

# Sense of Number Visual Calculation Policy

Basic Edition for  
John Hunt Primary School  
October 2016



Graphic Design by Dave Godfrey

Compiled by the Sense of Number Maths Team

For sole use within John Hunt Primary School.

**'A picture is worth 1000 words!'**

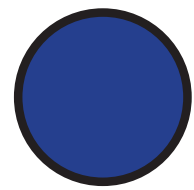
[www.senseofnumber.co.uk](http://www.senseofnumber.co.uk)



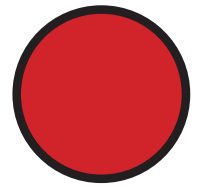
John Hunt Primary School

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# Guide to using a



# Visual Calculation Policy

**The Sense of Number Visual Calculation Policy provides a visual representation of a school's written and mental calculation policy.**

## **Typical uses:**

**Classroom:** The slides are printed out (e.g. A4) and the appropriate slides are displayed within each classroom for continual reference or on a working wall.

**Teacher Reference:** The slides are printed out (e.g. 9 slides per A4 page) and inserted in the teacher's planning folder.

**Parents:** The slides are used to communicate to parents the methods being taught and used within school.

**Website:** Slides from the VCP are inserted on a schools' maths webpages.

**(Please note: the VCP should not be made available for download)**



# KC1: Key Concepts!

## Addition



$$8 + 2 = 10$$

**“What is 8 add 2?”**  
**Answer: 10**

## Subtraction



$$8 - 2 = 6$$

**“What is 8 subtract 2?”**  
**Answer: 6**  
**“The difference between 8 and 2 is 6”**



# KC2: Key Concepts!

## Multiplication

**x**

$$8 \times 2 = 16$$

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

## Division

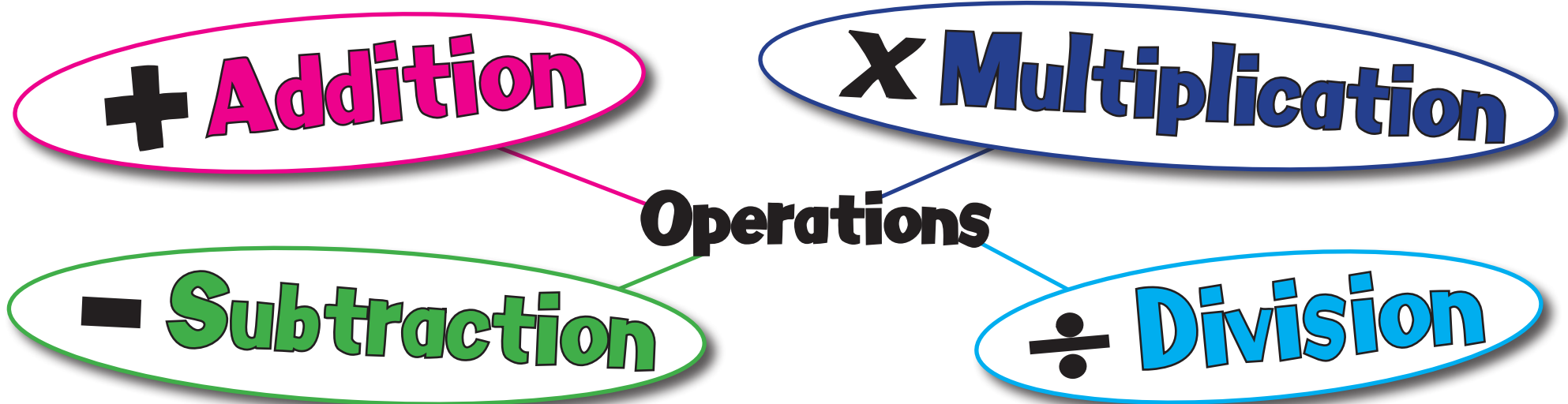
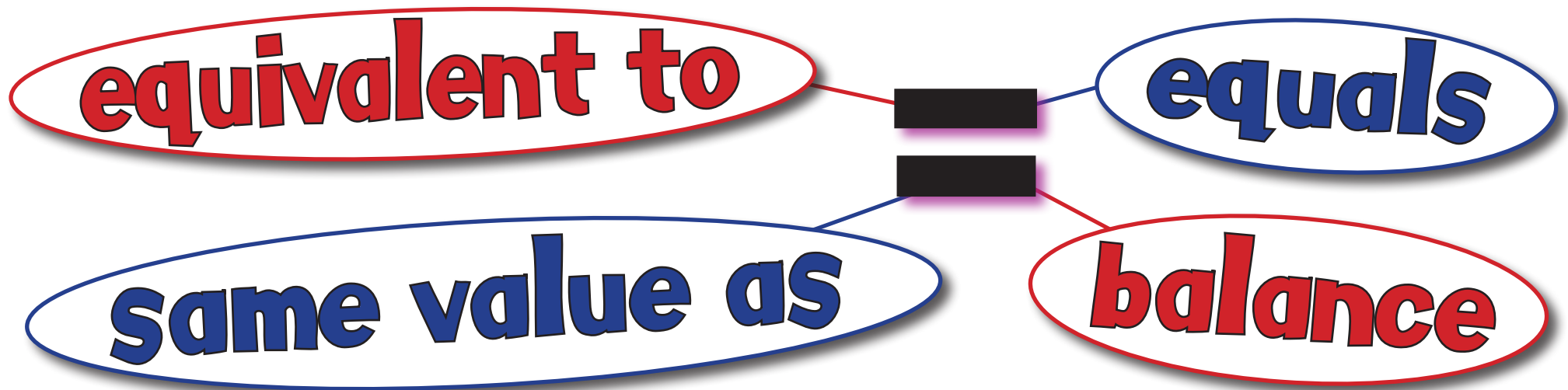
**÷**

$$8 \div 2 = 4$$

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

(“8 shared into 2 sets is 4”)

# Calculation Vocabulary



1

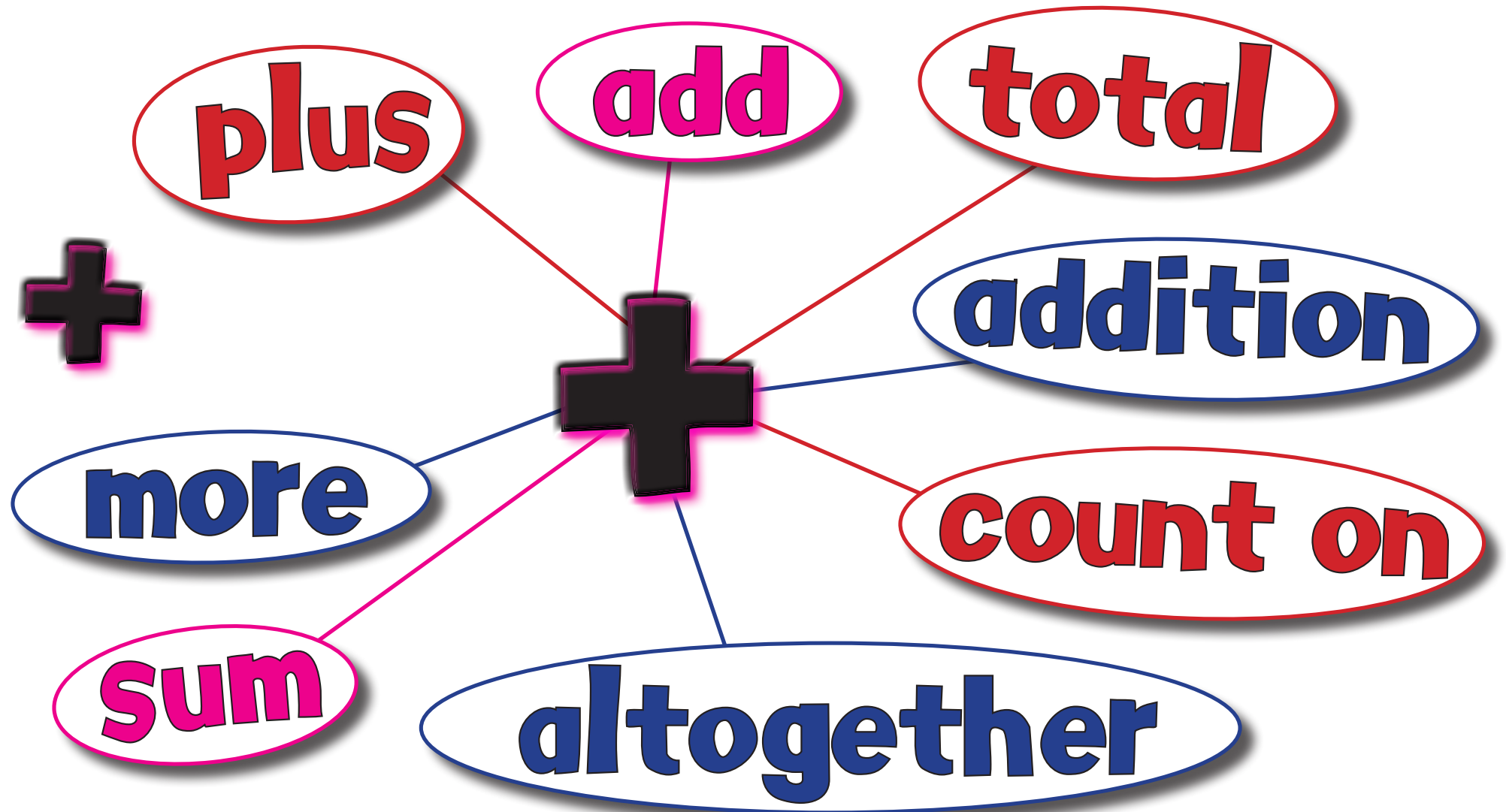
**Can I do this  
in my head?**



2

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

# Addition Vocabulary



# Addition Calculation

$$4 + 2 = 6$$

(add)

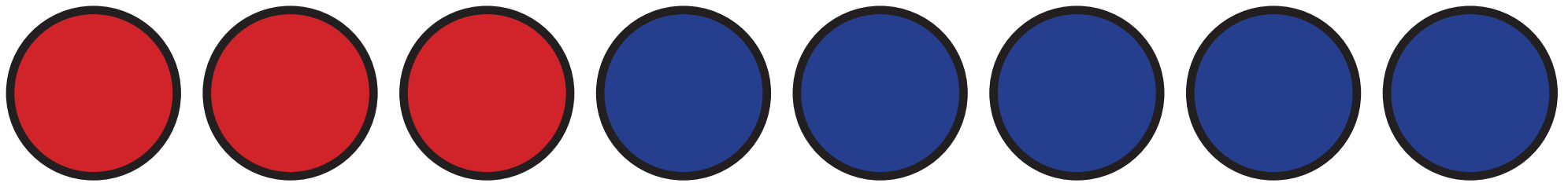
(equals  
or same as)

$$6 = 4 + 2$$

$$4 + 2 = 5 + 1$$



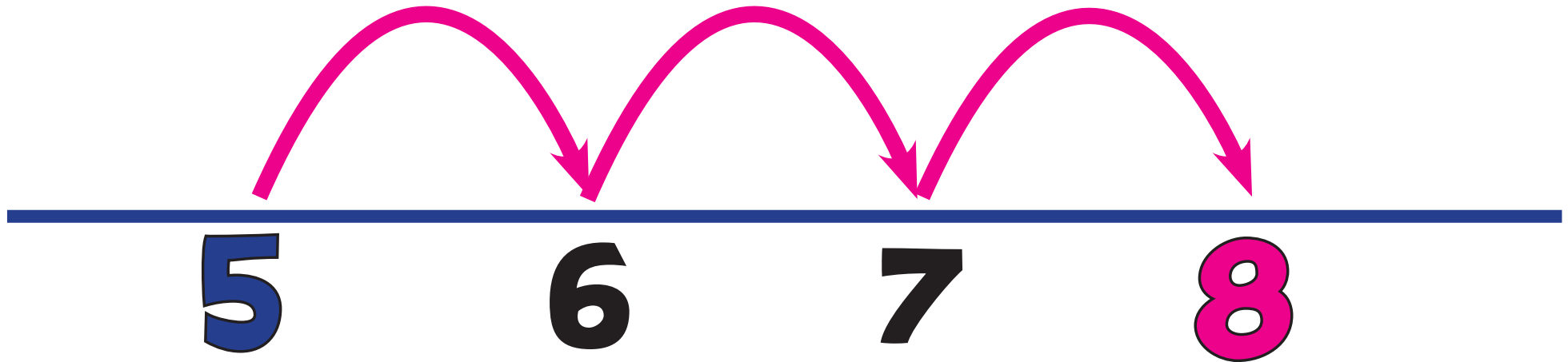
# A1: Objects & Pictures



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

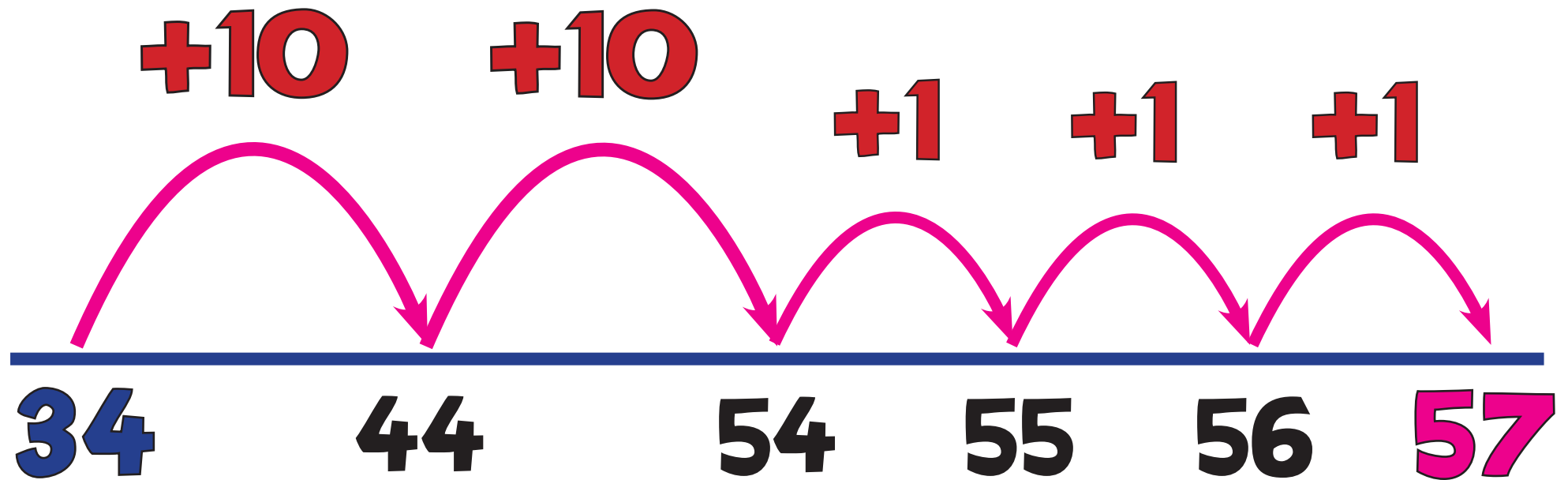
# A2: Counting On

+1      +1      +1



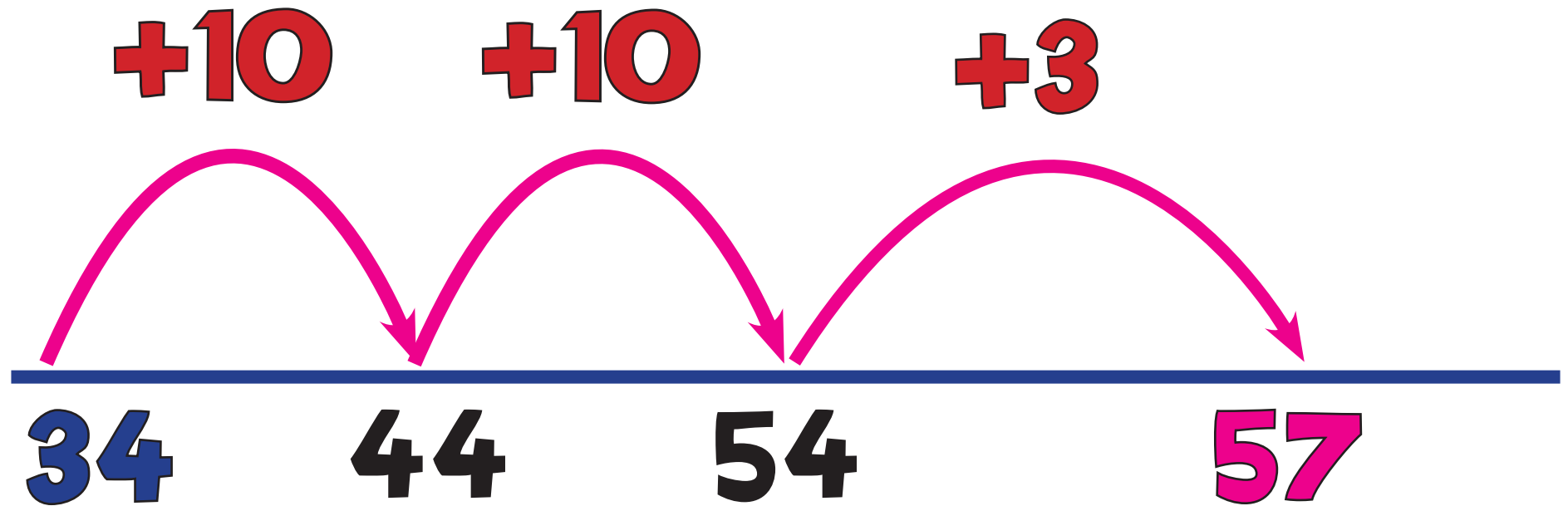
$$5 + 3 = 8$$

# A3: Forwards Bounce



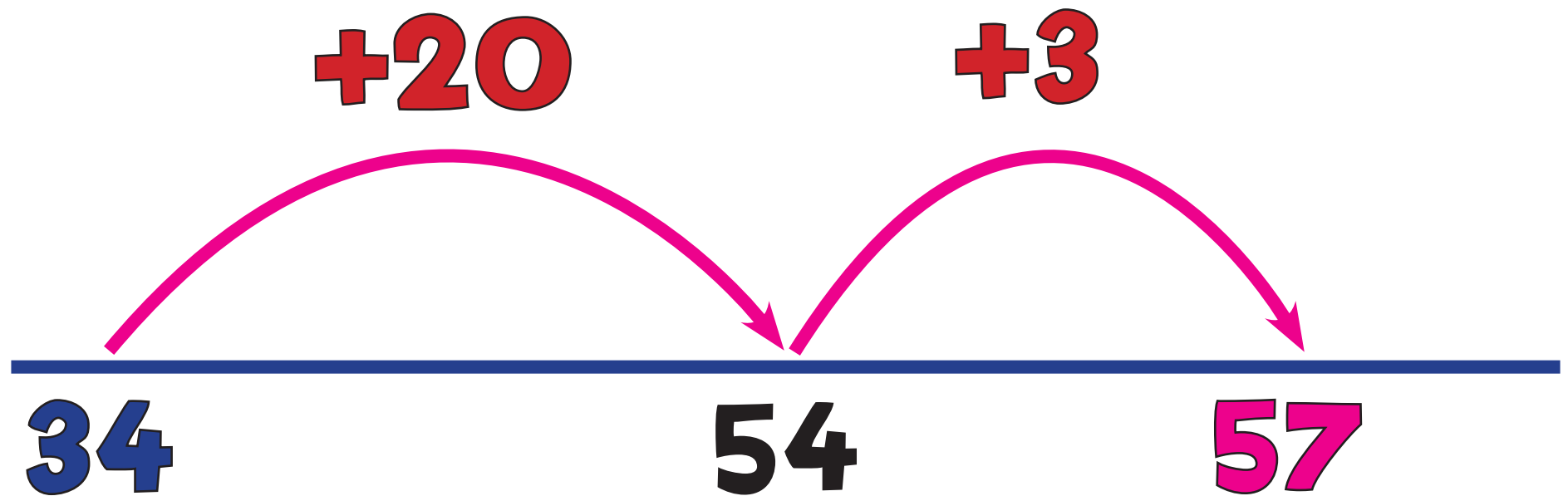
$$34 + 23 = 57$$

# A4: Forwards Jump



$$34 + 23 = 57$$

# A5: Forwards Jump



$$34 + 23 = 57$$

# A6: Partitioning

$$43 + 24 = 67$$

$$40 + 20 = 60$$

$$3 + 4 = 7$$

---

$$67$$

# A7: Partition Jot

$$43 + 24 = 67$$

Diagram illustrating the partitioning of the addition  $43 + 24 = 67$ . The number 43 is split into 40 and 3, and 24 is split into 20 and 4. The 40 and 20 are combined to form 60, and the 3 and 4 are combined to form 7. The final result is 67.

$$60 + 7$$

# A8: Column Addition

$$\begin{array}{r} \text{100} \quad \text{10} \quad \text{1} \\ 78 \\ + 46 \\ \hline 14 \\ 110 \\ \hline 124 \end{array}$$

$$(8 + 6)$$

$$(70 + 40)$$

# A9: Expanded Column Addition

$$\begin{array}{r} \text{100} \quad \text{10} \quad \text{1} \\ 687 \\ + 248 \\ \hline 15 \\ 120 \\ 800 \\ \hline 935 \end{array}$$

(7 + 8)  
(80 + 40)  
(600 + 200)

# A10: Column Addition

	100	10	1
	6	8	7
+	2	4	8
	1	1	
<hr/>			
	9	3	5
<hr/>			

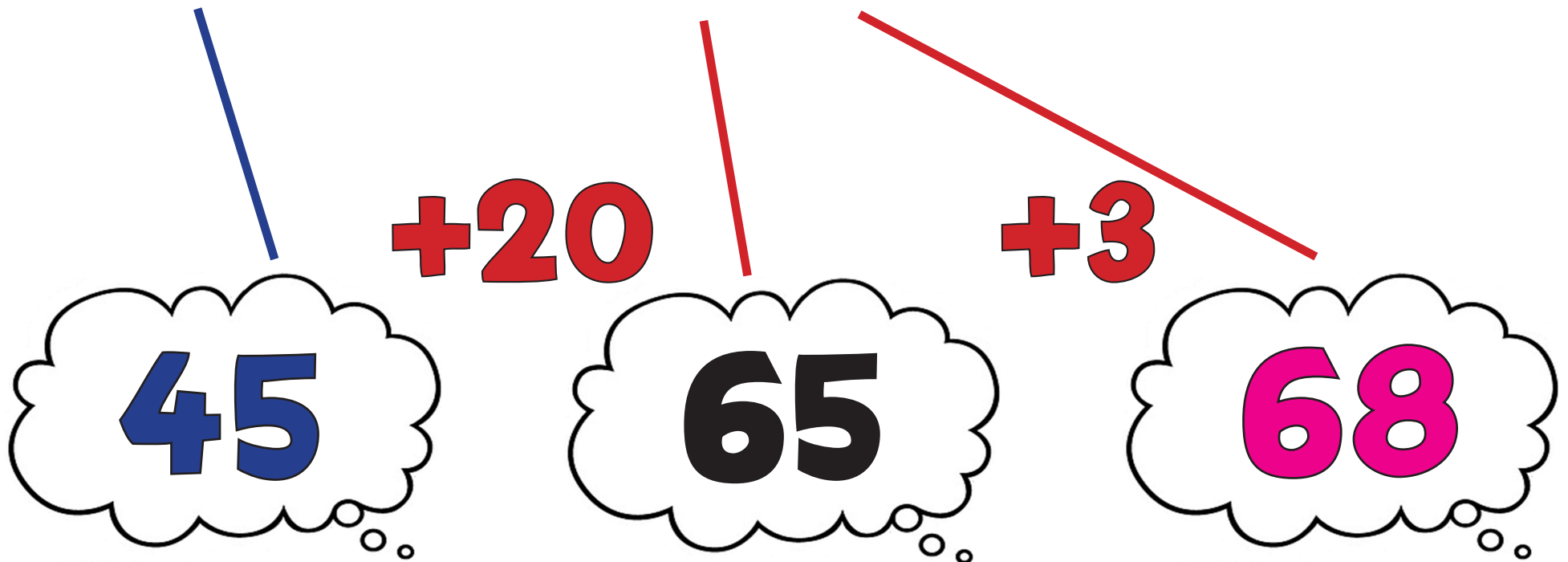
# MA1: Partitioning

$$45 + 28 = 73$$

$$60 + 13 = 73$$

# MA2: Counting On

$$45 + 23 = 68$$



# MA3: Number Bonds

$$45 + 95 = 140$$

$$40 + 100 = 140$$

# MA4: Double & Adjust

$$45 + 46 = 91$$

$$45 + 45 + 1$$

$$90 + 1 = 91$$

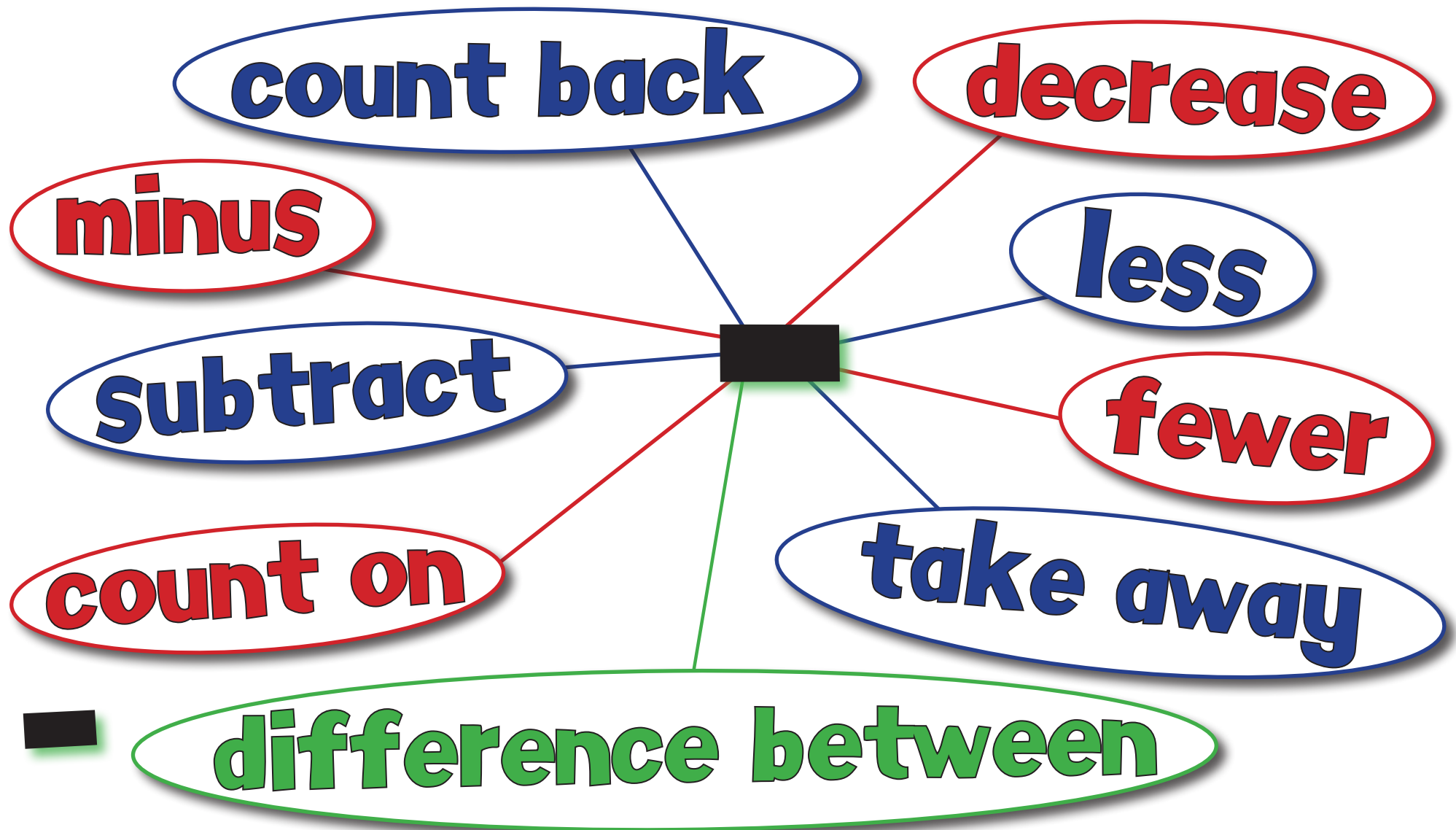
# MA5: Round & Adjust

$$45 + 39 = 84$$

$$45 + 40 - 1$$

$$85 - 1 = 84$$

# Subtraction Vocabulary



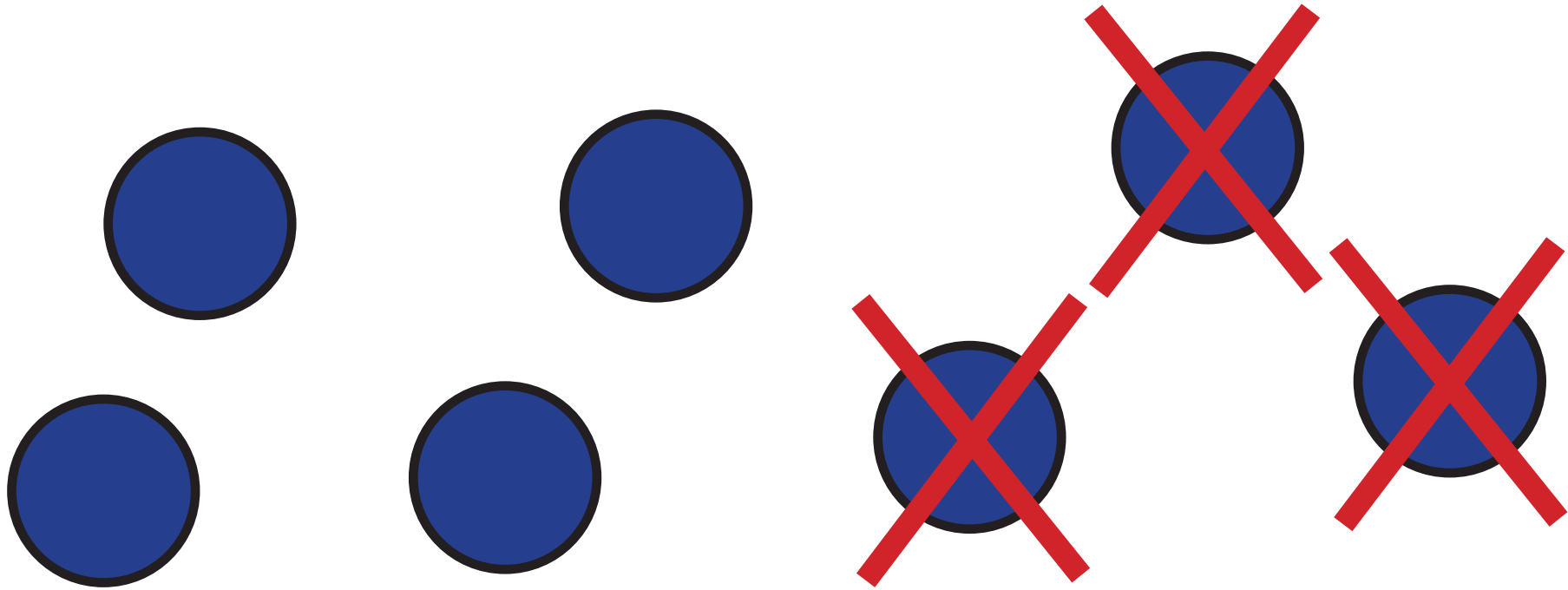
# Subtraction Calculation

$$6 - 2 = 4$$

(subtract) (equals or same as)

$$4 = 6 - 2$$

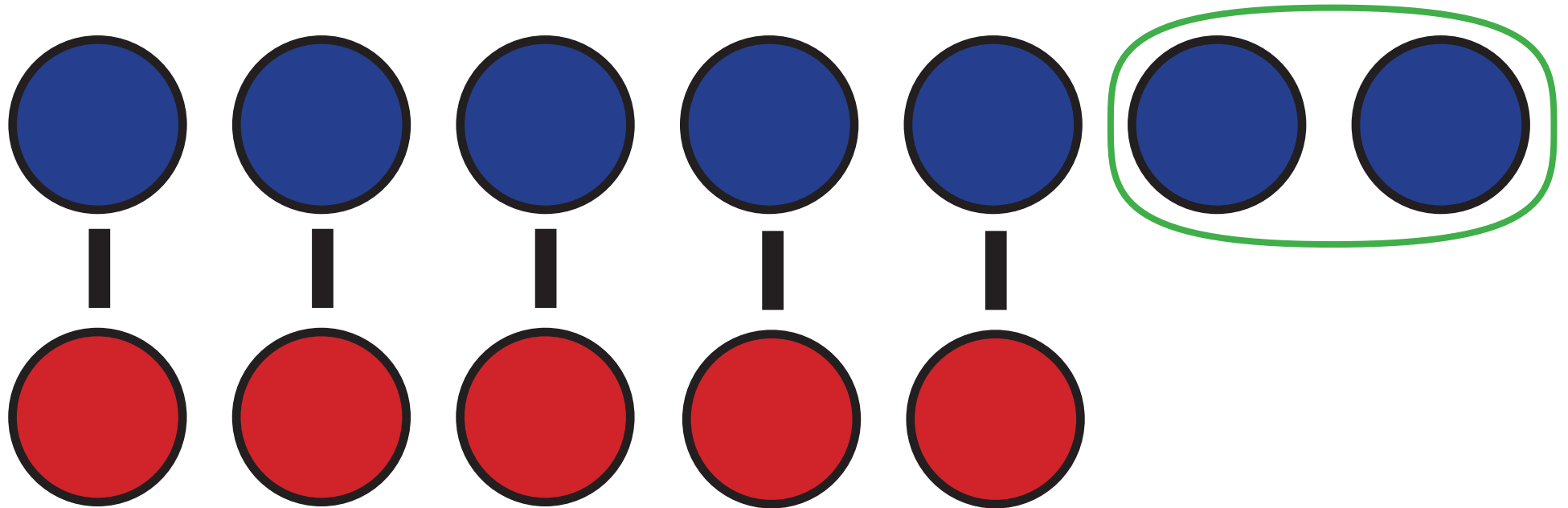
# S1: Objects



$$7 - 3 = 4$$

**“What do I get if I take 3 away from 7? Answer: 4”**

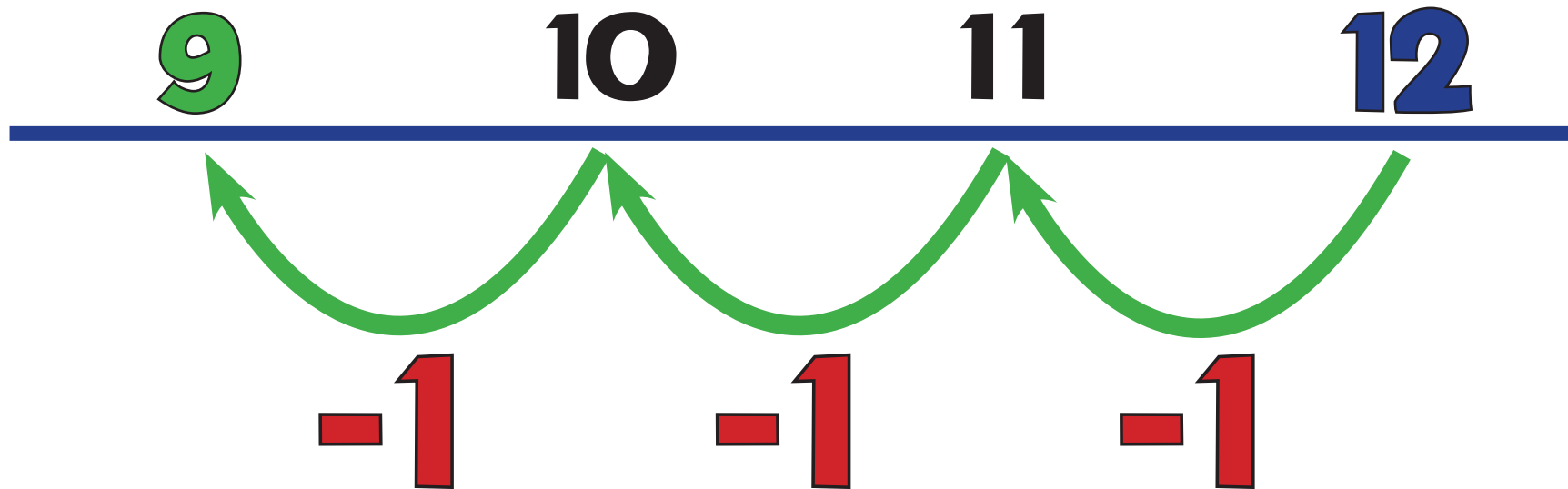
# S2: What's the Difference?



$$7 - 5 = 2$$

“How many more is 7 than 5? What is the difference?”

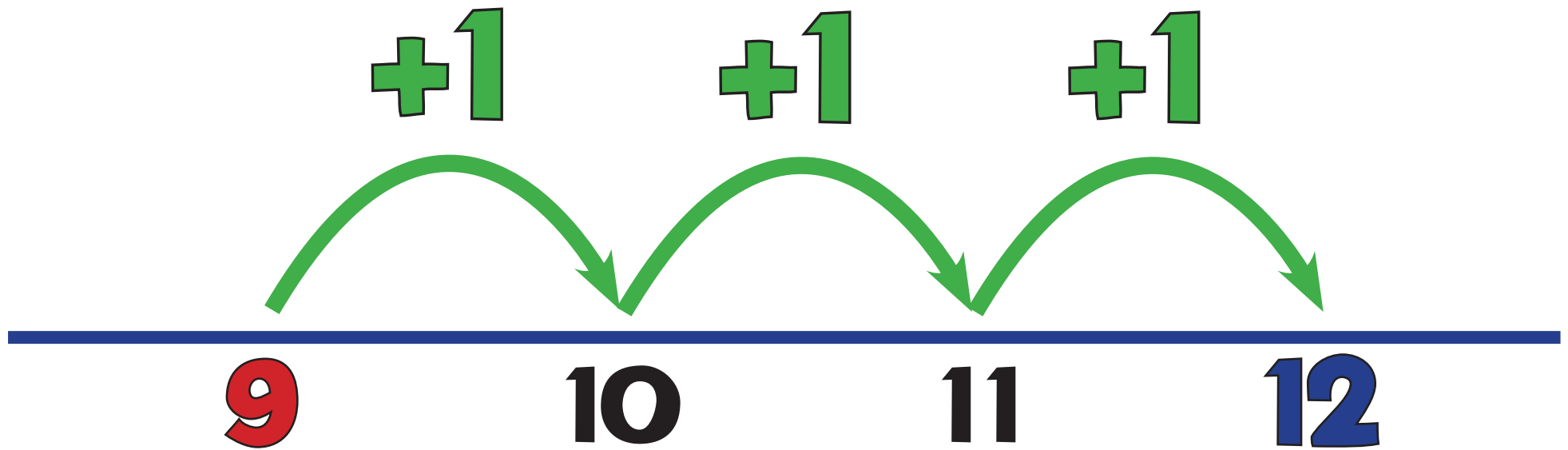
# S3: Counting Back



$$12 - 3 = 9$$

“What do I get if I take 3 away from 12? Answer: 9”

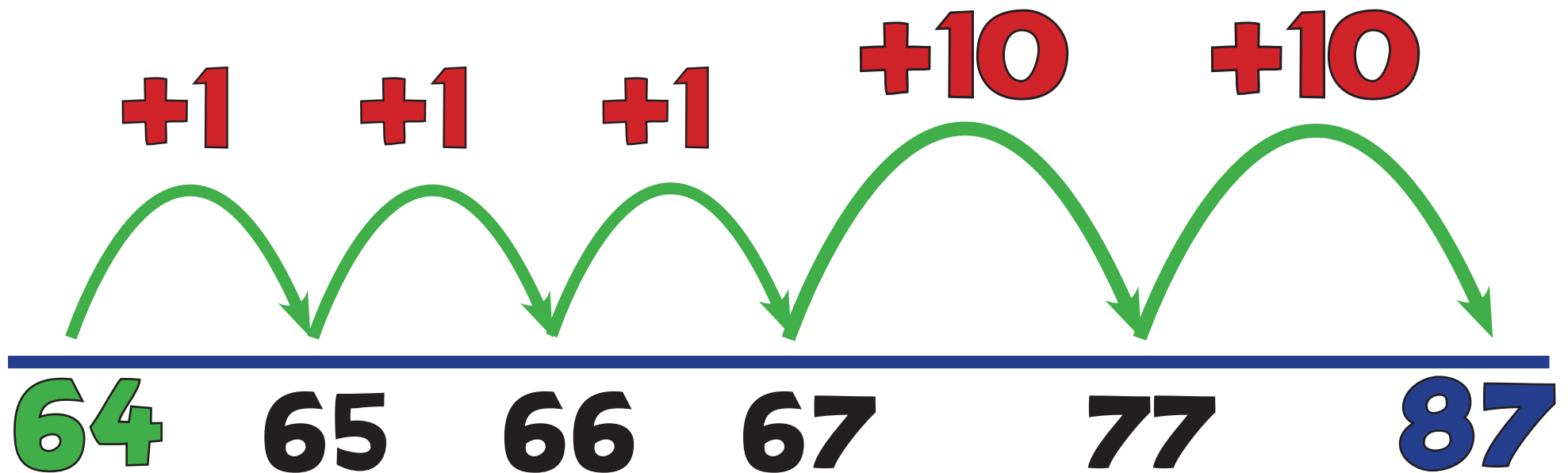
# S4: Counting On



$$12 - 9 = 3$$

**“How many more is 12 than 9? What is the difference?”**

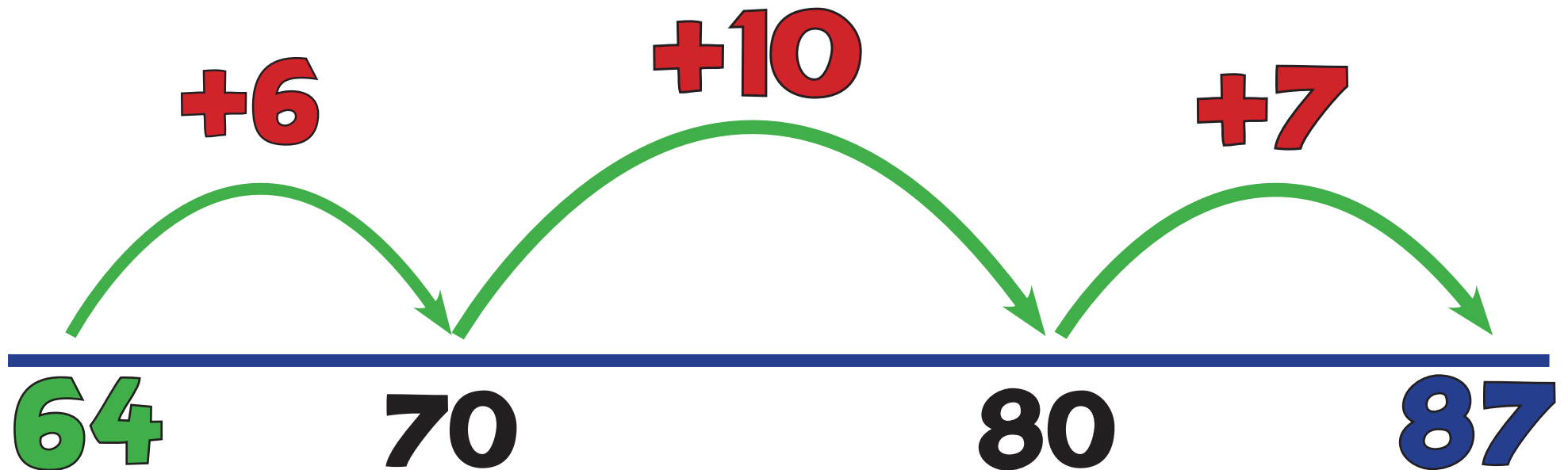
# S5: Forward Bounce



$$87 - 64 = 23$$

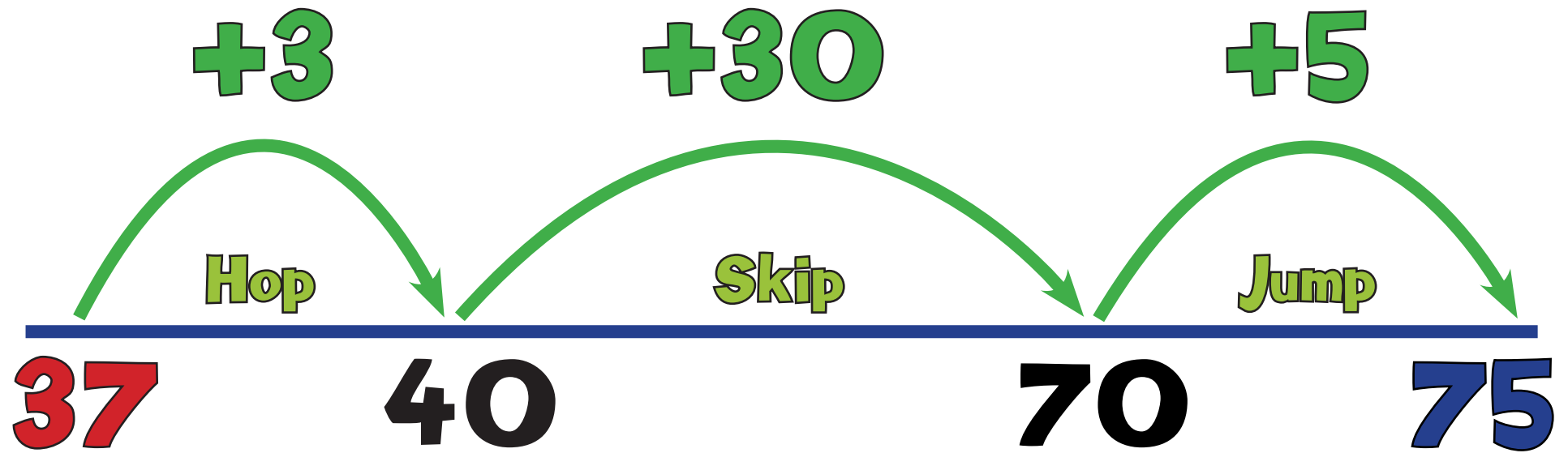
# S6: Forward Bounce

to tens



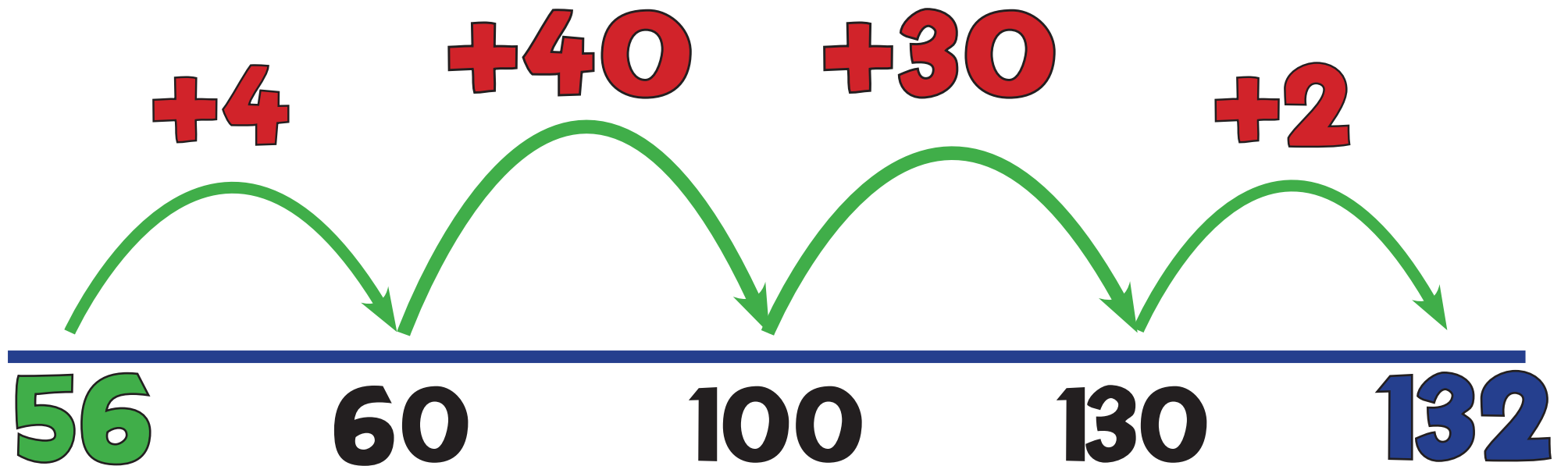
$$87 - 64 = 23$$

# S7: Triple Jump!



$$75 - 37 = 38$$

# S8: Quad Jump



$$132 - 56 = 76$$

# S9: Column Subtraction

First

$$\begin{array}{r} \phantom{6} \text{10} \phantom{1} \\ \phantom{6} \phantom{10} \text{1} \\ \phantom{6} \text{6} \phantom{10} \text{12} \\ \phantom{6} \text{7} \text{2} \\ - \text{48} \\ \hline \text{24} \end{array}$$

# S10: Column Subtraction

$$\begin{array}{r} \text{100} \quad \text{10} \quad \text{1} \\ 6 \quad 11 \quad 13 \\ \cancel{7} \quad \cancel{2} \quad \cancel{3} \\ - \quad 3 \quad 5 \quad 6 \\ \hline 3 \quad 6 \quad 7 \end{array}$$

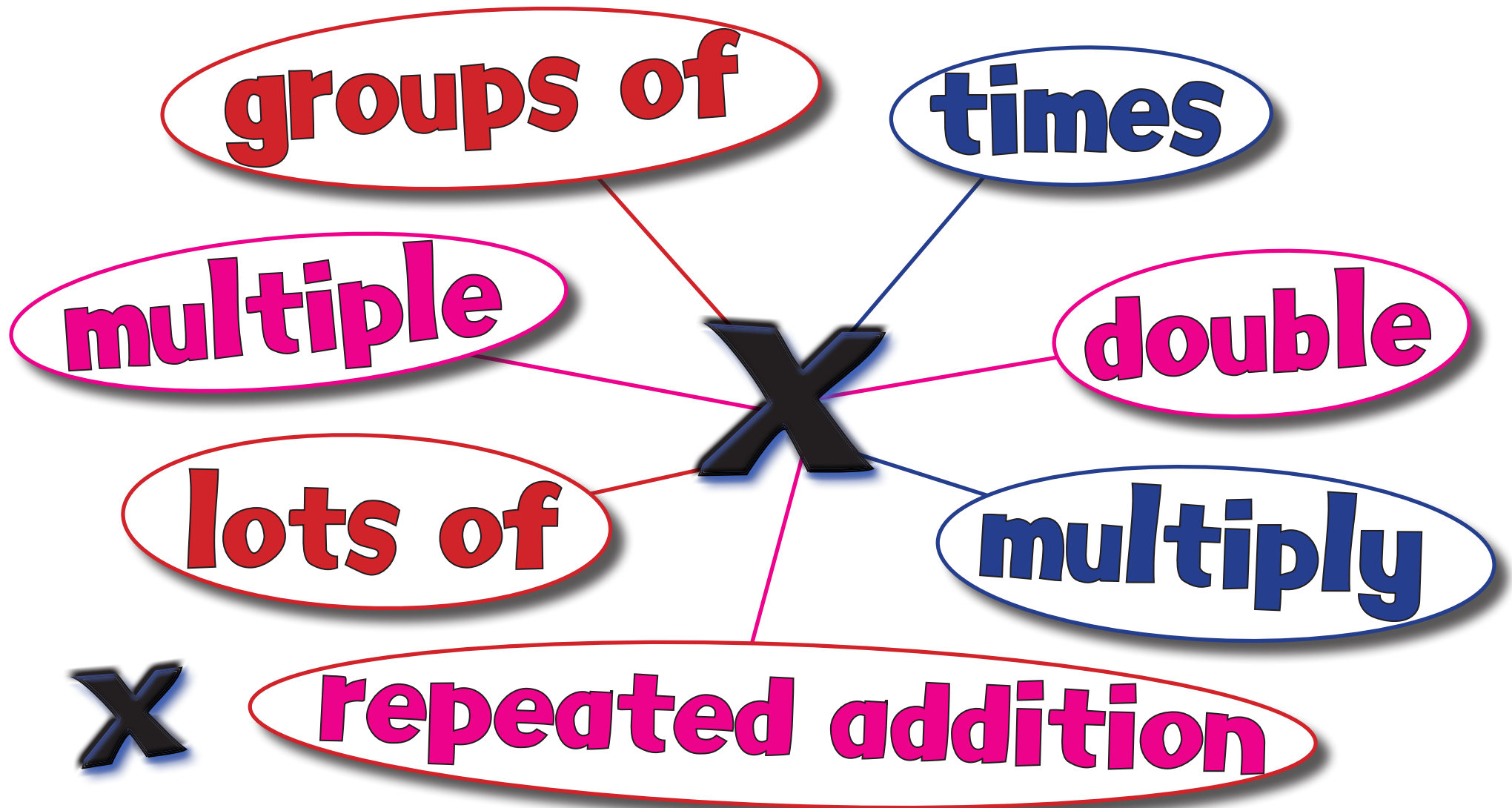
# S11: Column Subtraction

## Tricky

	100	10	1
	<del>3</del>	<del>10</del> <sup>9</sup>	<del>13</del>
	<del>4</del>	<del>0</del>	<del>3</del>
-	2	7	8
	1	2	5



# Multiplication Vocabulary



# Multiplication Calculation

$$4 \times 2 = 8$$

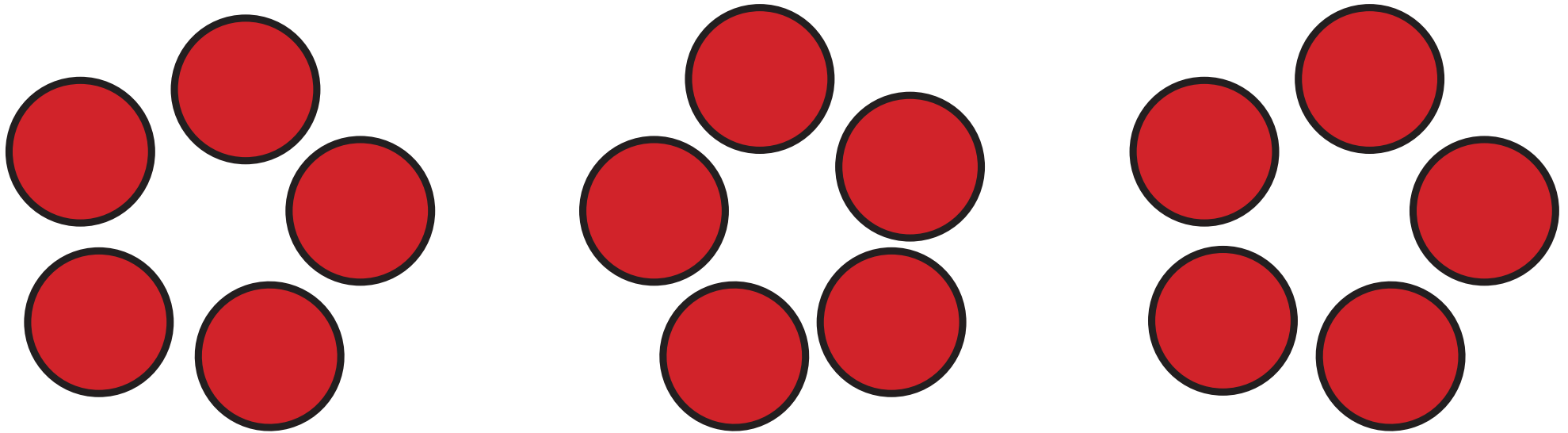
(multiplied by)

(equals or same as)

**x**

# M1: Repeated Addition

(Groups)

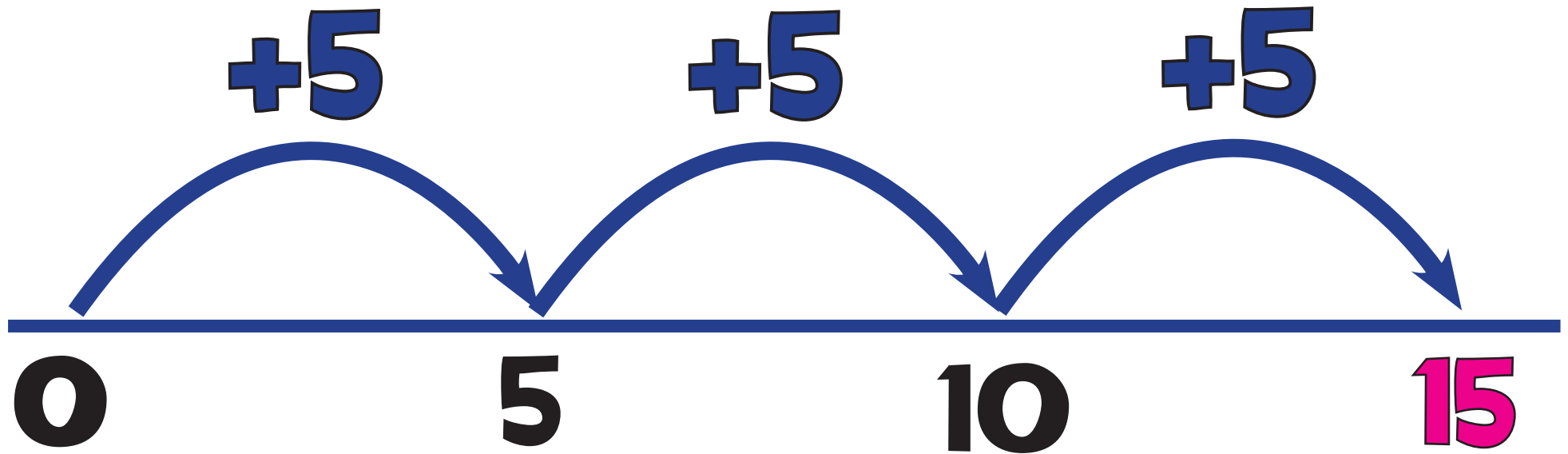


$$5 \times 3 = 5 + 5 + 5 = 15$$

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

# M2: Repeated Addition

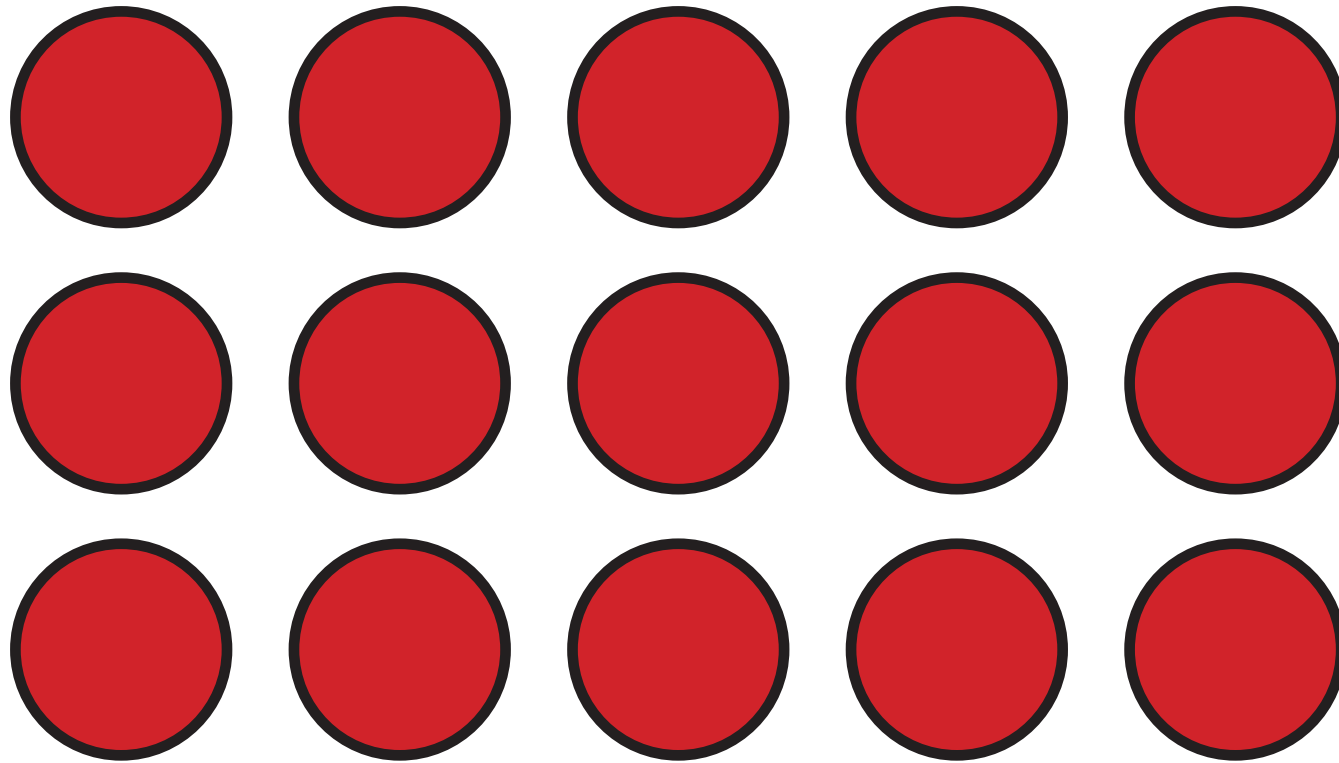
(Number Line)



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

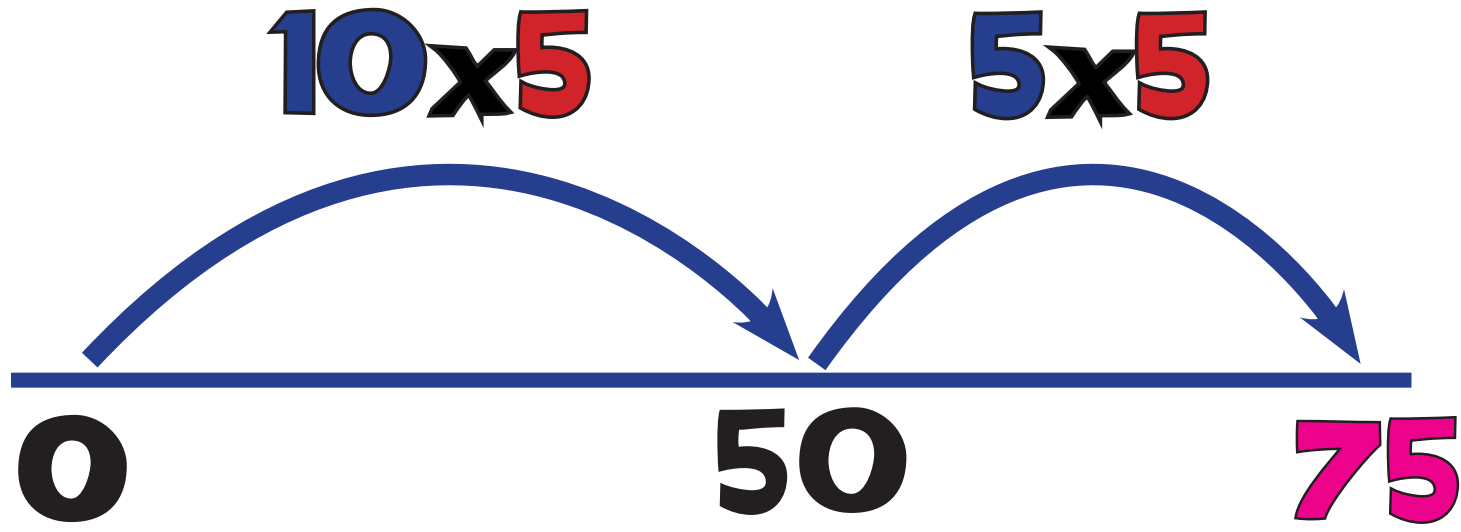
“5 times 3” means “5, 3 times!”

# M3: Arrays



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

# M4: Multi Boing!



$$\begin{array}{r} 10 \times 5 = 50 \\ 5 \times 5 = 25 \\ \hline 75 \end{array}$$

$$15 \times 5 = 75$$



# M5: Grid Method

Short Multiplication

$$15 \times 5 = 75$$

x	10	5
5	50	25

$$50 + 25 = 75$$

# M6: Expanded Column

$$\begin{array}{r} 100 \quad 10 \quad 1 \\ \quad 43 \\ \times \quad 6 \\ \hline \end{array}$$

$$\begin{array}{r} 18 \\ 240 \\ \hline 258 \end{array}$$

$$(3 \times 6)$$

$$(40 \times 6)$$

# M7: Column Multiplication

$$\begin{array}{r} \text{100} \quad \text{10} \quad \text{1} \\ \quad \quad 43 \\ \times \quad \quad 6 \\ \hline \quad 2 \quad 1 \\ \hline 258 \\ \hline \end{array}$$

# M8: Grid Method

Long Multiplication

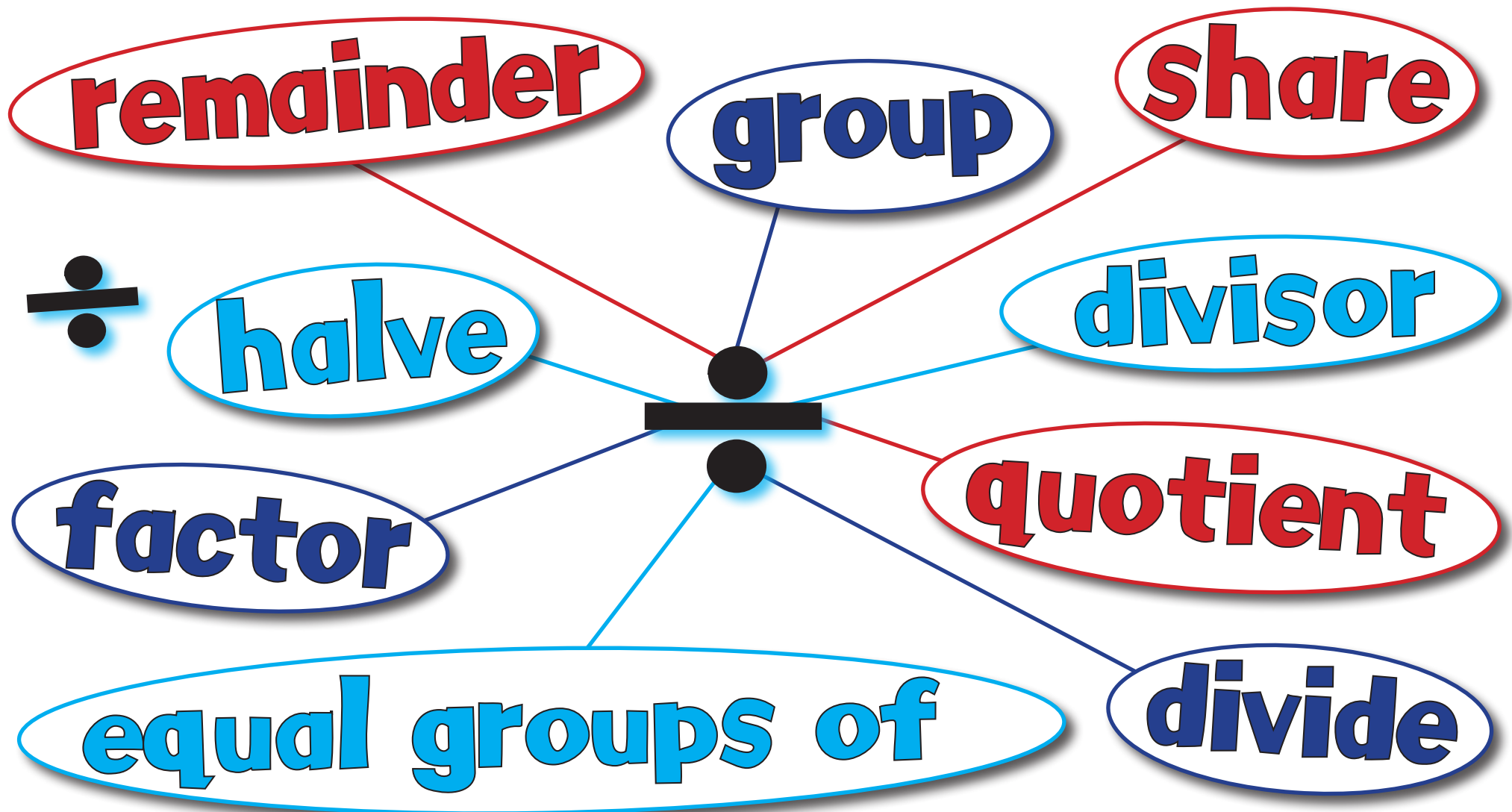
$$43 \times 65 = 2795$$

<b>x</b>	<b>40</b>	<b>3</b>
<b>60</b>	<b>2400</b>	<b>180</b>
<b>5</b>	<b>200</b>	<b>15</b>

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



# Division Vocabulary



# Division Calculation

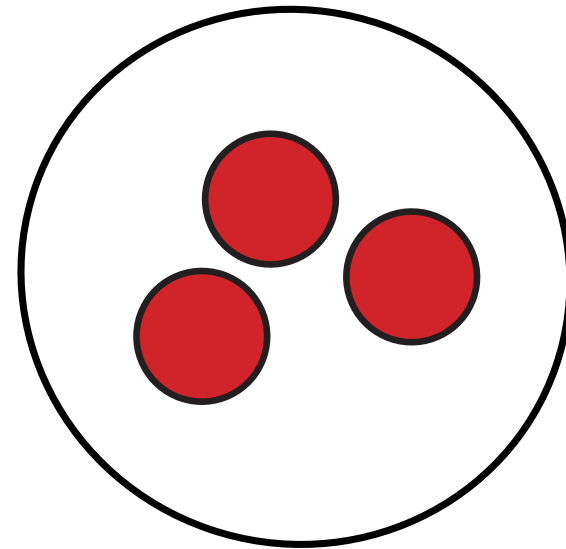
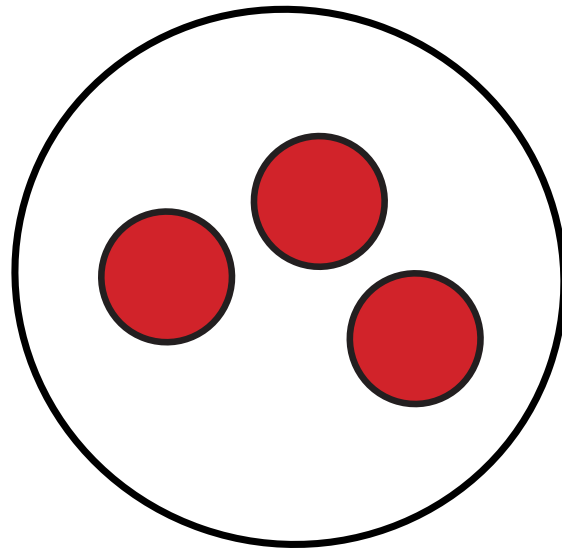
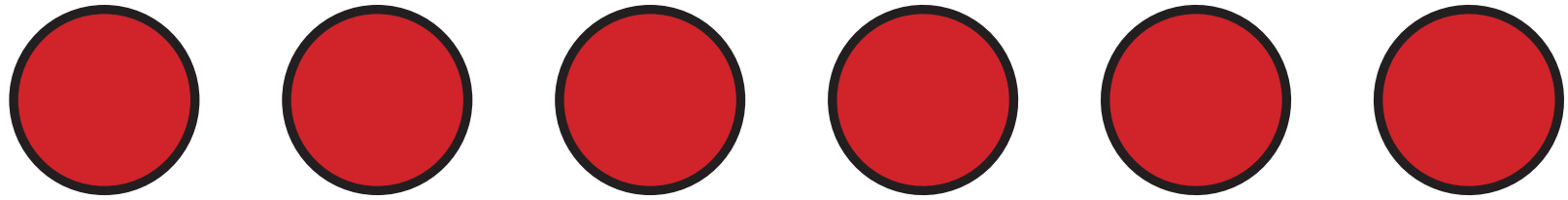
$$8 \div 2 = 4$$

(divided by)

(equals or  
same as)

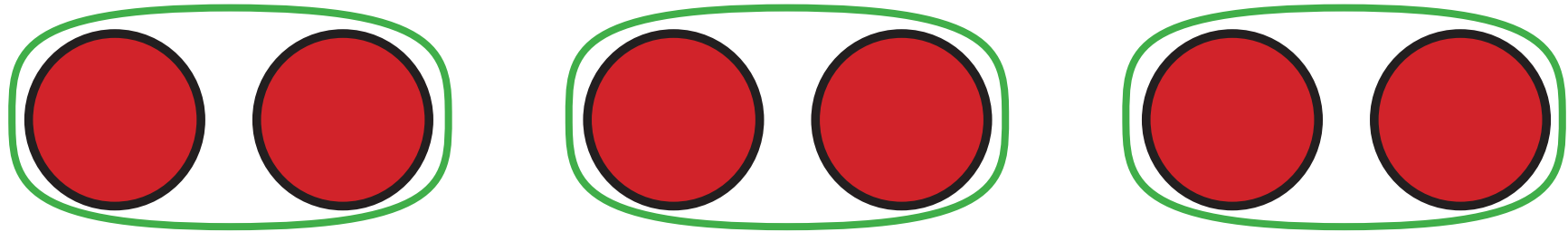
$$\div 8 \div 4 = 2$$

# D1: Sharing (Concept)



**“If I share 6 into 2 equal amounts, how many in each group?” Answer: 3**

# D2: Grouping (Concept)



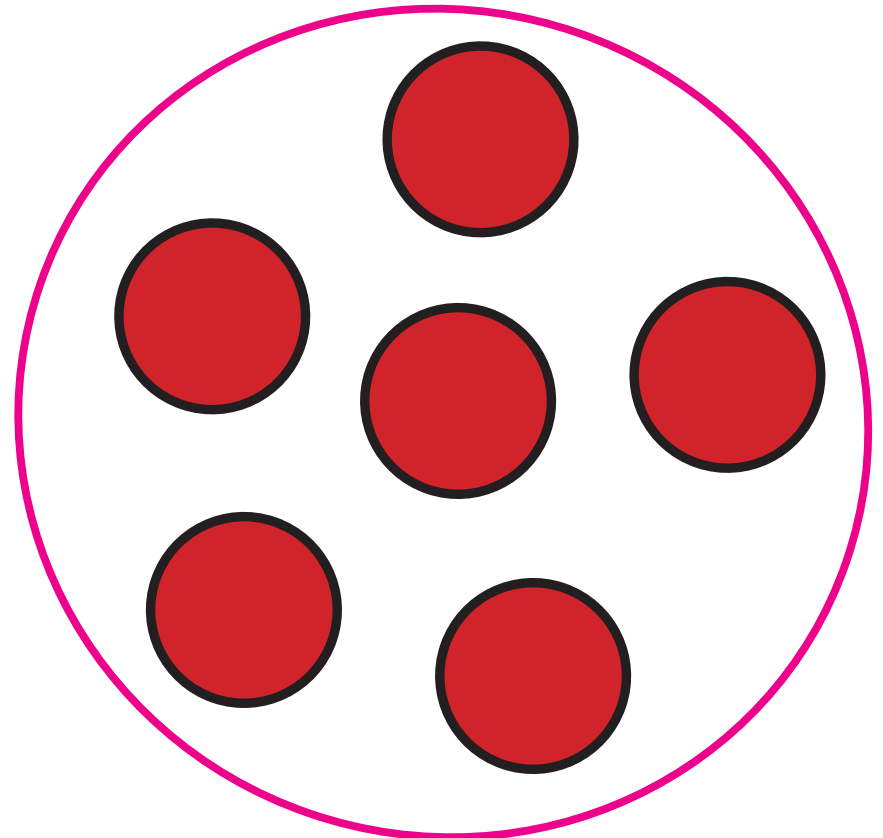
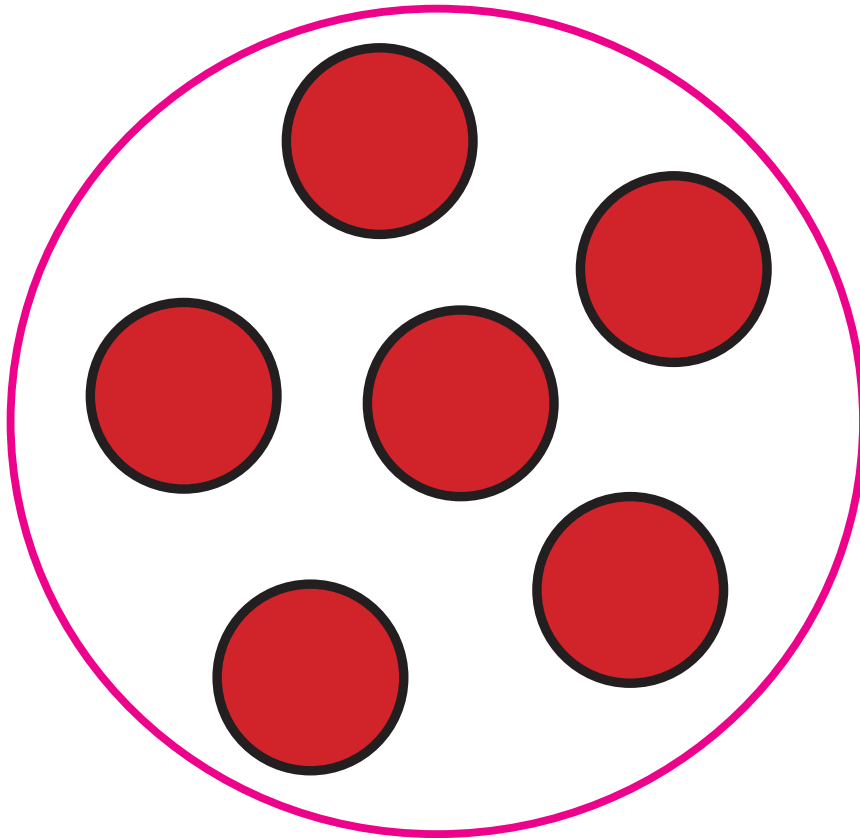
**“How many groups of 2 can I make out of 6?”**

**Answer: 3**

# D3: Division as Sharing

$$12 \div 2 = 6$$

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

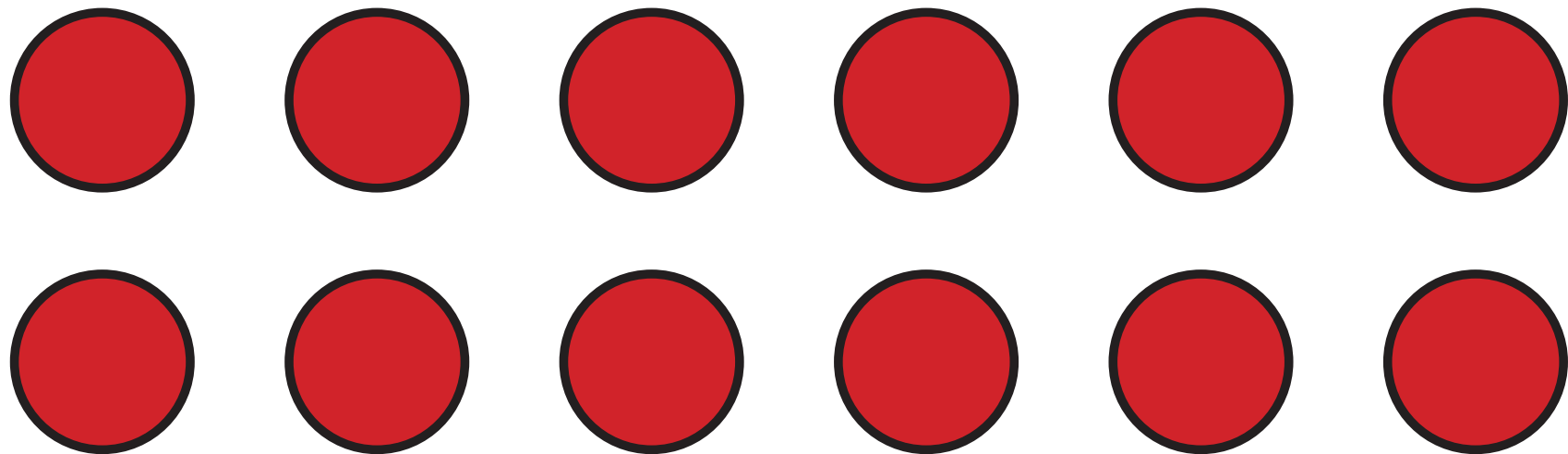


# D4: Division as Grouping

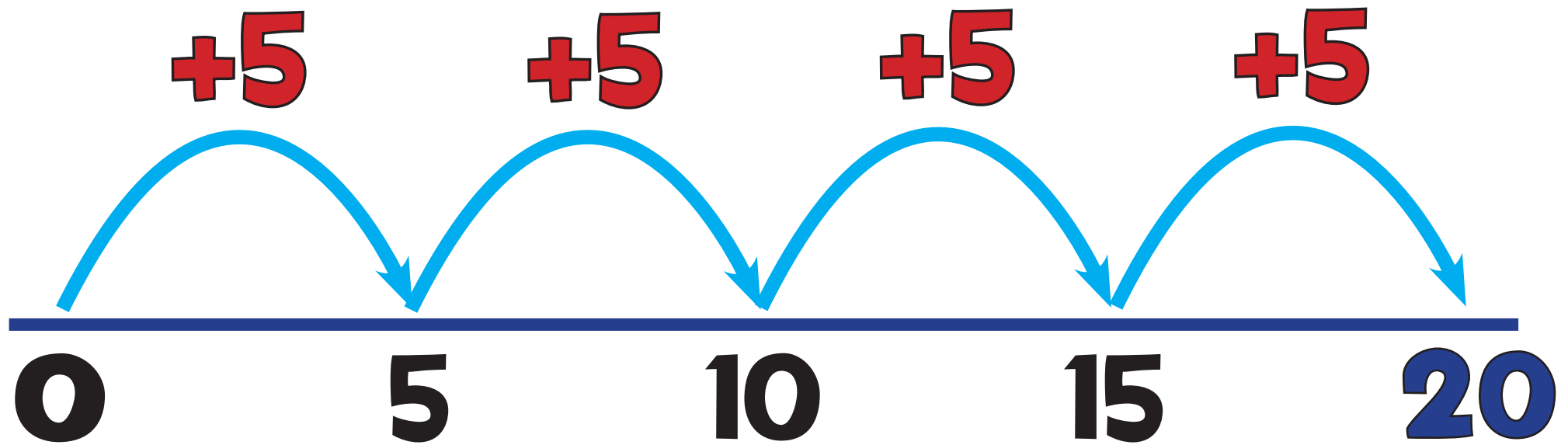
$$12 \div 2 = 6$$

“How many groups of 2  
can I fit into 12?”

Answer: 6



# D5: Grouping on a Number Line

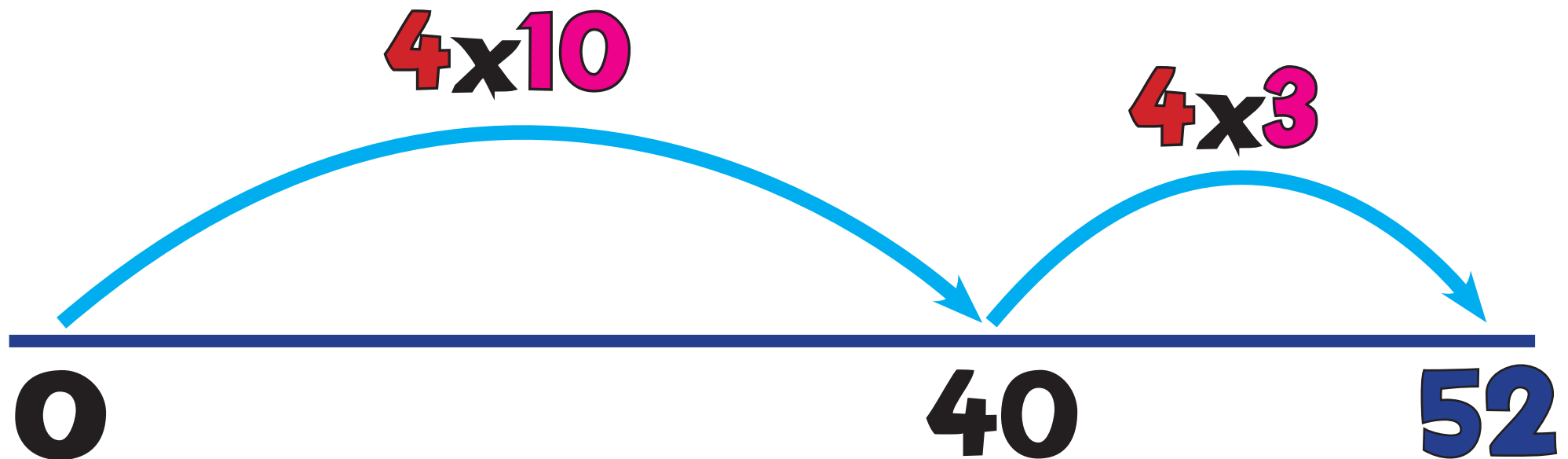


“How many 5s in 20?”

Answer: 4

$$20 \div 5 = 4$$

# D6: Grouping on a Number Line 2



“How many 4s in 52?”

Answer: 13

$$52 \div 4 = 13$$

# D7: Short Division

$$136 \div 4 = 34$$

$$\begin{array}{r} 34 \\ 4 \overline{) 136} \end{array}$$

# D8: Long Division

## Short Division Method

$$\begin{array}{r} 26 \text{ r}21 \\ 37 \overline{) 983} \\ \underline{9} \phantom{8} \phantom{3} \\ 0 \phantom{8} \phantom{3} \\ \underline{0} \phantom{8} \phantom{3} \\ 0 \phantom{8} \phantom{3} \\ \underline{0} \phantom{8} \phantom{3} \\ 0 \phantom{8} \phantom{3} \end{array}$$

The diagram shows a short division problem. The divisor is 37, written in black. The dividend is 983, with the digits 9, 8, and 3 colored blue, red, and green respectively. A pink bracket is drawn under the dividend. Above the dividend, the quotient 26 is written in pink, followed by a remainder of 21 (r21) also in pink. Above the digit 9, a blue '9' is written, and above the digit 8, a red '24' is written.

# D9: Long Division

Decimal Remainder

$$432 \div 5 = 86.4$$

$$\begin{array}{r} 086.4 \\ 5 \overline{) 432.0} \end{array}$$

The diagram shows the long division process. The divisor 5 is on the left. The dividend 432.0 is on the right, with a pink horizontal line above it. The quotient 086.4 is written above the line. The digits of the dividend are color-coded and numbered: 4 (blue, 1), 3 (red, 3), 2 (green, 2), and 0 (purple, 2). The decimal point is a black square.

# D10: Long Division

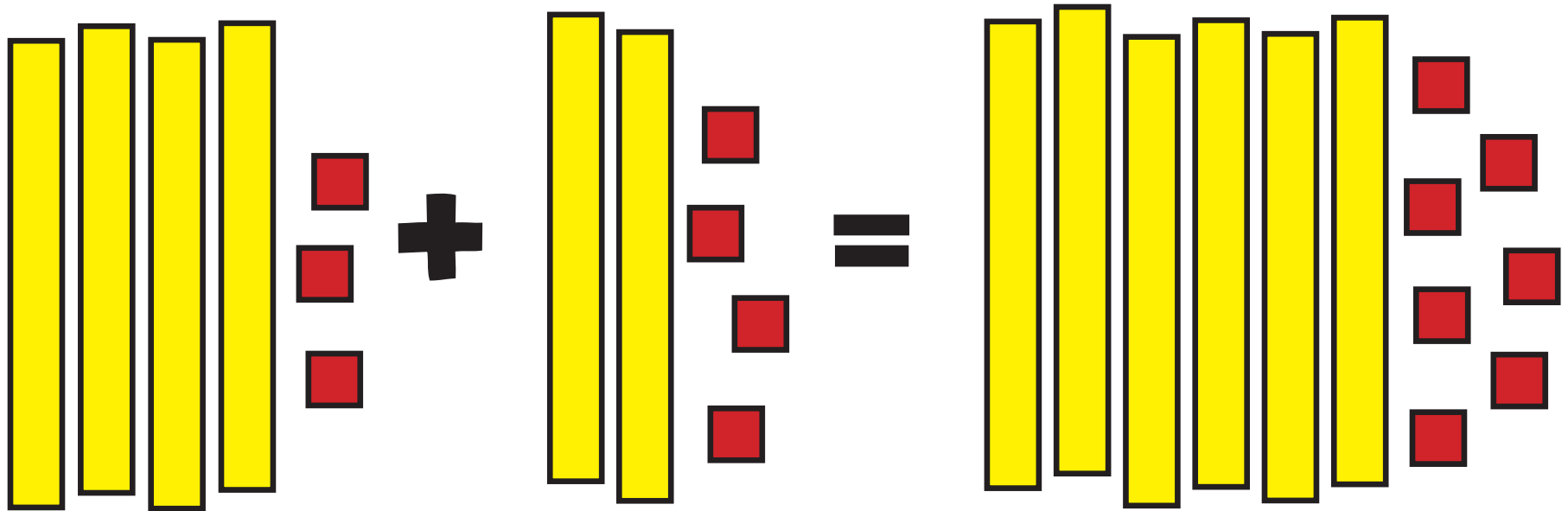
Traditional Method

$$\begin{array}{r} 26 \text{ r}21 \\ \hline 37 \overline{) 983} \\ \underline{- 74} \phantom{0} \\ 243 \\ \underline{- 222} \\ 21 \end{array}$$

$$983 \div 37 = 26 \text{ r}21$$

# A: Base 10

$$43 + 24 = 67$$



# B: Arrow Cards

$$43 + 24 = 67$$



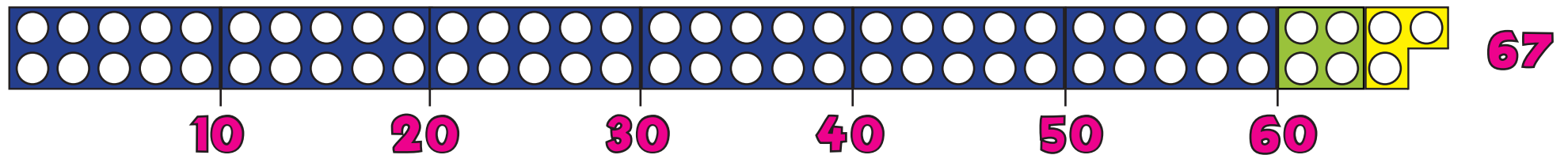
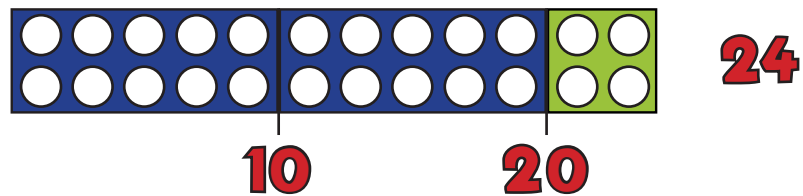
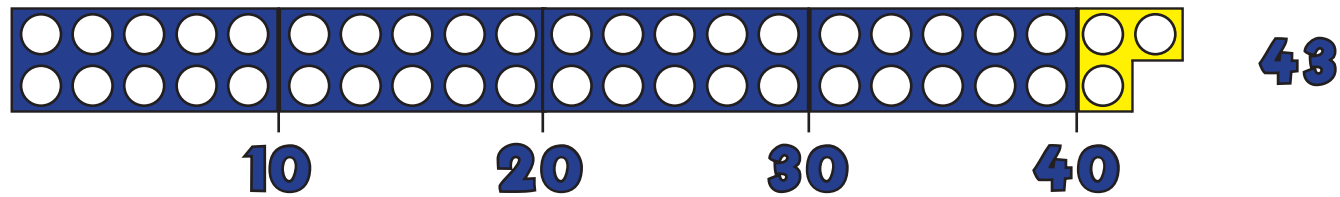
# C: Hundred Square

$$43 + 24 = 67$$

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

# D: Numicon

$$43 + 24 = 67$$



# E: Money

$$43 + 24 = 67$$

