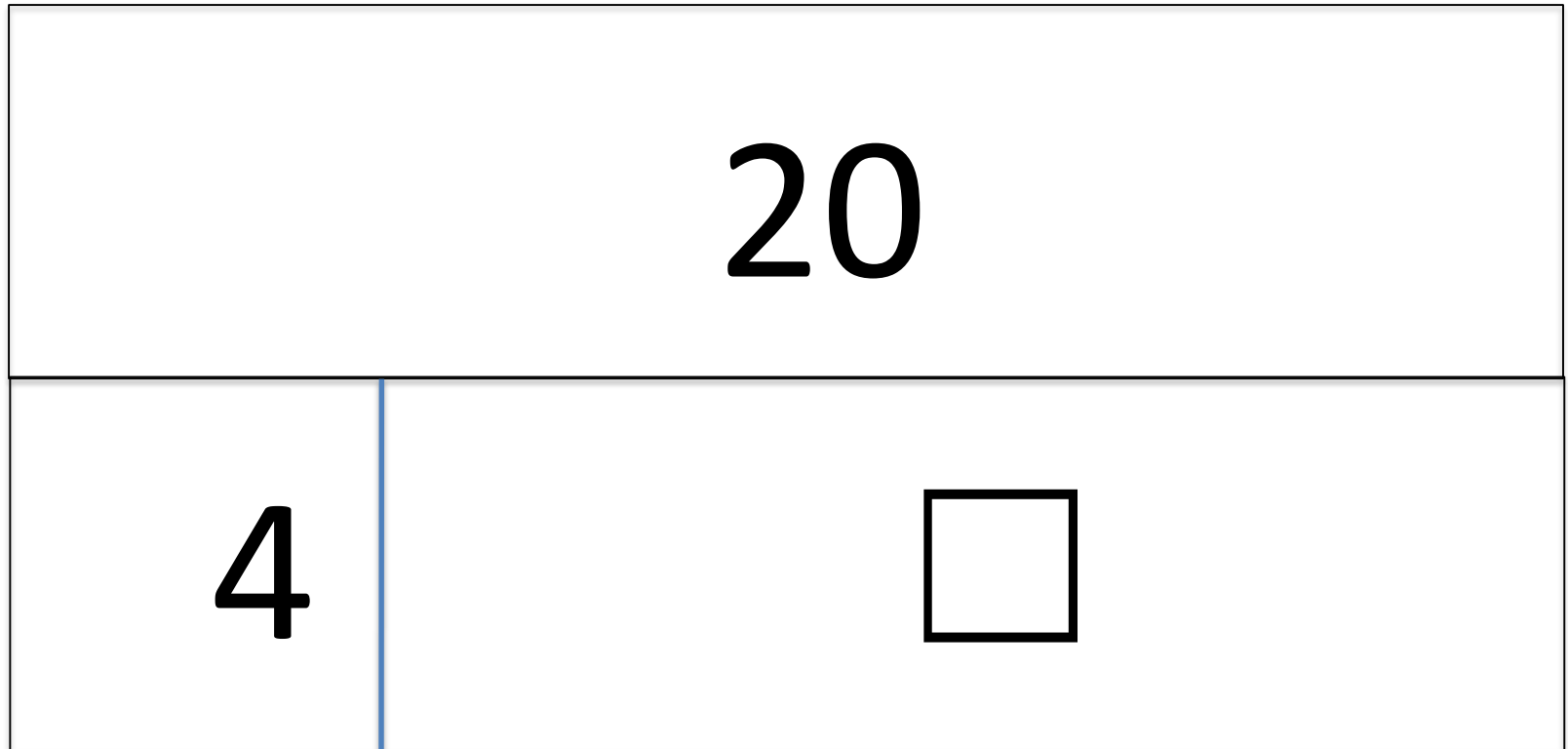
My foot is 8 inches long. My hand is 5 inches long. (How much longer is my foot?)



$$5 + \square = 8$$

$$8 - 5 = \square$$

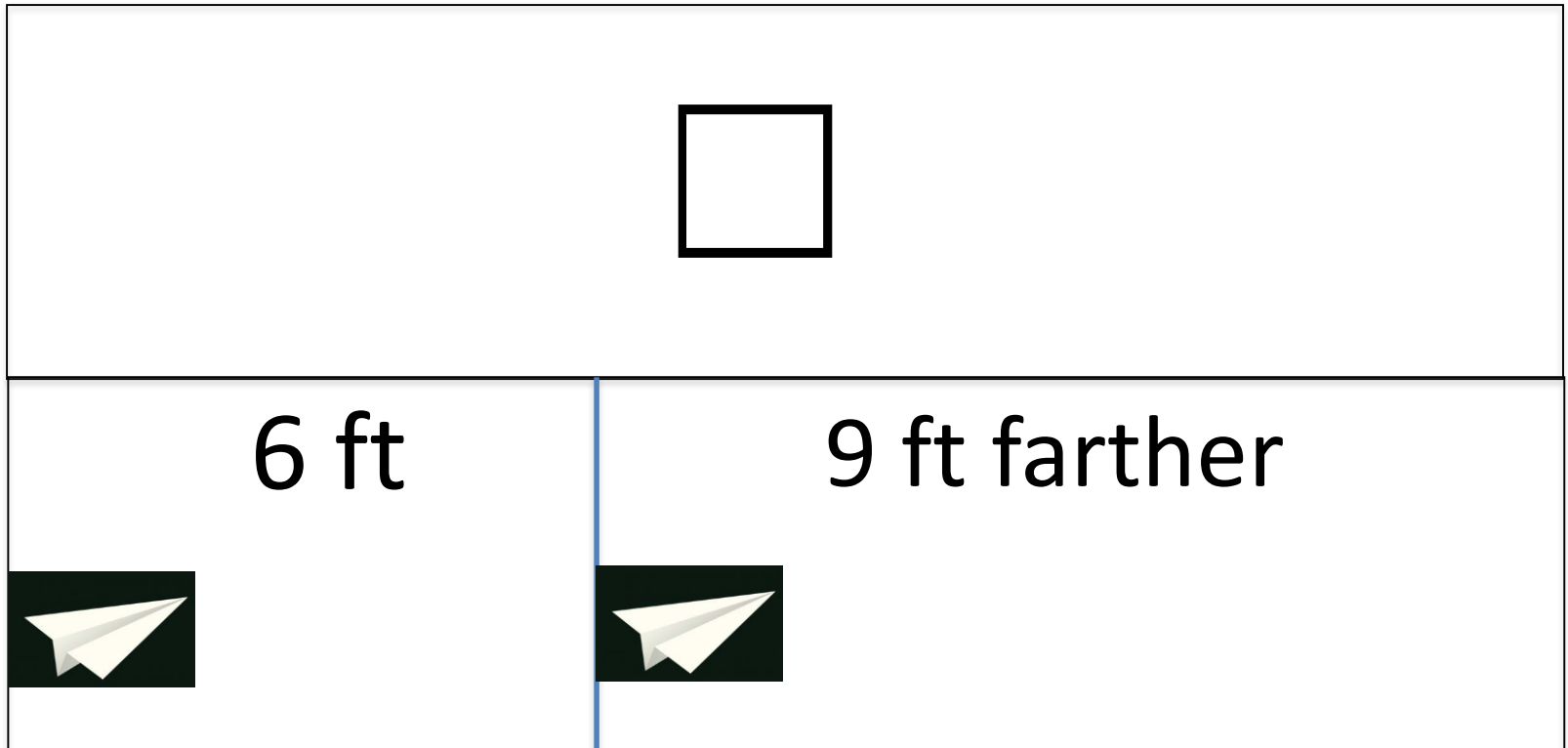
My snow man is 20 inches tall. The head of the snowman is only 4 inches tall. (How much smaller is the head?)



$$4 + \square = 20$$

$$20 - 4 = \square$$

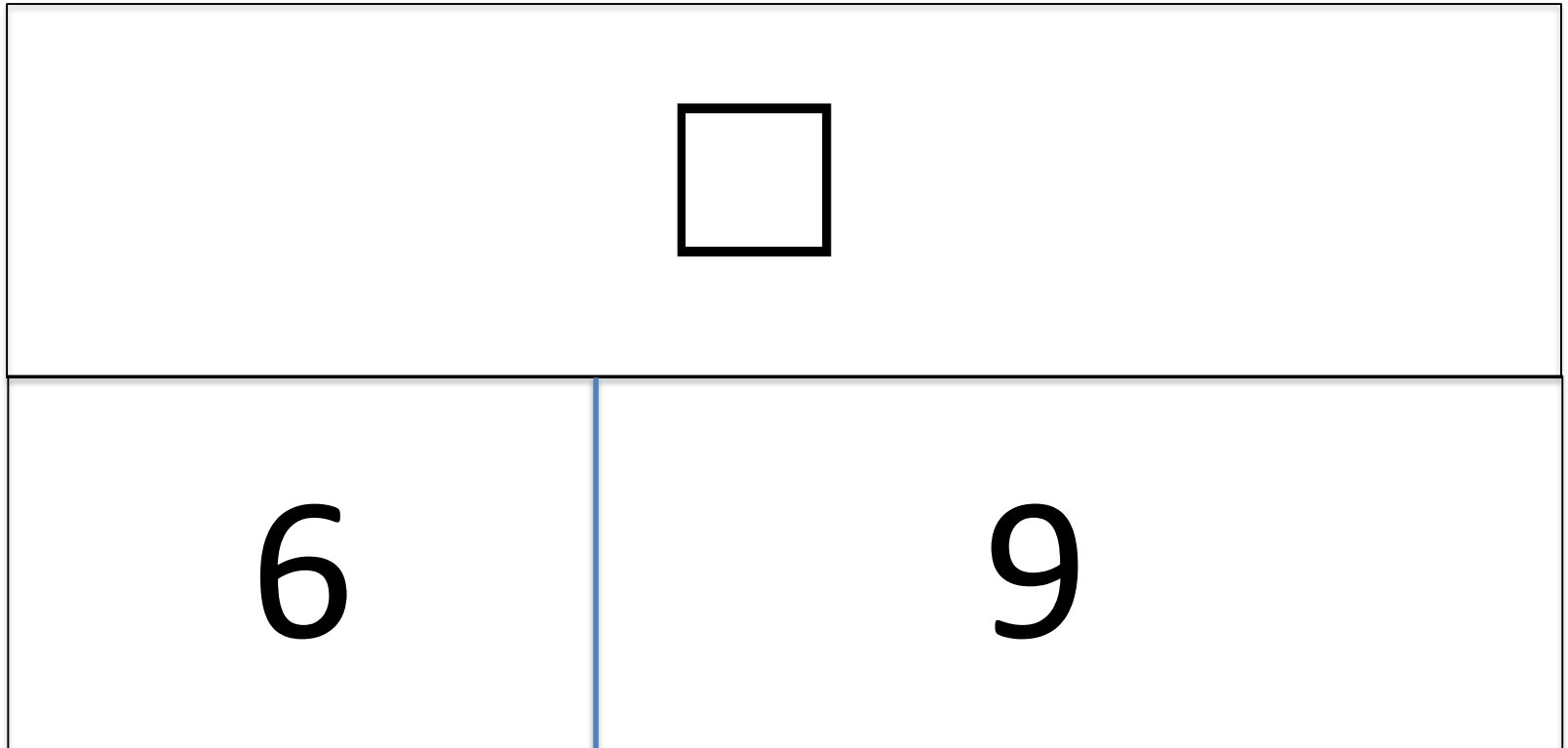
I threw the paper airplane 9 feet farther than Tom. If Tom threw it 6 feet, (how far did I throw it?)



$$6 + 9 = \square$$

$$\square - 9 = 6$$

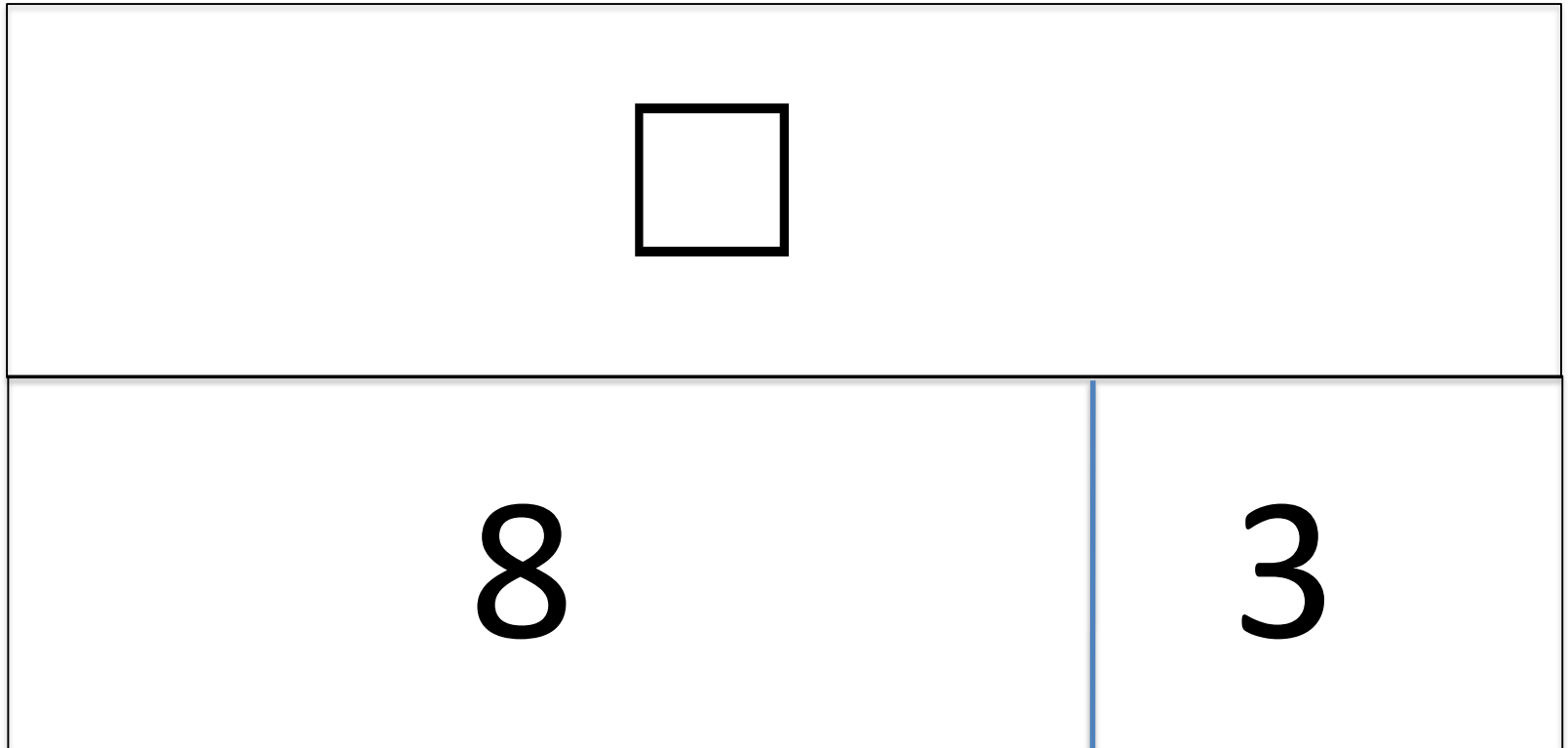
I threw the paper airplane 9 feet farther than Tom. If Tom threw it 6 feet, (how far did I throw it?)



$$6 + 9 = \square$$

$$\square - 9 = 6$$

I slept for 8 hours. Tom slept for 3 hours longer.
(How long did Tom sleep?)



$$8 + 3 = ?$$

$$\square - 3 = 8$$

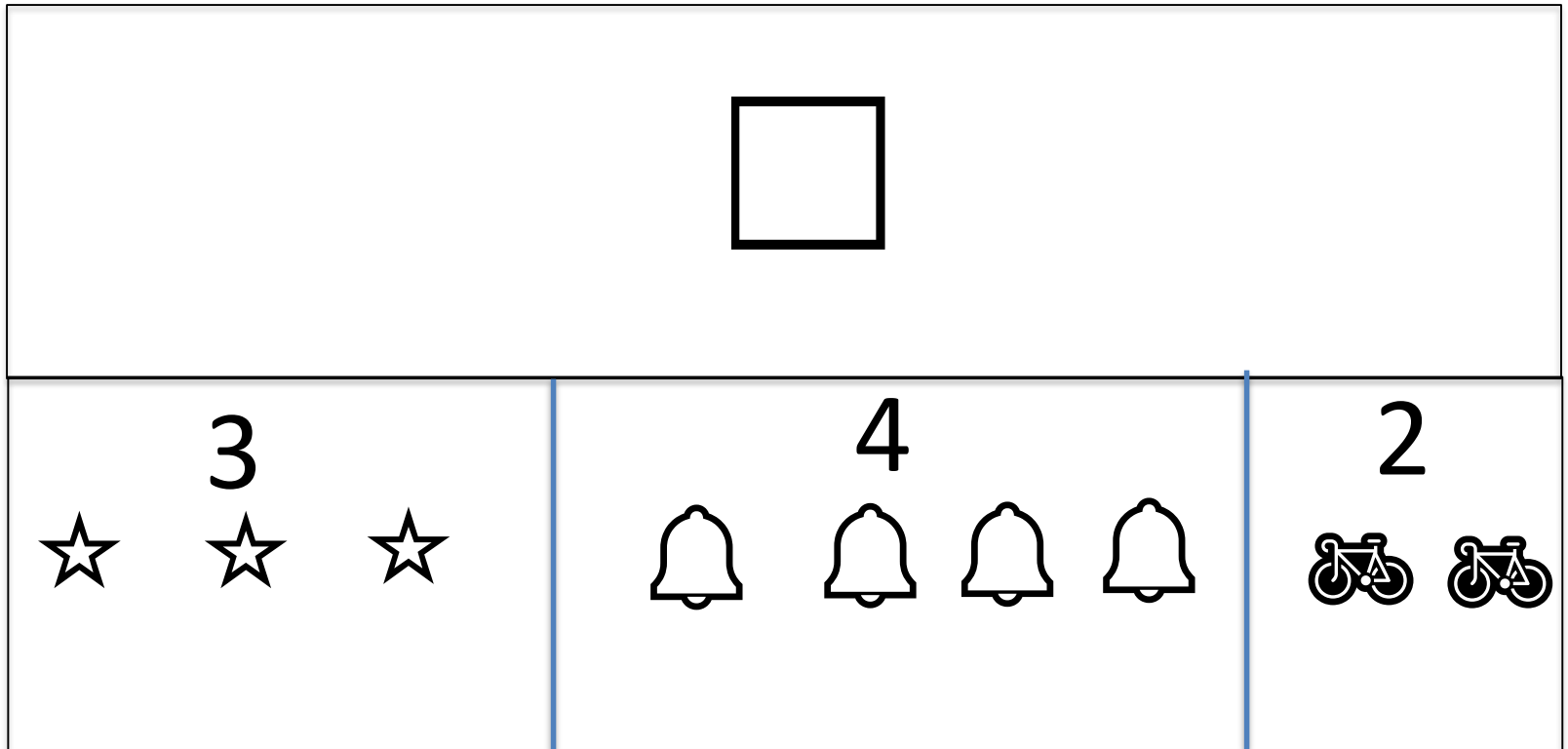
I ate 17 pieces of candy. Tom ate 13 pieces. How many less did Tom eat?



$$13 + \square = 17$$

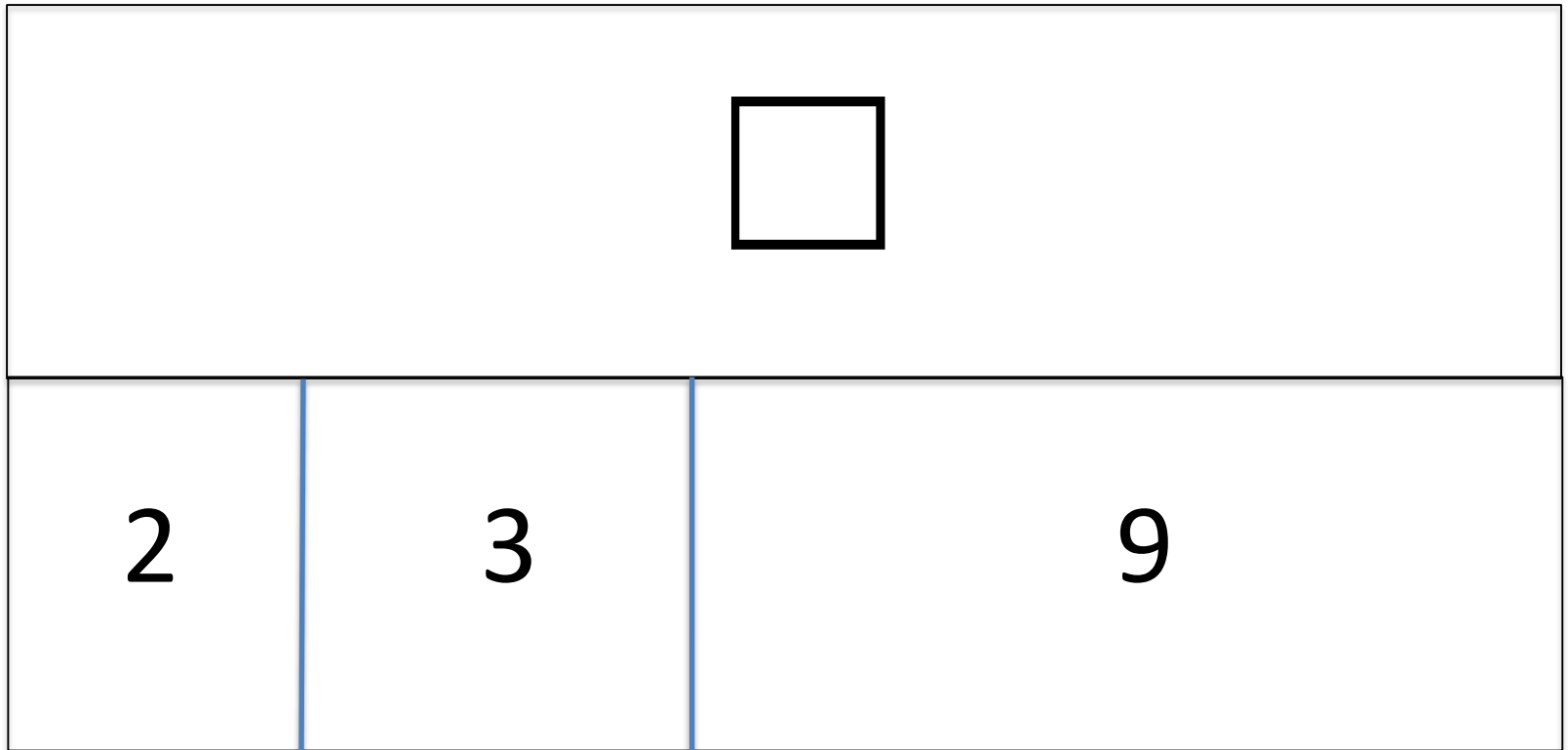
$$17 - 13 = \square$$

Mary has a sticker collection. She has 3 stars, 4 bells, and 2 bikes. How many stickers does she have?



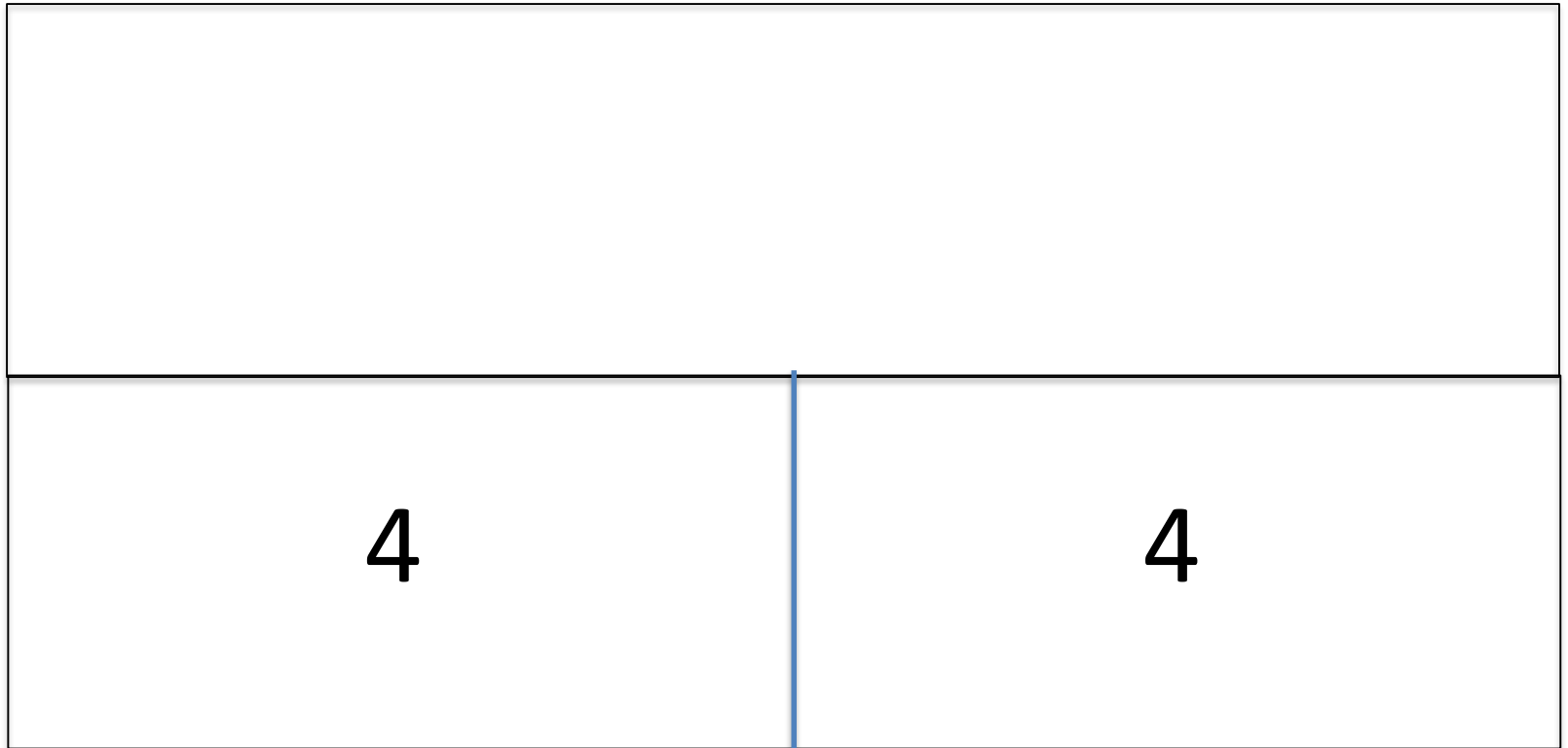
$$3 + 4 + 2 = \square$$

Bob has pets. He has 2 dogs, 3 cats, and 9 fish.
How many pets does he have?



$$2 + 3 + 9 = \square$$

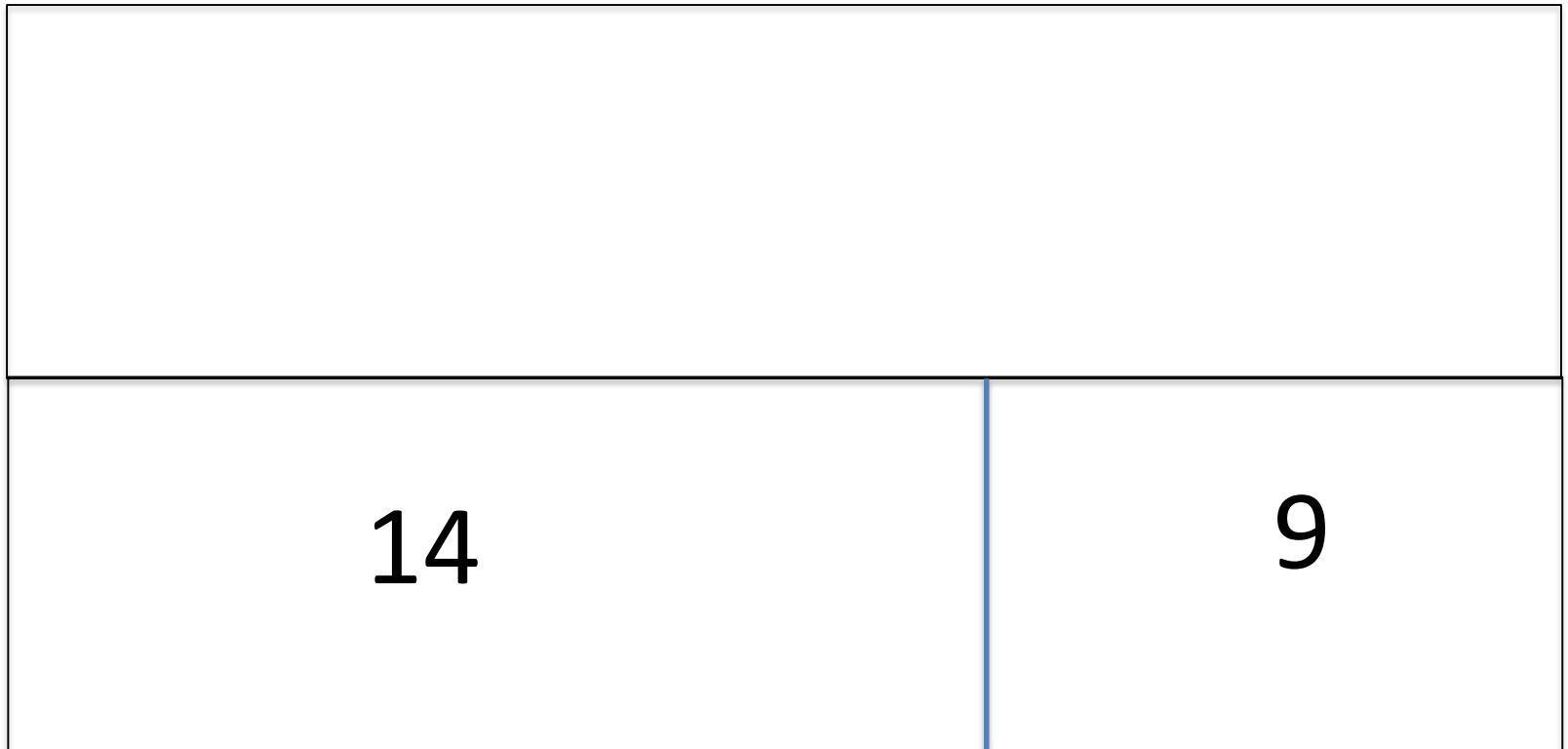
Sam has 4 hats. Pat has 4 hats. Use $>$ $=$ $<$ to show which is a bigger number of fish.



$$4 = 4$$

$$4 = 4$$

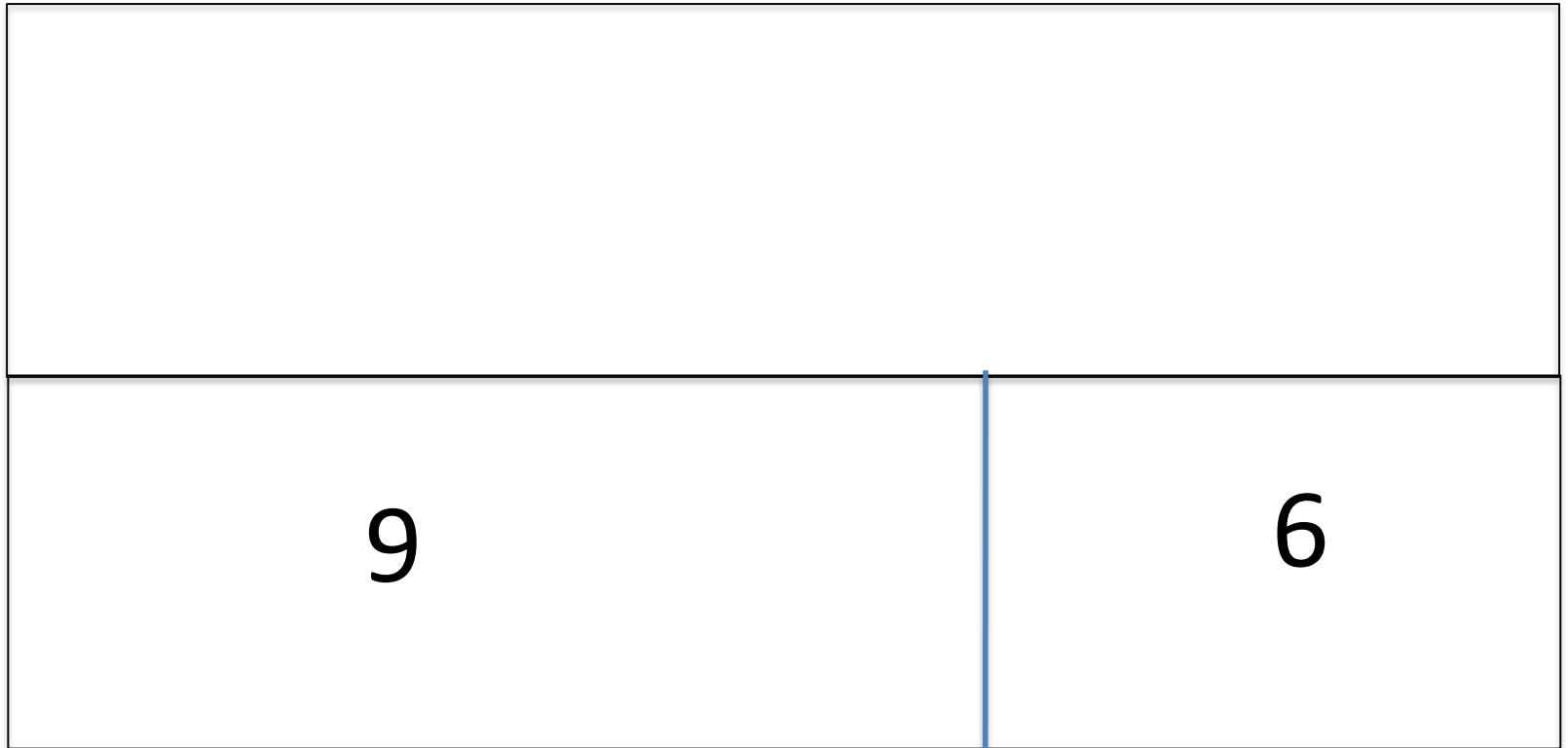
Bob has 14 pets. Mary has 9 pets. Use $>$ $=$ $<$ to show which is a bigger number of pets.



$$14 > 9$$

$$9 < 14$$

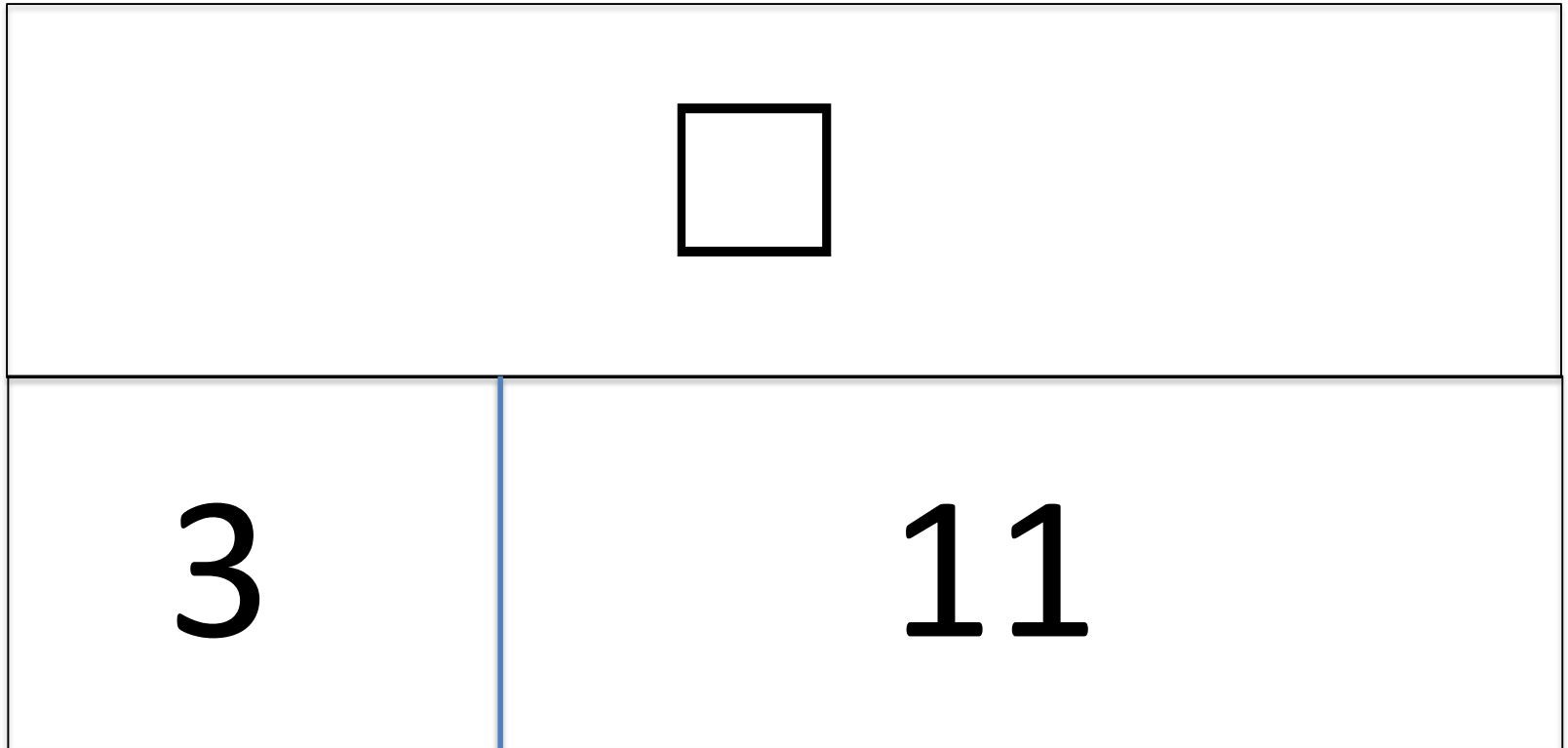
Dan has 9 fish. Tim has 6 fish. Use $>$ $=$ $<$ to show which is a bigger number of fish.



$$9 > 6$$

$$6 < 9$$

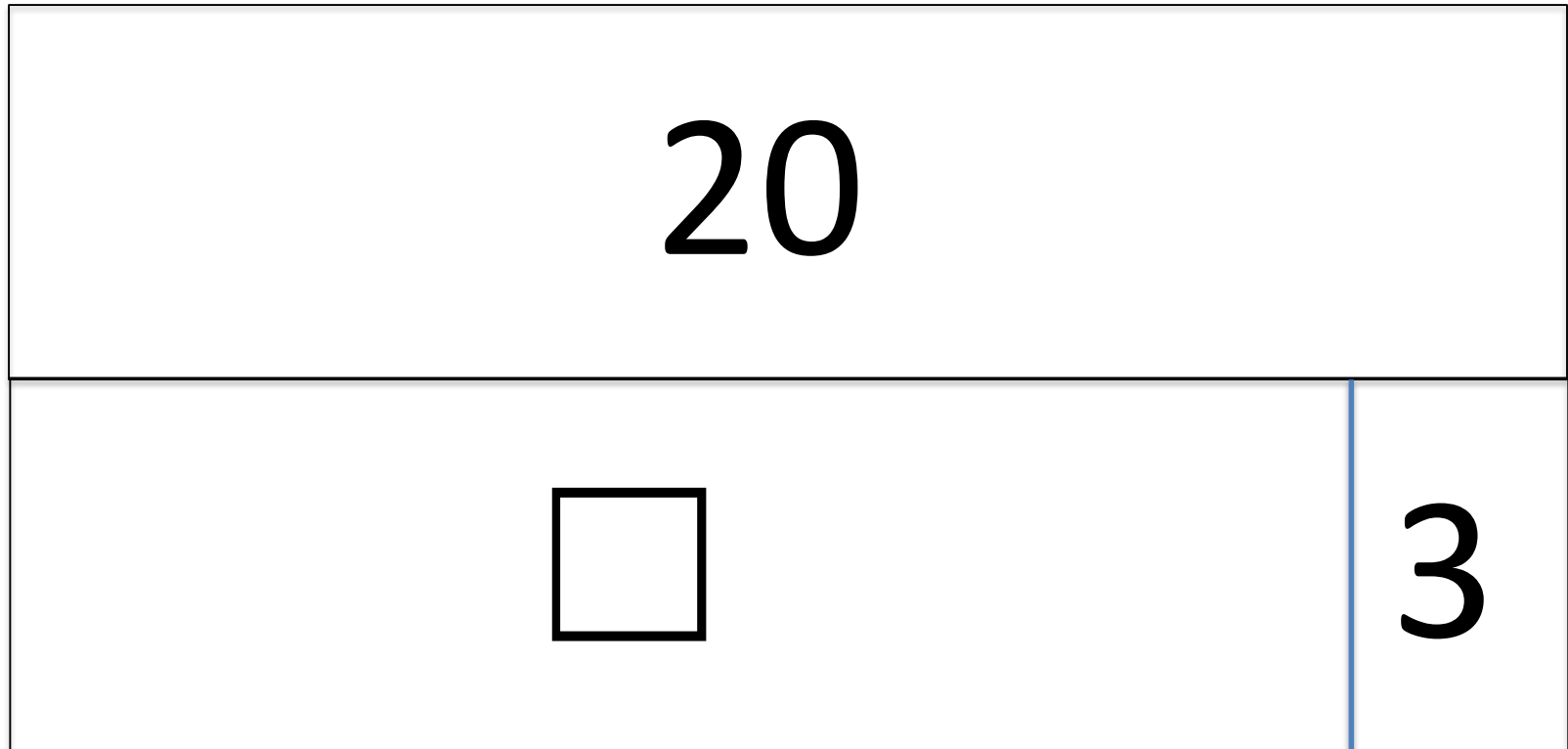
George has 3 dollars. His grandma gives him 11 more dollars. How much does he have now?



$$3 + 11 = \square$$

$$11 + 3 = \square$$

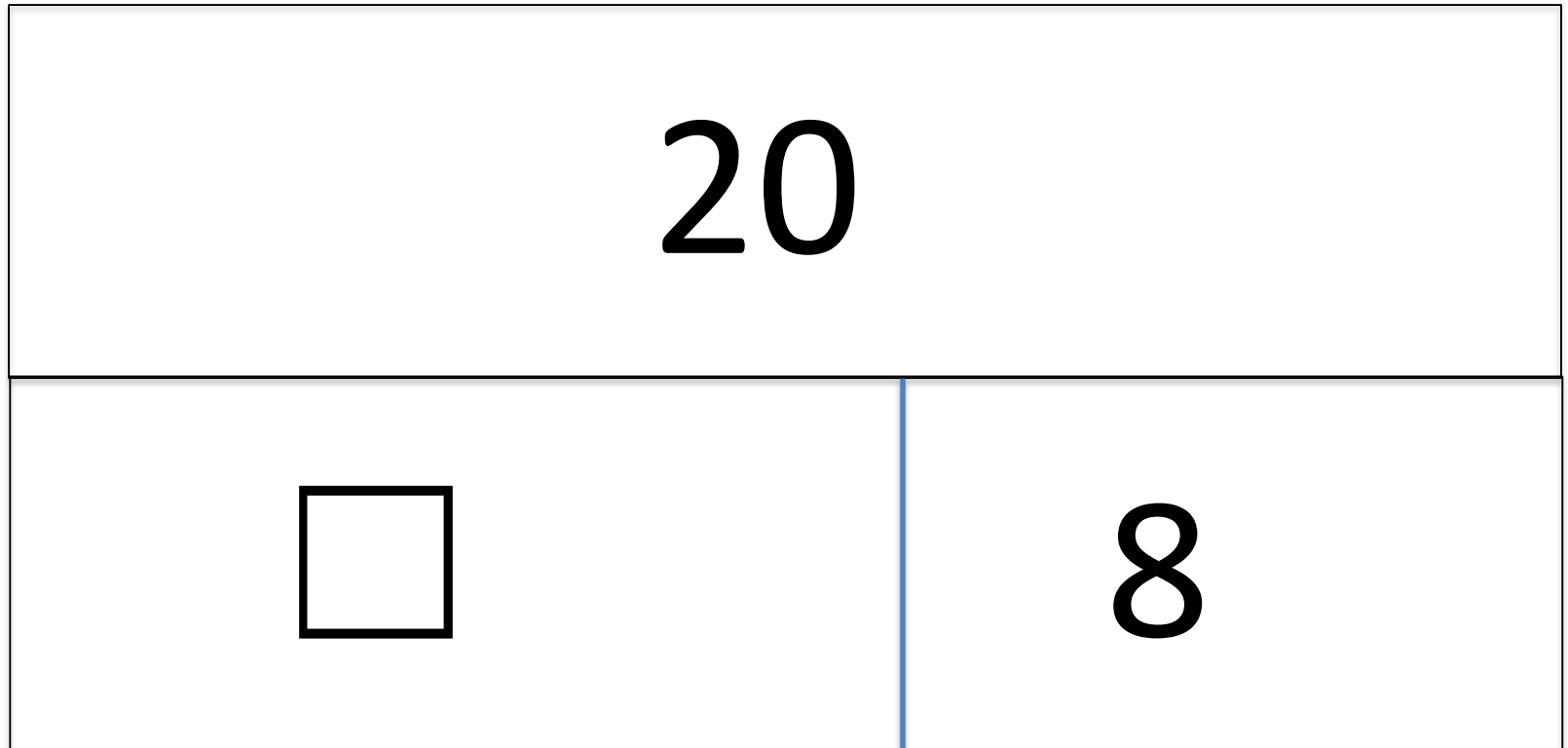
Yesterday, George had some money. Today, Grandma gave him 3 dollars. Now he has 20 dollars. How much did he have yesterday?



$$\square + 3 = 20$$

$$20 - 3 = \square$$

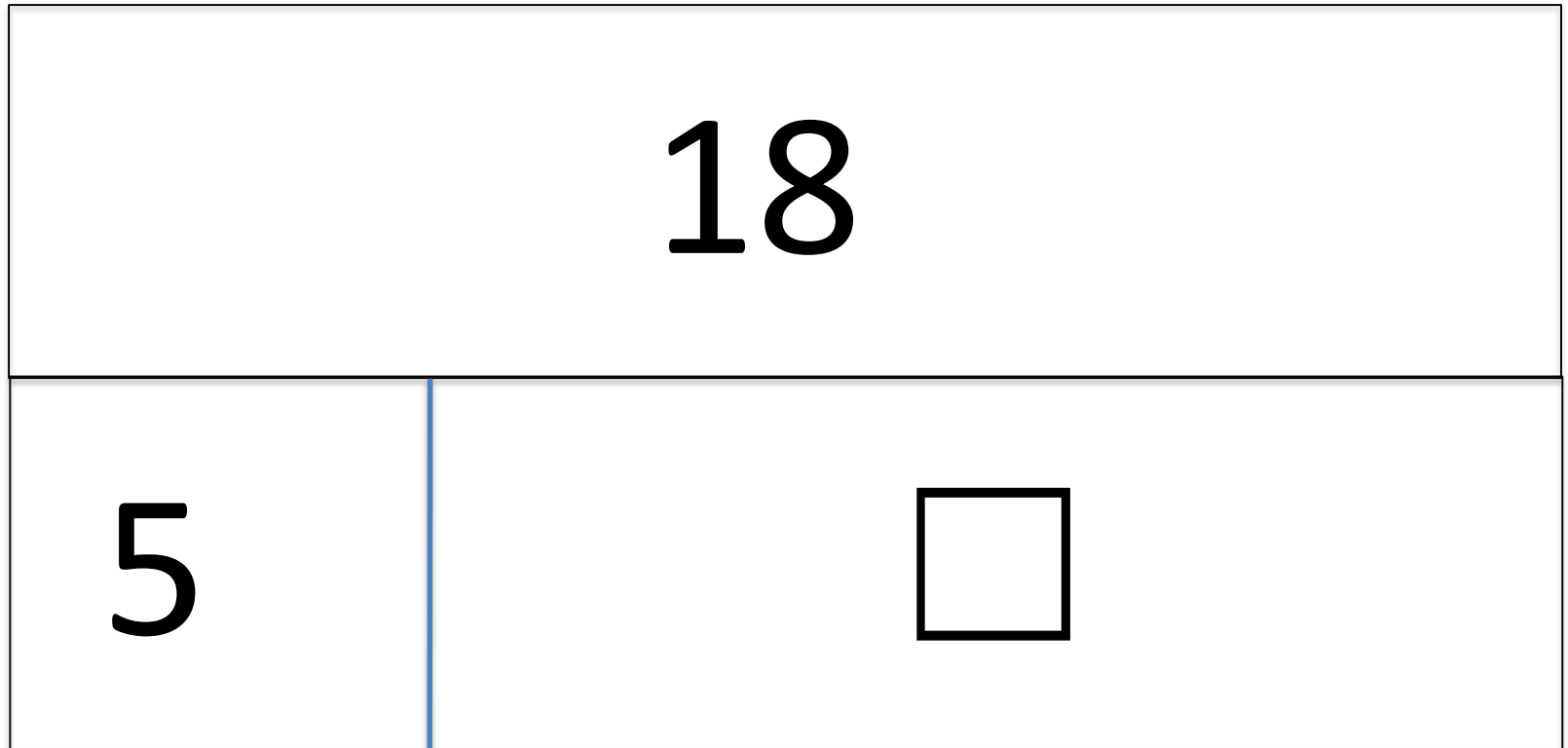
Last week there were some bunnies in my yard.
Today 8 more came. Now there are 20 bunnies.
How many were there yesterday?



$$\square + 8 = 20$$

$$20 - 8 = \square$$

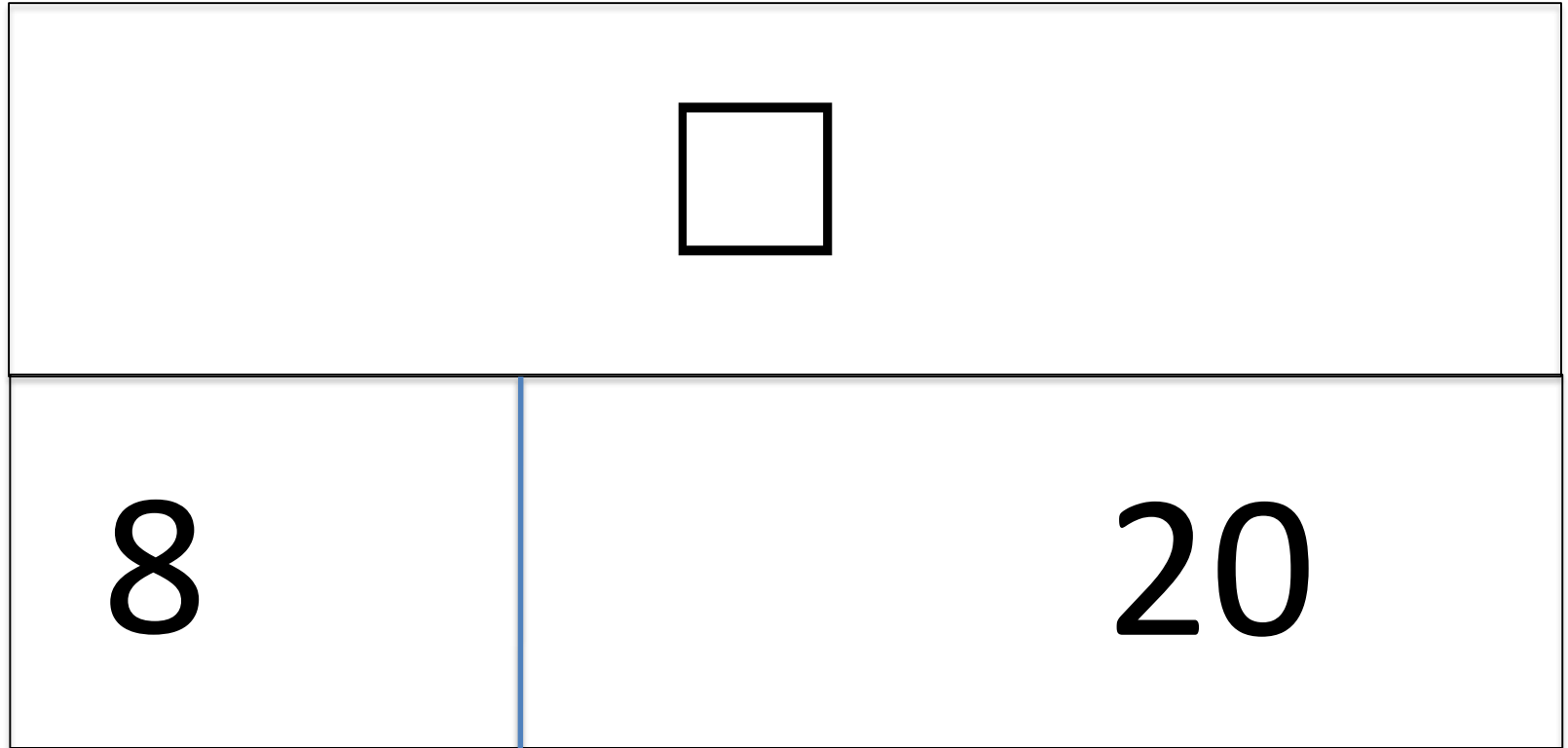
When everyone is here, our class has 18 students. 5 are absent today. How many are here today?



$$5 + \square = 18$$

$$18 - 5 = \square$$

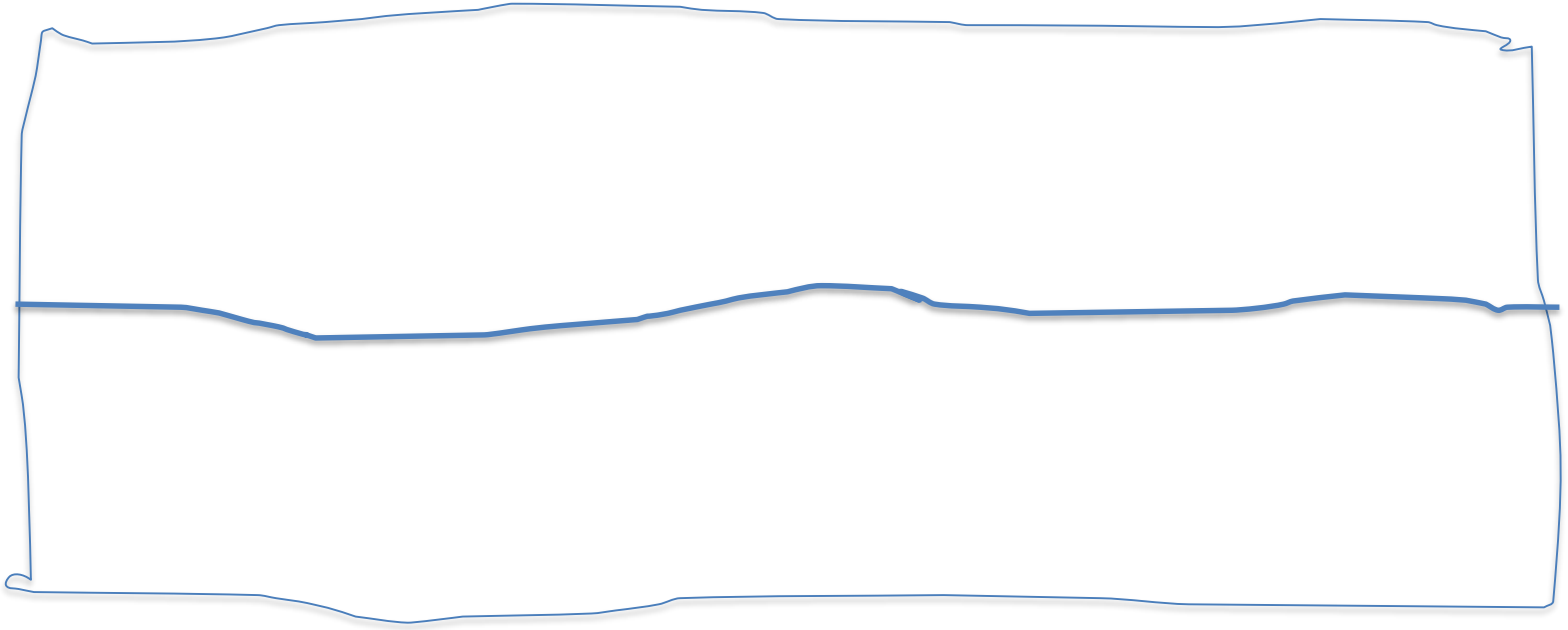
Last week there were some bunnies in my yard. Today 8 more came. Now there are 20 bunnies. How many were there yesterday?



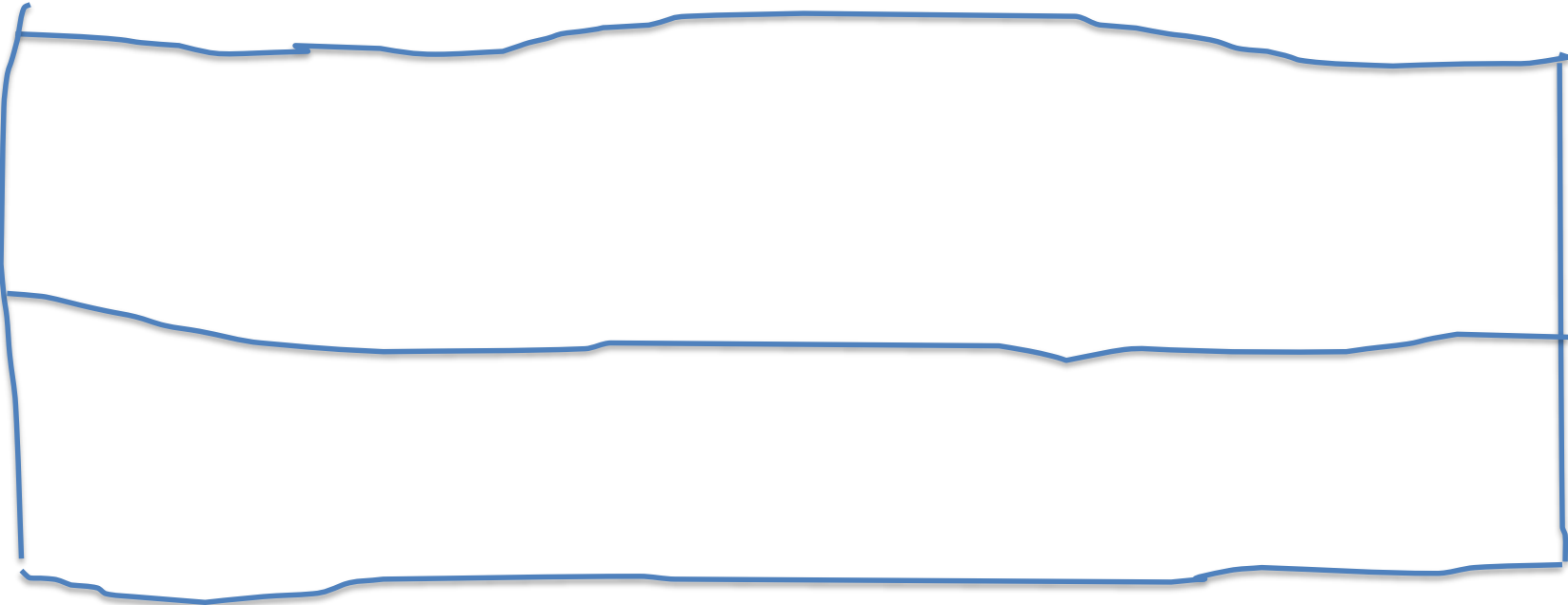
$$8 + 20 = 28$$

Is this right? What mistake was made?
Can you fix it?

Can you draw the Bar Diagram?



Can you draw the Bar Diagram?



I have 9 stickers. I got 3 more.

How many do I have now?

?

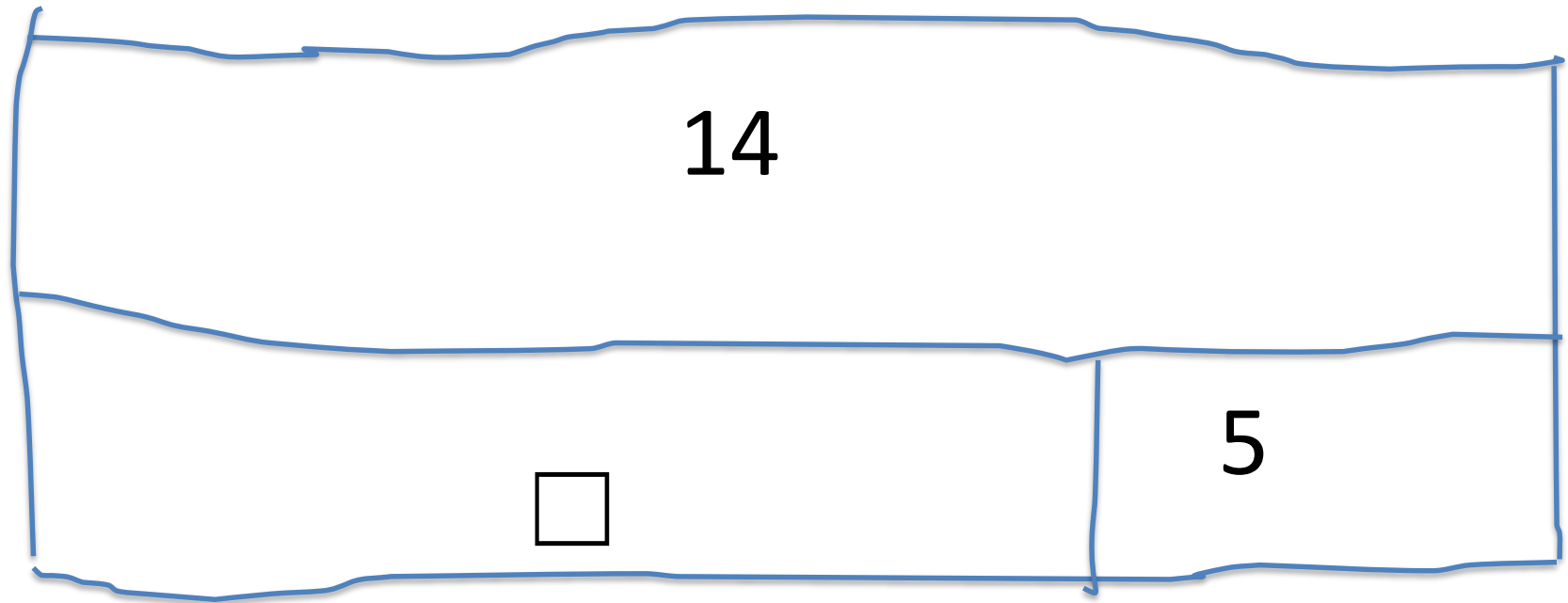
9

3

$$9 + 3 = \square$$

$$3 + 9 = \square$$

I had 14 stickers. I lost some. Now I have 5. How many did I lose?

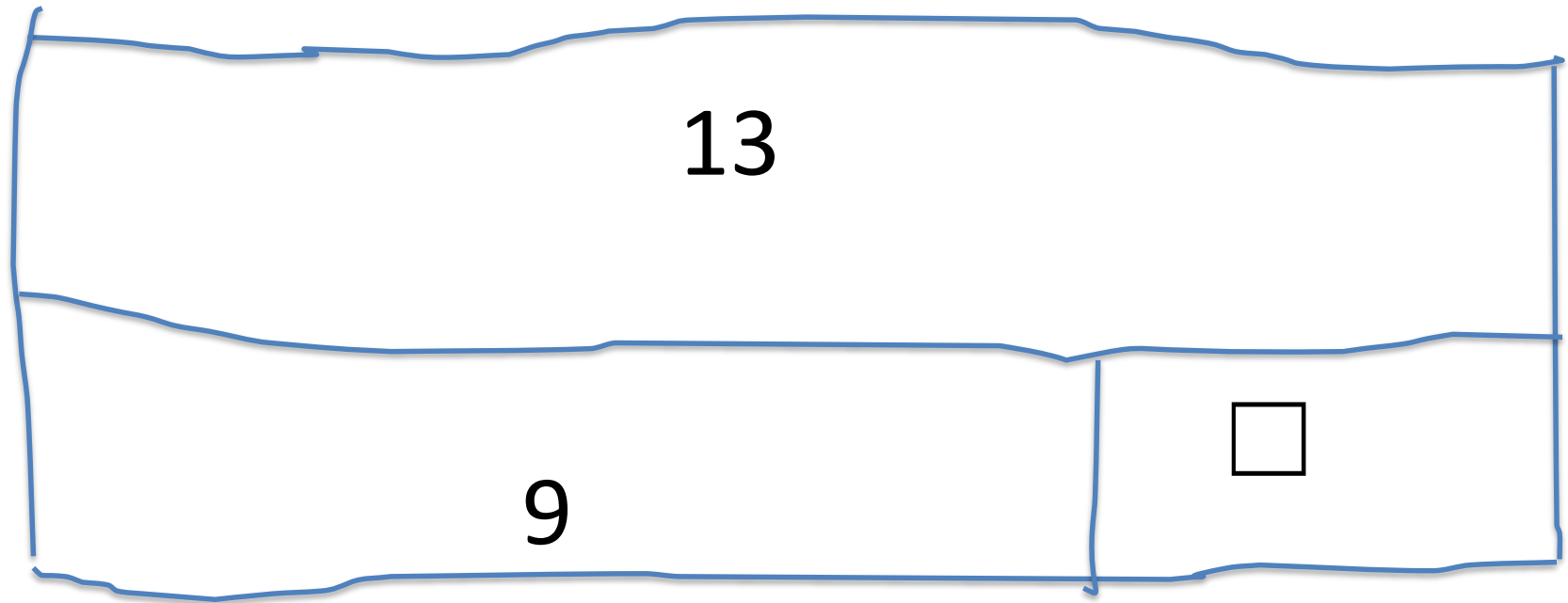


$$14 - \square = 5$$

$$\square + 5 = 14$$

$$14 - 5 = \square$$

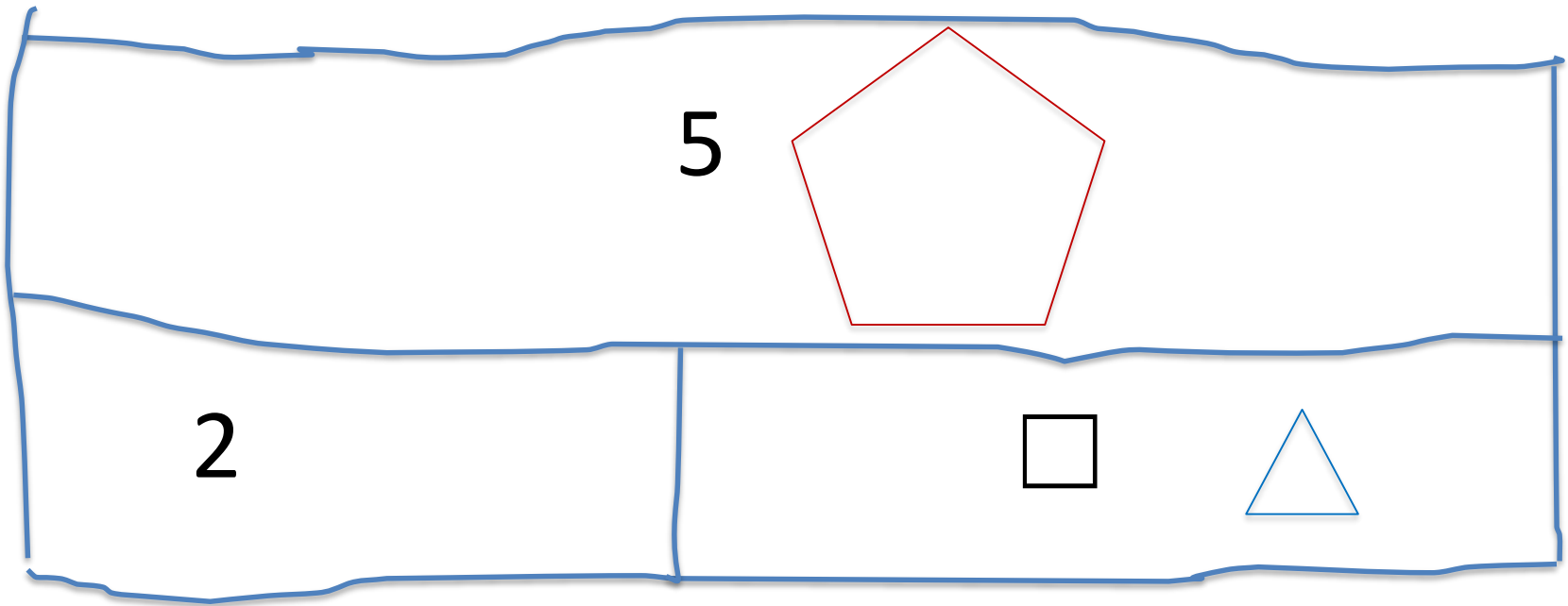
I have 13 squares and 9 triangles.
How many more squares do I have?



$$13 - 9 = \square$$

$$9 + \square = 13$$

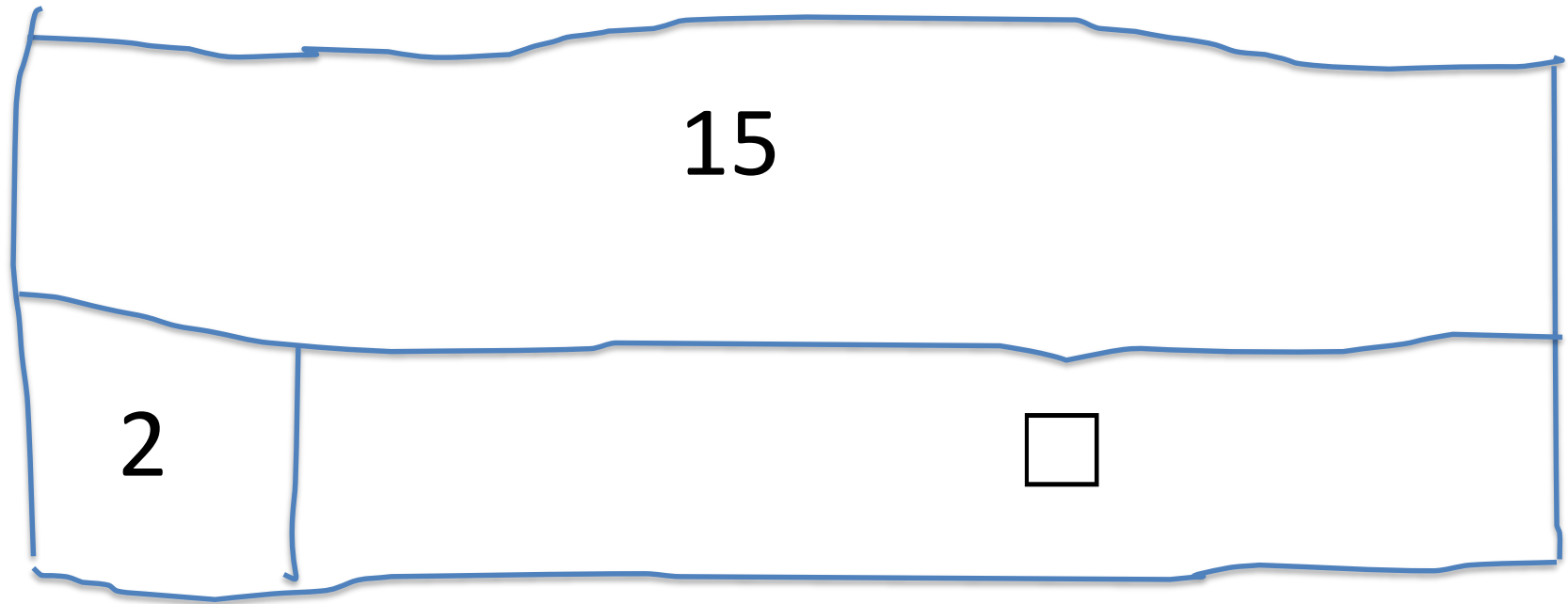
I'm thinking of a shape. It has 2 fewer sides than a pentagon. What shape am I?



$$5 - 2 = \square$$

$$2 + \square = 5$$

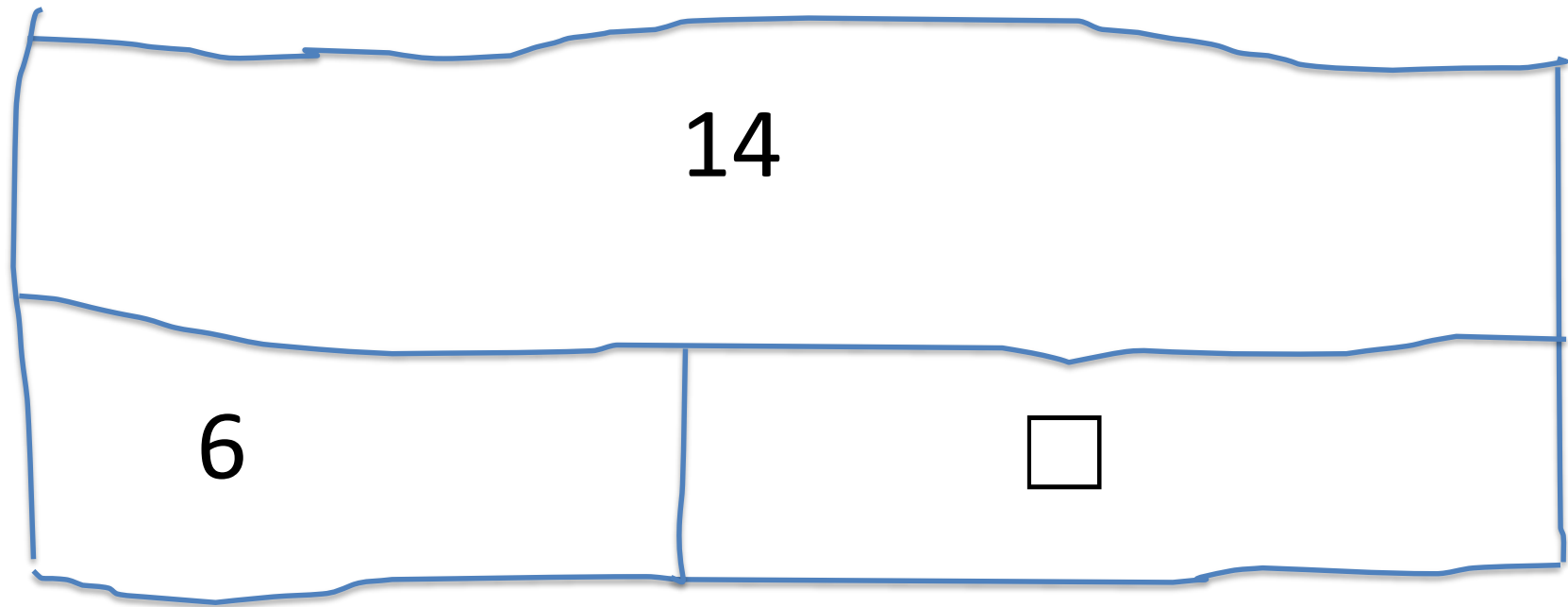
I want to save up to 15 dollars. I have 2 dollars. How much more do I have to go?



$$15 - 2 = \square$$

$$2 + \square = 15$$

How much larger is \$14 than \$6?



$$6 + \square = 14$$

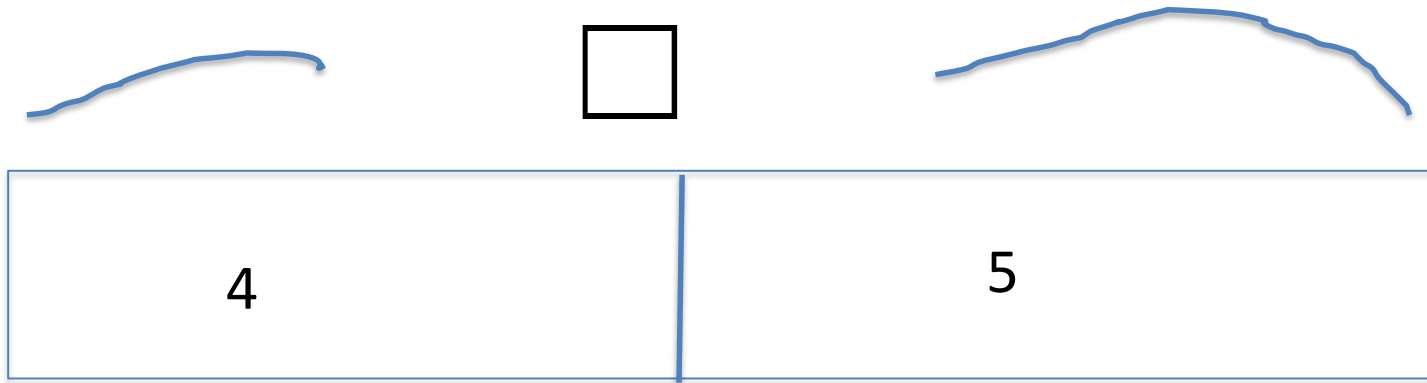
$$14 - 6 = \square$$

Other ways to draw the bar...

One rectangle with a box on top.

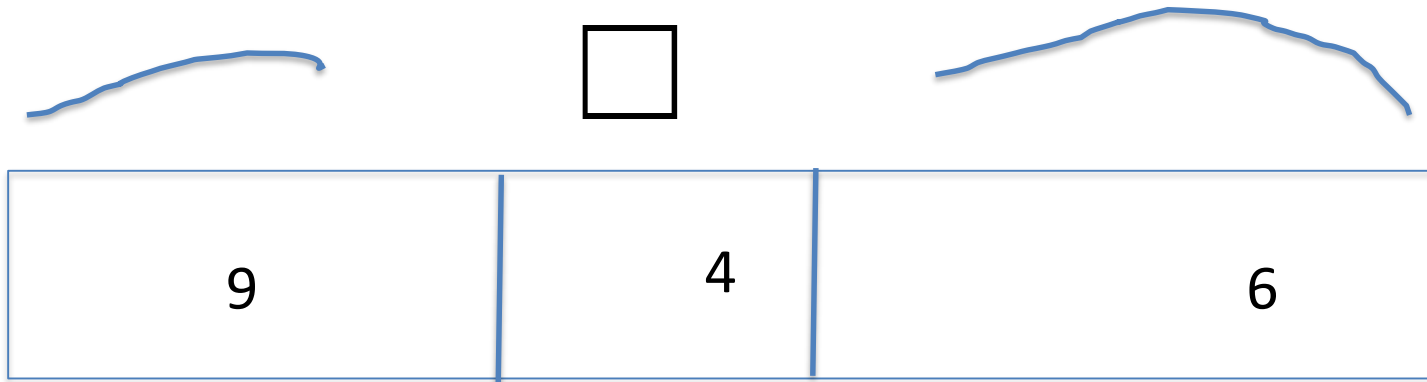
Bob has some coins. He has 4 pennies and 5 nickels. How many coins does he have?

$$4 + 5 = \square$$



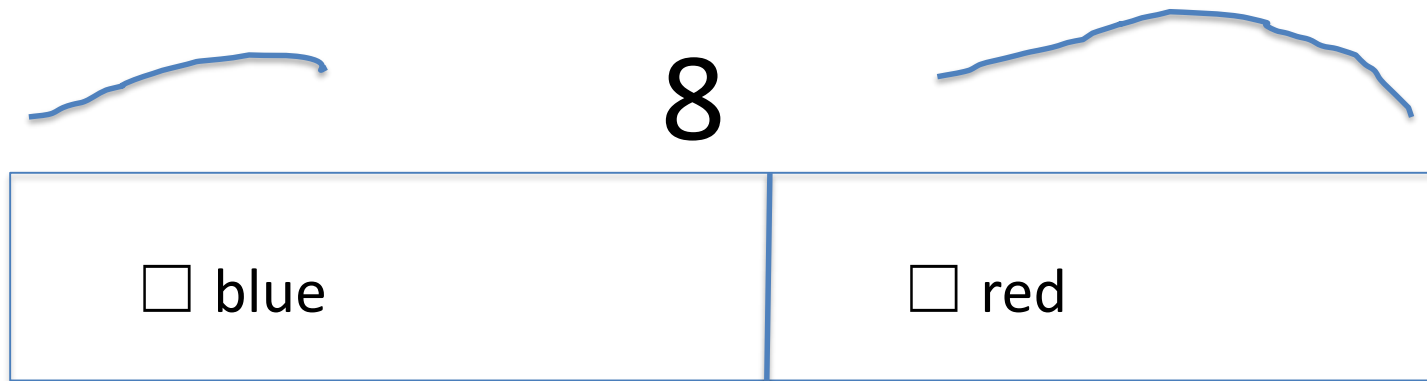
Mary has a sticker collection. She has 9 stars, 4 dinosaurs, and 6 hearts. How many stickers does she have?

$$9 + 4 + 6 = \square$$



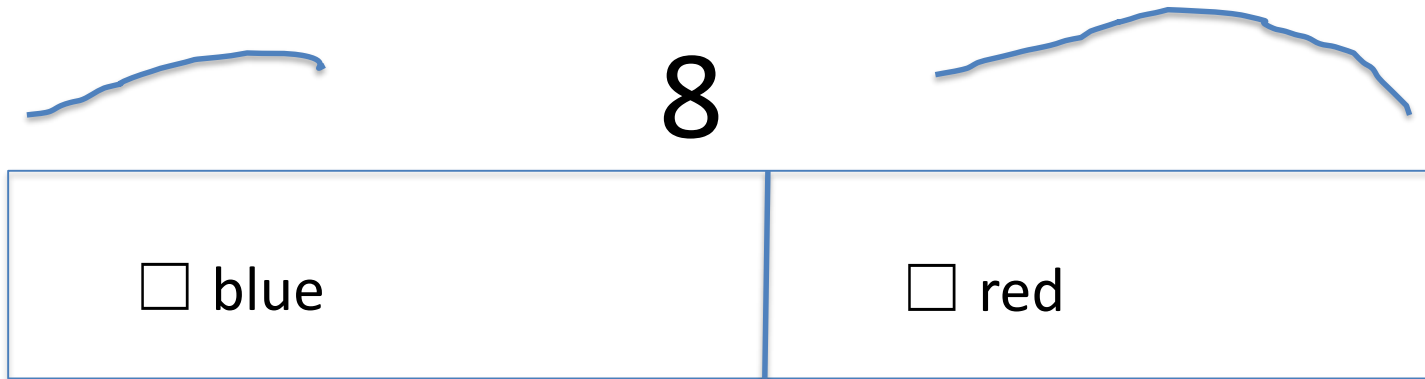
Mary has 8 crayons. Some are blue and some are red. How many of each could she have?

$$\square + ? = 8$$



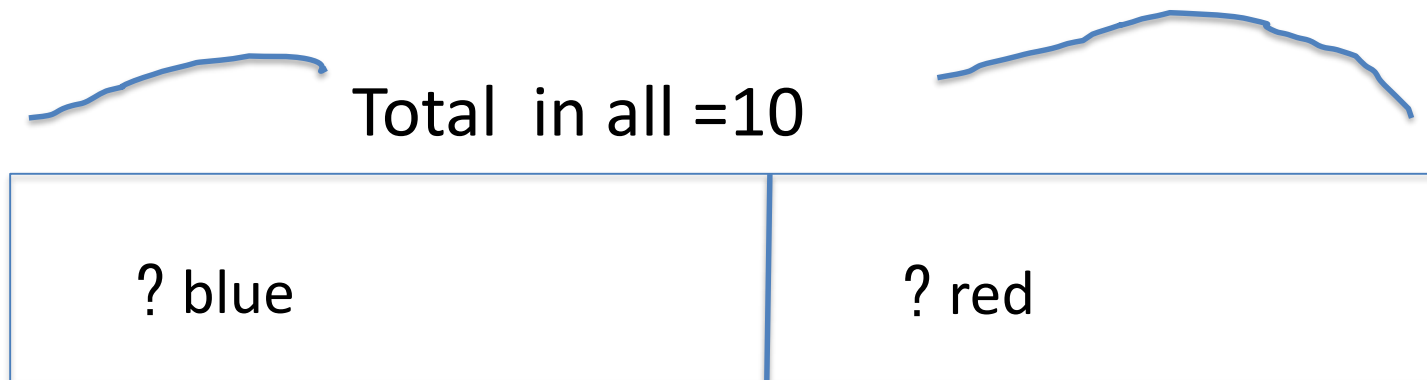
Mary has 8 crayons. Some are blue and some are red. She has the same number of each color. How many of each does she have?

$$\square + \square = 8$$



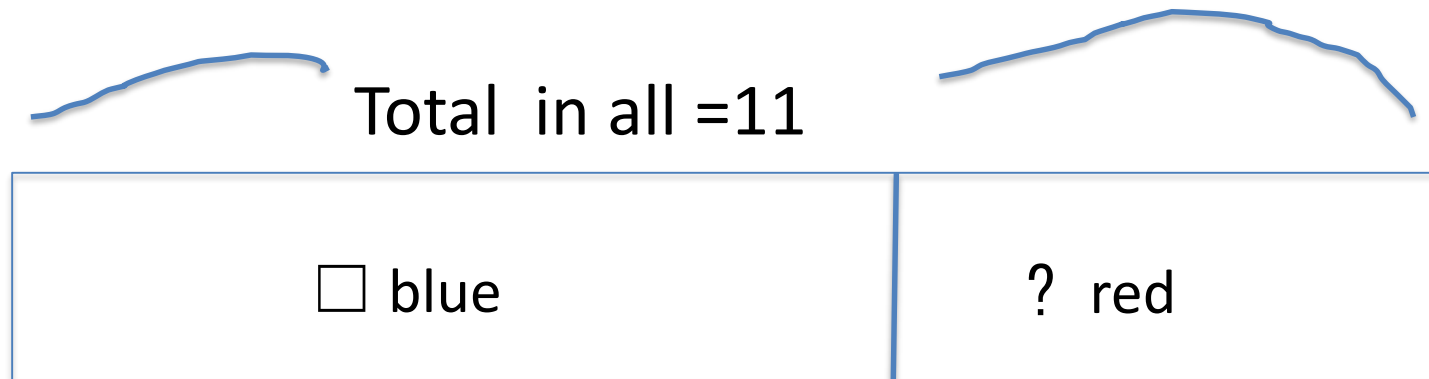
Mary has 10 crayons. Some are blue and some are red. She has the same number of each color. How many of each does she have?

$$\square + \square = 10$$



Mary has 11 crayons. Some are blue and some are red. There is one more blue than red. How many of each does she have?

$$\square + ? = 11$$



Mary has 7 crayons. Some are blue and some are red. One more blue than red. How many of each does she have?

$$\square + ? = 7$$

