

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

÷

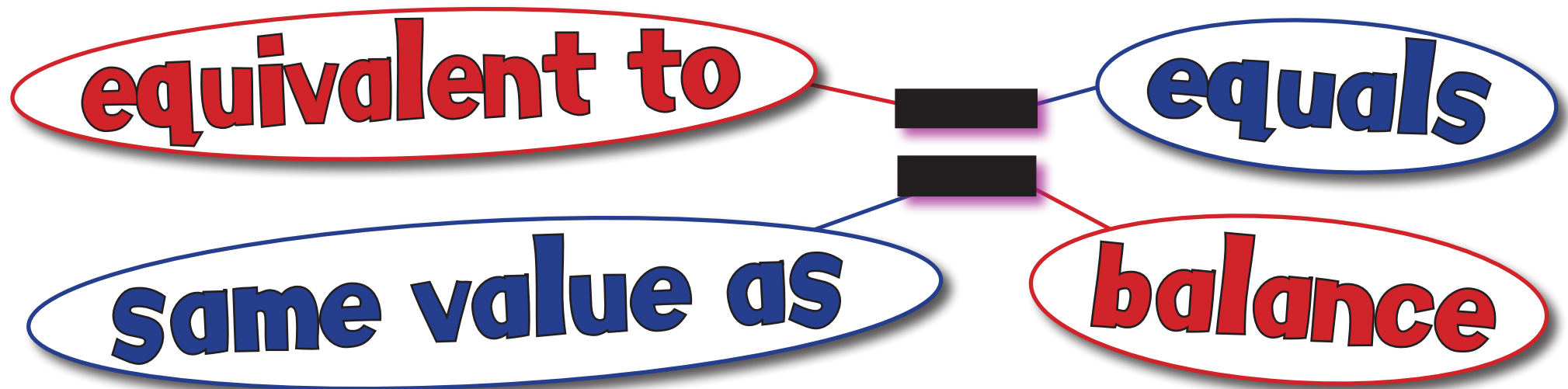
$$8 \div 2 = 4$$

“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?**

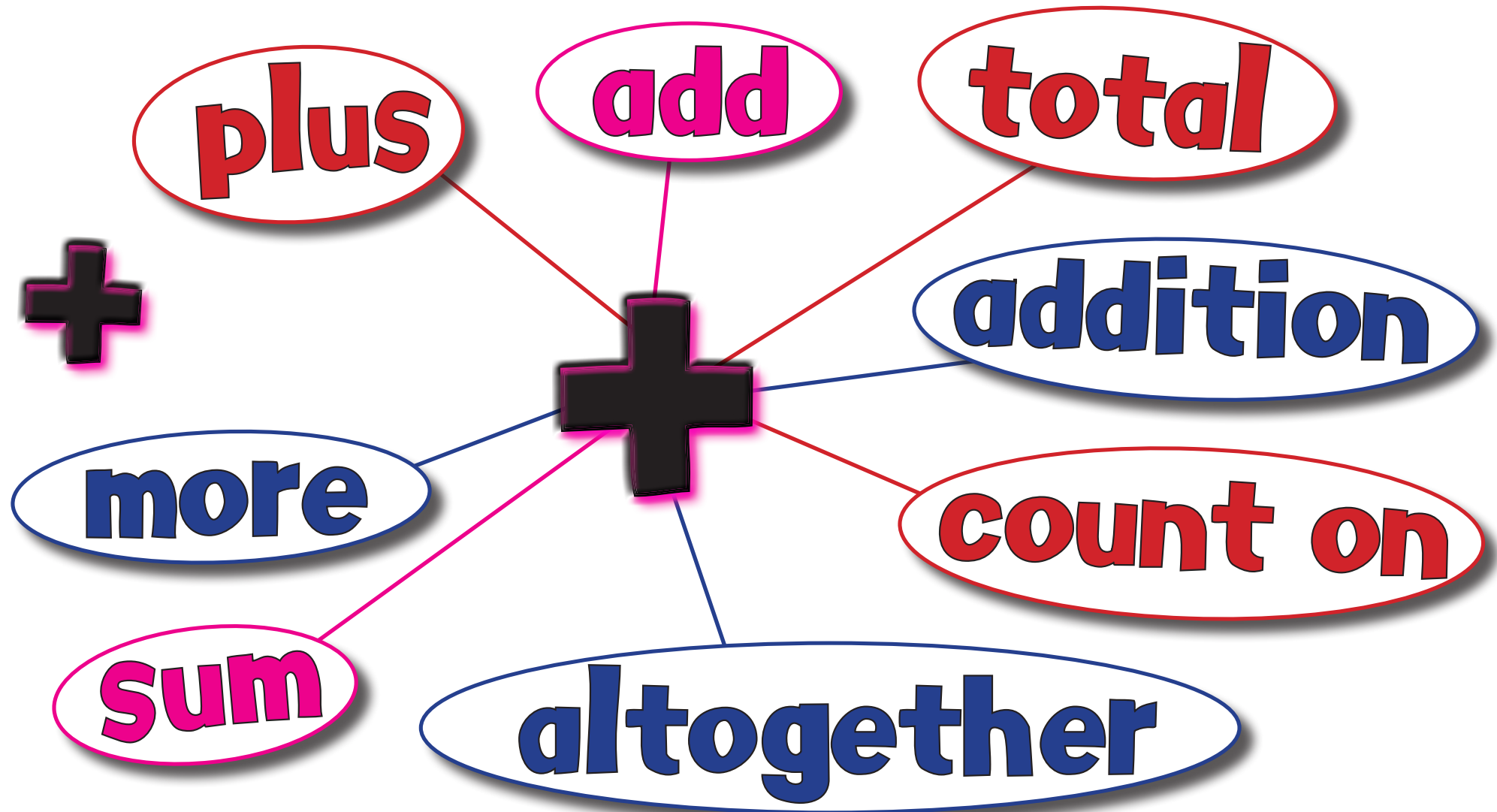


2

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



Addition Vocabulary



Addition Calculation

$$4 + 2 = 6$$

(add)

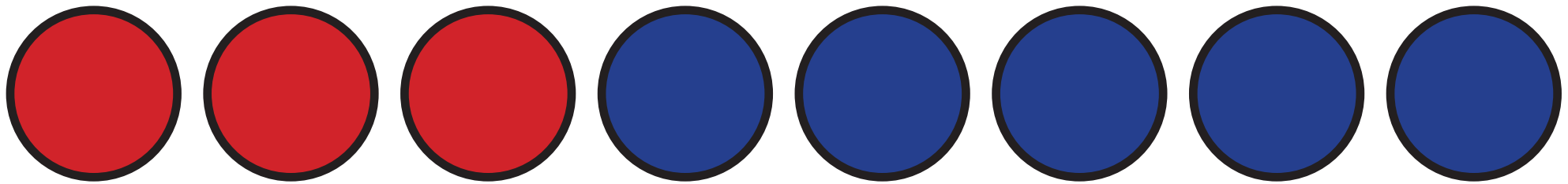
(equals
or same as)

$$6 = 4 + 2$$

$$4 + 2 = 5 + 1$$



A1: Objects & Pictures



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

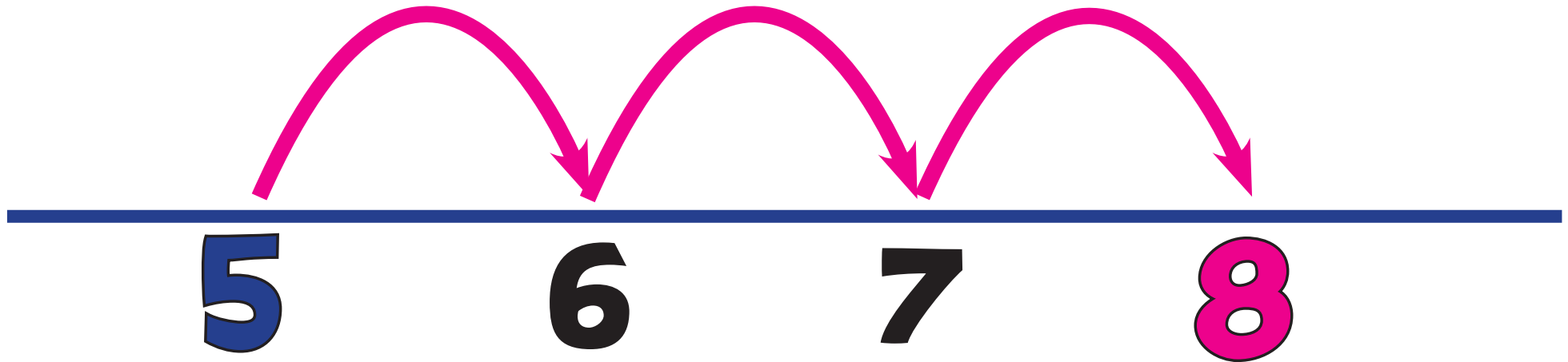


A2: Counting On

+1

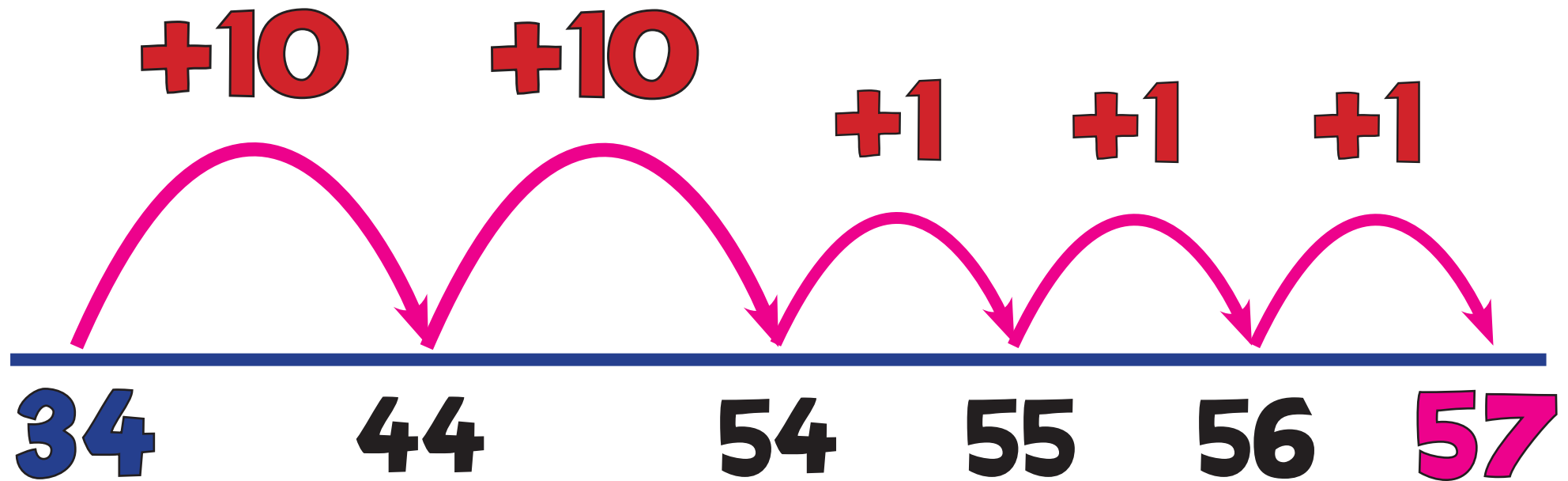
+1

+1



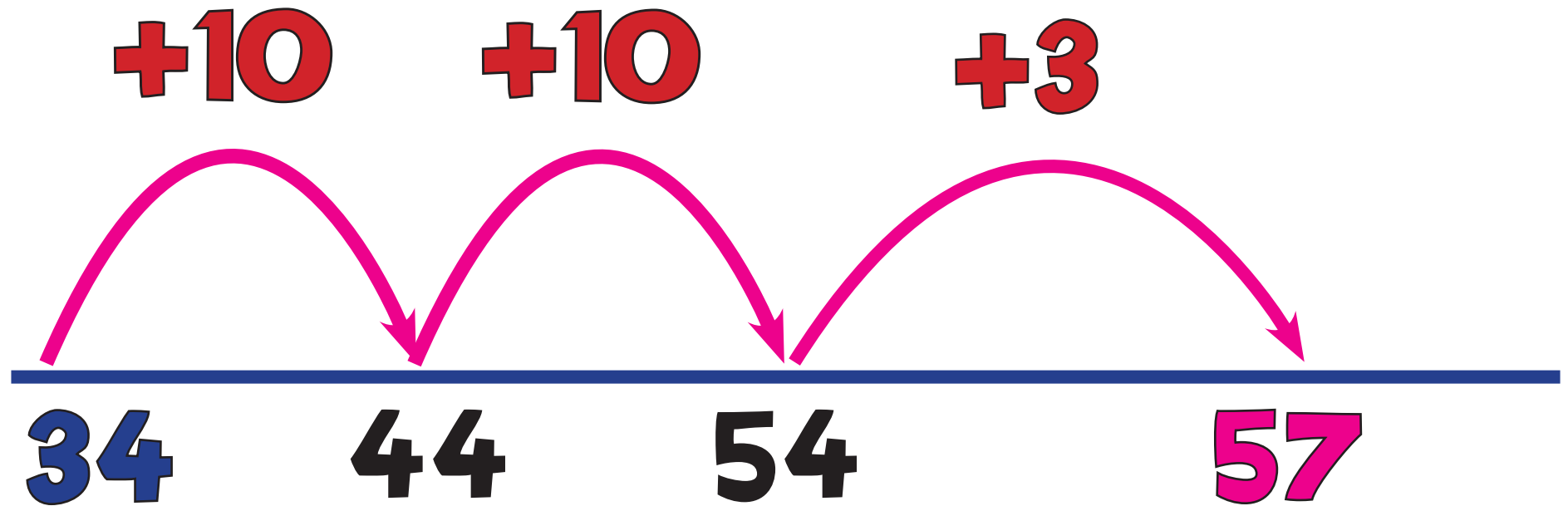
$$5 + 3 = 8$$

A3: Forwards Bounce



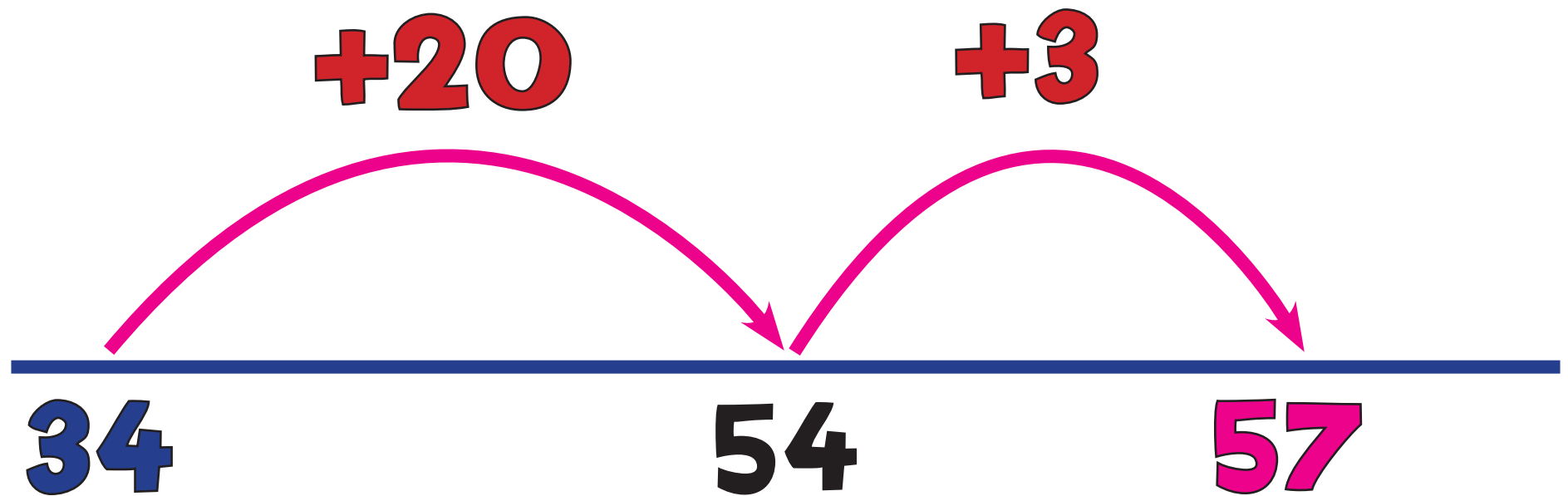
$$34 + 23 = 57$$

A4: Forwards Jump



$$34 + 23 = 57$$

A5: Forwards Jump



$$34 + 23 = 57$$

A6: Partitioning

$$43 + 24 = 67$$

$$40 + 20 = 60$$

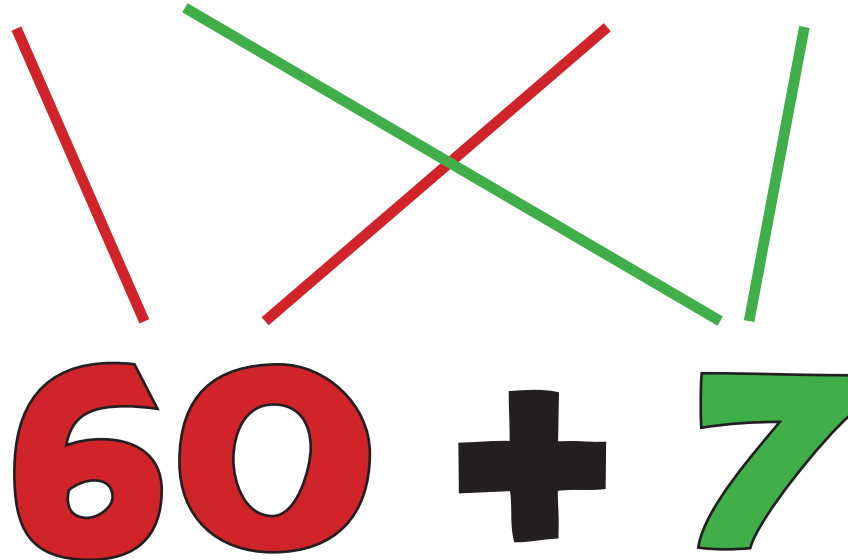
$$3 + 4 = 7$$

$$67$$



A7: Partition Jot

$$43 + 24 = 67$$



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
	9	3	5
	1	1	



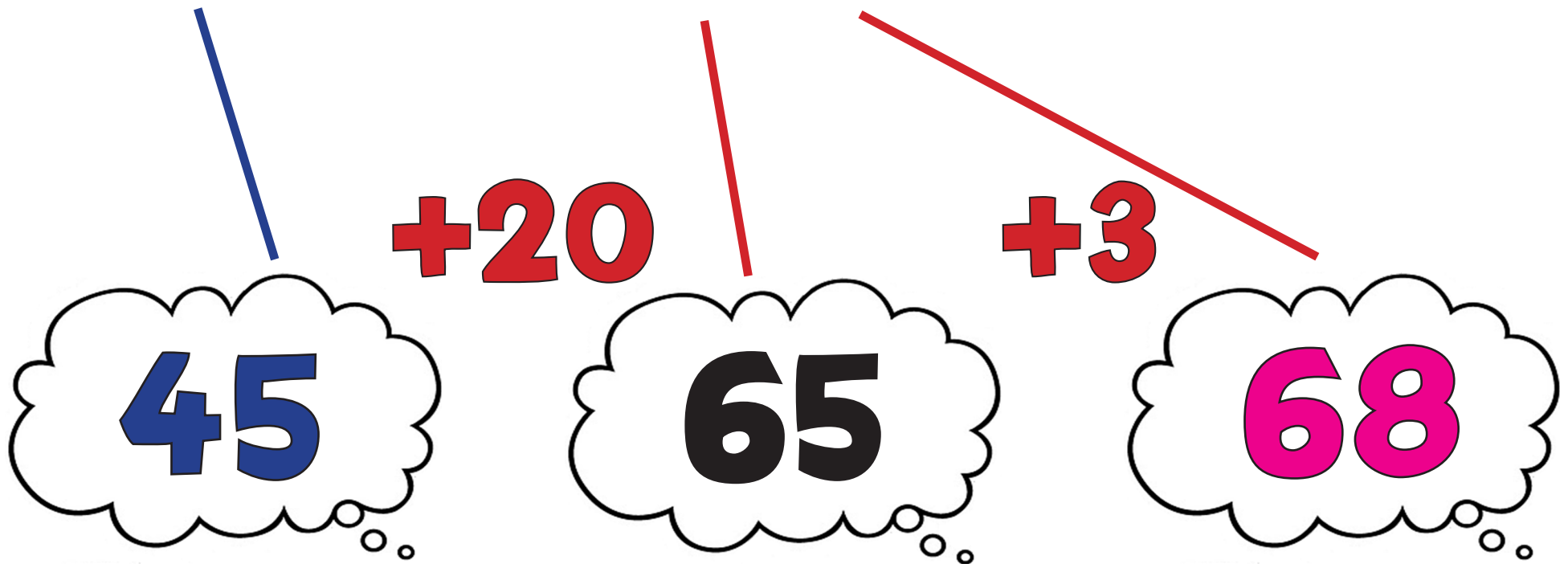
MA1: Partitioning

$$45 + 28 = 73$$

$$60 + 13 = 73$$

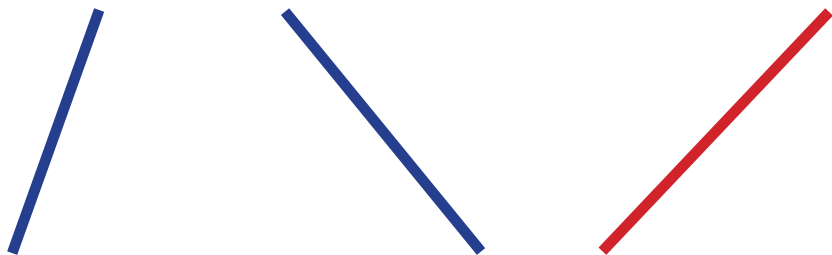
MA2: Counting On

$$45 + 23 = 68$$



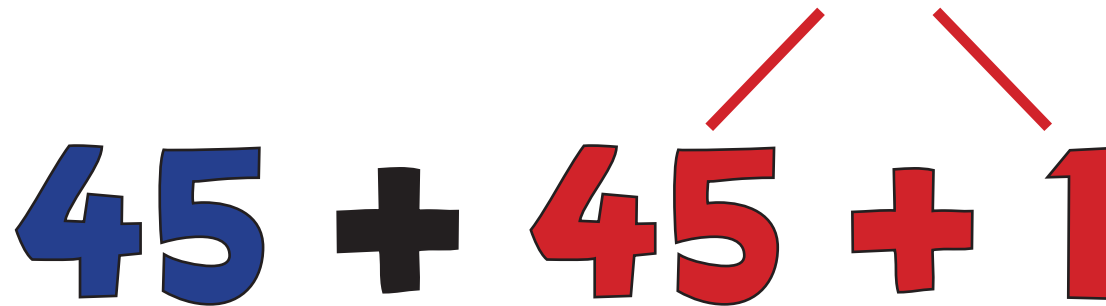
MA3: Number Bonds

$$45 + 95 = 140$$


$$40 + 100 = 140$$

MA4: Double & Adjust

$$45 + 46 = 91$$

$$45 + 45 + 1$$


$$90 + 1 = 91$$




MA5: Round & Adjust

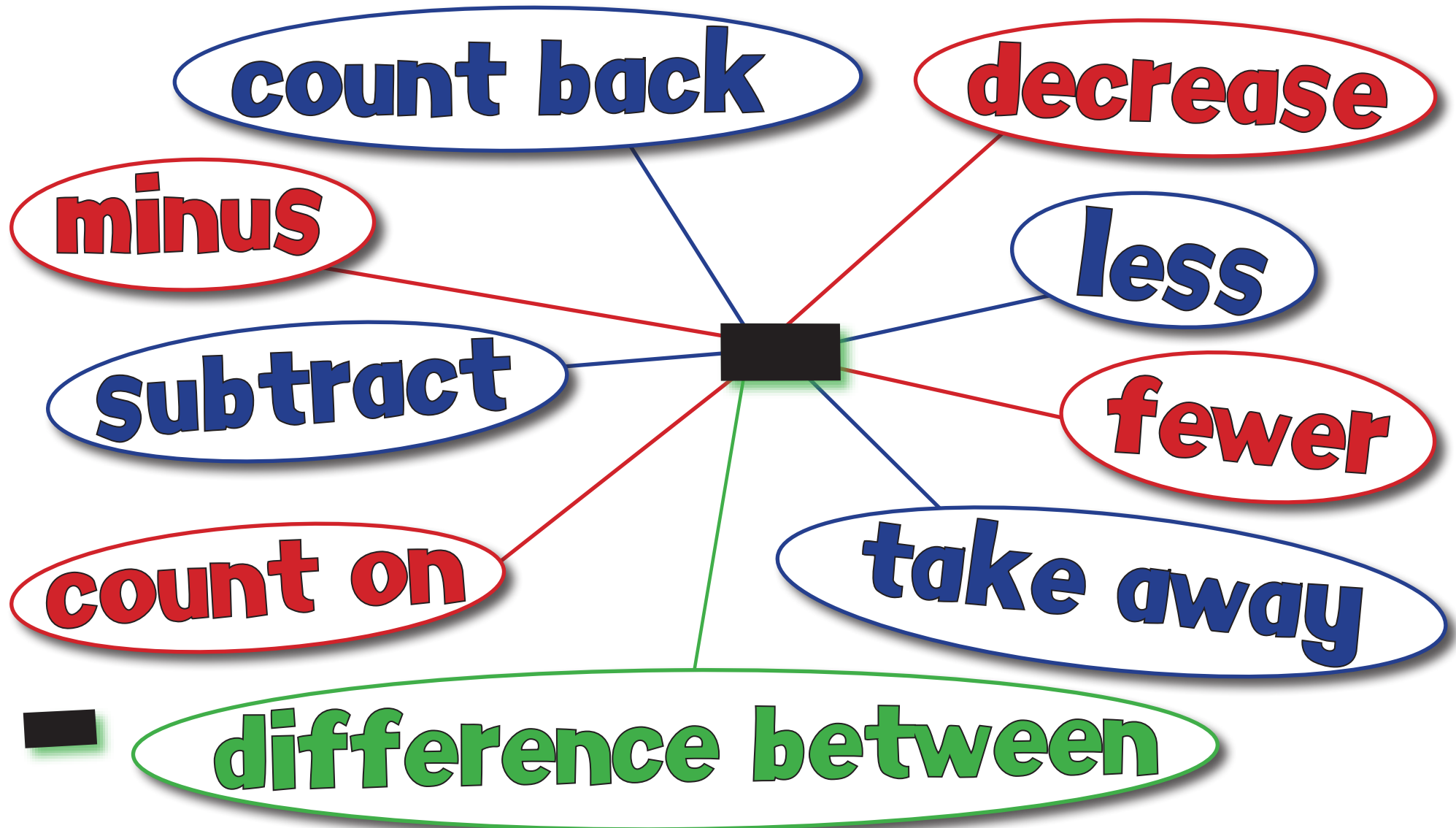
$$45 + 39 = 84$$

$$45 + 40 - 1$$

$$85 - 1 = 84$$



Subtraction Vocabulary



Subtraction Calculation

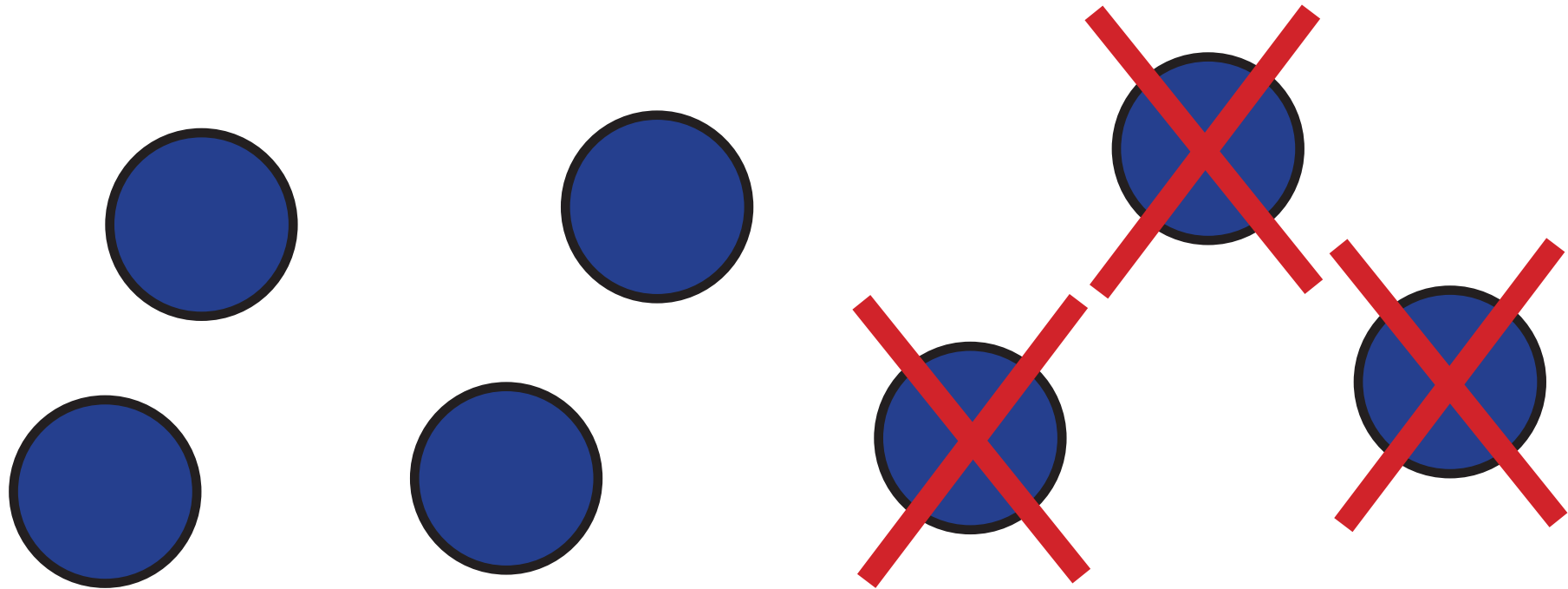
$$6 - 2 = 4$$

(subtract) (equals or same as)

$$4 = 6 - 2$$



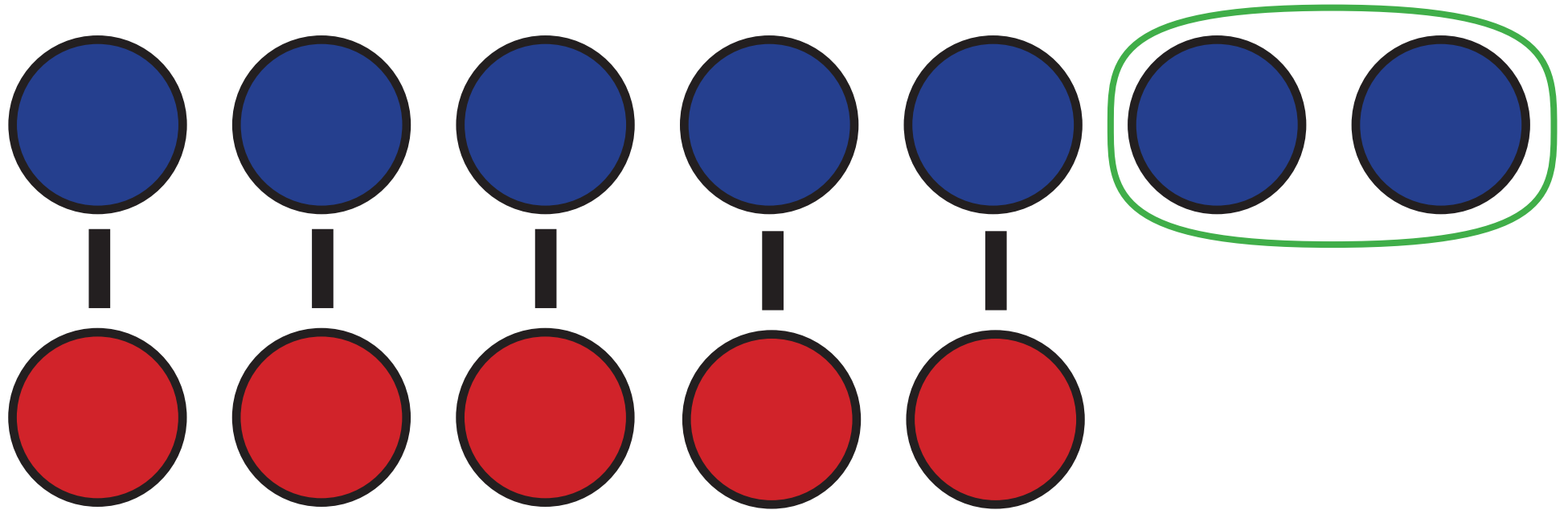
S1: Objects



$$7 - 3 = 4$$

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

S2: What's the Difference?

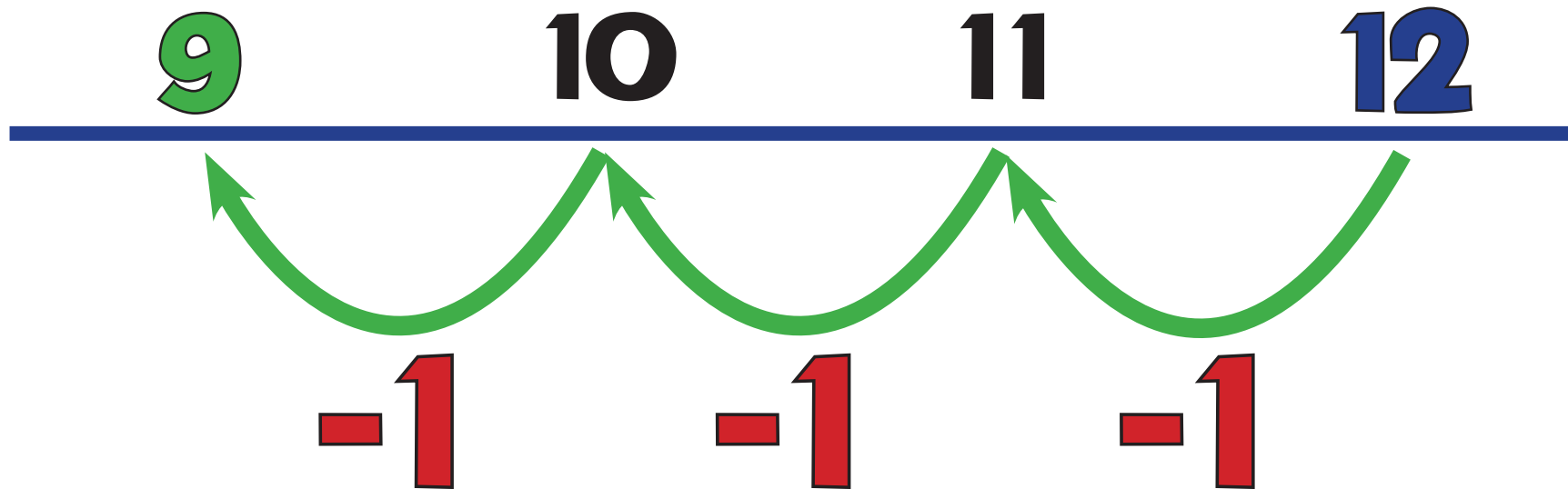


$$7 - 5 = 2$$

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



S3: Counting Back

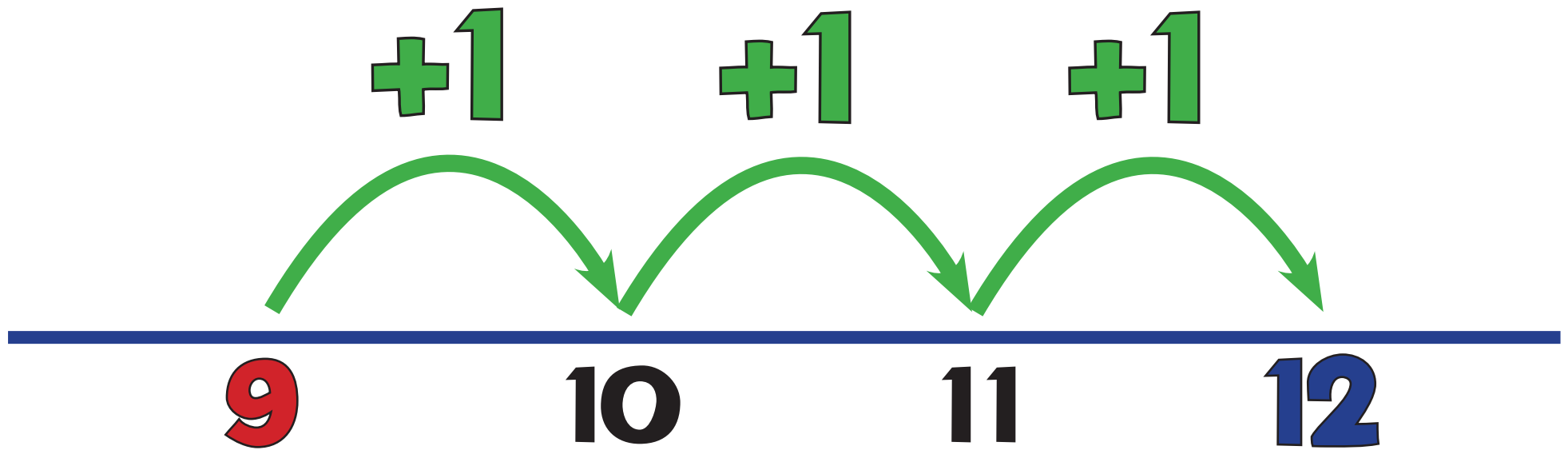


$$12 - 3 = 9$$

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



S4: Counting On

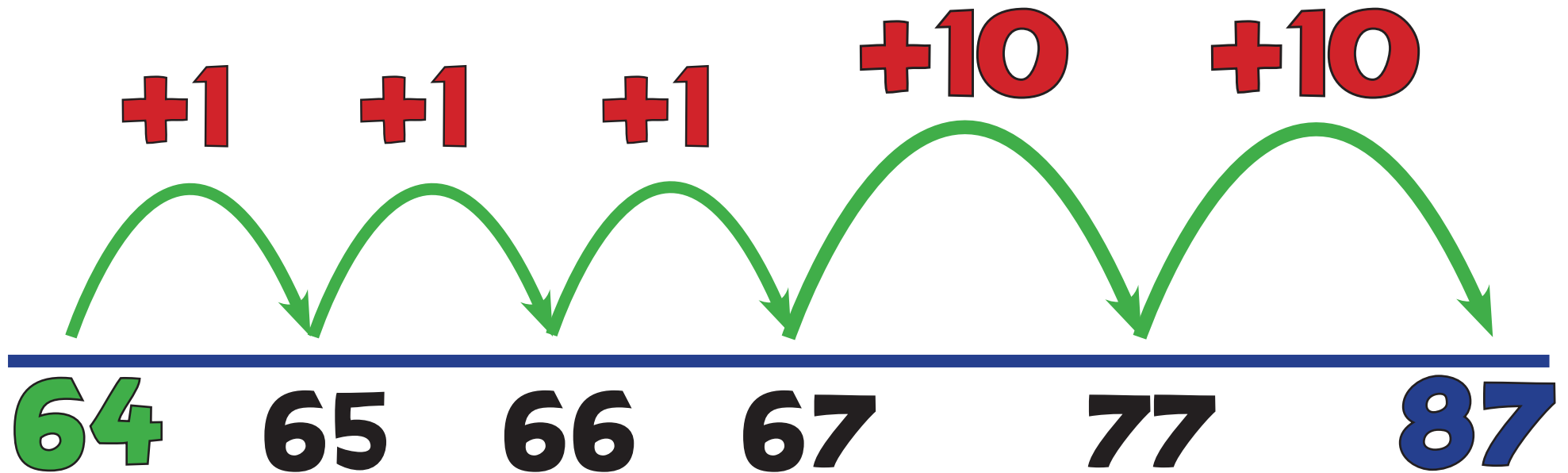


$$12 - 9 = 3$$

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



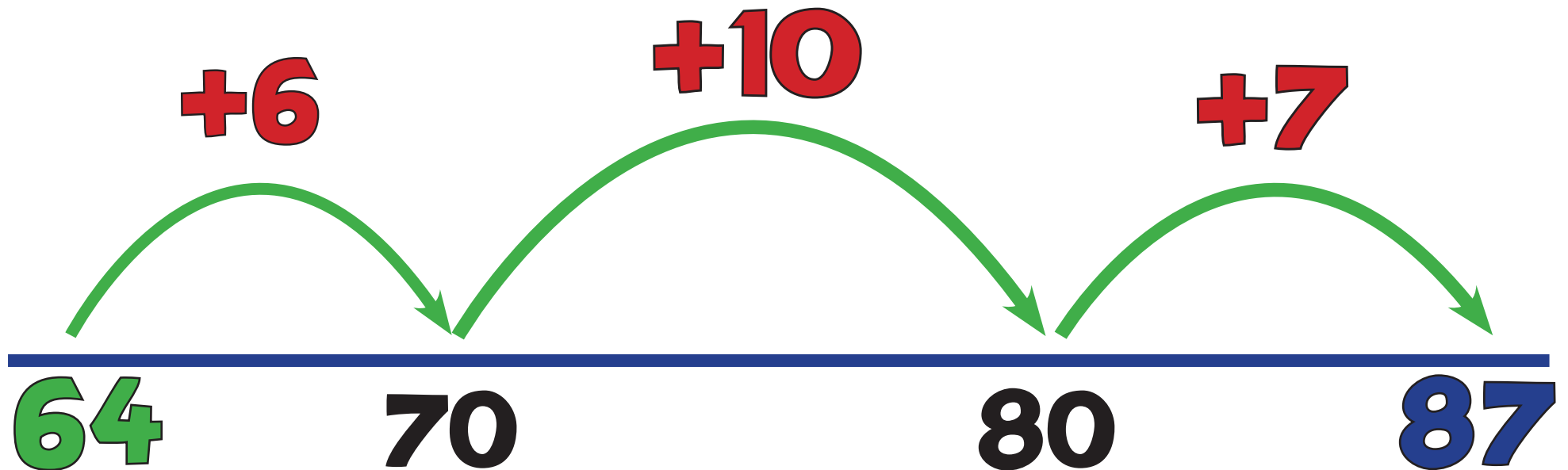
S5: Forward Bounce



$$87 - 64 = 23$$

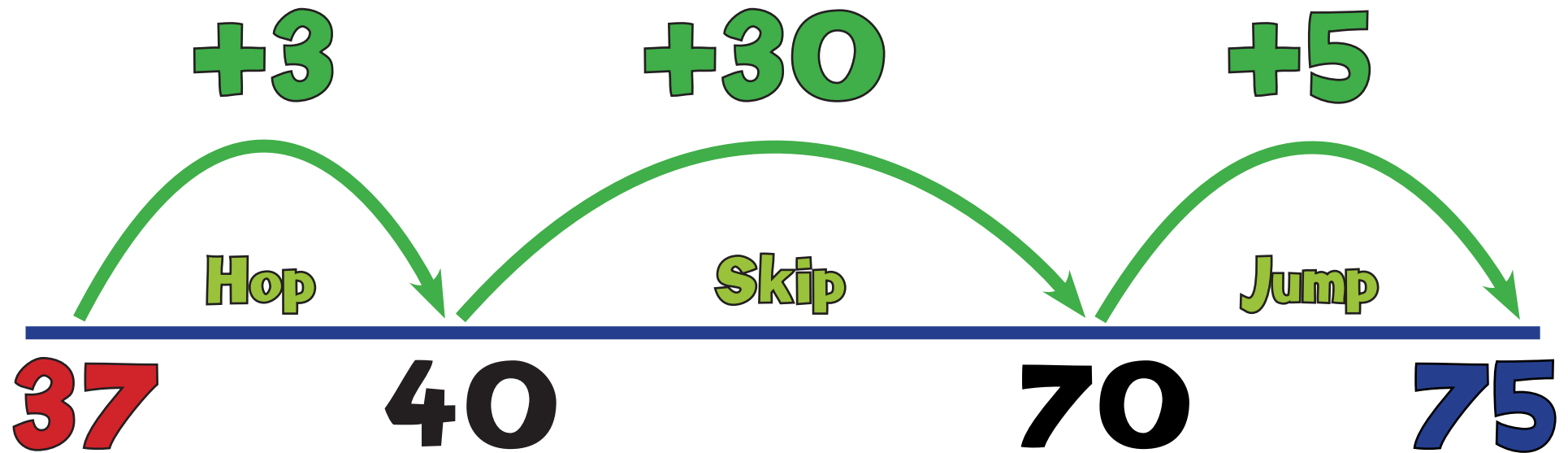
S6: Forward Bounce

to tens



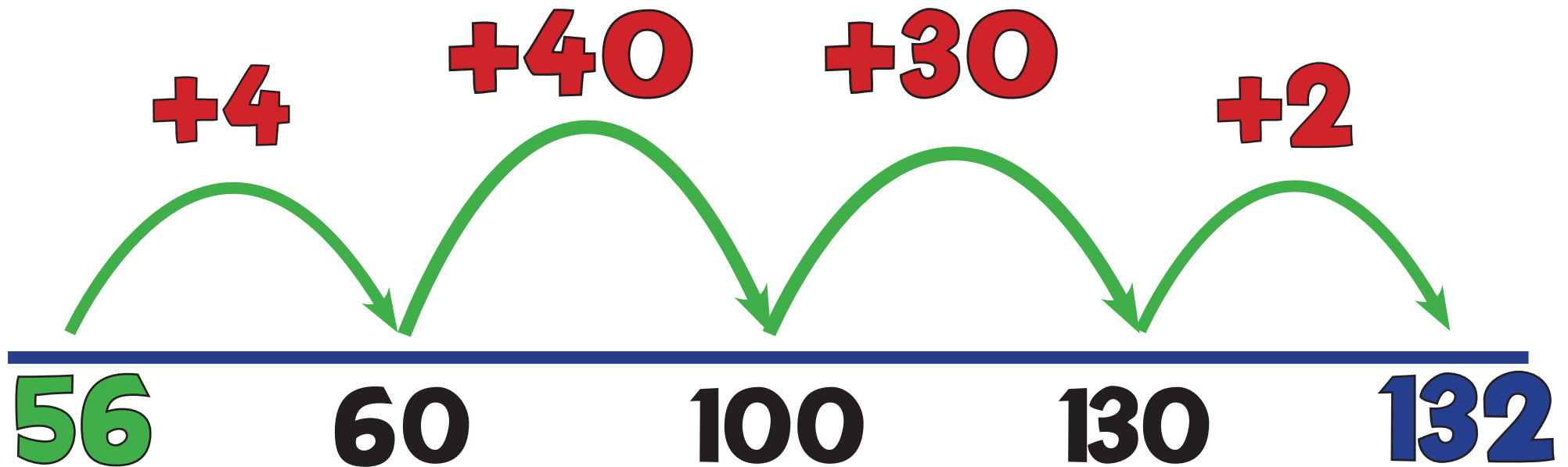
$$87 - 64 = 23$$

S7: Triple Jump!



$$75 - 37 = 38$$

S8: Quad Jump



$$132 - 56 = 76$$

S9: Column Subtraction

First

$$\begin{array}{r} \text{10} \quad \text{1} \\ \text{6} \quad \text{12} \\ \text{7} \text{ } \text{2} \\ - \text{4} \text{ } \text{8} \\ \hline \text{2} \text{ } \text{4} \end{array}$$



S10: Column Subtraction

	100	10	1
	6	11	13
	7	2	3
-	3	5	6
	3	6	7



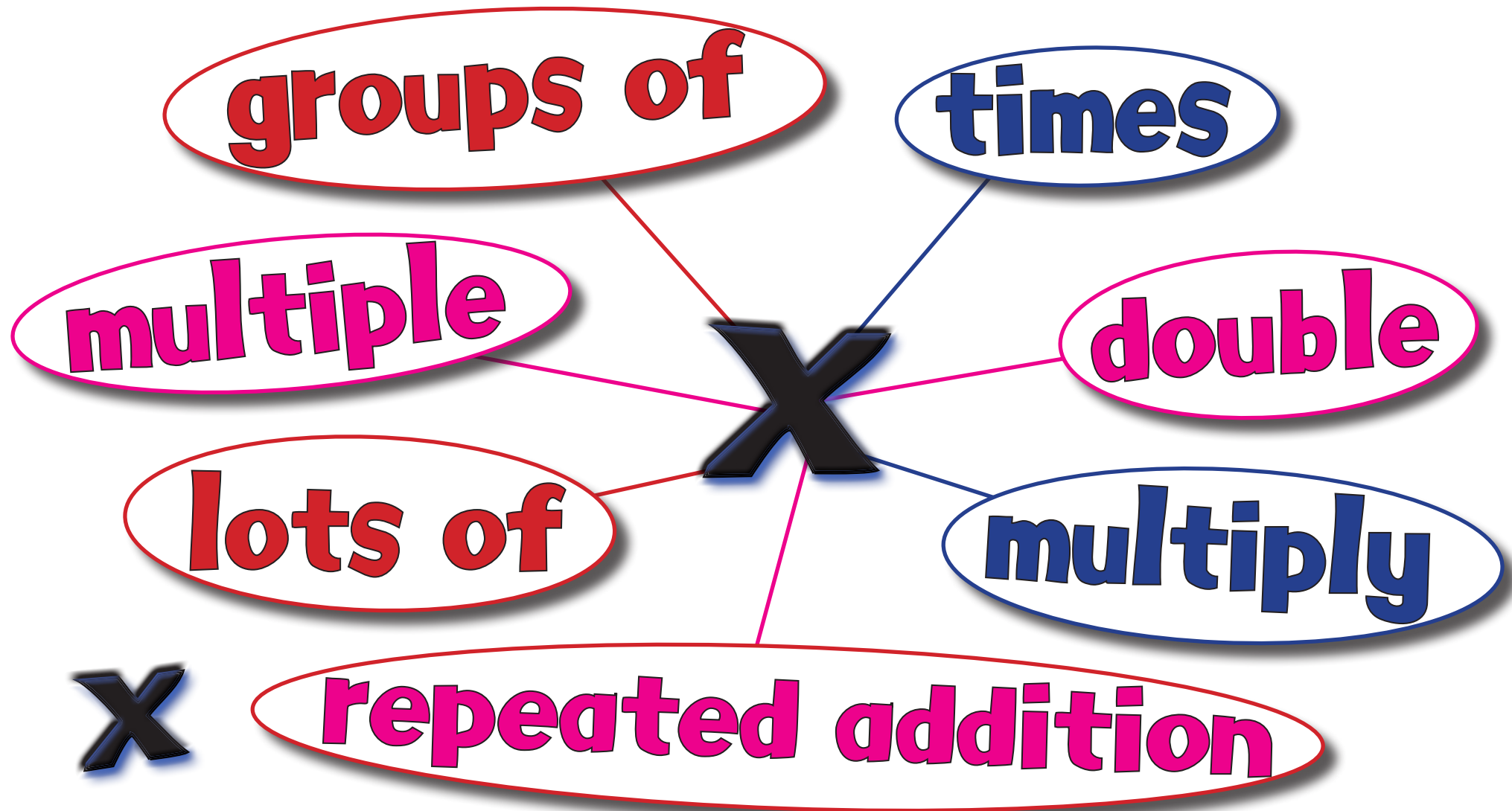
S11: Column Subtraction

Tricky

	100	10	1
		9	
	3	10	13
	4	0	3
-	2	7	8
	1	2	5



Multiplication Vocabulary



Multiplication Calculation

$$4 \times 2 = 8$$

(multiplied by)

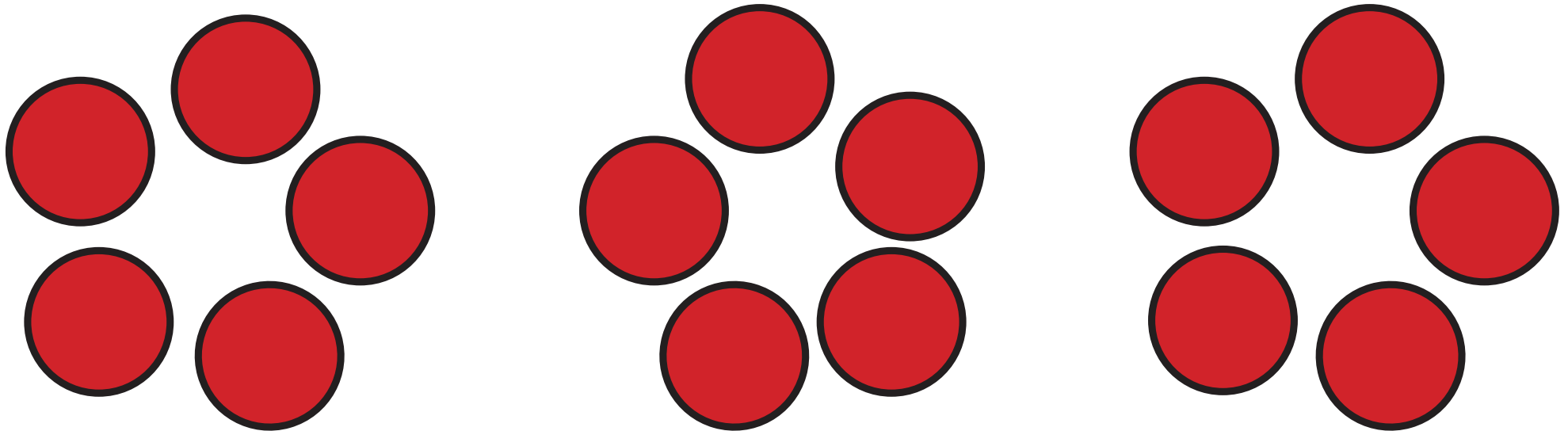
(equals or
same as)

x



M1: Repeated Addition

(Groups)



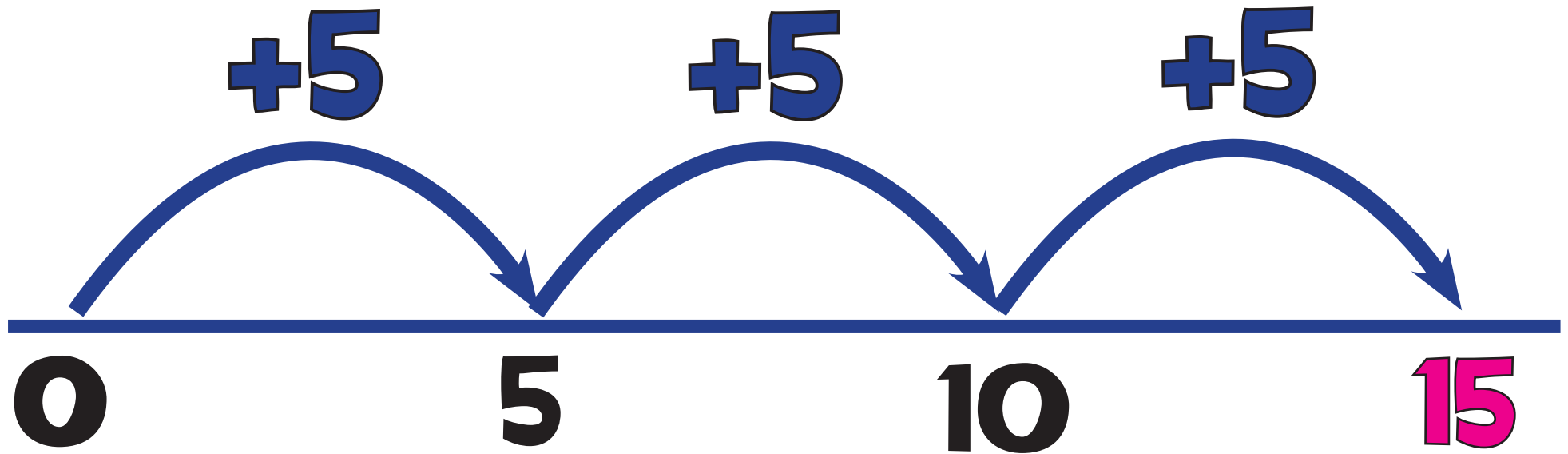
$$5 \times 3 = 5 + 5 + 5 = 15$$

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



M2: Repeated Addition

(Number Line)

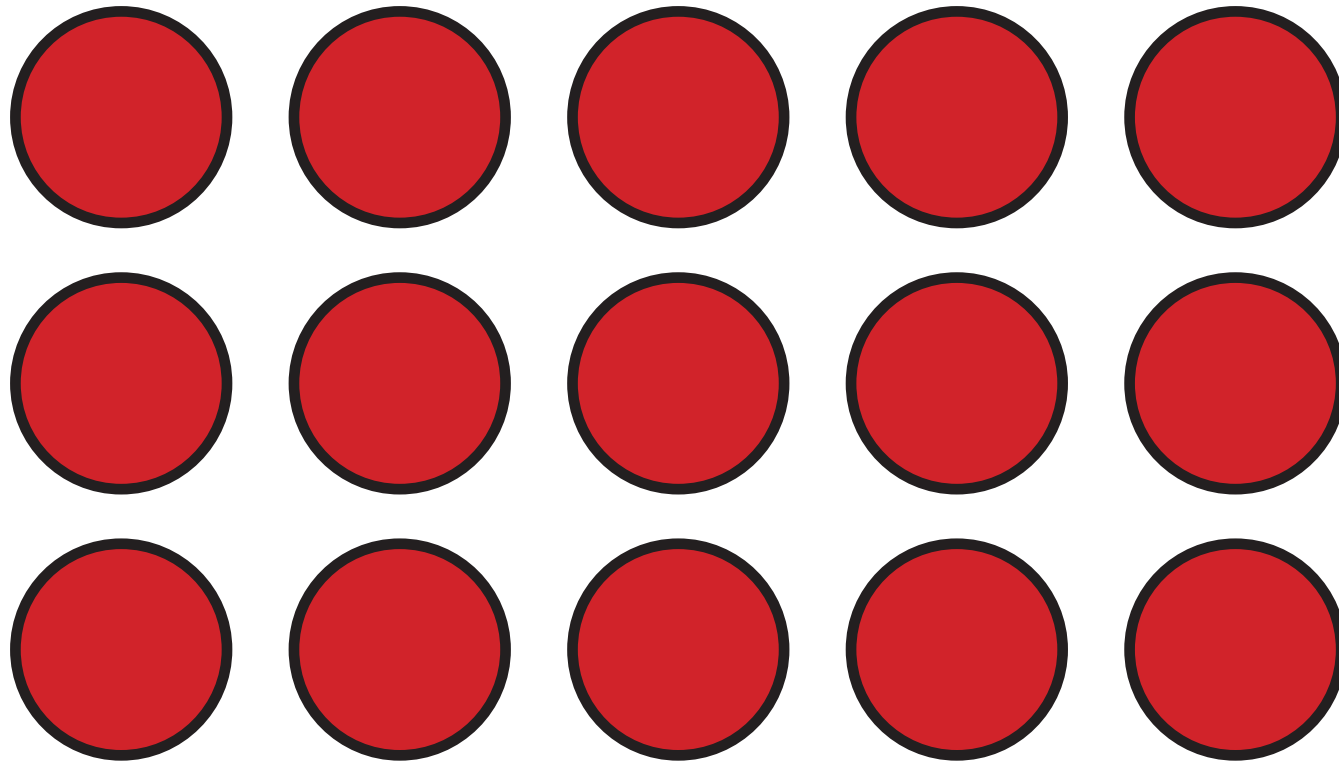


$$5 \times 3 = 5 + 5 + 5 = 15$$

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



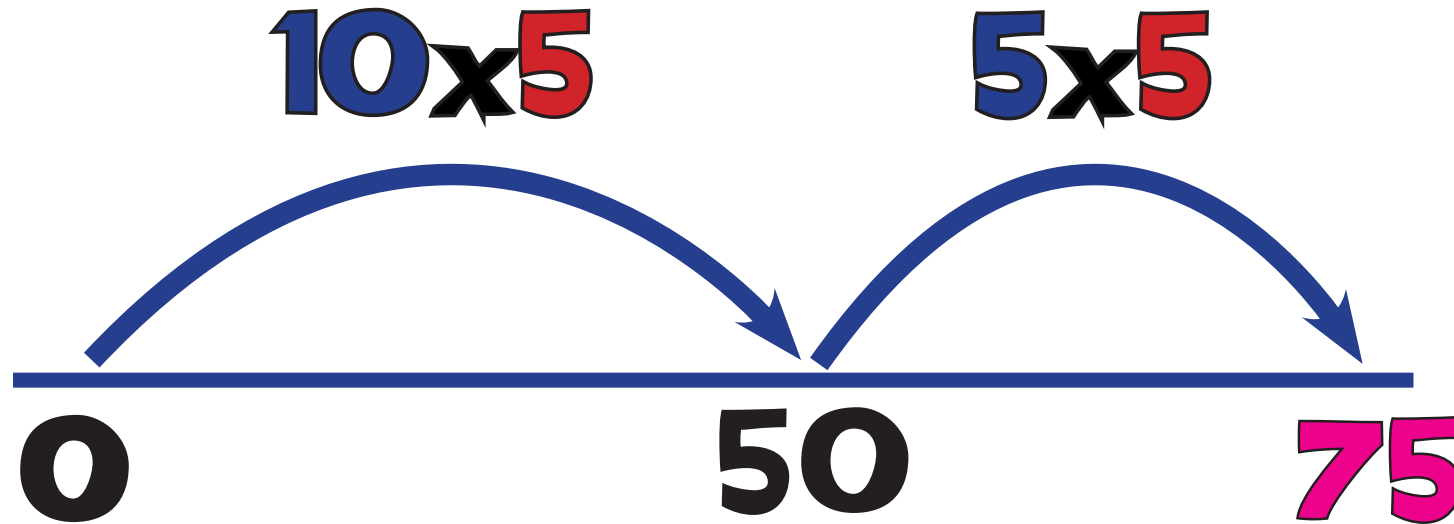
M3: Arrays



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



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

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

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

$$(3 \times 6)$$

$$(40 \times 6)$$



M7: Column Multiplication

$$\begin{array}{r} \text{100} \quad \text{10} \quad \text{1} \\ \quad 43 \\ \times \quad 6 \\ \hline 258 \\ \hline 21 \end{array}$$



M8: Grid Method

Long Multiplication

$$43 \times 65 = 2795$$

x	40	3
60	2400	180
5	200	15

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



M9: Long Multiplication

Column

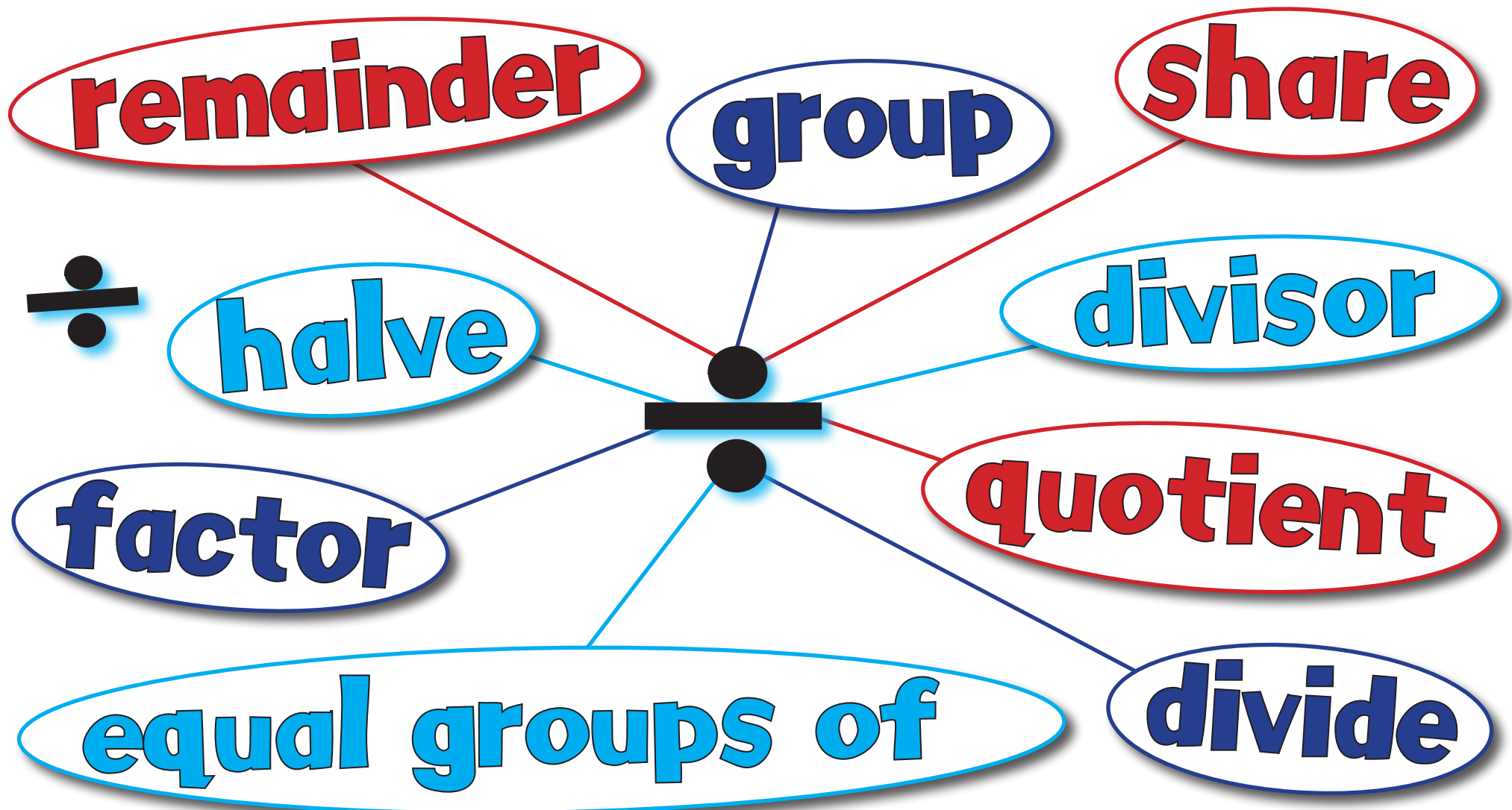
$$\begin{array}{r} 43 \\ \times 65 \\ \hline 215 \\ + 2580 \\ \hline 2795 \end{array}$$

(5 x 43)

(60 x 43)



Division Vocabulary



Division Calculation

$$8 \div 2 = 4$$

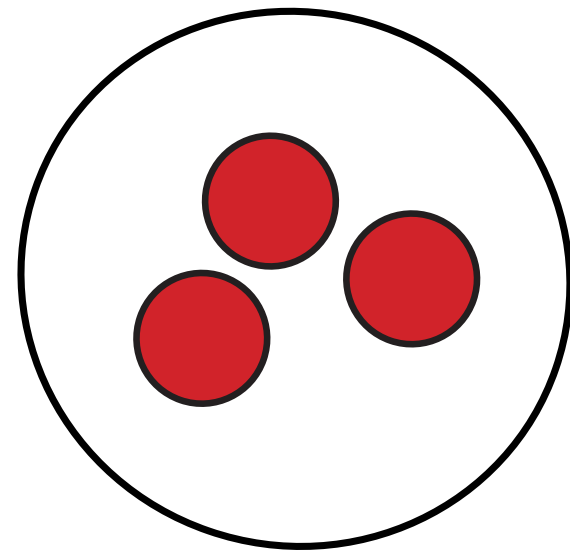
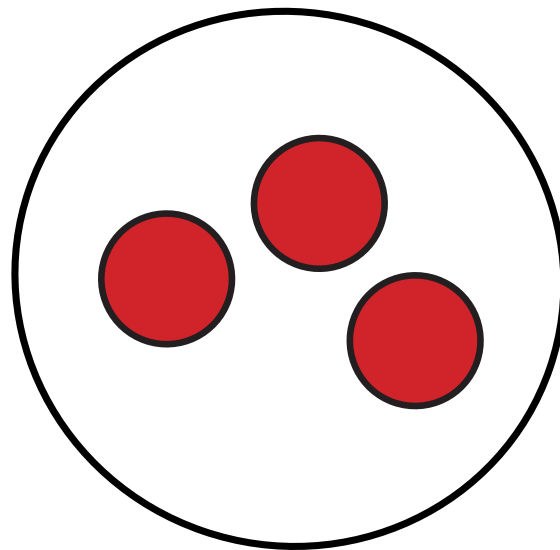
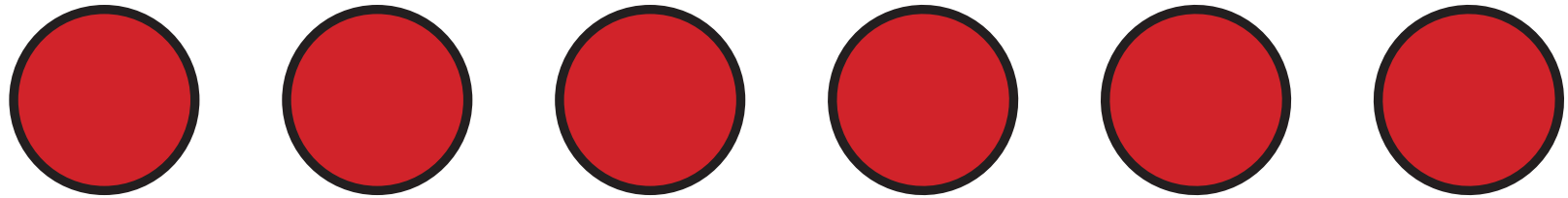
(divided by)

(equals or
same as)

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



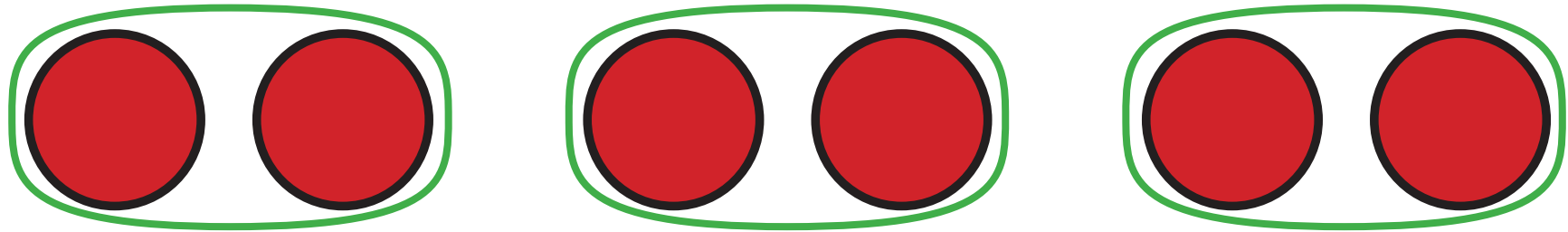
D1: Sharing (Concept)



“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?”

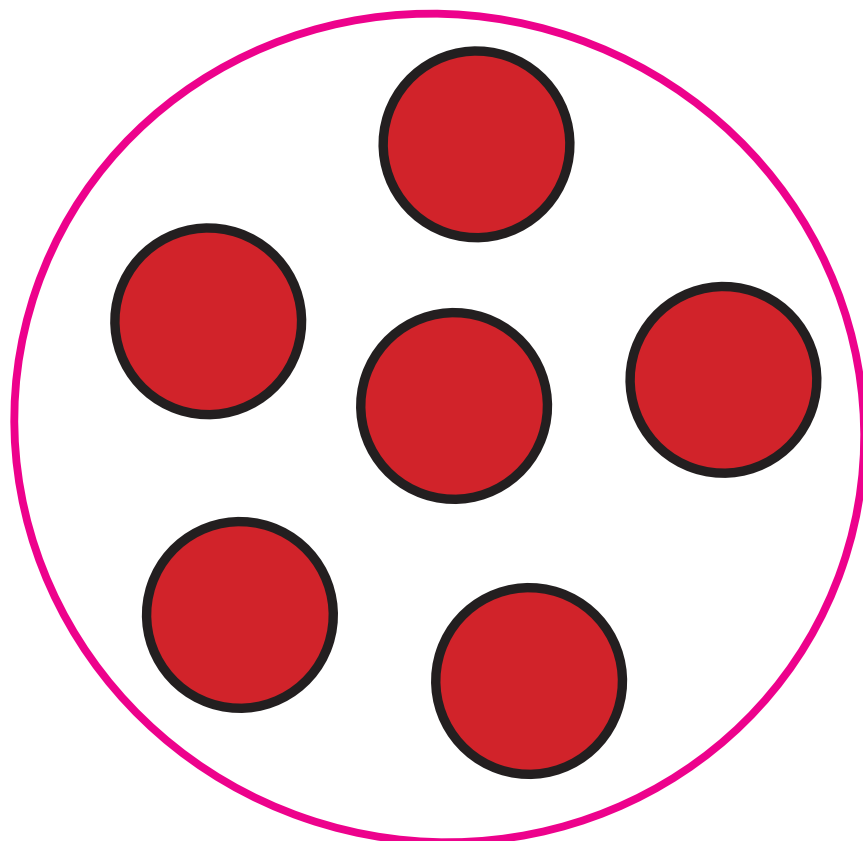
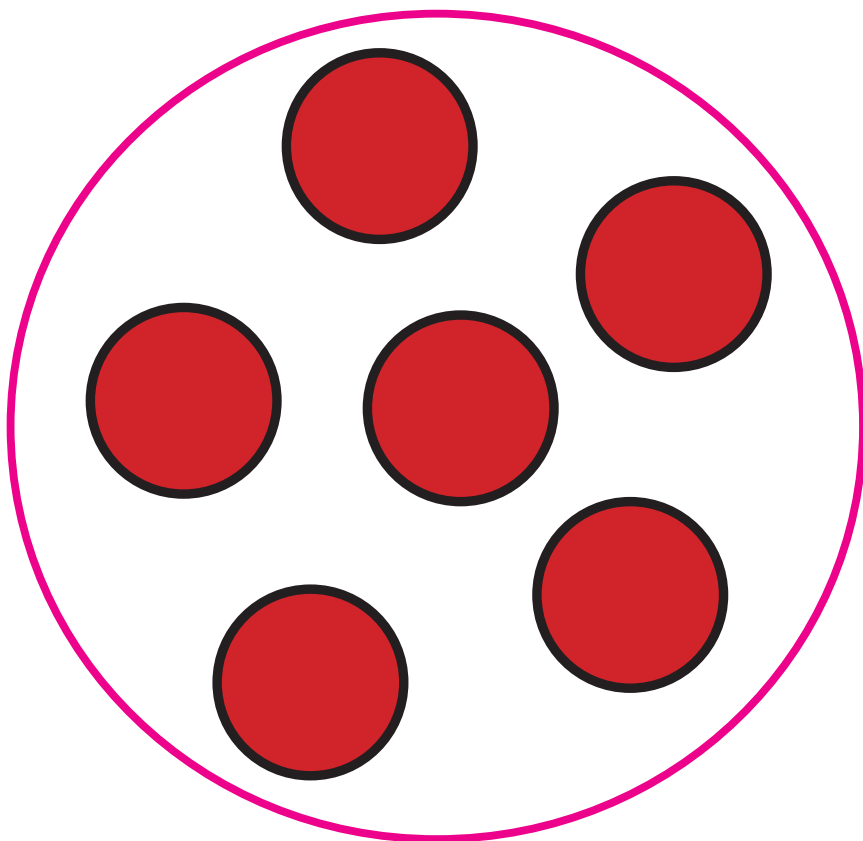
Answer: 3



D3: Division as Sharing

$$12 \div 2 = 6$$

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

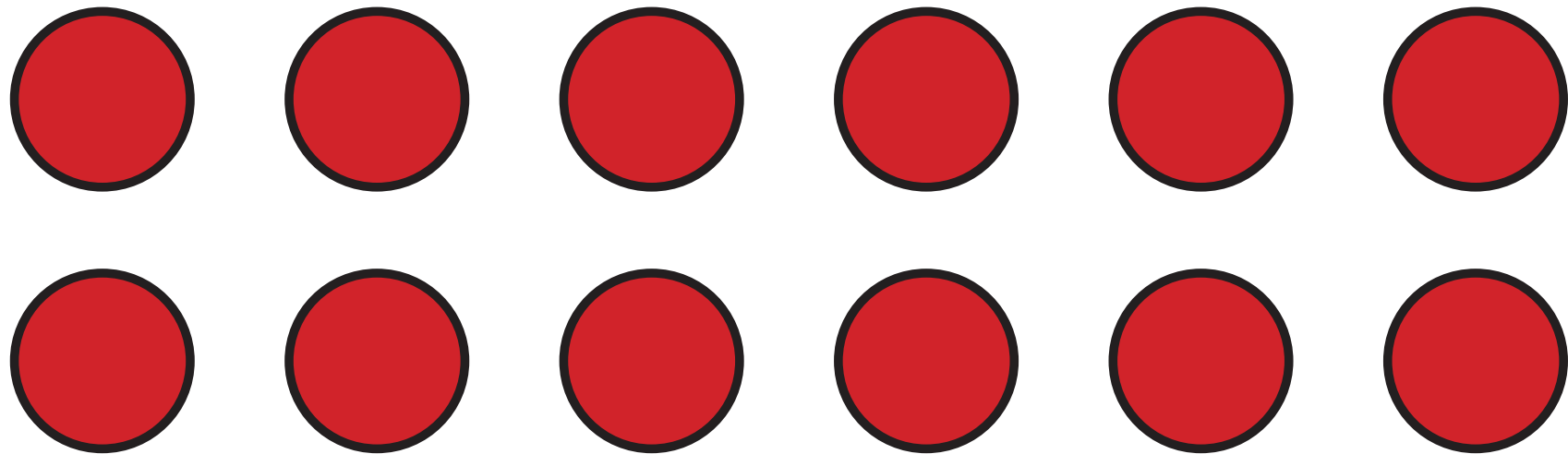


D4: Division as Grouping

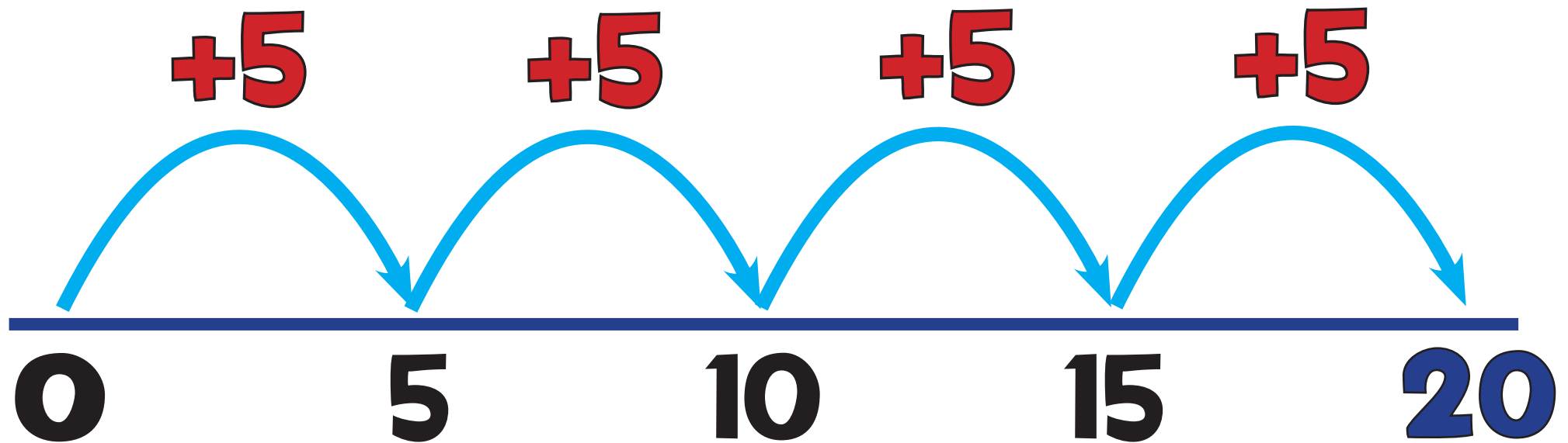
$$12 \div 2 = 6$$

"How many groups of **2**
can I fit into **12**?"

Answer: **6**



D5: Grouping on a Number Line



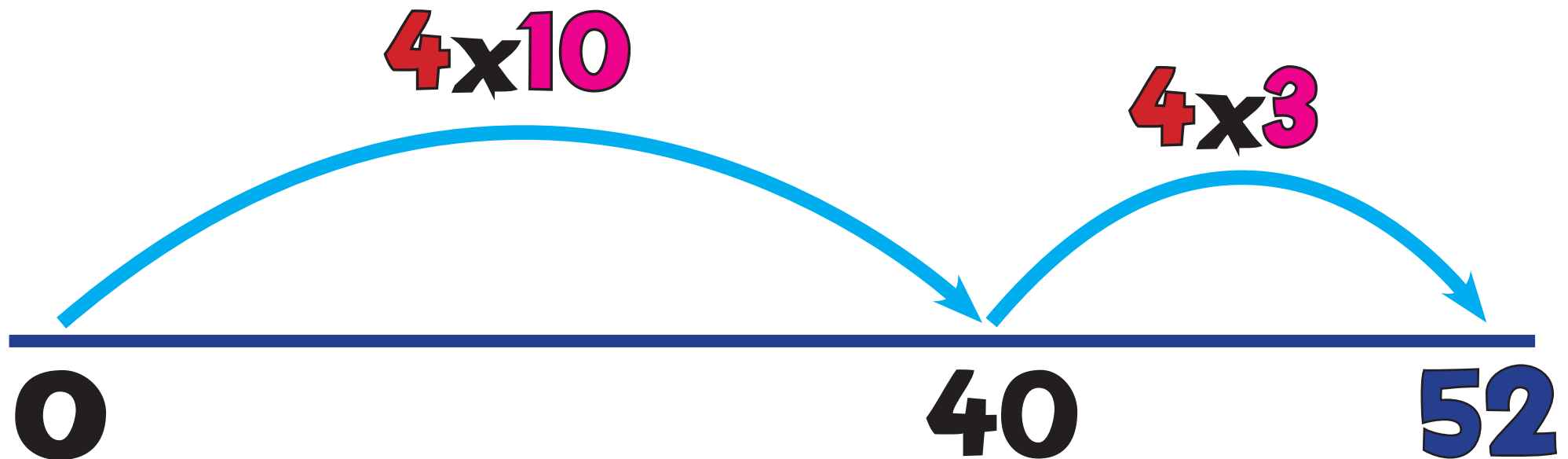
"How many 5s in 20?"

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

$$\begin{array}{r} 26 \text{ r}21 \\ 37 \overline{) 983} \end{array}$$

The diagram illustrates the short division method for 983 divided by 37. The divisor 37 is written in black on the left. The dividend 983 is written in the middle, with the 9 in blue, the 8 in red, and the 3 in green. Above the dividend, the quotient 26 is written in pink, followed by a remainder of 21 (r21) also in pink. A pink horizontal line separates the quotient from the dividend. Above the 9, a blue 9 is written, and above the 8, a red 24 is written, indicating the multiplication steps: 37 times 2 equals 74, and 37 times 6 equals 222.



D9: Long Division

Decimal Remainder

$$432 \div 5 = 86.4$$

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

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



D10: Long Division

Traditional Method

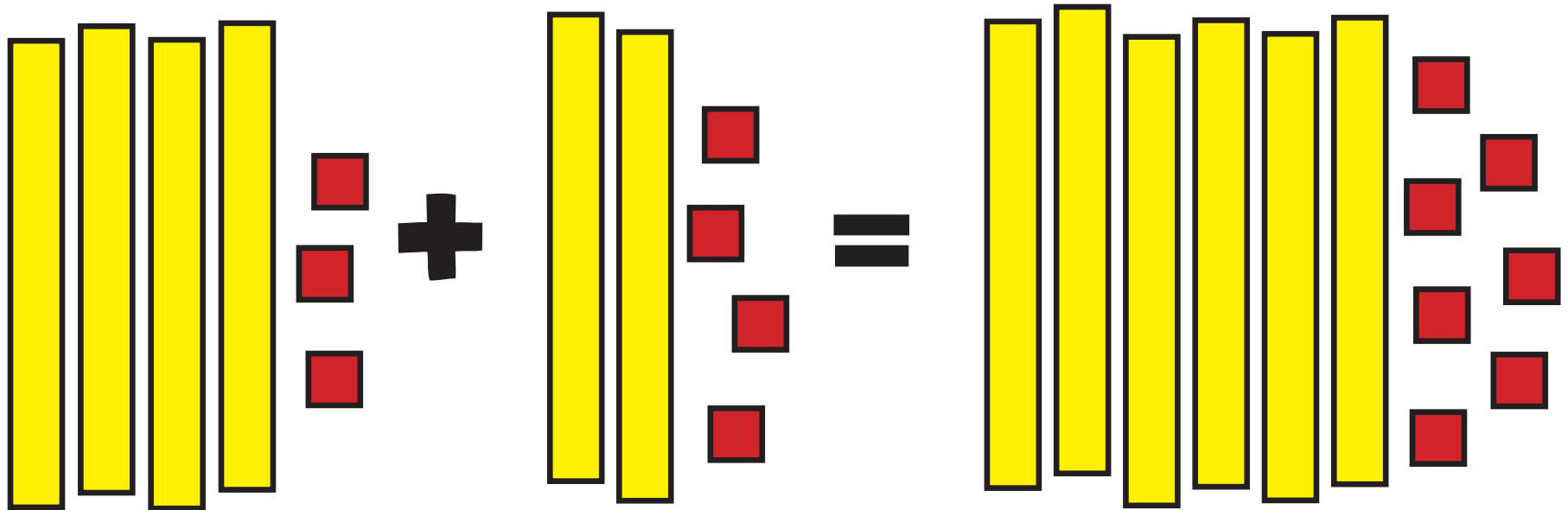
$$\begin{array}{r} 26 \text{ r}21 \\ 37 \overline{) 983} \\ \underline{- 74} \\ 243 \\ \underline{- 222} \\ 21 \end{array}$$

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



A: Base 10

$$43 + 24 = 67$$



B: Arrow Cards

$$43 + 24 = 67$$

40 + 20 = 60

3 + 4 = 7

60 + 7 = 67

C: Hundred Square

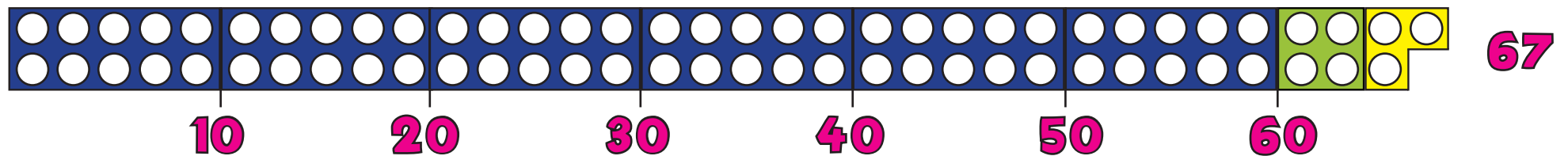
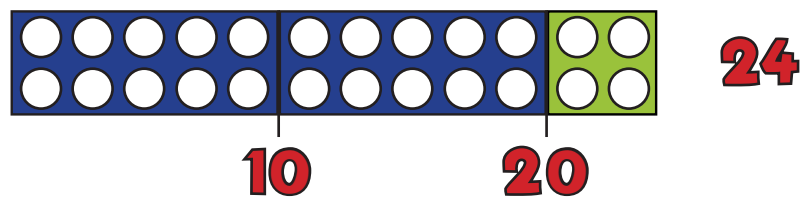
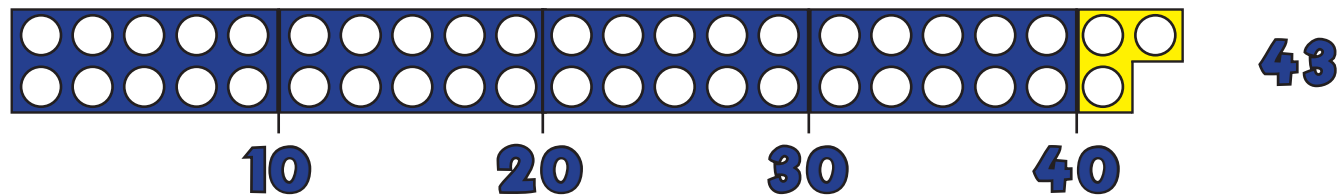
$$43 + 24 = 67$$

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

$$43 + 24 = 67$$

