

Visual Calculation Policy

**The Valley Community
Primary School**



Key Concepts!

Addition

+

$$8 + 2 = 10$$

"What is 8 add 2?"

Answer : 10

Subtraction

-

$$8 - 2 = 6$$

"What is 8 take away 2?"

Answer : 6

"The difference between 8 and 2 is 6"

Key Concepts!

Multiplication

x

$$8 \times 2 = 16$$

“8 multiplied by 2” means
“8, 2 times” or
“2 groups of 8”

Division

÷

$$8 \div 2 = 4$$

“8 divided by 2” means “How
many groups of 2 are there in
8?” Answer: 4

(“8 shared into 2 sets is 4”)

MA1: Partitioning

$$45 + 82 = 127$$

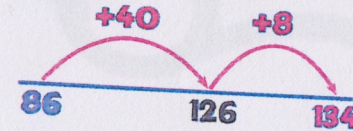
$$120 + 7 = 127$$

In my head?

Need a Jotting?

A3b: Forwards Jump

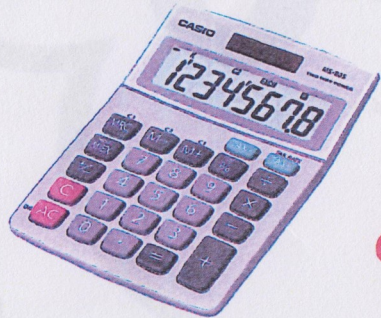
$$86 + 48 = 134$$

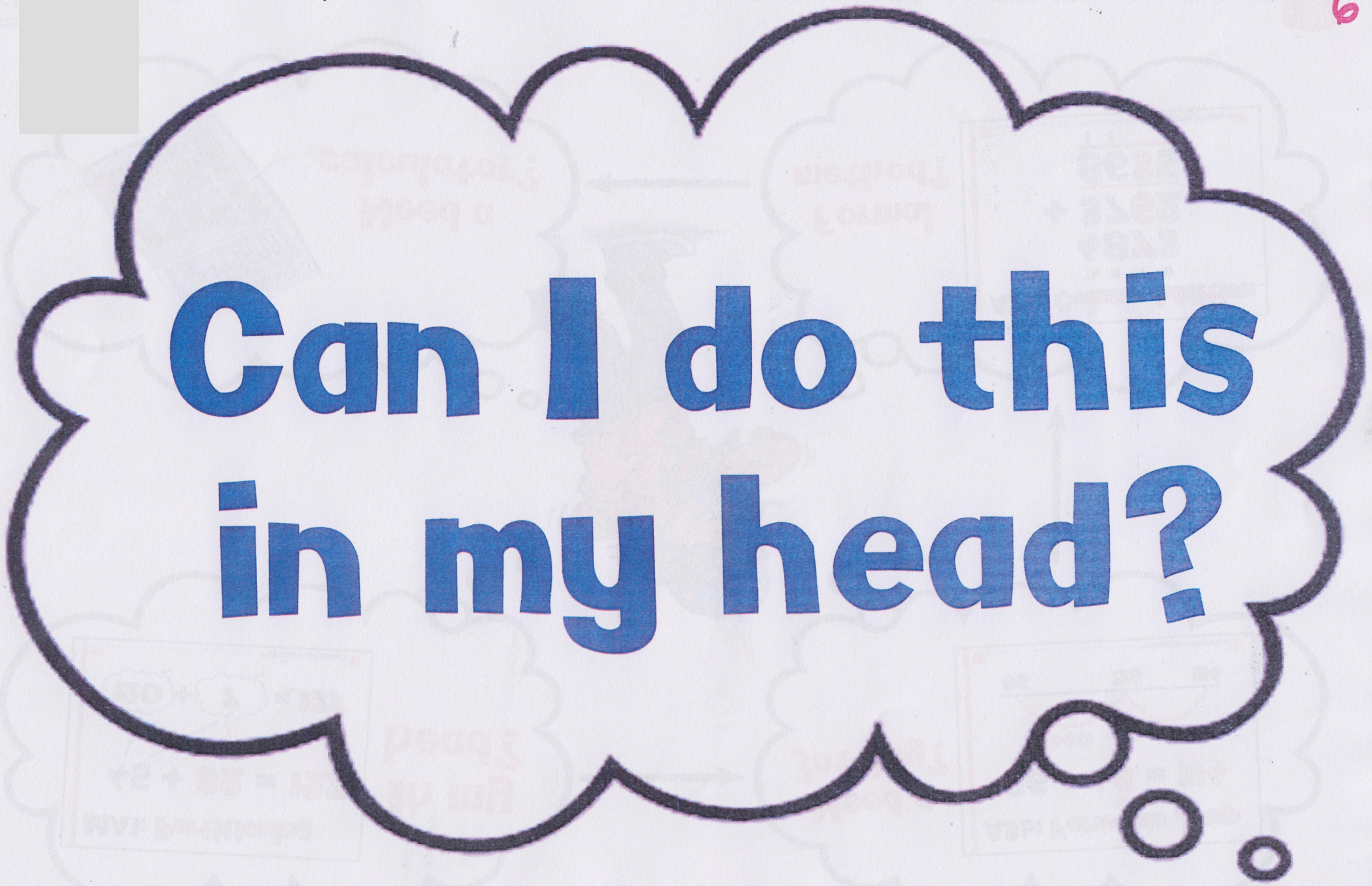
**A7d: Column Addition**

	Th	H	T	U
	4	8	7	3
+	3	7	6	2
	8	6	3	5
			1	1

Need a calculator?

Formal method?





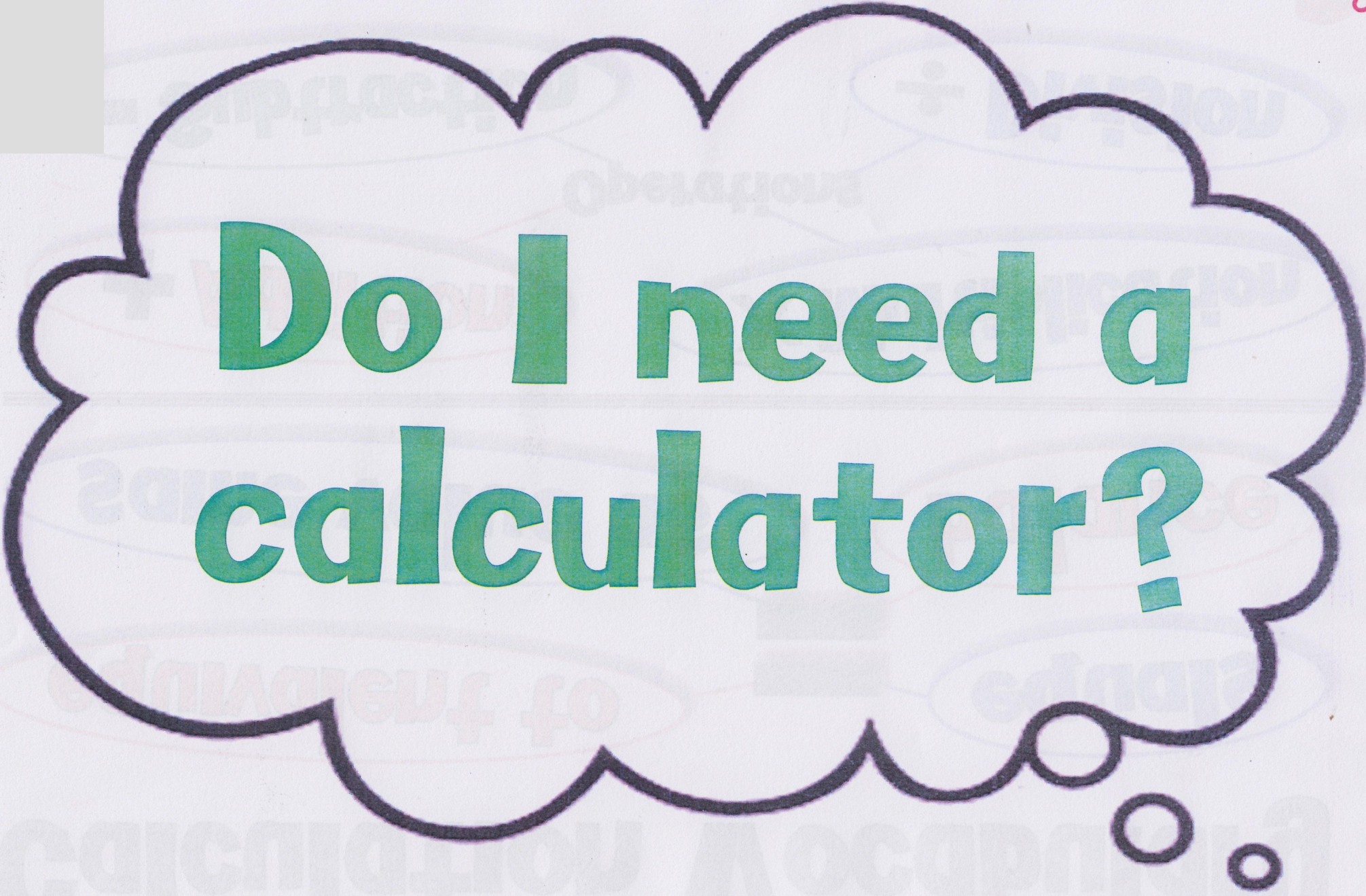
**Can I do this
in my head?**



**Do I need to
use a drawing
or a jotting?**



**Do I need an
expanded or a
standard method?**



**Do I need a
calculator?**

Calculation Vocabulary

equivalent to

equals

same value as

balance

+ Addition

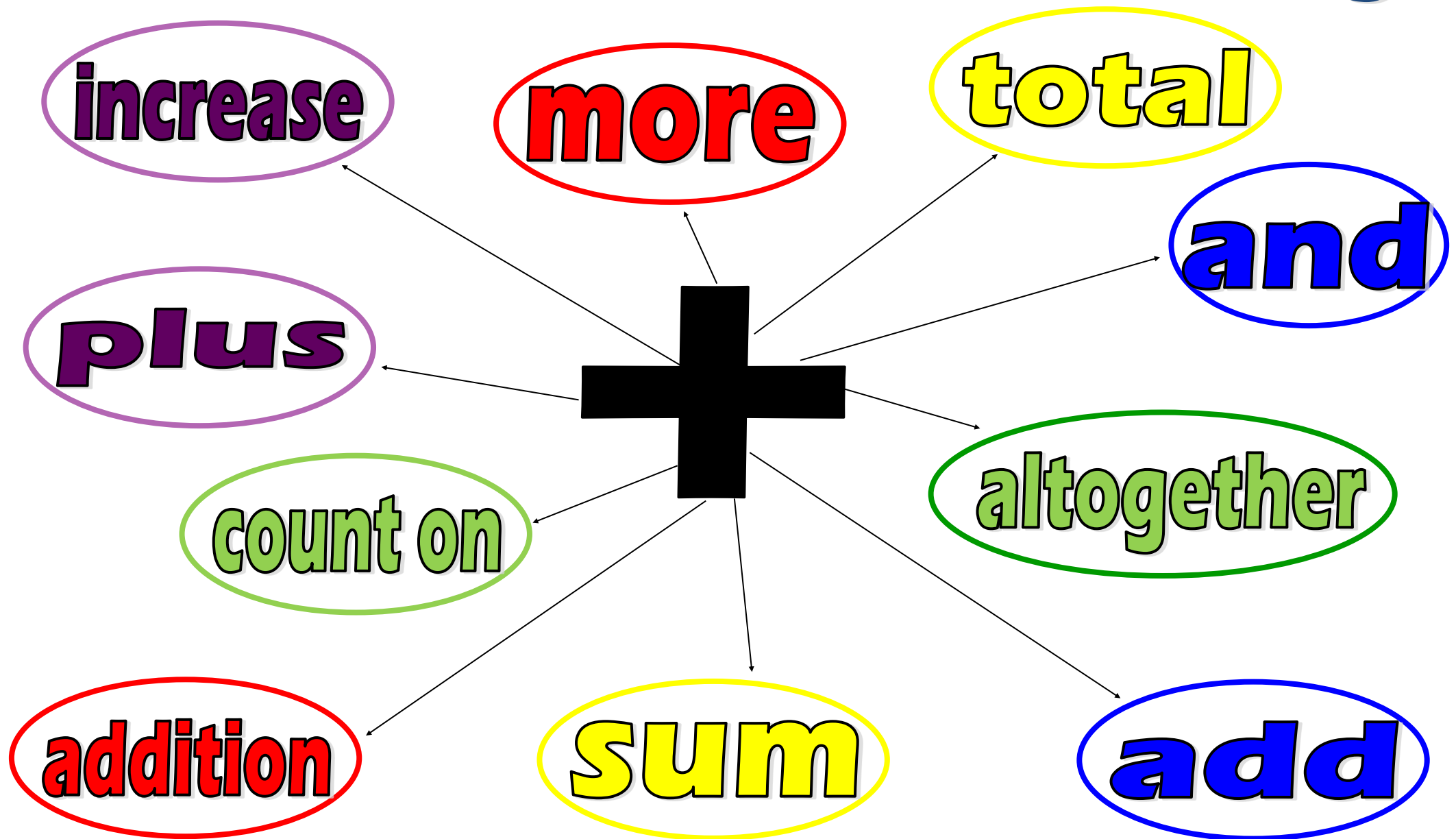
X Multiplication

- Subtraction

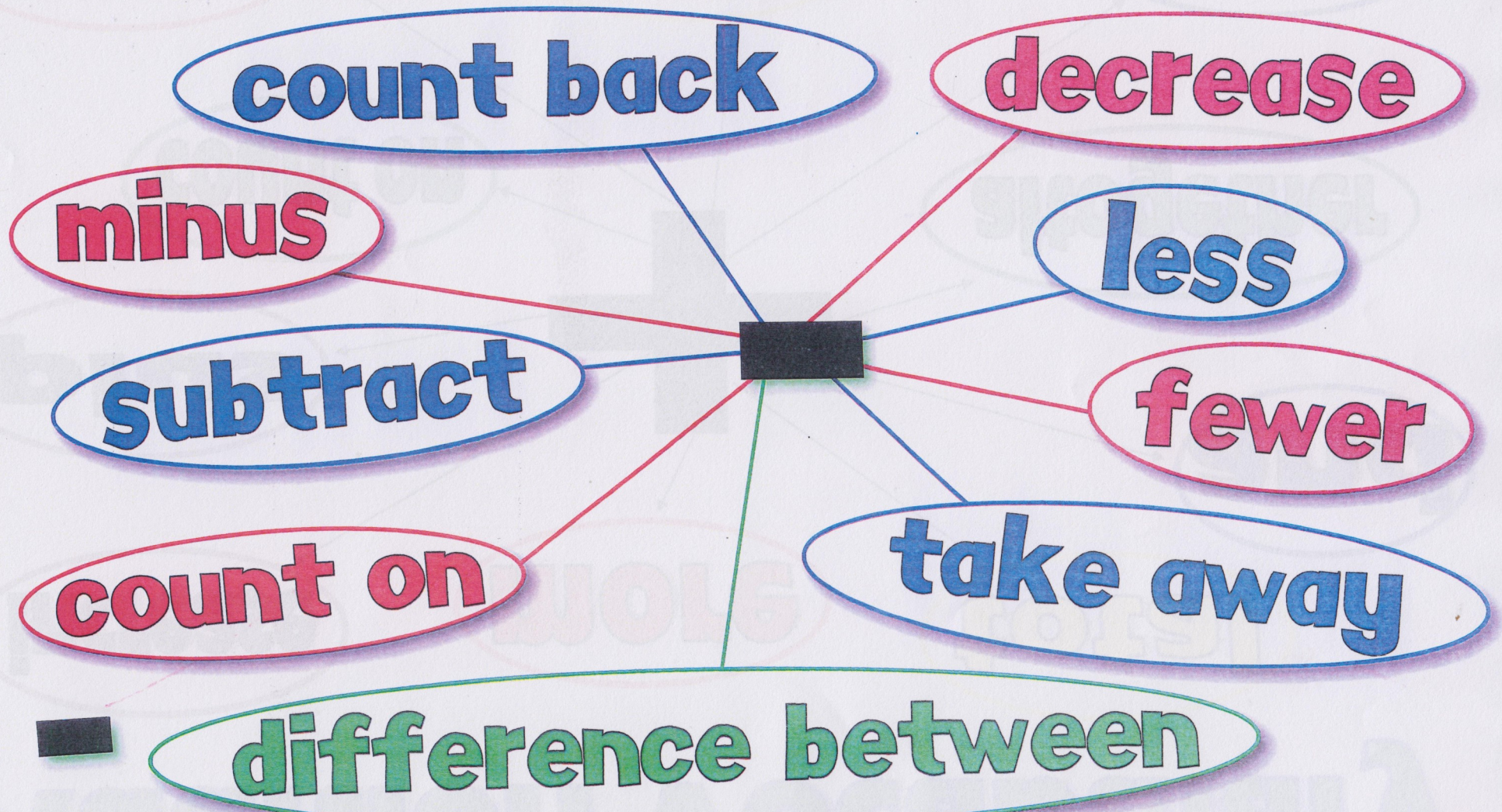
÷ Division

Operations

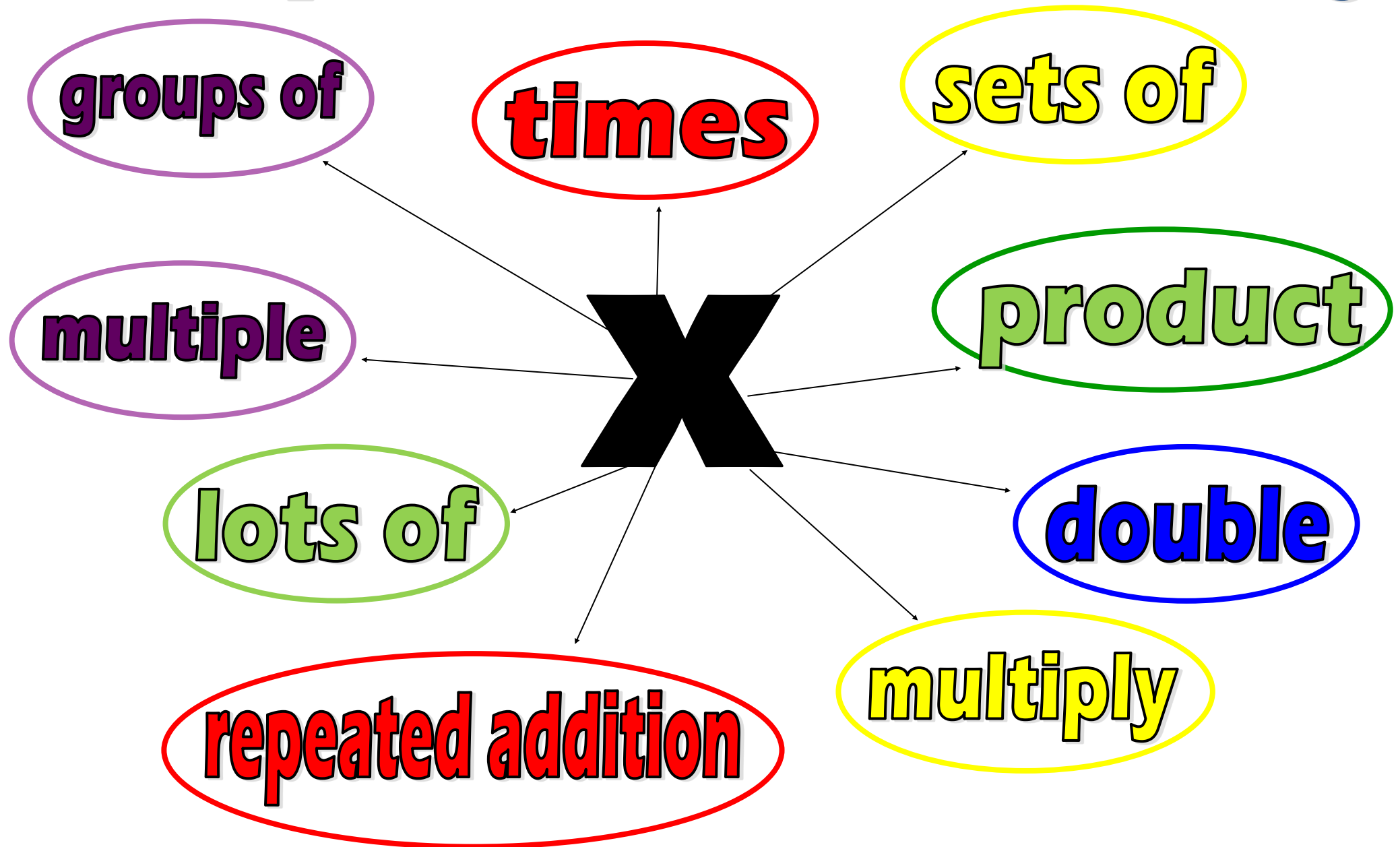
Addition Vocabulary



Subtraction Vocabulary

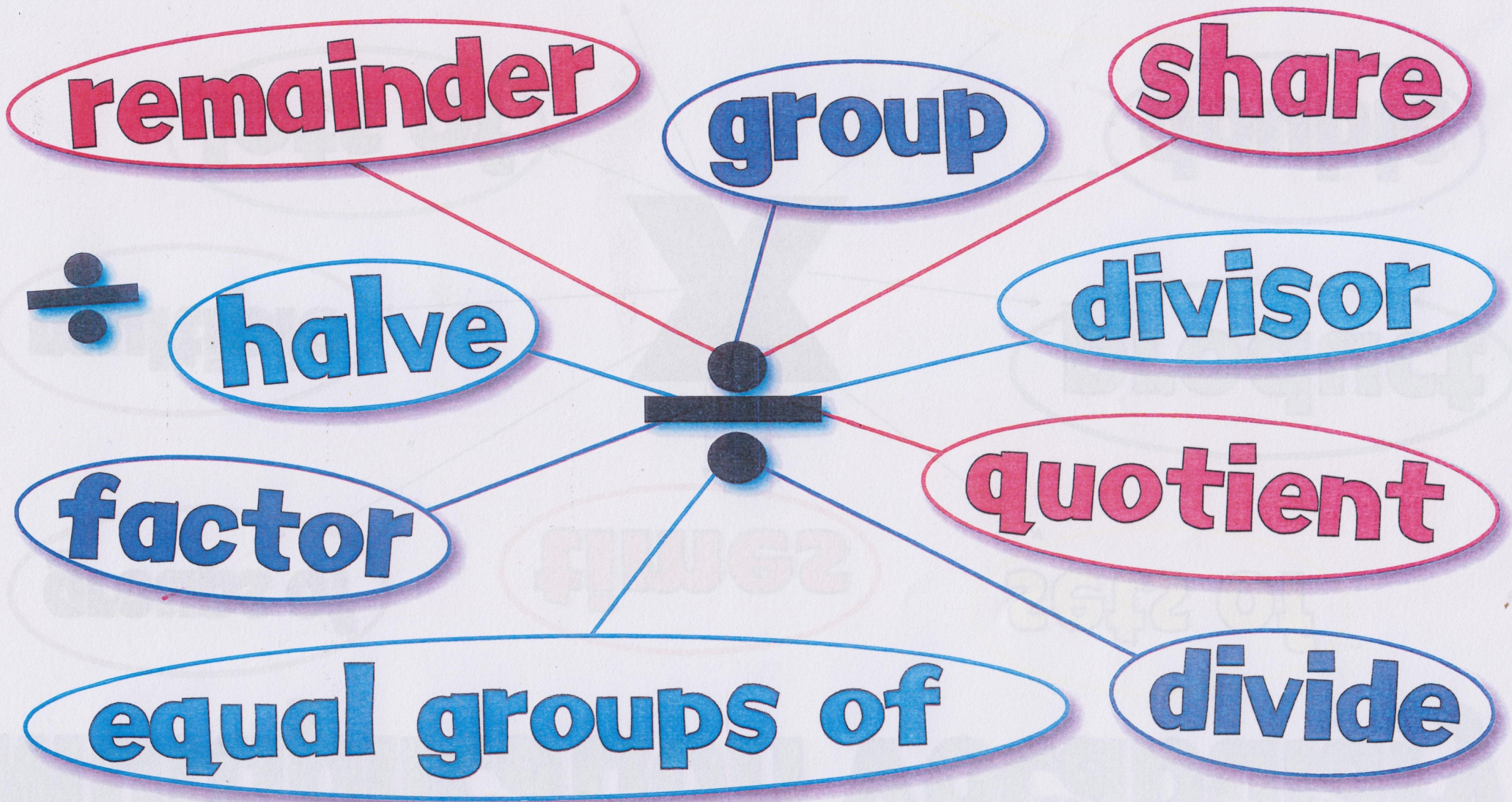


Multiplication Vocabulary



Division Vocabulary

14.



Addition Calculation

4 + 2 = 6

(add) (equals)

total

sum

The diagram illustrates the addition of 4 and 2 to get 6. The numbers 4 and 2 are in blue, the plus sign and equals sign are in black, and the result 6 is in pink. The word 'total' is in a blue oval, and 'sum' is in a blue oval. Arrows point from 'total' and 'sum' to the pink number 6.

Subtraction Calculation

$$6 - 2 = 4$$

(subtract) (equals)

difference

Multiplication Calculation

$$4 \times 2 = 8$$

(multiplied by) (equals)

multiplier

product

Division Calculation

$$8 \div 2 = 4$$

(divided by)

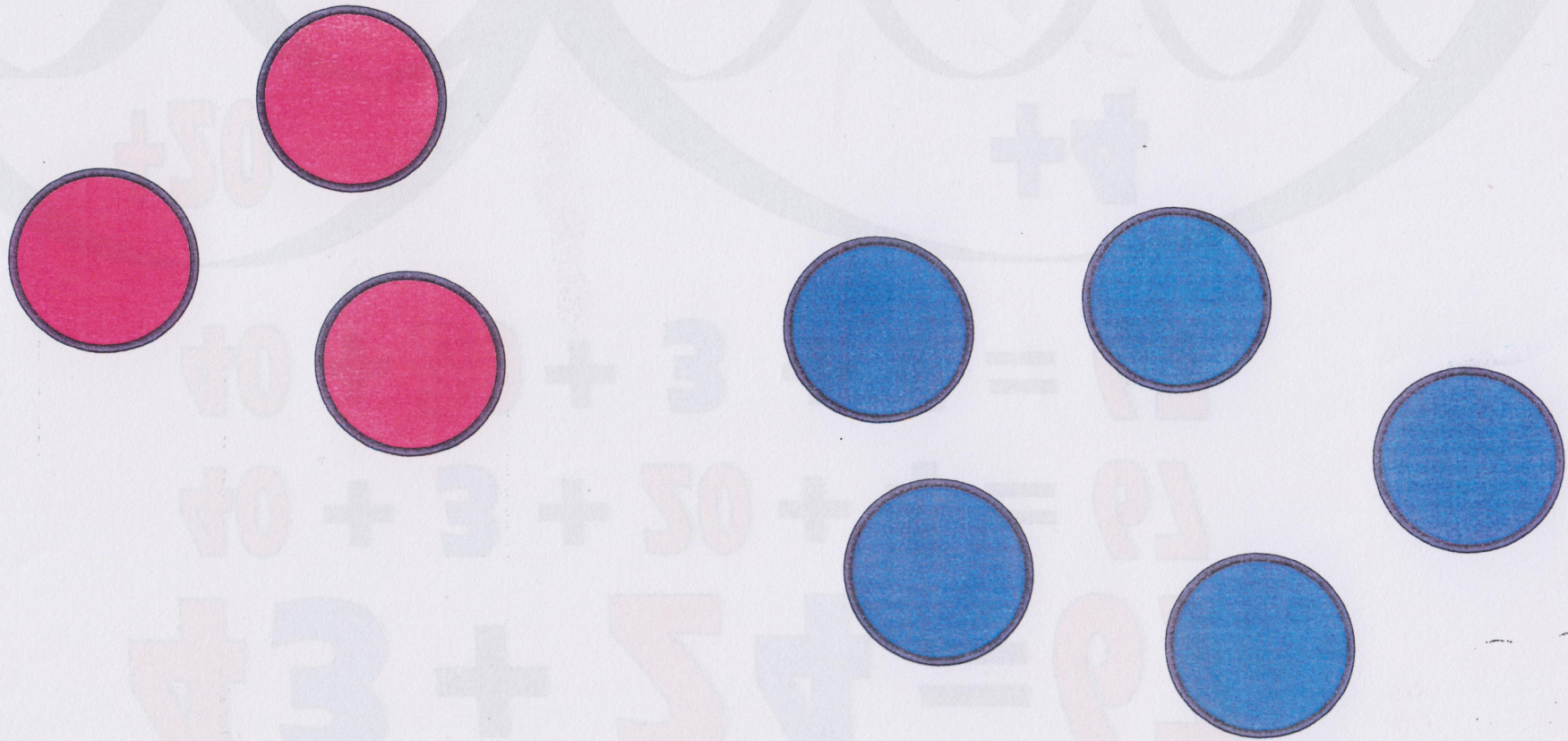
(equals)

divisor

quotient

19.

Objects & Pictures



"If I have **3** and then **5** more, how many altogether? Answer: **8**"



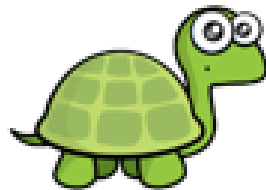
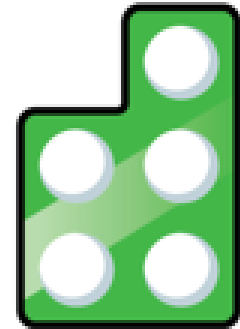
Four **add** one is
equal to five!



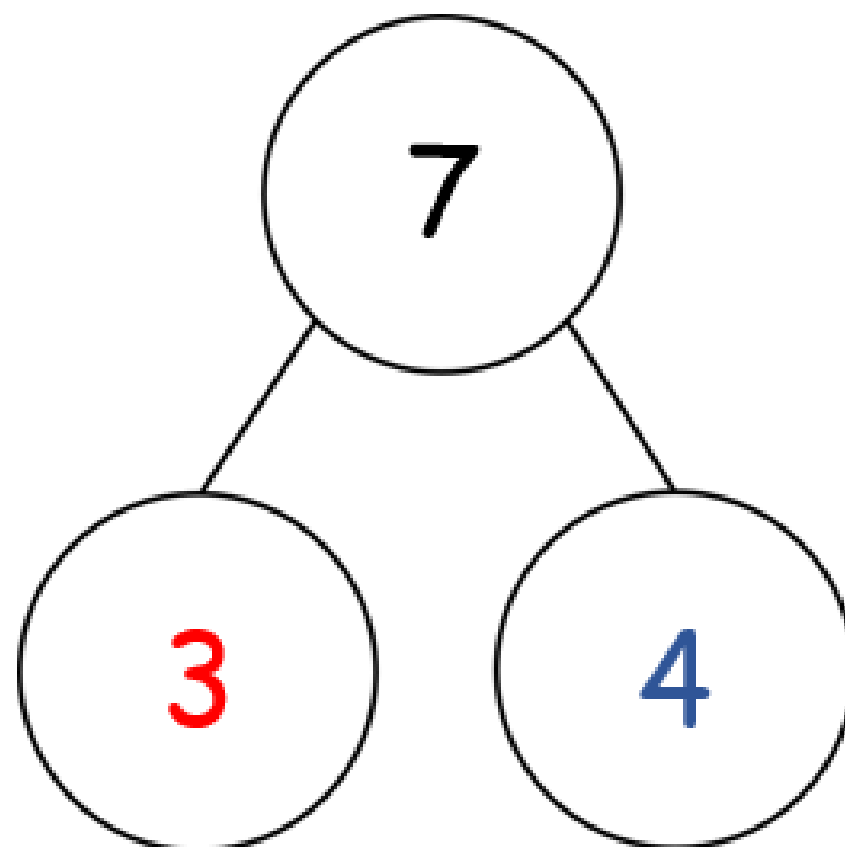
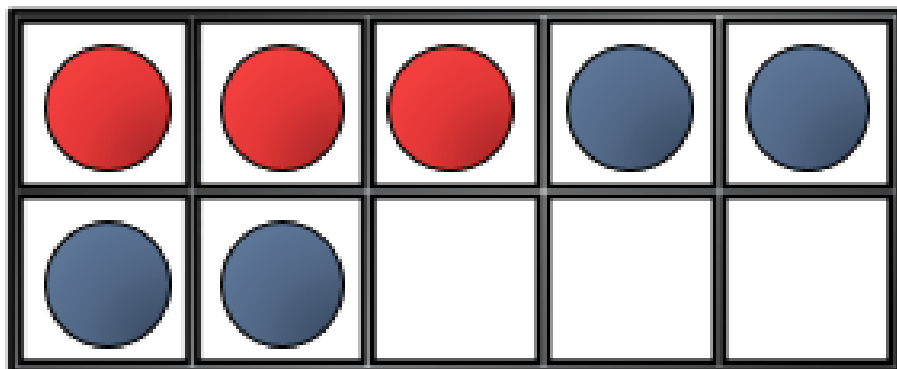
+



=

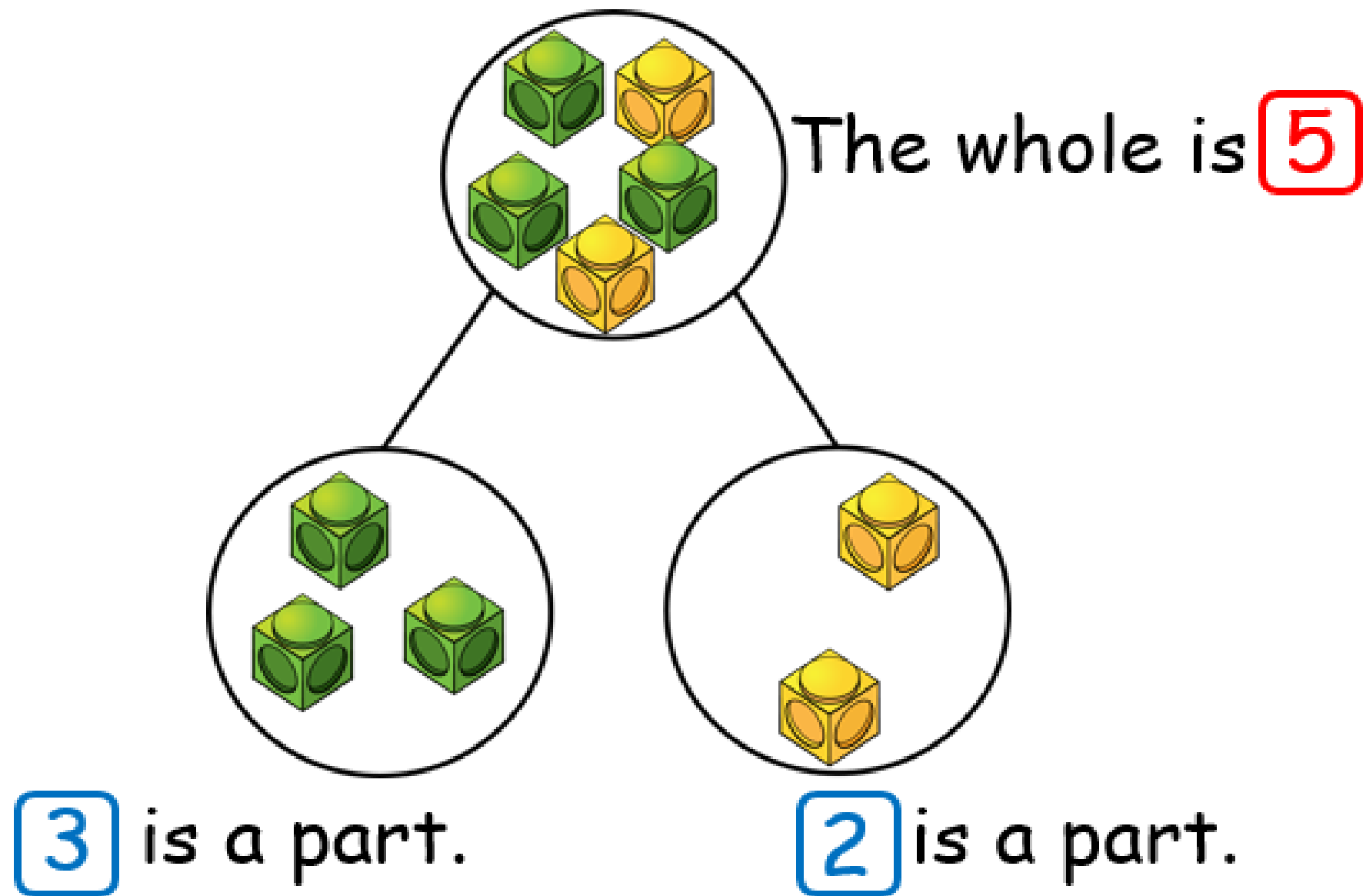


Four **plus** one is
equal to five!

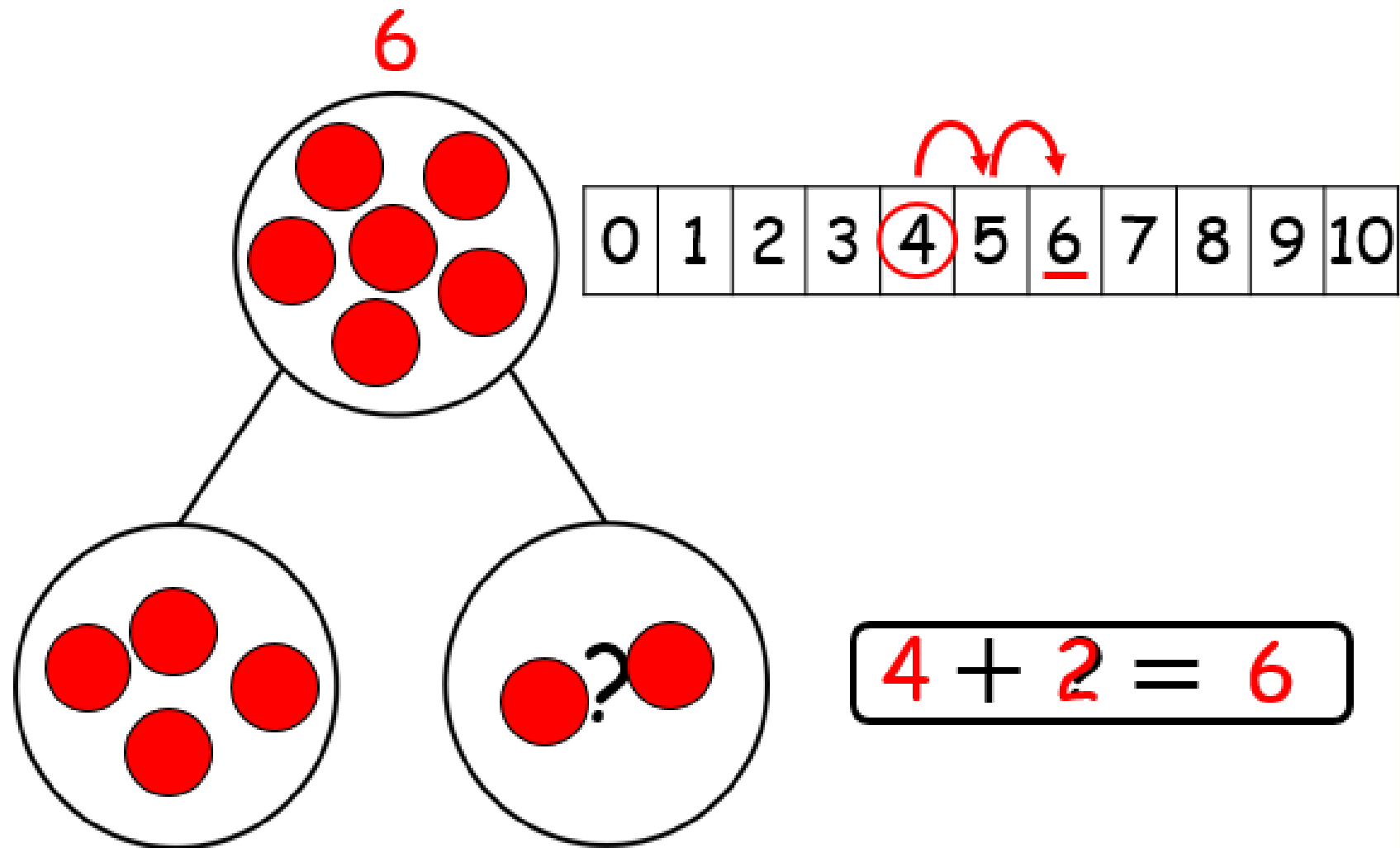


$$\boxed{3} + \boxed{4} = \boxed{7}$$

Finding a part

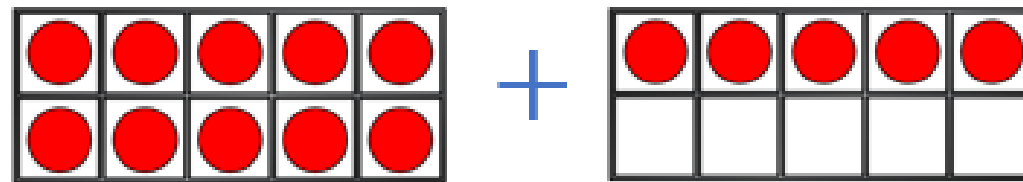


Finding a part



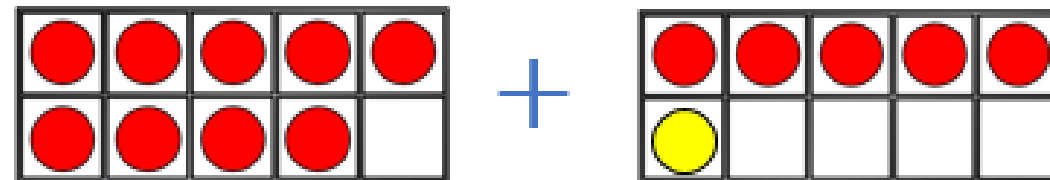
Making 10

If



$$10 + 5 = 15$$

Then



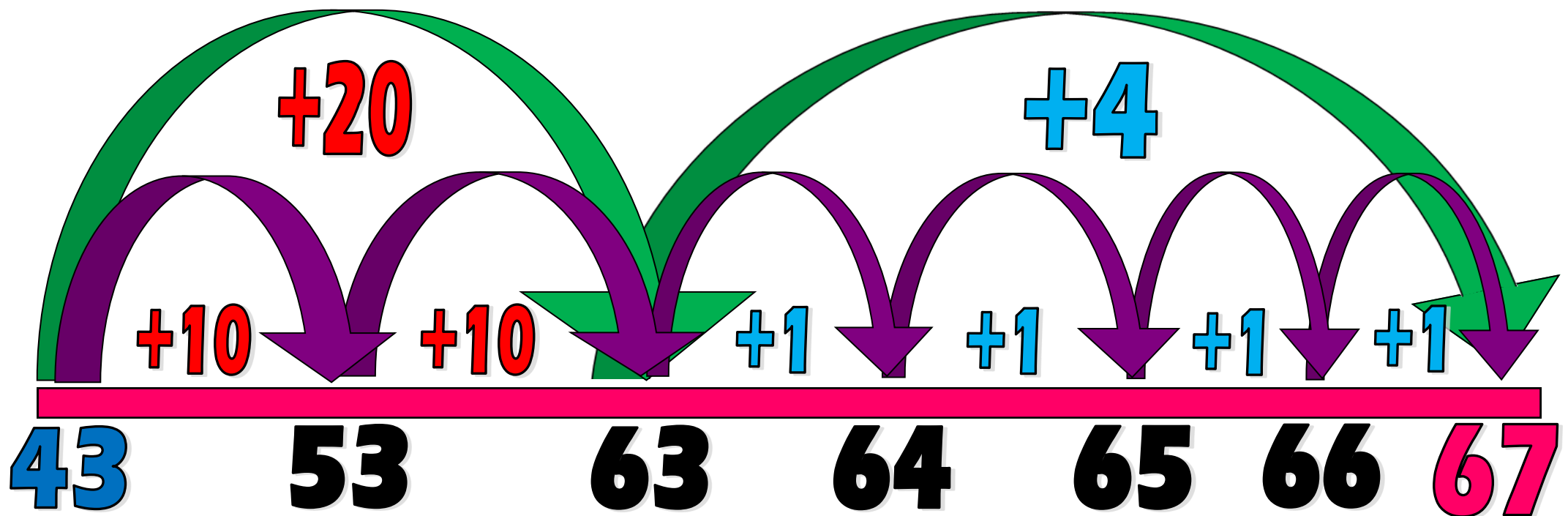
$$9 + 6 = 15$$

Forwards Jump

$$43 + 24 = 67$$

$$40 + 3 + 20 + 4 = 67$$

$$40 + 20 + 3 + 4 = 67$$



Partitioning the second number

$$43 + 24$$

$$43 + 20 + 4$$

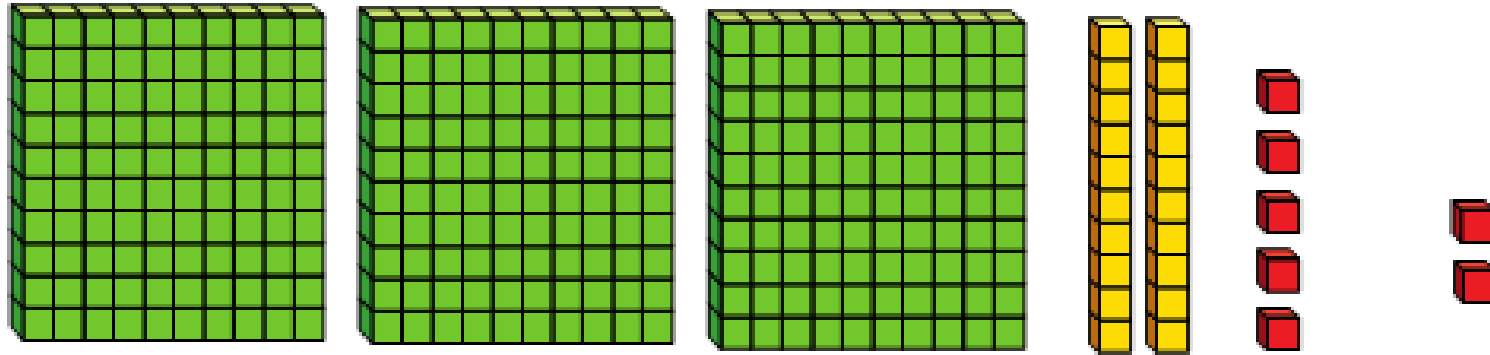

$$63 + 4 = 67$$

Partition Jot

$$43 + 24 = 67$$

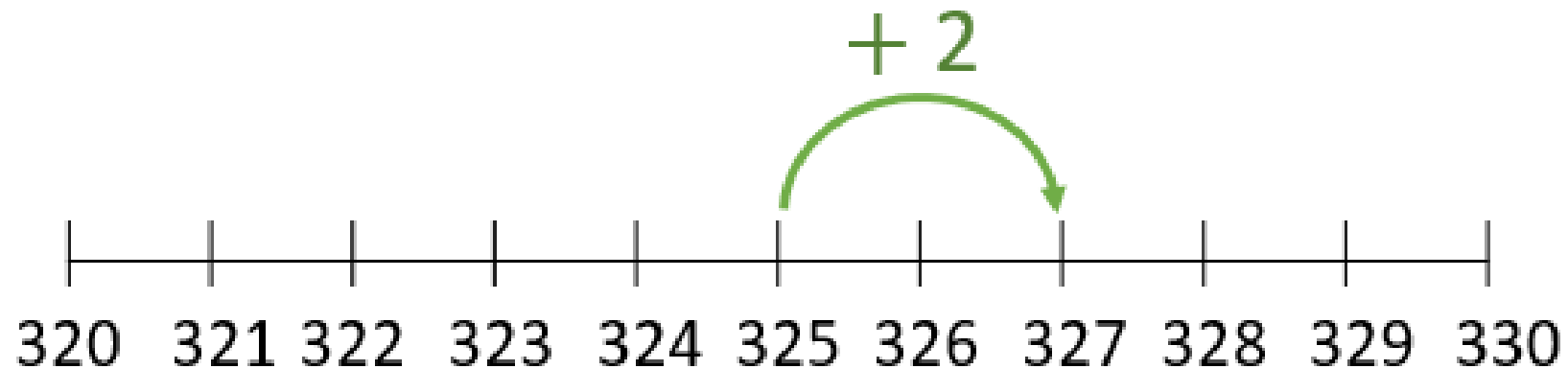
A Partition Jot diagram illustrating the addition of 43 and 24. The numbers are written in a partitioned format: 43 (red 4, blue 3) + 24 (red 2, blue 4) = 67 (red 6, blue 7). The diagram shows the partitioning of the tens and ones places. The red lines connect the red tens digits (4 and 2) to the red tens digit of the result (6). The blue lines connect the blue ones digits (3 and 4) to the blue ones digit of the result (7).

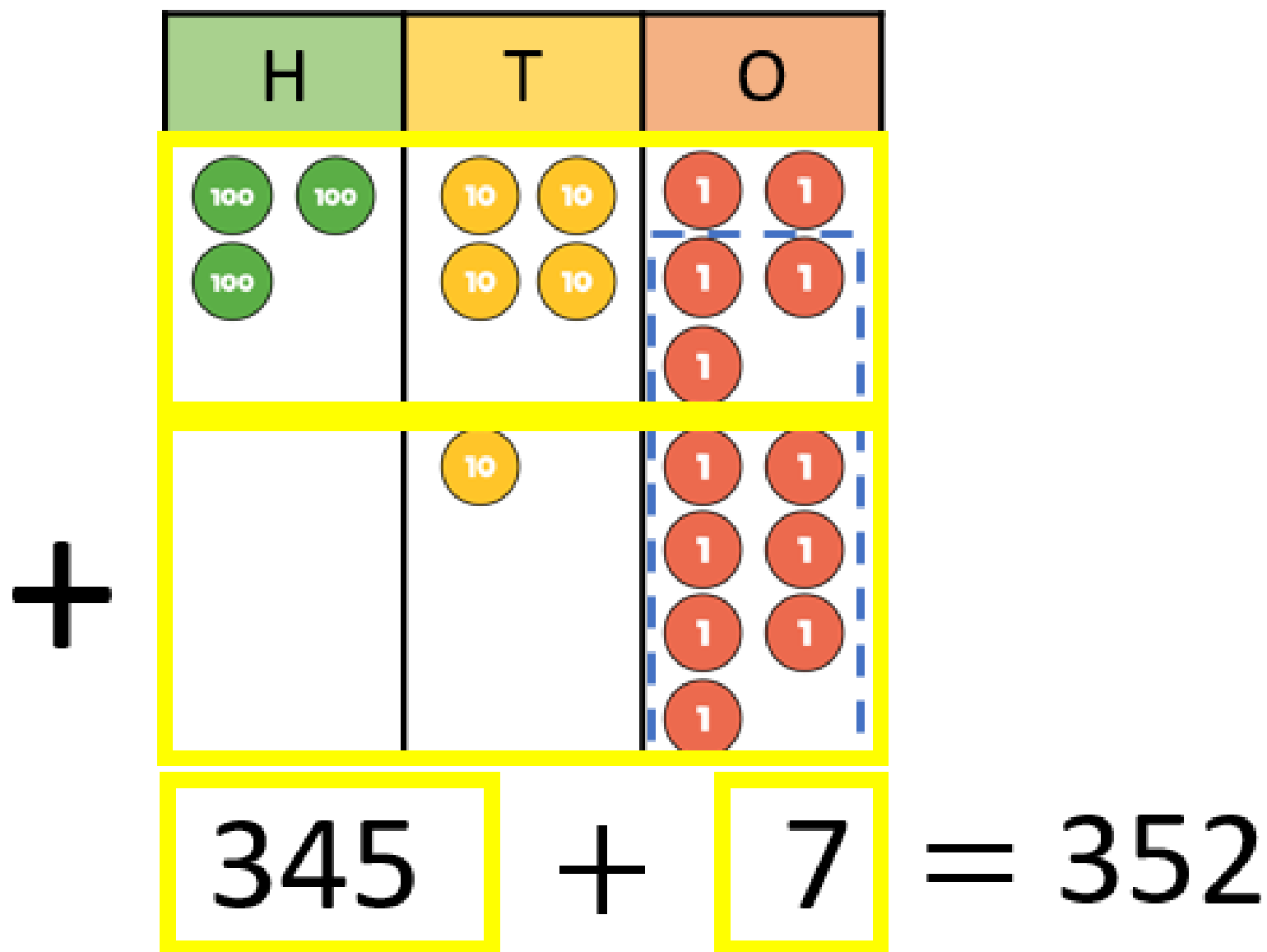
Calculate $325 + 2$



$$5 + 2 = 7$$

$$325 + 2 = 327$$





Column Addition

$$\begin{array}{r} \text{T} \quad \text{U} \\ 43 \\ + 24 \\ \hline 67 \end{array}$$

$$\begin{array}{r} \text{T} \quad \text{U} \\ 38 \\ + 25 \\ \hline 63 \\ \hline 1 \end{array}$$

Expanded Column Addition

H

T

U

$$600 + 80 + 7$$

$$200 + 40 + 8$$

$$800 + 120 + 15 = 935$$

Expanded column addition

H

T

u

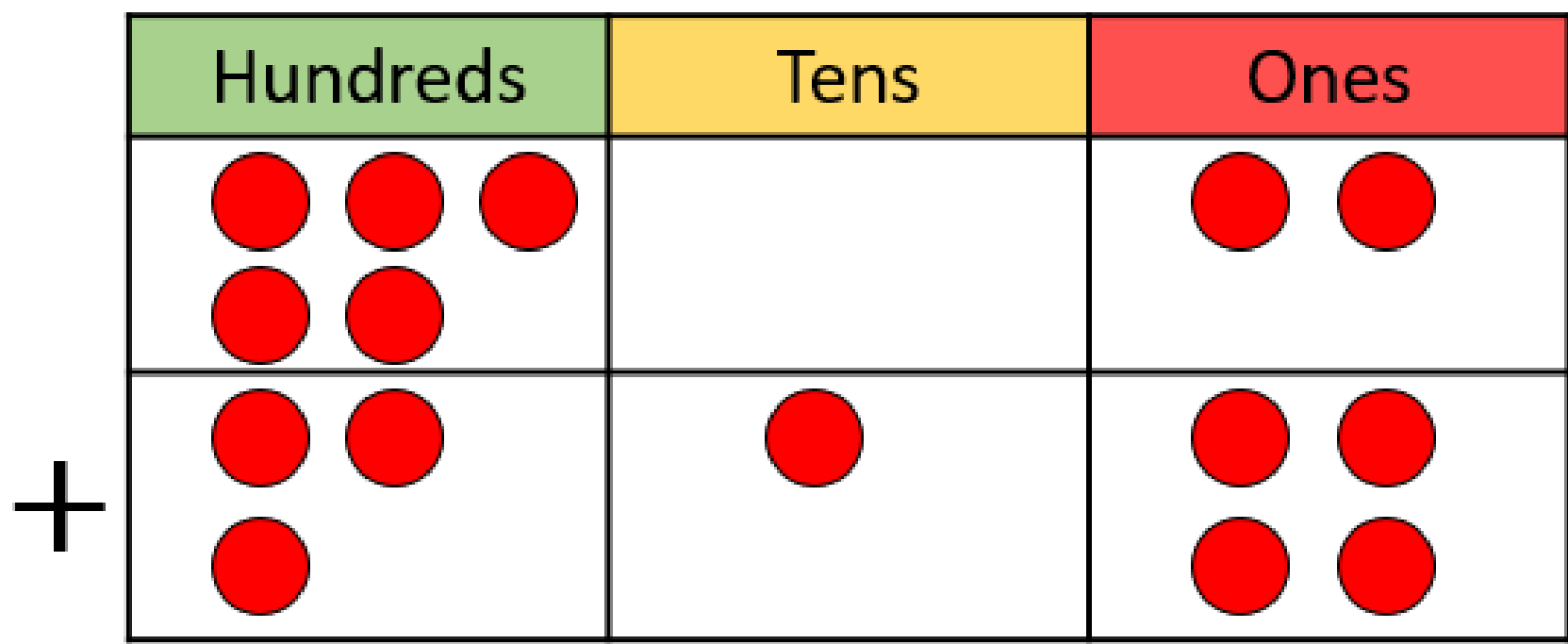
$$600 + 80 + 7$$

$$200 + 40 + 8$$

$$900 + 30 + 5$$

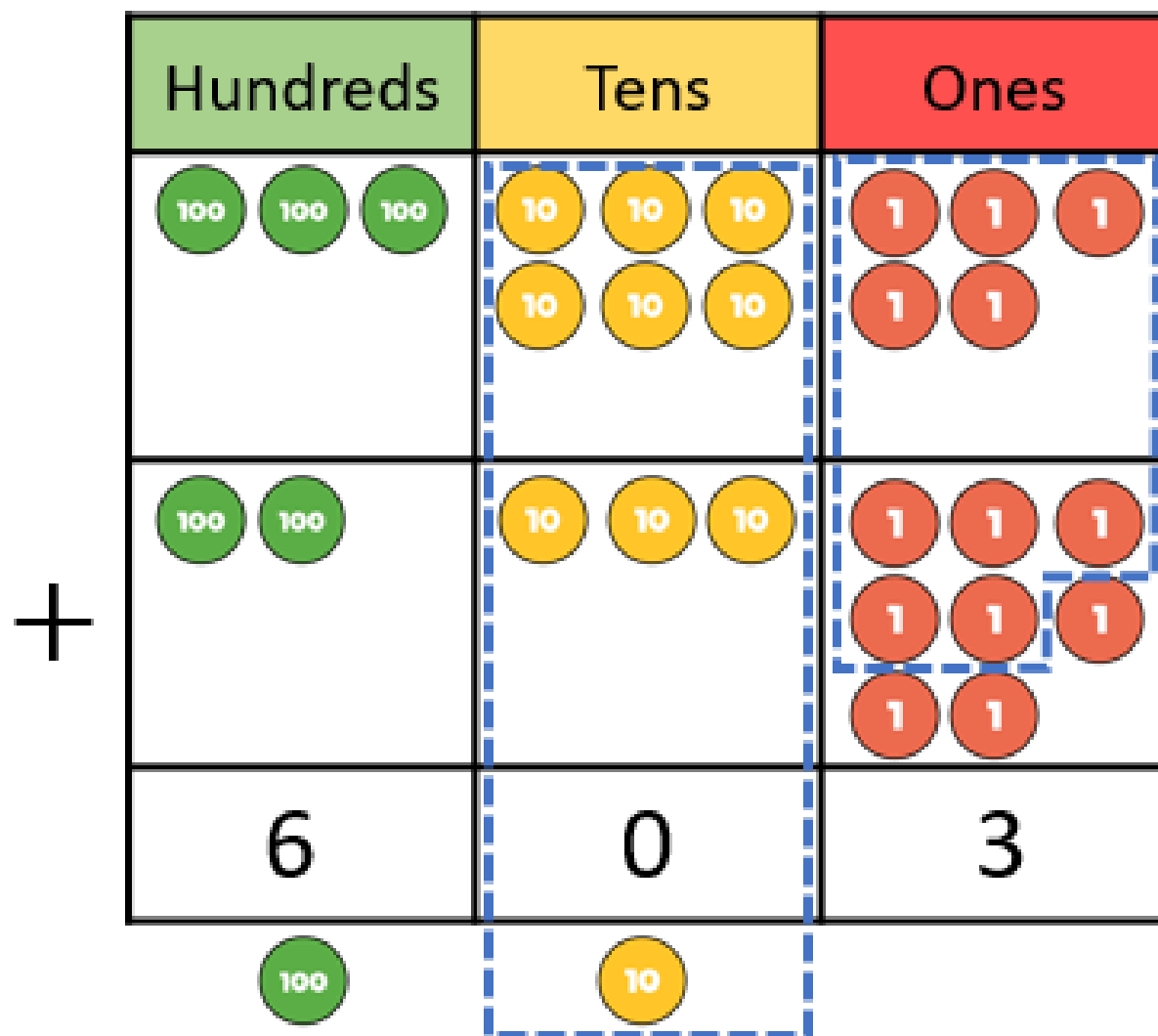
100

10



	H	T	O
	5	0	2
+	3	1	4
	8	1	6

$$238 + 365 = 603$$



H	T	O
3	6	5
2	3	8
6	0	3
1	1	

Column Addition

H

T

U

6

8

7

+

2

4

8

9

3

5

1

1

Column Addition

	TTh	Th	H	T	O
		7	2	4	0
+		2	8	1	9
	1	0	0	5	9
	1	1			

Column Addition

$$\begin{array}{r} 32.8 \\ + 1.2 \\ \hline 34.0 \end{array}$$

1

$$\begin{array}{r} 53.4 \\ + 5.3 \\ \hline 58.7 \end{array}$$

Partitioning

$$45 + 82 = 127$$

The diagram illustrates the partitioning of the numbers 45 and 82. Red lines connect the '4' in 45 to the '120' in the second equation, and the '8' in 82 to the '7'. Blue lines connect the '5' in 45 to the '7' in the second equation, and the '2' in 82 to the '120' in the second equation. This shows that 45 is partitioned into 40 and 5, and 82 is partitioned into 80 and 2. The 40 and 80 are combined to form 120, and the 5 and 2 are combined to form 7. The final sum is 127.

$$120 + 7 = 127$$

Counting On

$$45 + 20 = 65$$

45

+20

65

Number Bonds

$$45 + 95 = 140$$

$$40 + 100 = 140$$

Double & Adjust

$$45 + 46 = 91$$

$$45 + 45 + 1$$

$$90 + 1 = 91$$

Round & Adjust

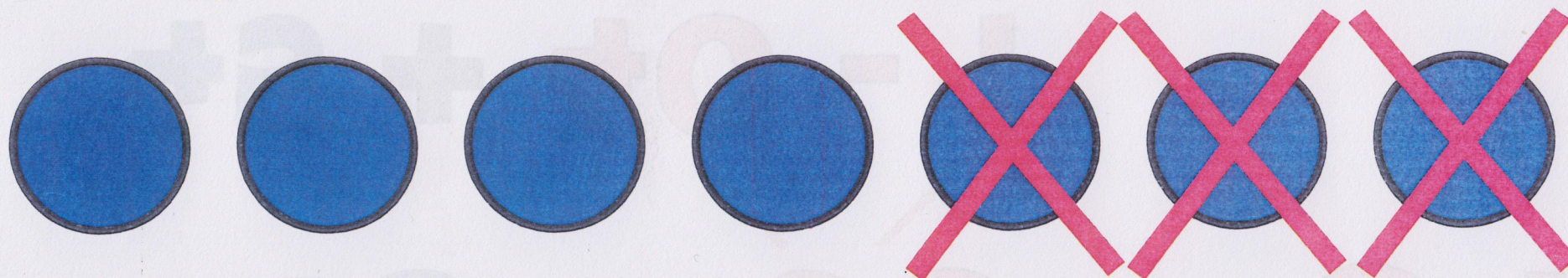
29

$$45 + 39 = 84$$

$$45 + 40 - 1$$

$$85 - 1 = 84$$

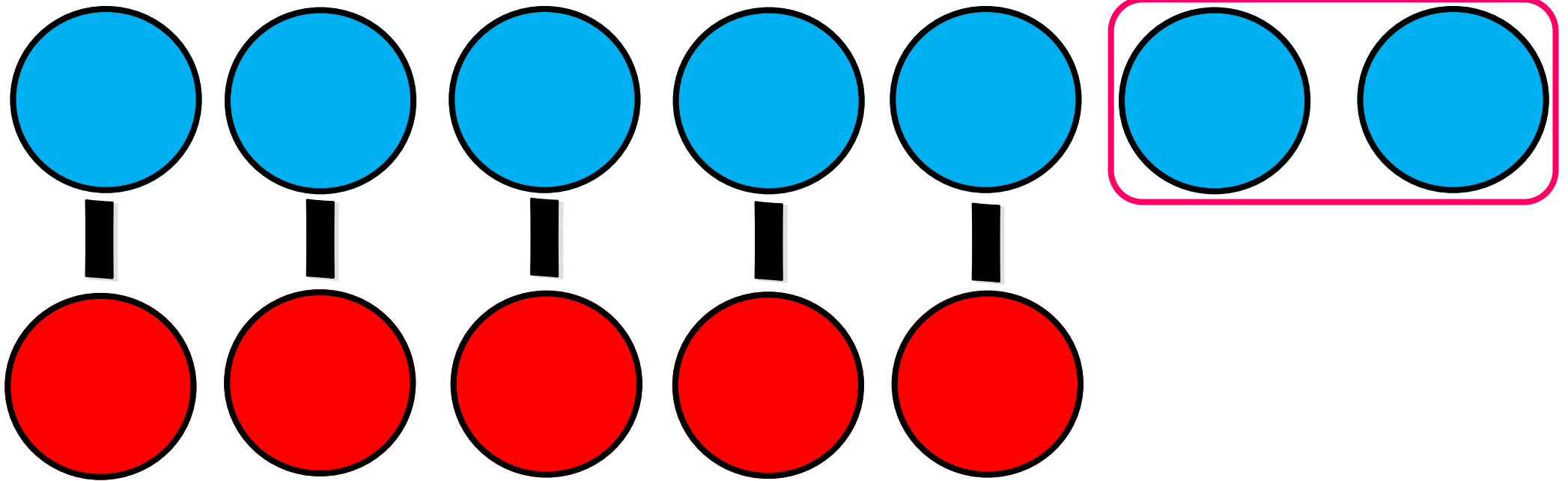
Objects



$$7 - 3 = 4$$

"What do I get if I take 3 away from 7? Answer: 4"

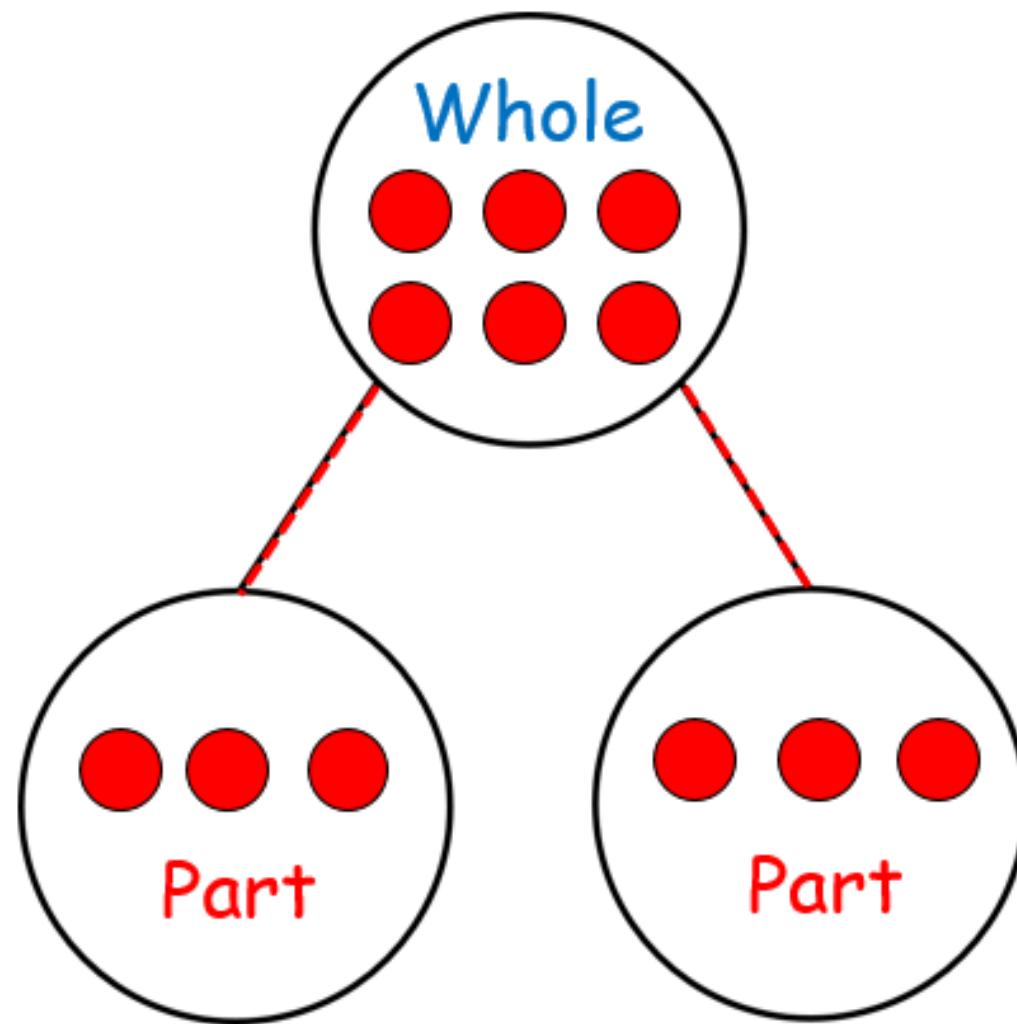
What's the Difference?



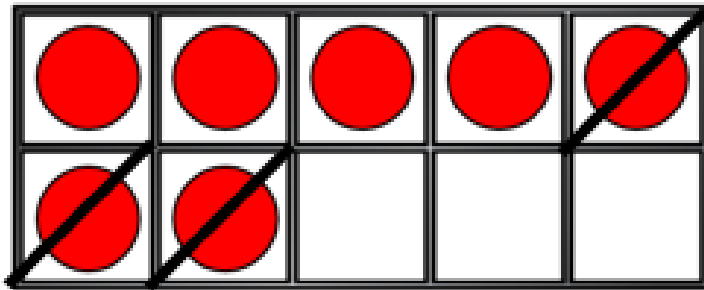
$$7 - 5 = 2$$

"How many more is 7 than 5? What is the difference?"

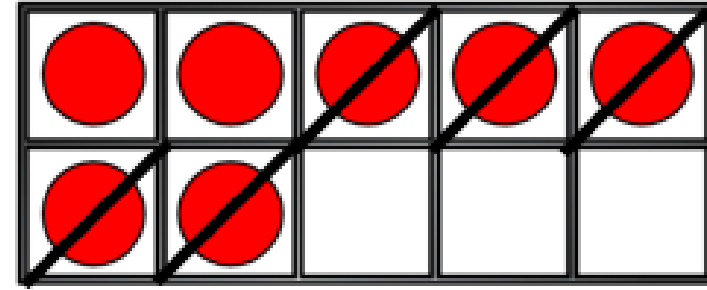
Part-Whole model



Subtraction - taking away



$$7 - 3 = 4$$

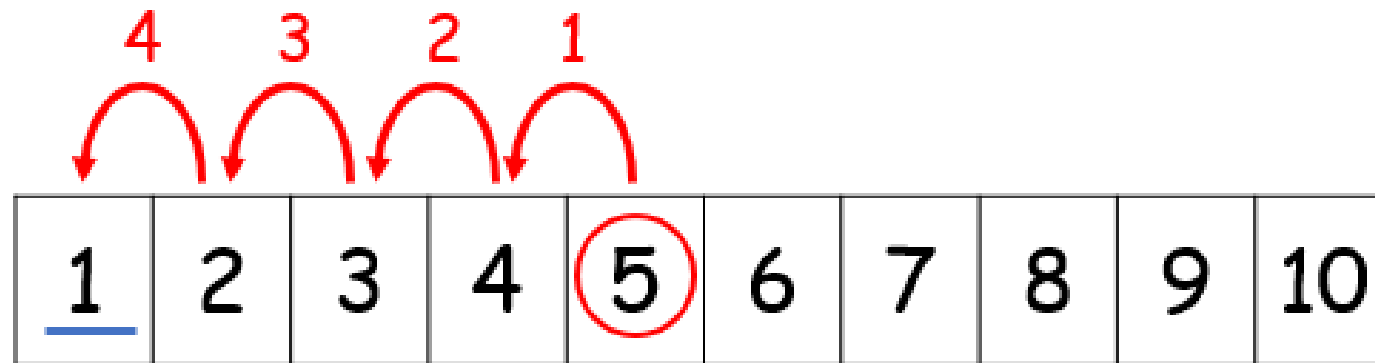


$$7 - 5 = 2$$



I can show
subtraction by
crossing out!

Number lines



Let's count backwards from 5 to 1

How many jumps?

$$\boxed{5} - \boxed{4} = \boxed{1}$$

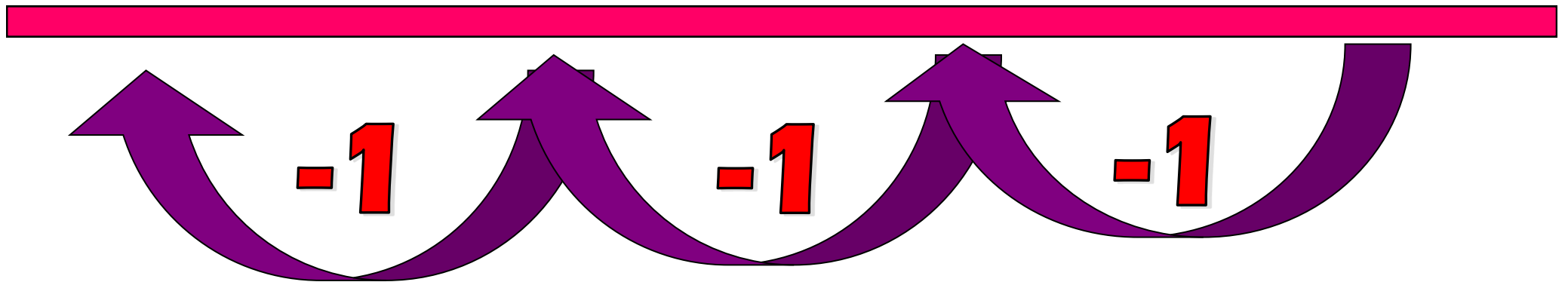
Counting Back

9

10

11

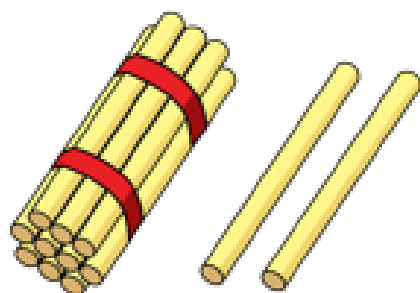
12



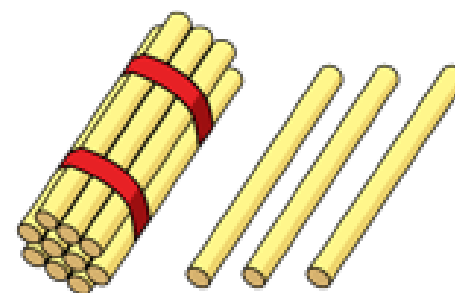
$$12 - 3 = 9$$

"What do I get if I take 3 away from 12? Answer 9"

Greater than or less than

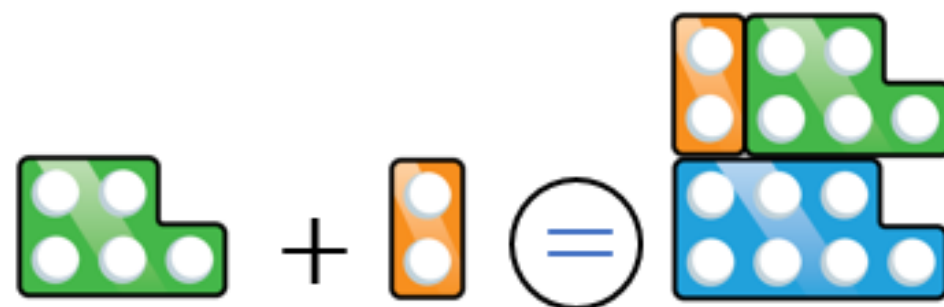


is less than



is greater than





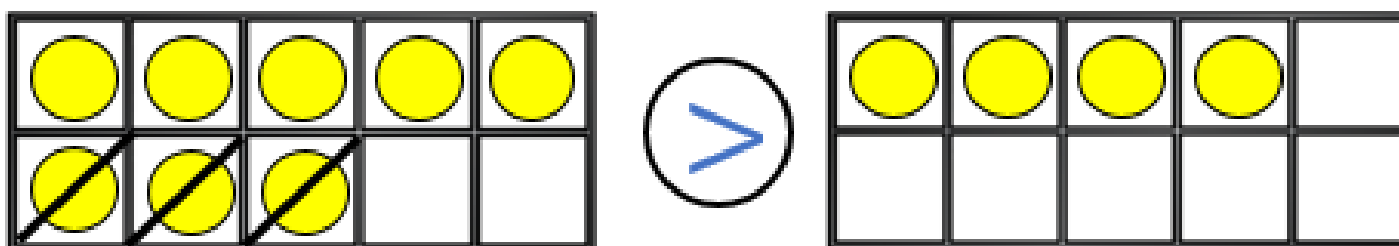
5 + 2 is equal to 7



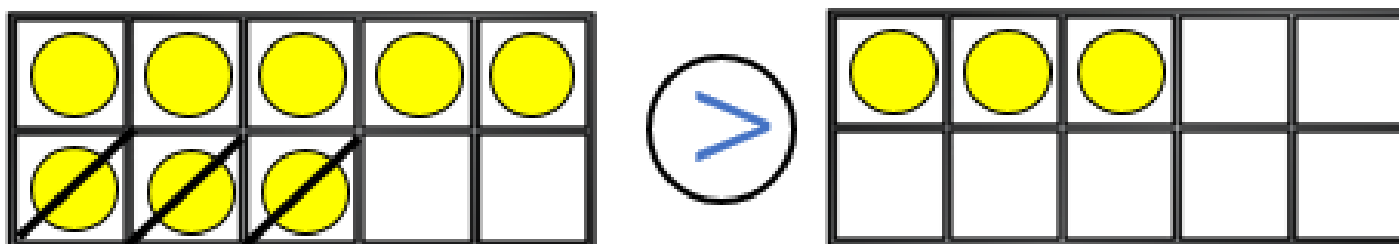
5 + 4 is greater than 7



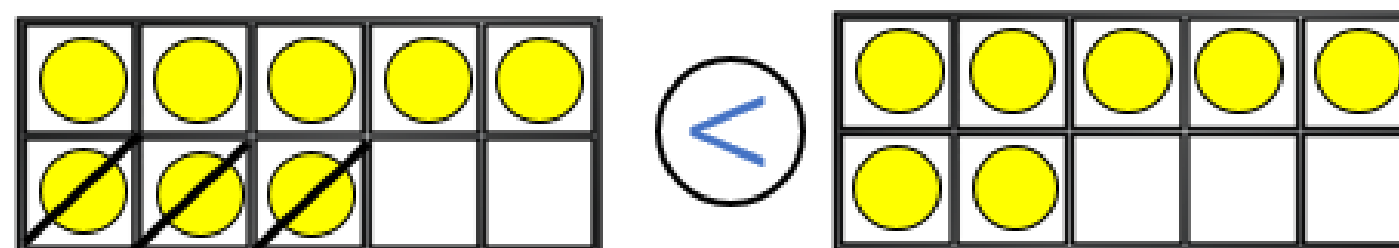
5 + 1 is less than 7



$8 - 3$ is greater than 4



$8 - 3$ is greater than 3



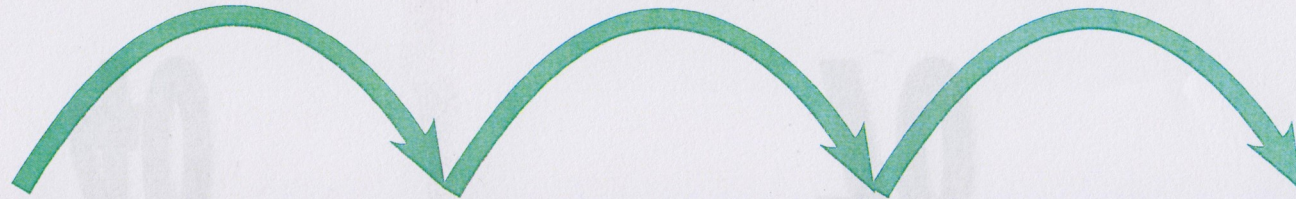
$8 - 3$ is less than 7

Counting On

+1

+1

+1



9

10

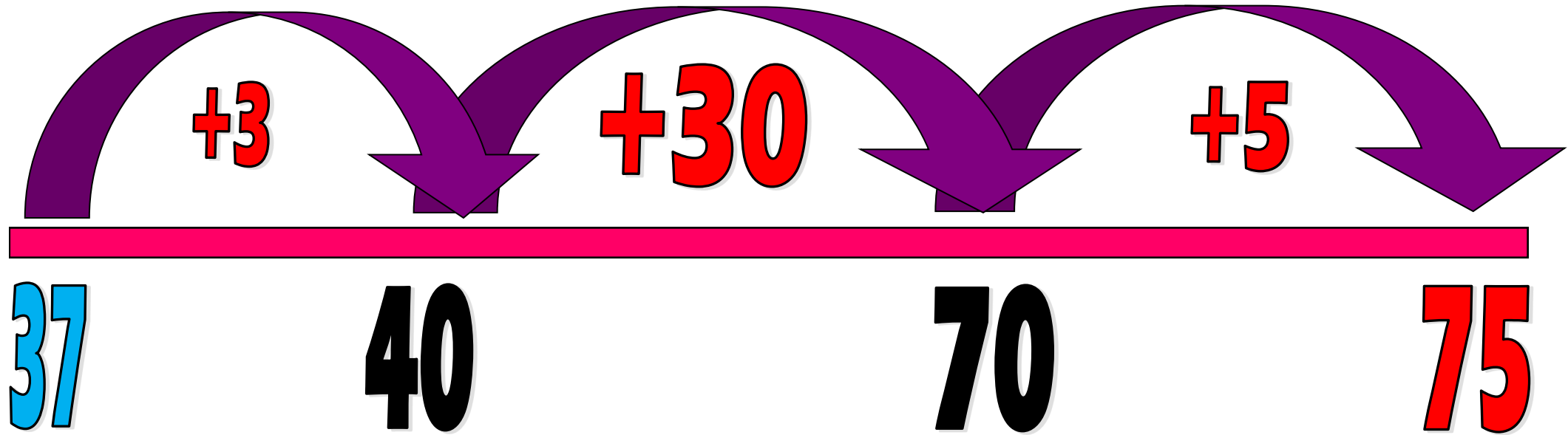
11

12

$$12 - 9 = 3$$

"How many more is 12 than 9? What is the difference?"

Jumps



$$75 - 37 = 38$$

Subtraction (Partitioning)

$$75 - 34$$

$$75 - 30 - 4$$


$$45 - 4 = 41$$

Partition Subtraction

$$75 - 34 = 41$$

No Exchanging

T

U

70

+

5

-

30

+

4

40

+

1

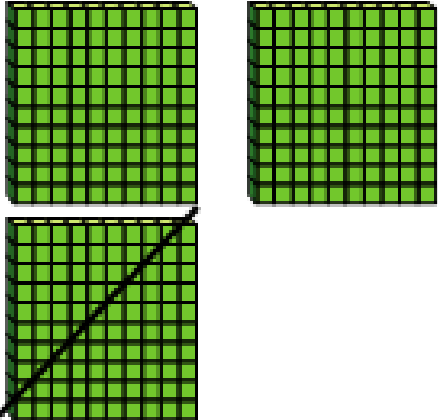
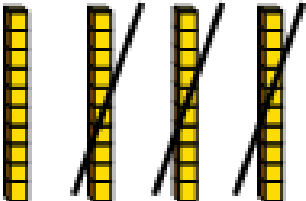
=

41

Work out $515 - 6$

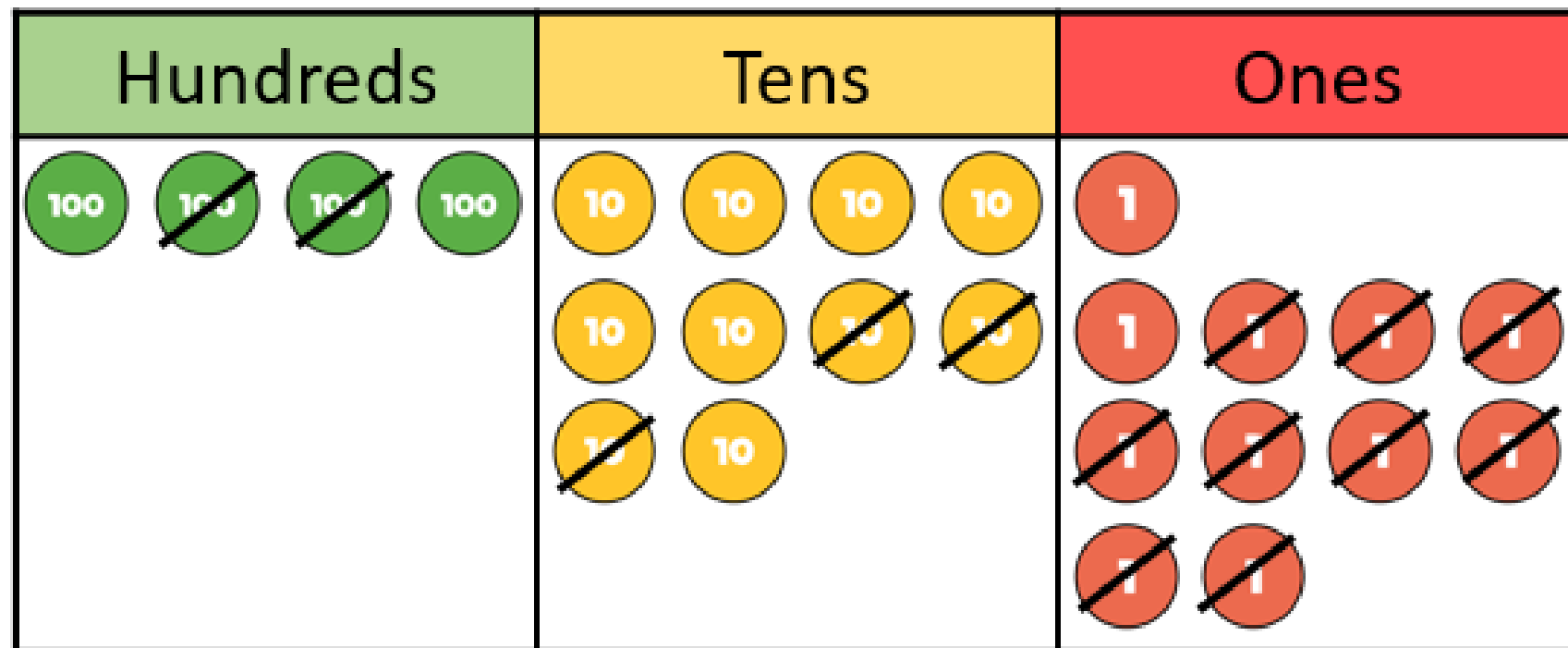
Hundreds	Tens	Ones
		

$$515 - 6 = 509$$

Hundreds	Tens	Ones
		

—

H	T	O
3	4	8
1	3	5
2	1	3



	H	T	O
	3	9	
	4	10	11
—	2	3	9
	1	6	2

Expanded Column

Subtraction (H,T,U)

$$723 - 356 = 367$$

	^H	^T	^U
	⁶⁰⁰	¹¹⁰	¹
	700	20	3
-	300	50	6
	300	60	7

Column Subtraction

	H	T	U
	⁶ 7	¹¹ 2	¹ 3
-	3	5	6
	3	6	7

Column Subtraction

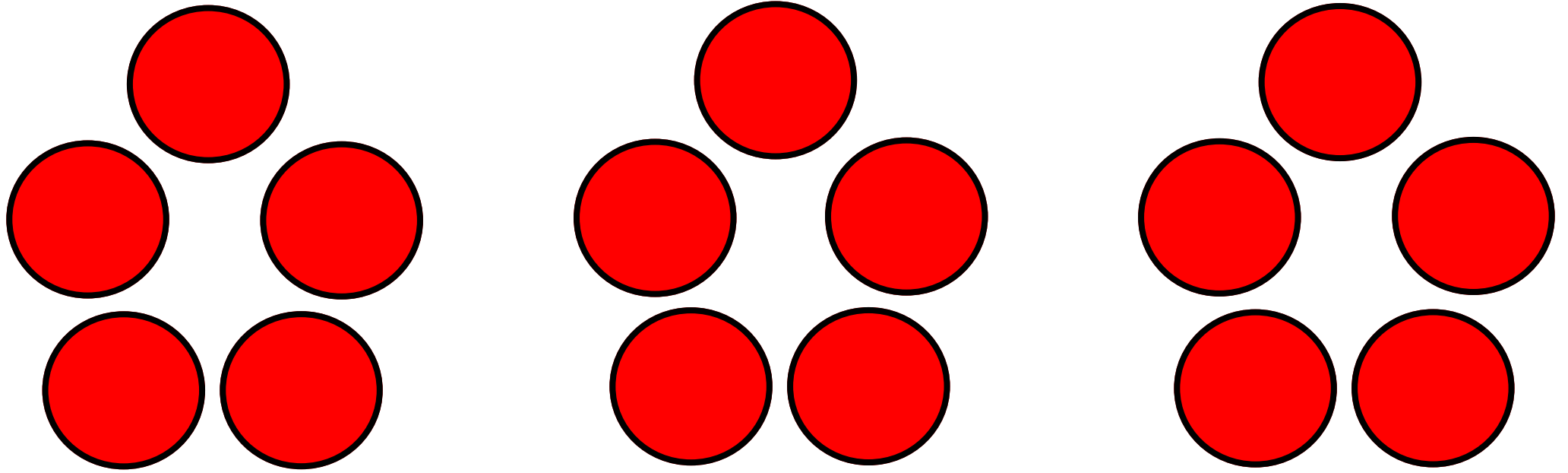
	TTh	Th	H	T	O
	¹ 2	¹¹ 2	¹¹ 2	⁹ 10	¹ 0
—	1	5	5	1	5
	0	6	6	8	5

Column Subtraction

$$15 - 3.12 = 11.88$$

	1	⁴ 5	¹ 0	⁹ 0	¹ 0
—		3	•	1	2
	1	1	•	8	8

Repeated Addition (Groups)

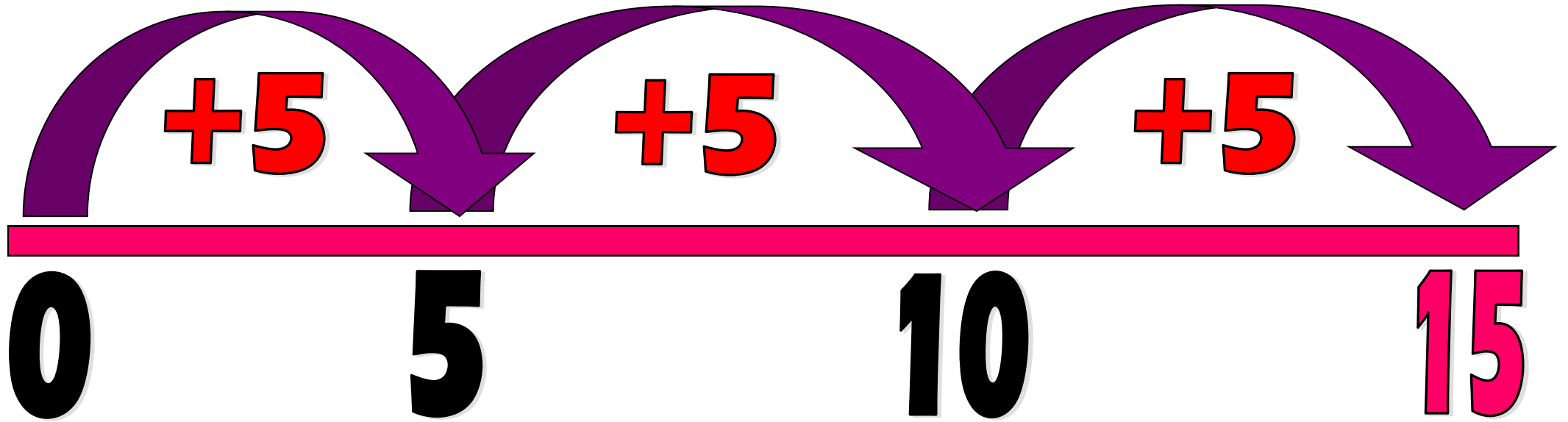


$$3 \times 5 = 5 + 5 + 5 = 15$$

"5 multiplied by 3" means "5, 3 times", which gives "3 lots of 5!"

Repeated Addition

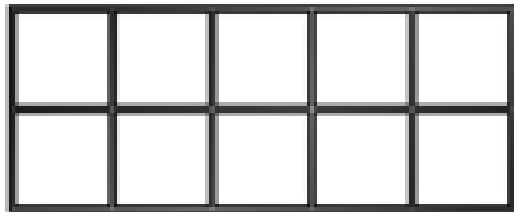
(Number Line)



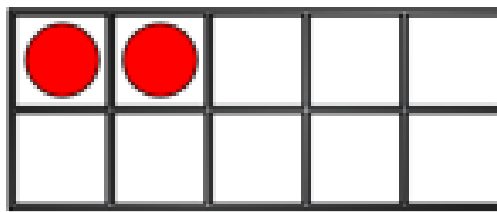
$$3 \times 5 = 5 + 5 + 5 = 15$$

"3 times 5" means "5, 3 times!"

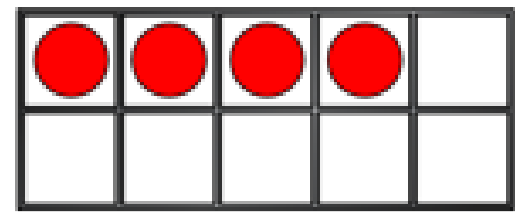
How many counters?



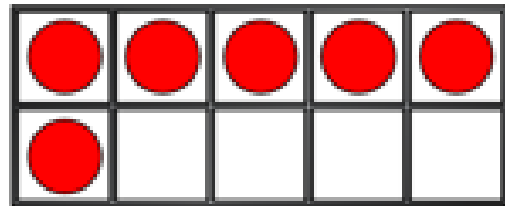
0



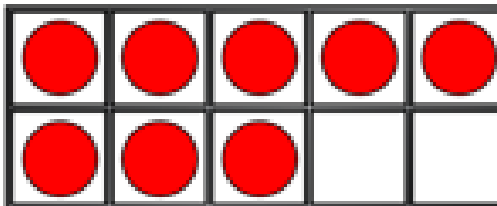
2



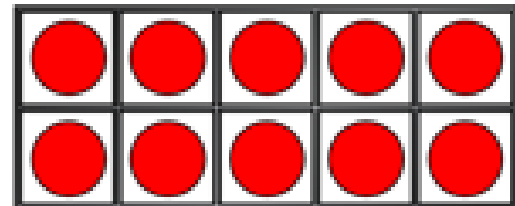
4



6

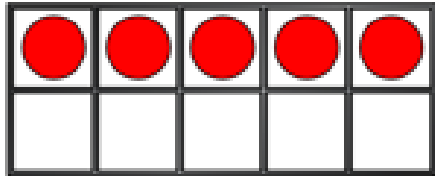


8

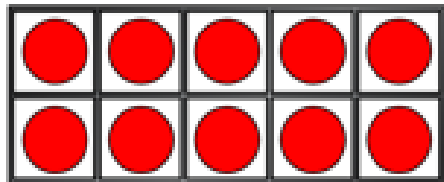


10

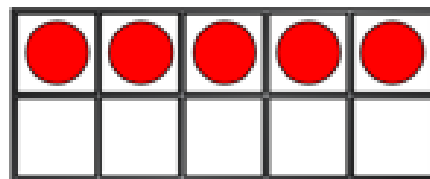
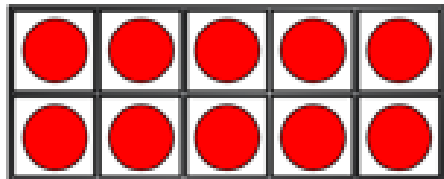
How many counters?



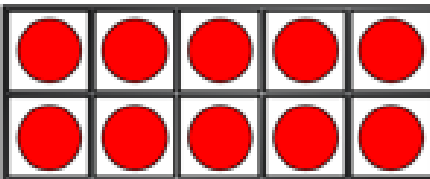
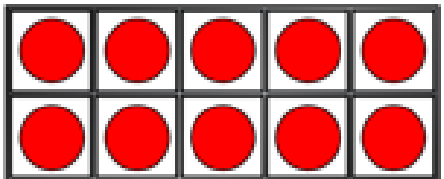
5



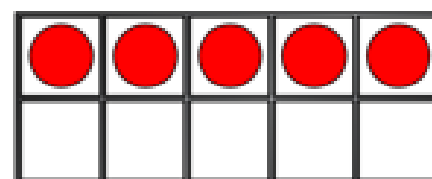
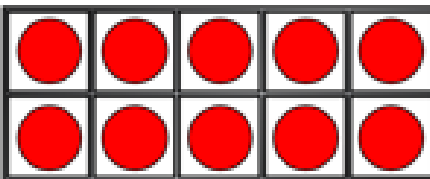
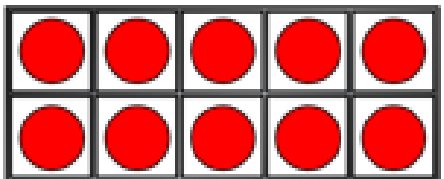
10



15



20



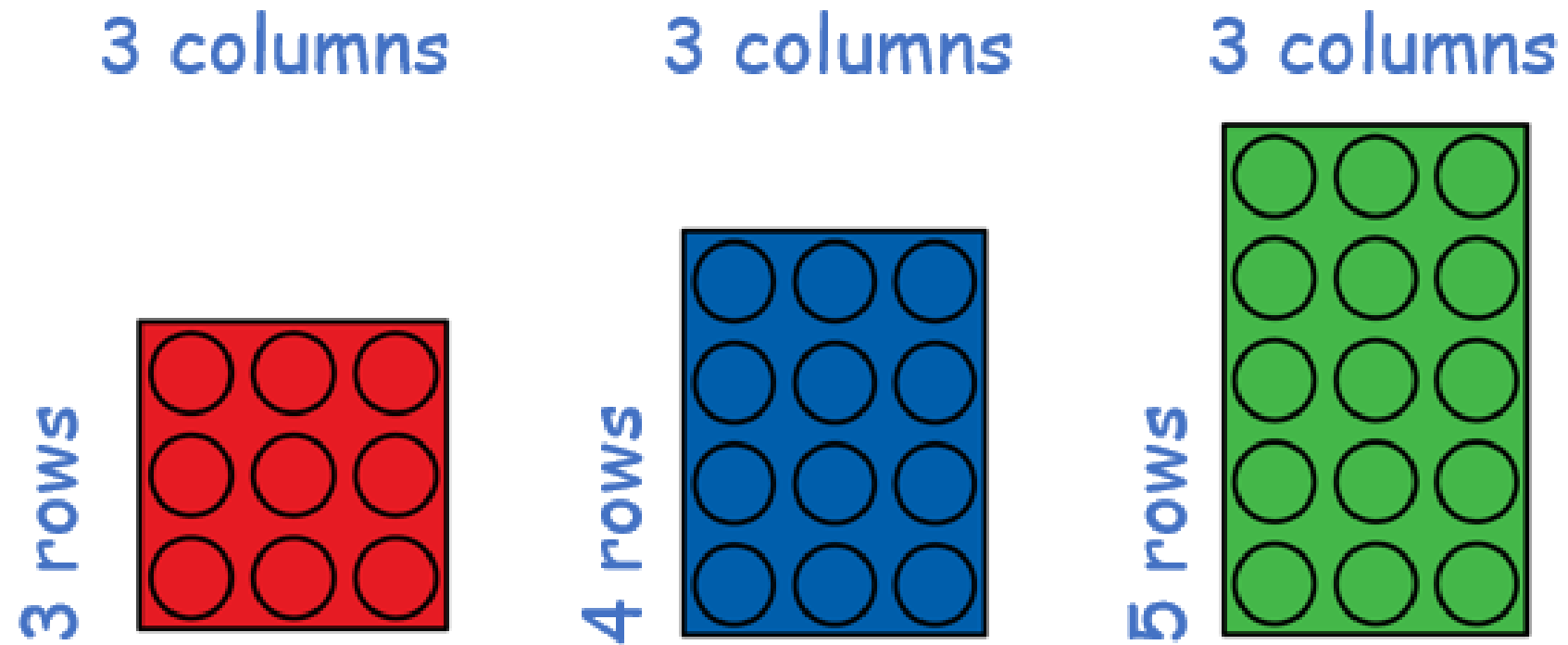
25

Numbers to 50

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

Can you find these numbers?

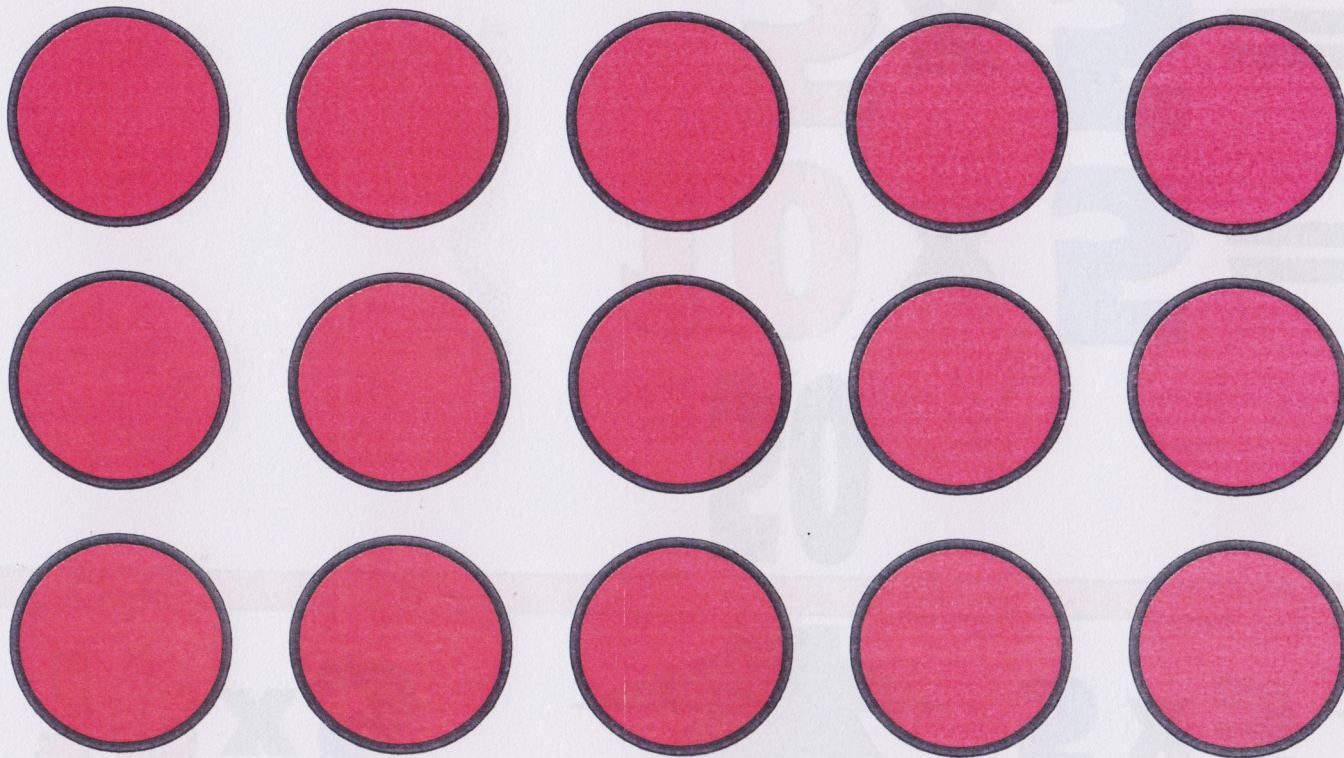
ten twenty thirty
forty fifty



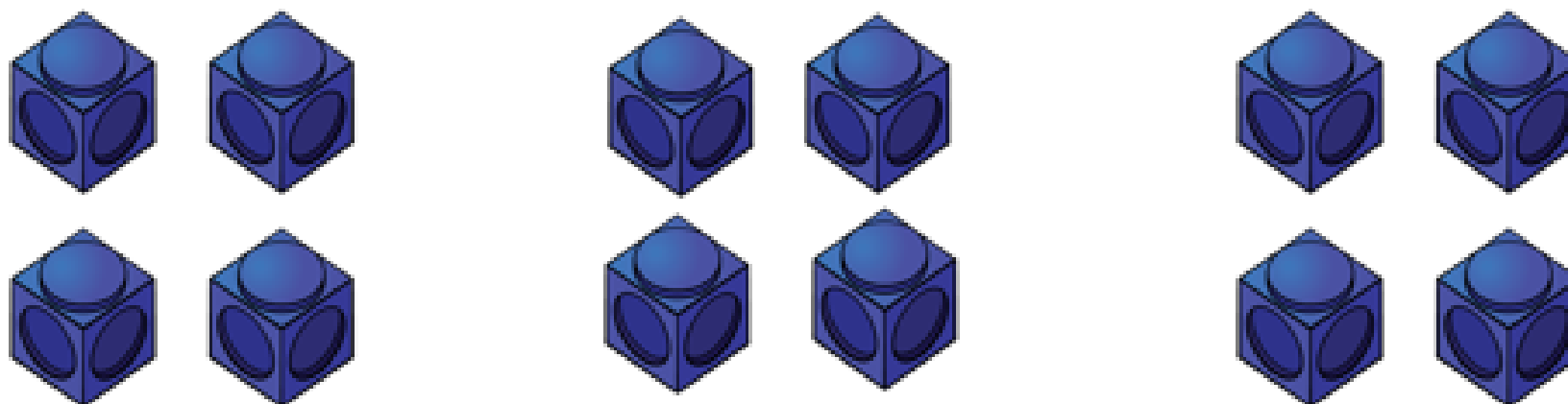
What is the same? **columns**

What is different? **rows**

Arrays



$$3 \times 5 = 15 \text{ or } 5 \times 3 = 15$$



There are 3 equal groups of 4

$$\boxed{4} + \boxed{4} + \boxed{4} = \boxed{12}$$

$$\boxed{3} \times \boxed{4} = \boxed{12}$$

Grid Method

$$15 \times 5 = 75$$

X	10	5
5	50	25

$$\begin{array}{r} + 50 \\ 25 \\ \hline 75 \end{array}$$

$$50 + 25 = 75$$

Grid Method

$$43 \times 65 = 2795$$

X	40	3
60	2400	180
5	200	15

$$\begin{array}{r} 2400 \\ 180 \\ 200 \\ 15 \\ + \\ \hline 2795 \end{array}$$

$$2400 + 180 + 200 + 15 = 2795$$

Column Multiplication

	H	T	U
	1	4	7
x			4
	5	8	8
	1	2	

Column Multiplication

$$\begin{array}{r} \text{X} \quad \quad 43 \\ \quad \quad 65 \\ \hline \text{+} \quad \quad \begin{array}{r} 215 \\ 2580 \end{array} \\ \hline 2795 \end{array}$$

The image shows a column multiplication problem. The first number is 43, with 4 in red and 3 in blue. The second number is 65, in black. A pink horizontal line separates the multiplicands from the partial products. The first partial product is 215, with 2 in purple, 1 in red, and 5 in blue. Below it, a small red '2' is under the 1, and a small blue '1' is under the 5. The second partial product is 2580, with 2 in orange, 5 in purple, 8 in red, and 0 in black. Below it, a small purple '2' is under the 5, and a small red '1' is under the 8. A second pink horizontal line separates the partial products from the final result, 2795, which is in pink.

Column Multiplication

$$\begin{array}{r} 21.3 \\ \times 00.4 \\ \hline 85.2 \\ 1 \end{array}$$

Jump!

x100

x10

÷10

÷100

Th

H

T

U

■ $\frac{1}{10}$ $\frac{1}{100}$

3

4

0

0

3

4

0

3

4

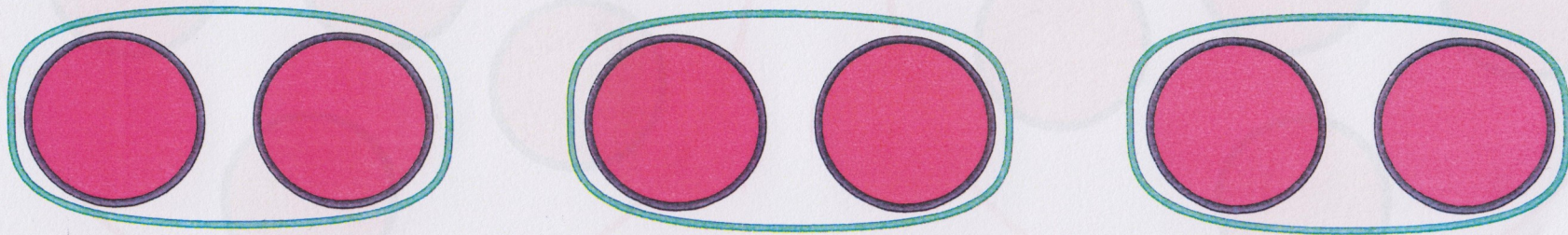
3.4

0.34



Grouping (Concept)

50.



“How many groups of **2** can I make out of **6**?”

Answer: **3**

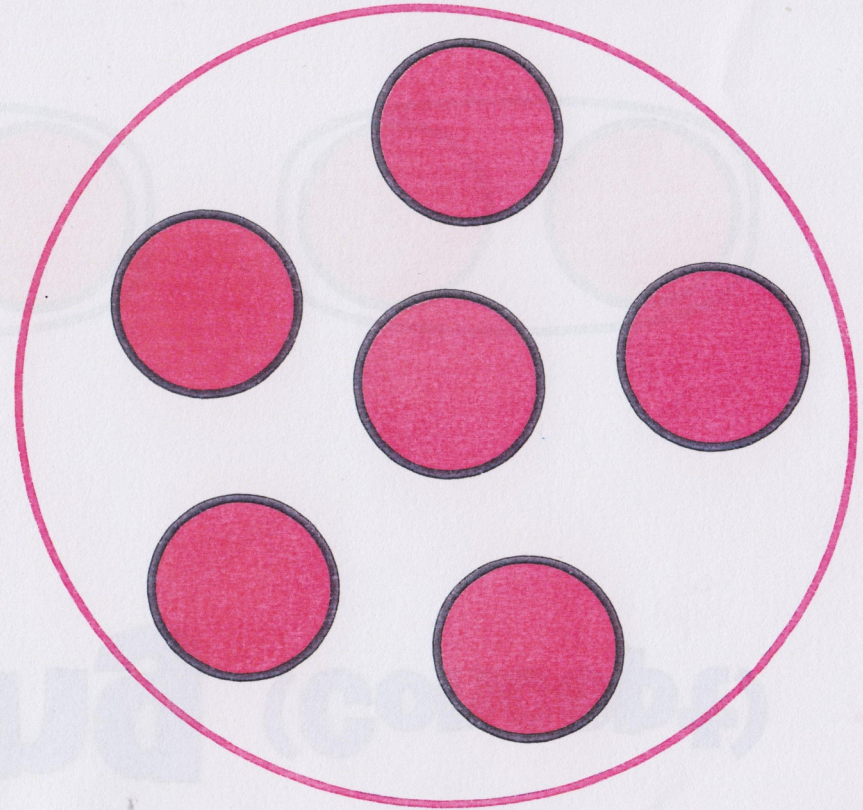
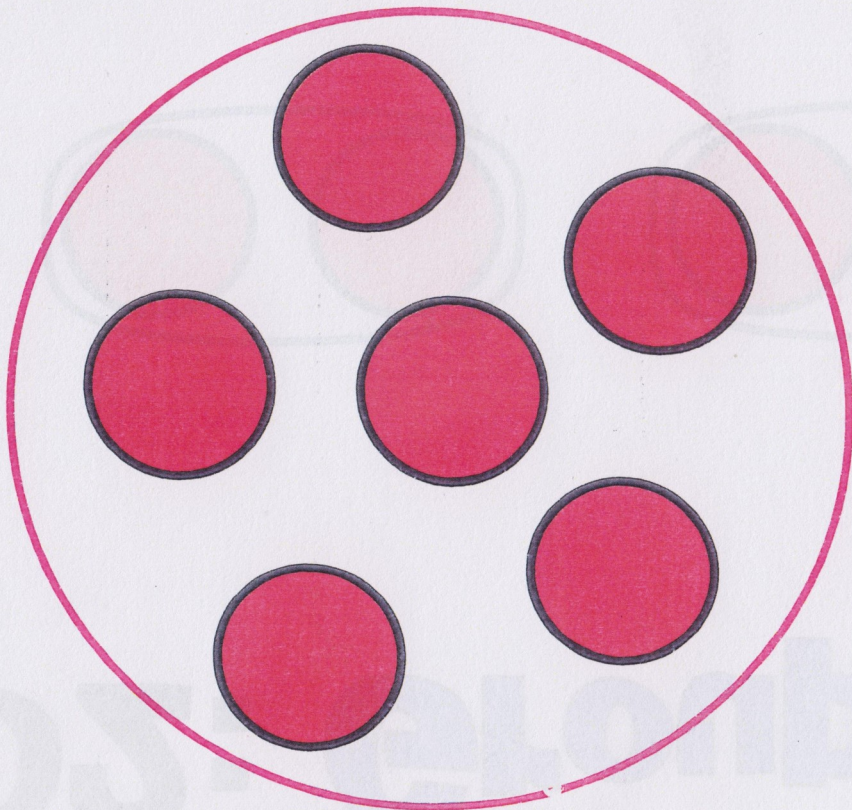
4d.

Division as Sharing

51.

$$12 \div 2 = 6$$

"If I share 12 into 2 equal amounts, how many in each group?" Answer: 6

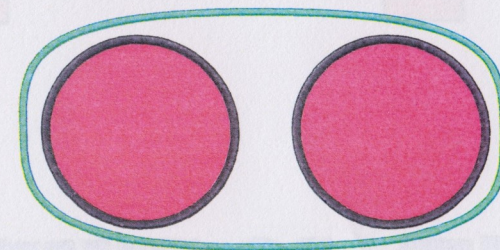
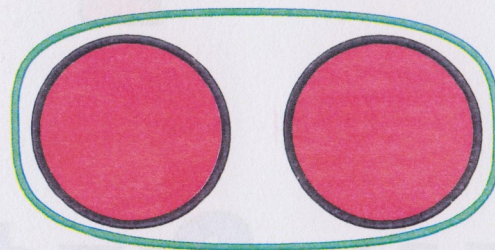
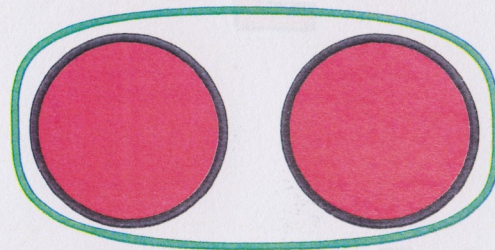
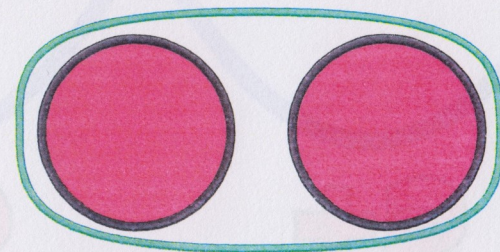
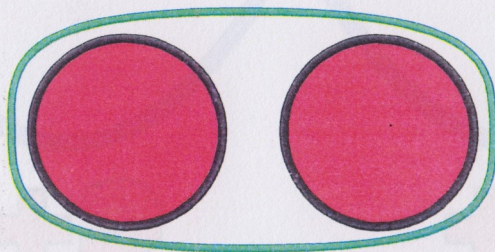
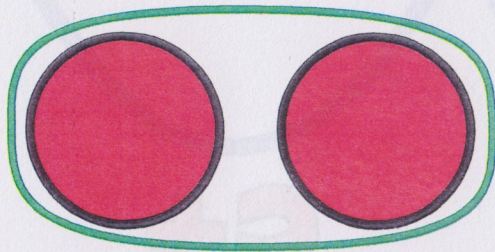


Division as Grouping

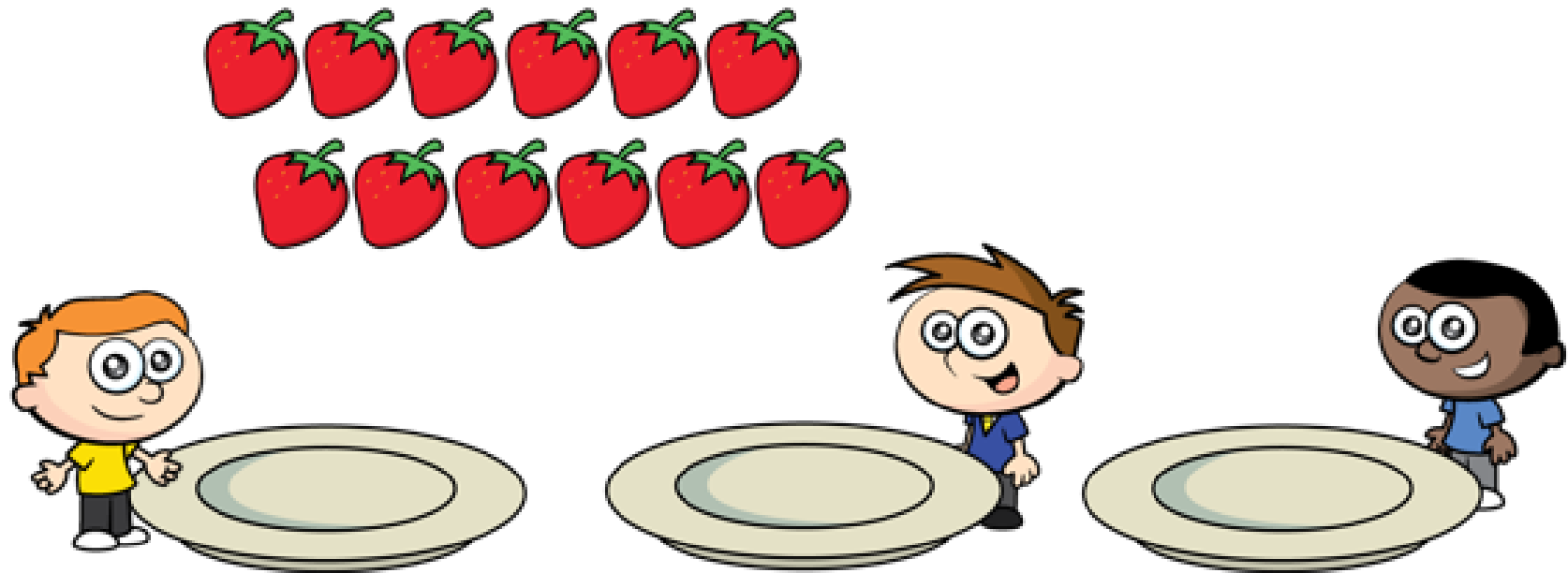
52.

$$12 \div 2 = 6$$

"How many groups of 2
can I fit into 12?"
Answer: 6



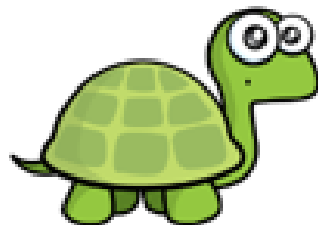
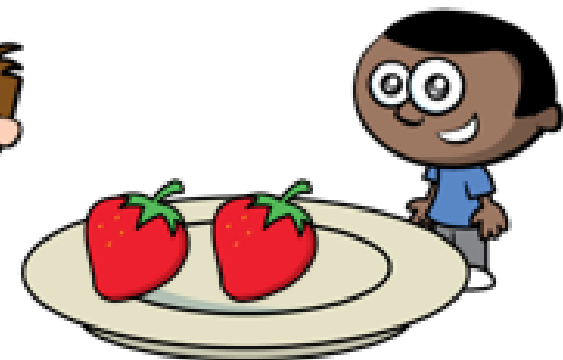
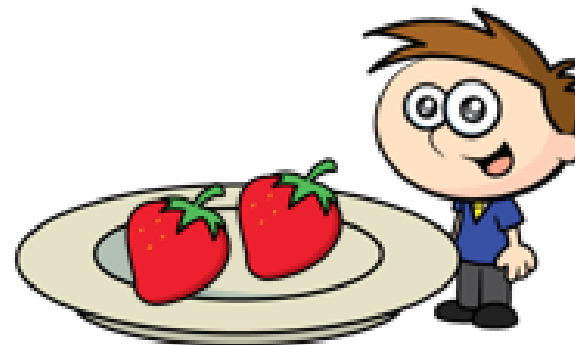
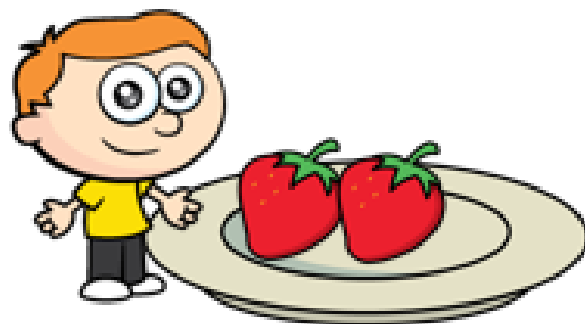
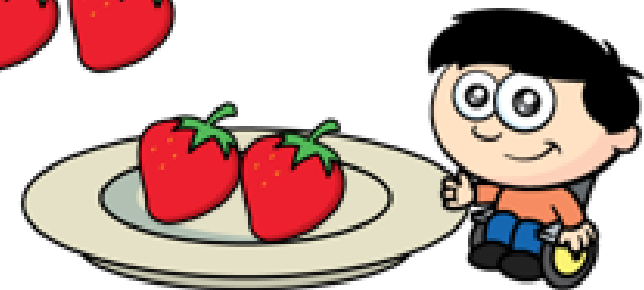
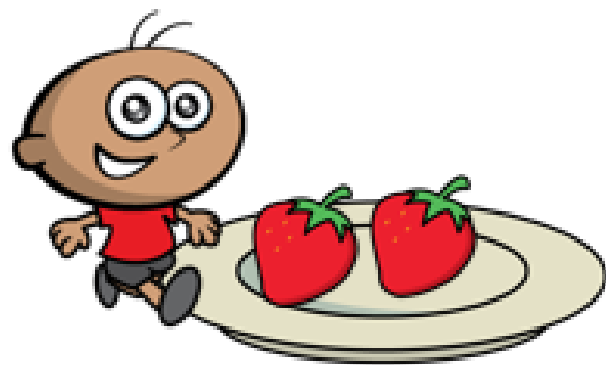
Ron is sharing out the strawberries.
How many strawberries will each child get?



There are 12 strawberries.

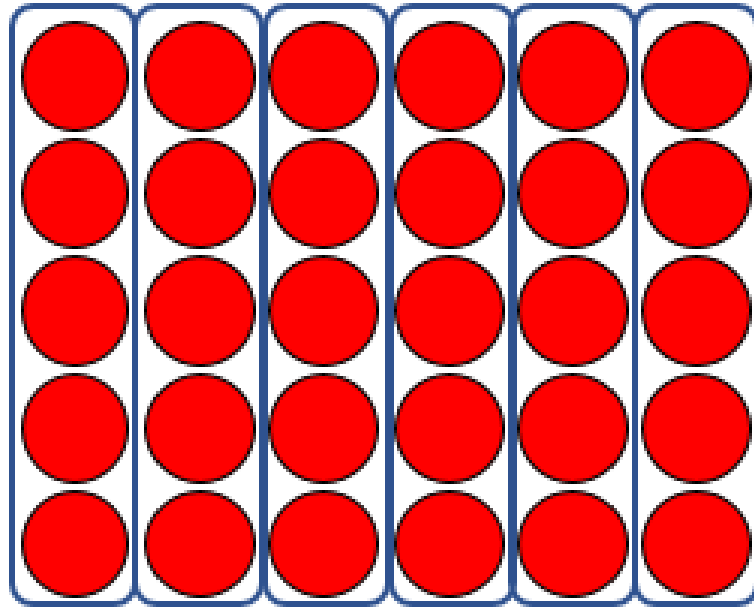
There are 3 children.

Each child will get 4 strawberries.



Did someone mention
left over strawberries?

Use the array to complete the calculations

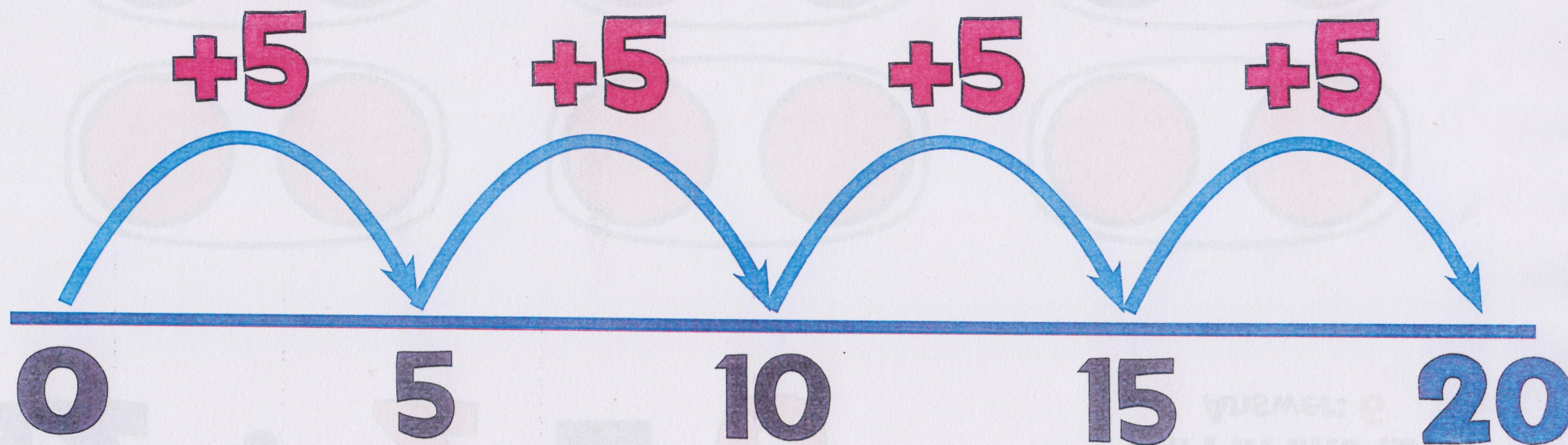


$$\boxed{6} \times 5 = \boxed{30}$$

$$\boxed{30} \div 5 = \boxed{6}$$

53.

Grouping on a Number Line

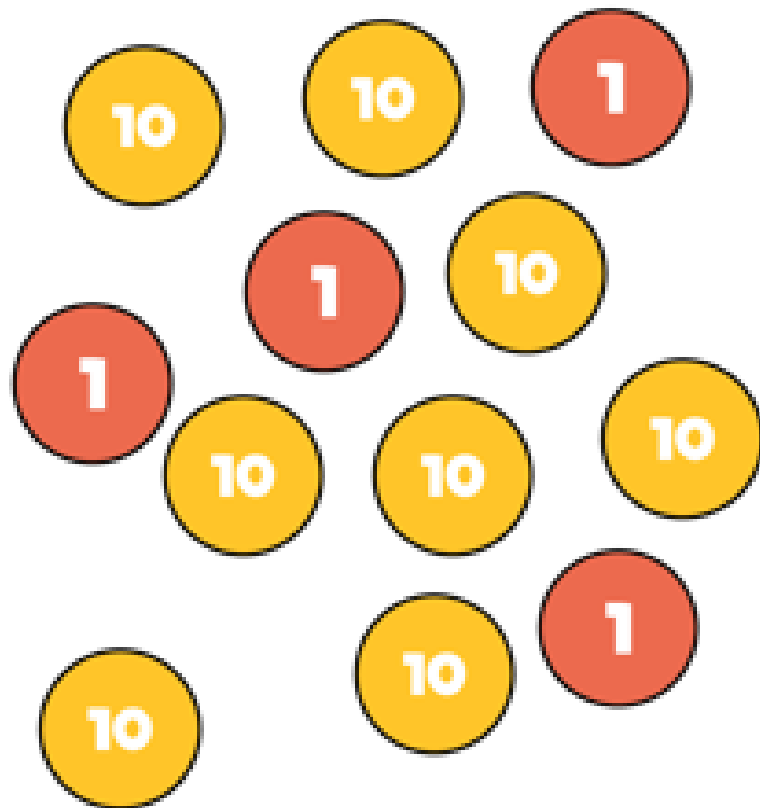


$$20 \div 5 = 4$$

"How many 5s in 20?"

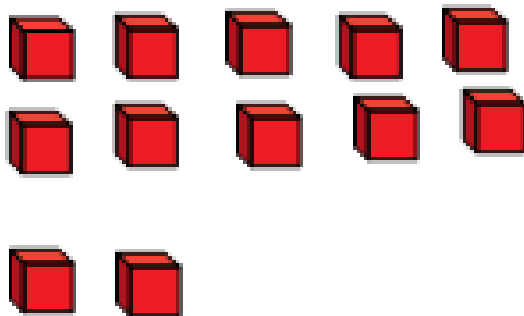
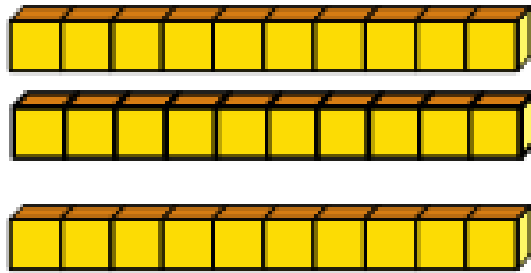
Answer: 4

$$84 \div 4 = 21$$



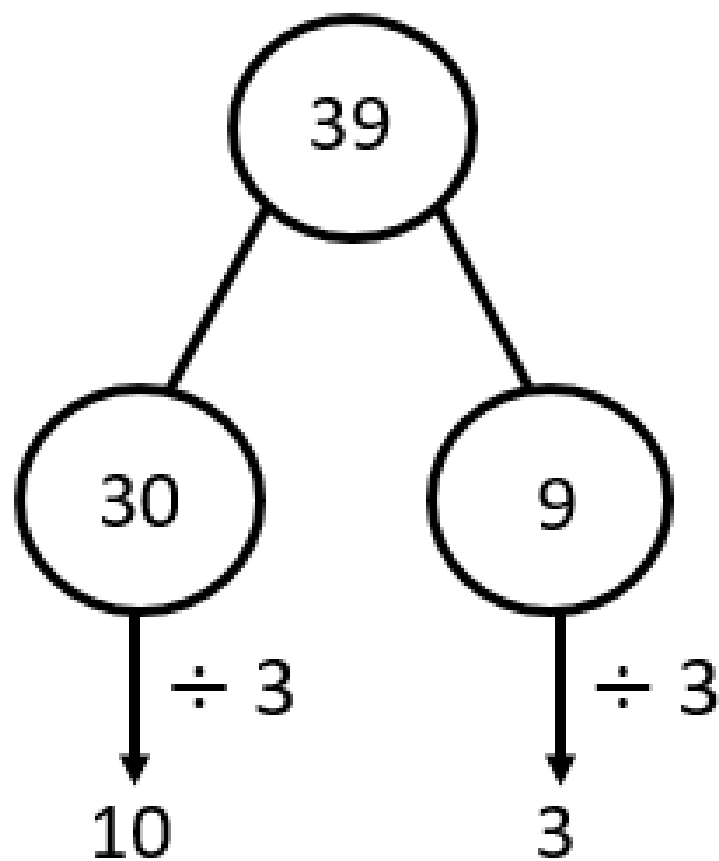
Tens	Ones

$$42 \div 3 = 14$$



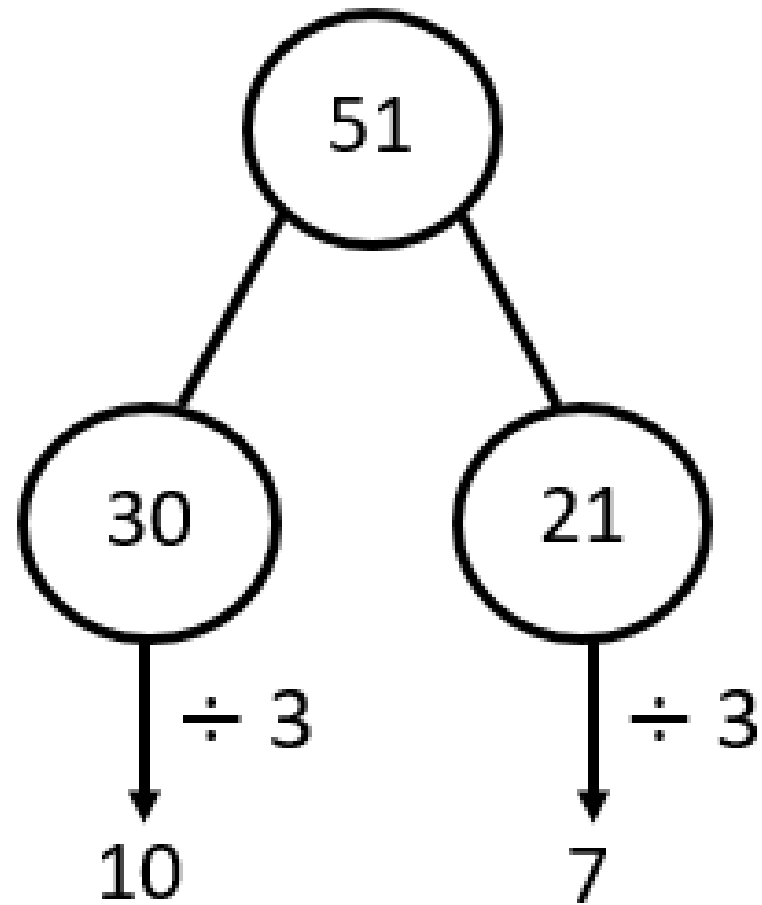
Tens	Ones

$$39 \div 3 = 13$$



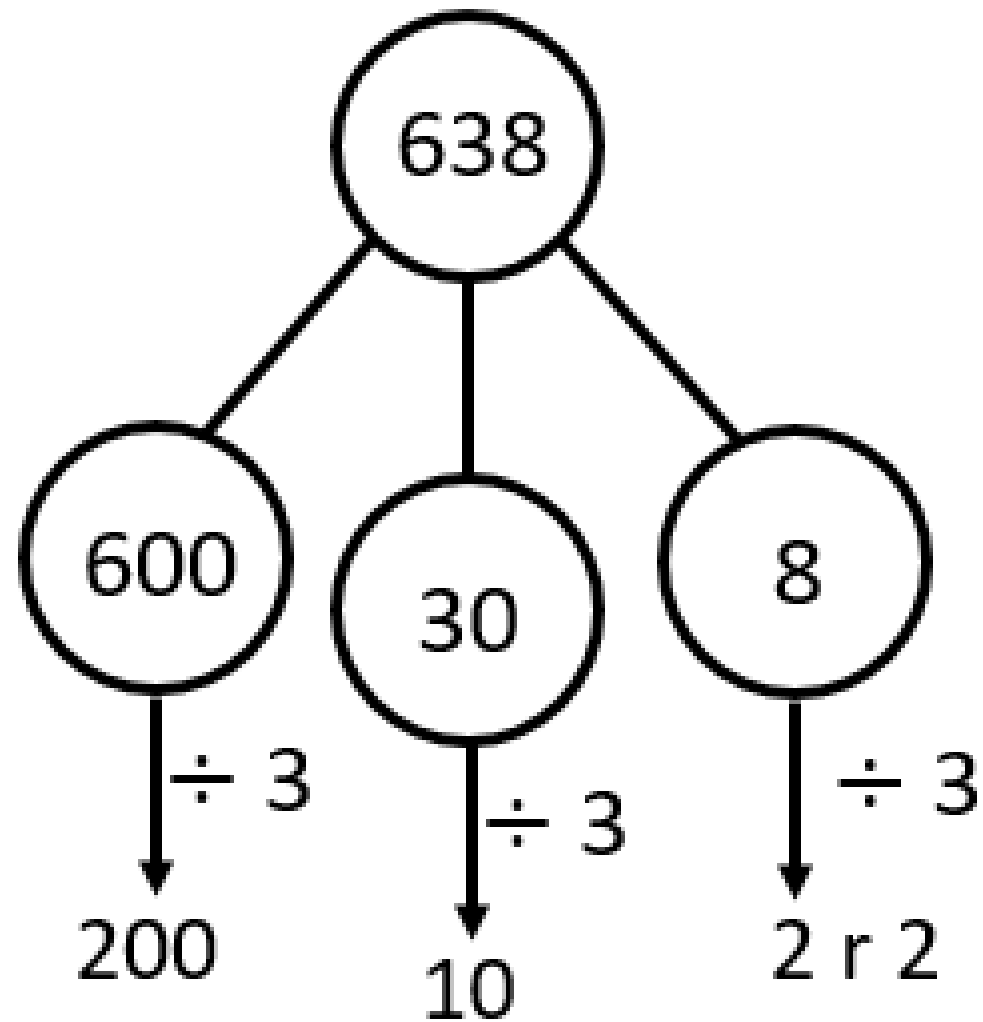
$$10 + 3 = 13$$

$$51 \div 3 = 17$$



$$10 + 7 = 17$$

$$638 \div 3 = 212 \text{ r } 2$$



Short Division

$$136 \div 4 = 34$$

0 3 4

4 $\overline{) 136}$

Short Division Method

26r21

$$37 \overline{) 9^9 8^{24} 3}$$

Short Division Method

$$\begin{array}{r} 029.25 \\ 4 \overline{) 1137.1020} \end{array}$$