Sense of Number

Visual Calculation Policy

Basic Edition for

John Hunt Primary School

October 2016

Together For Newark

Together For Newark

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

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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:

Classoom: 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)

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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 x 2 = 16

"8 multiplied by 2" means
"8, 2 times" or
"2 groups of 8"

Division

÷

8 ÷ 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")

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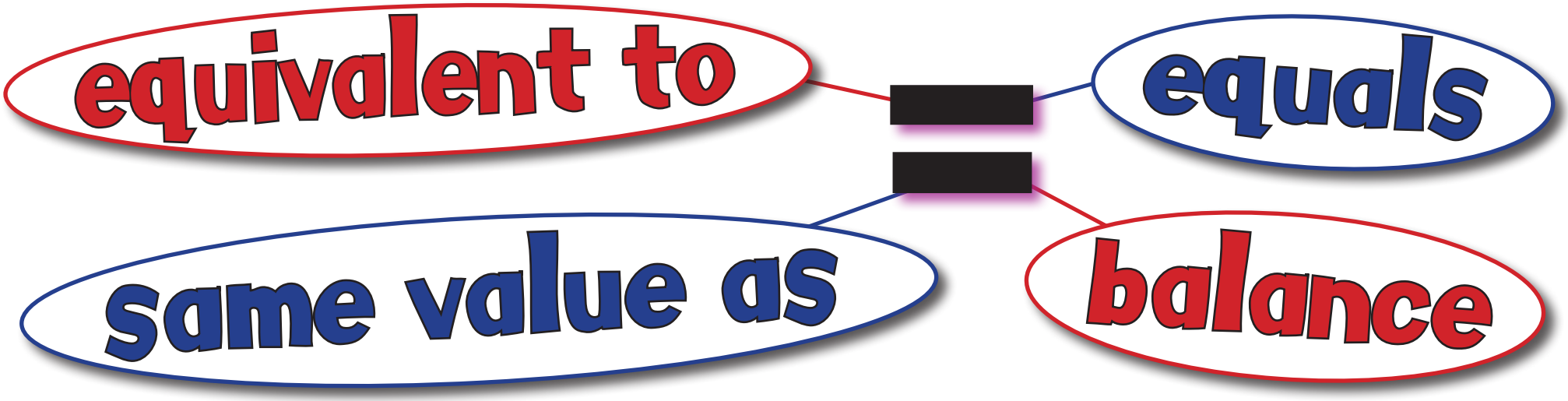
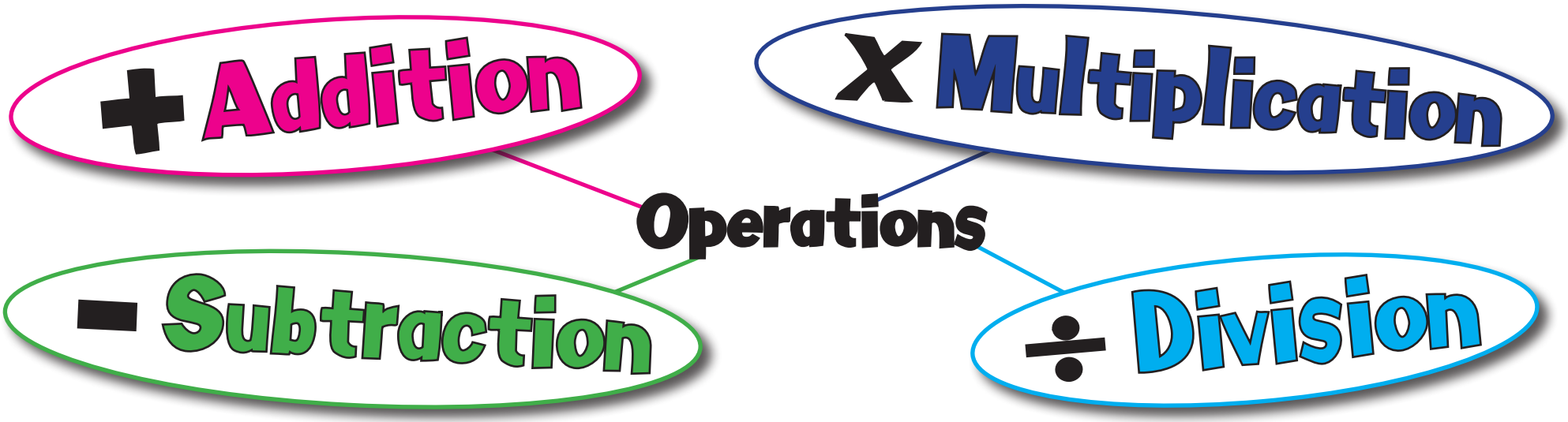
Calculation Vocabulary





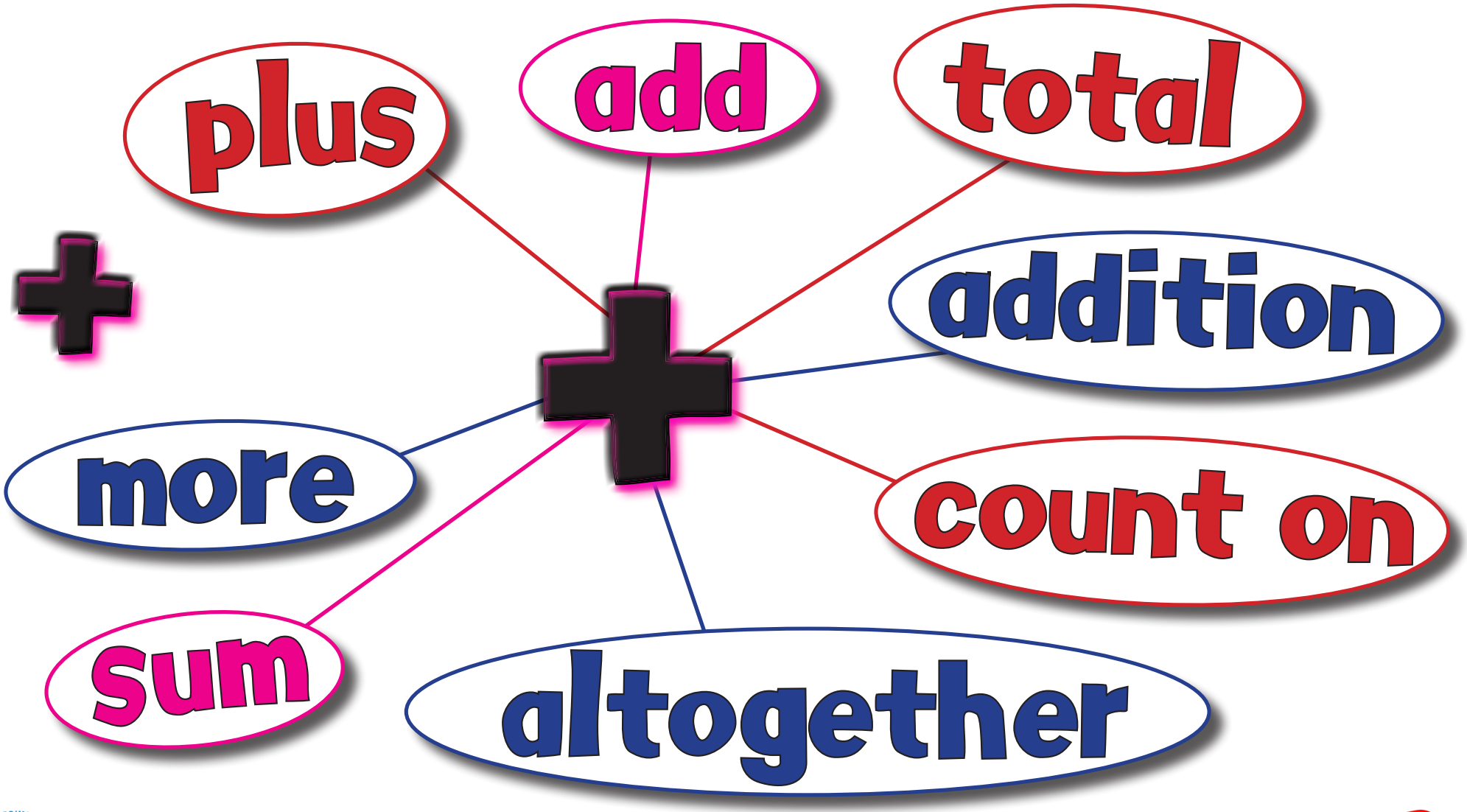
1

Can I do this in my head?

2

Do I need to use a drawing or a jotting?

Addition Vocabulary



Addition Calculation

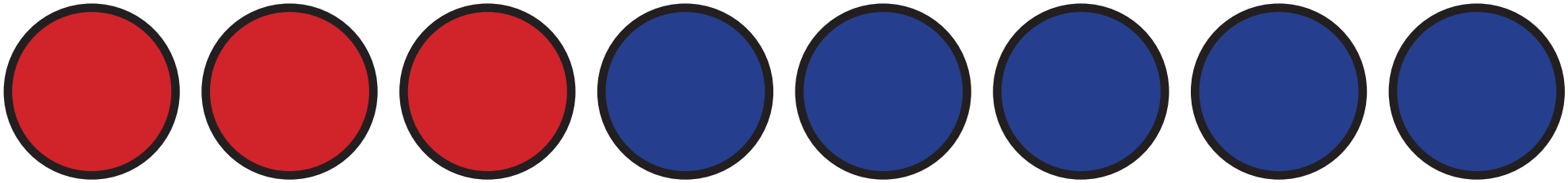
$4 + 2 = 6$

(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"

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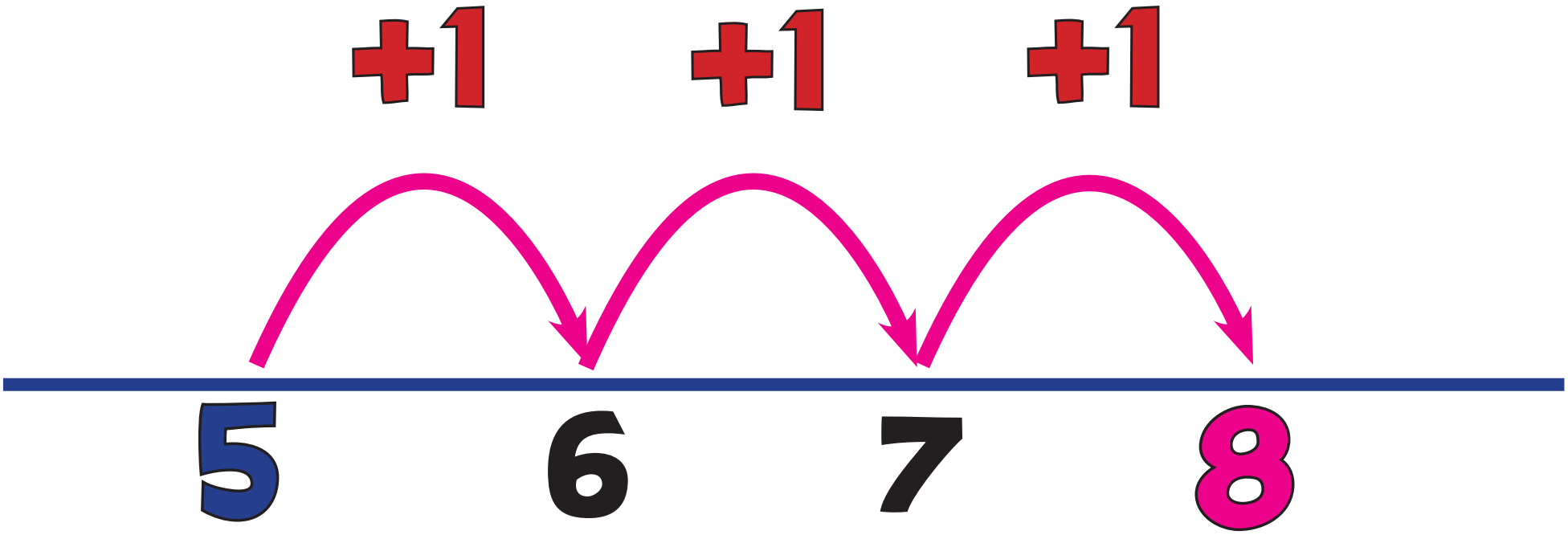
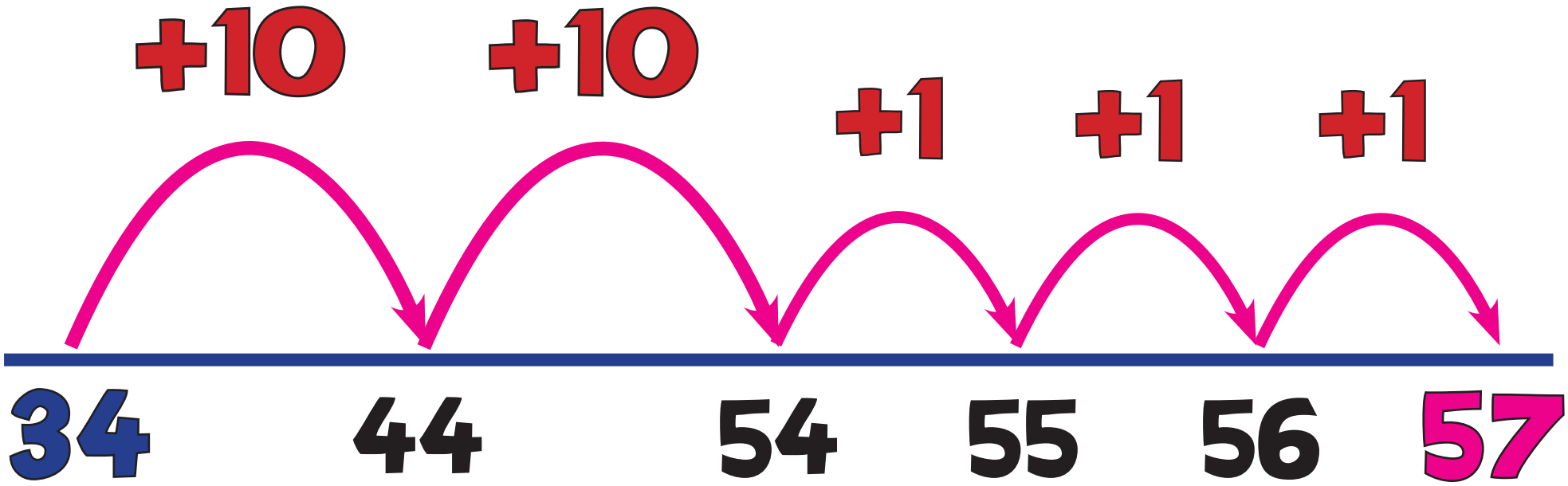
A2: Counting On



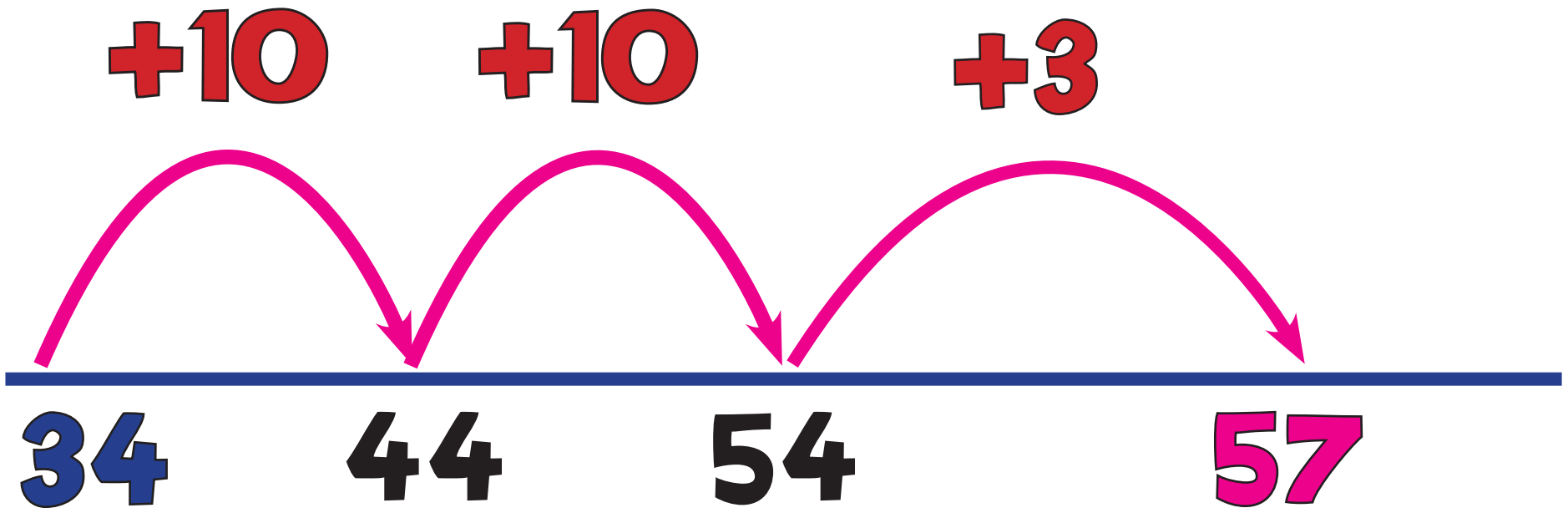
$$5 + 3 = 8$$

A3: Forwards Bounce



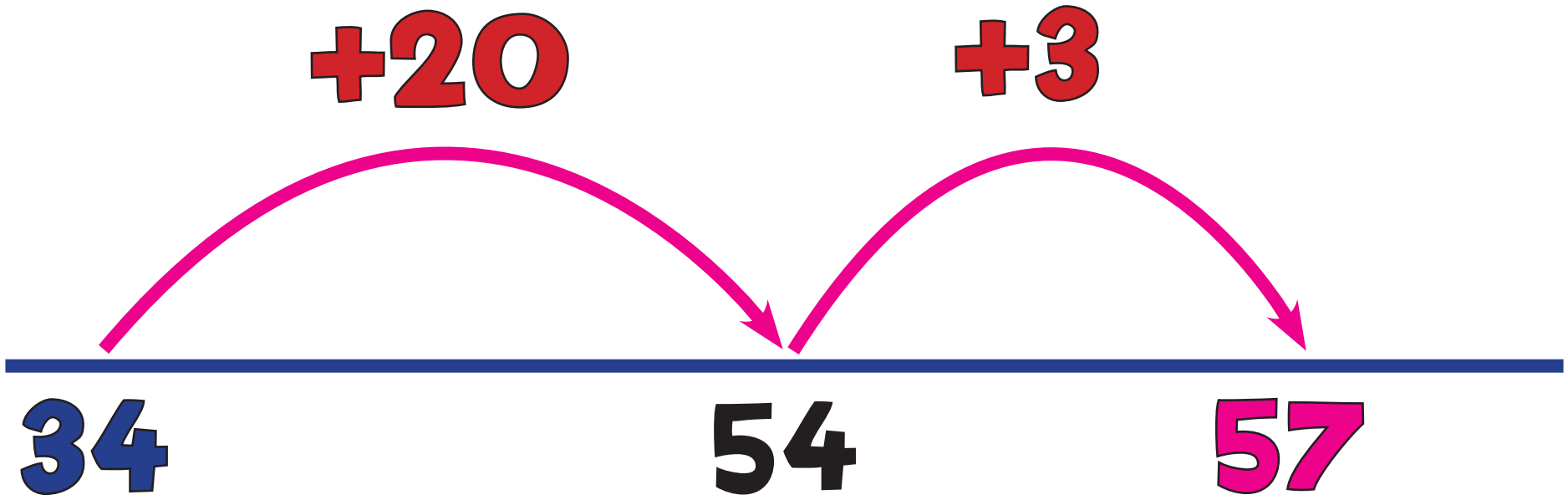
34 + 23 = 57

A4: Forwards Jump



34 + 23 = 57

A5: Forwards Jump



34 + 23 = 57

A6: Partitioning

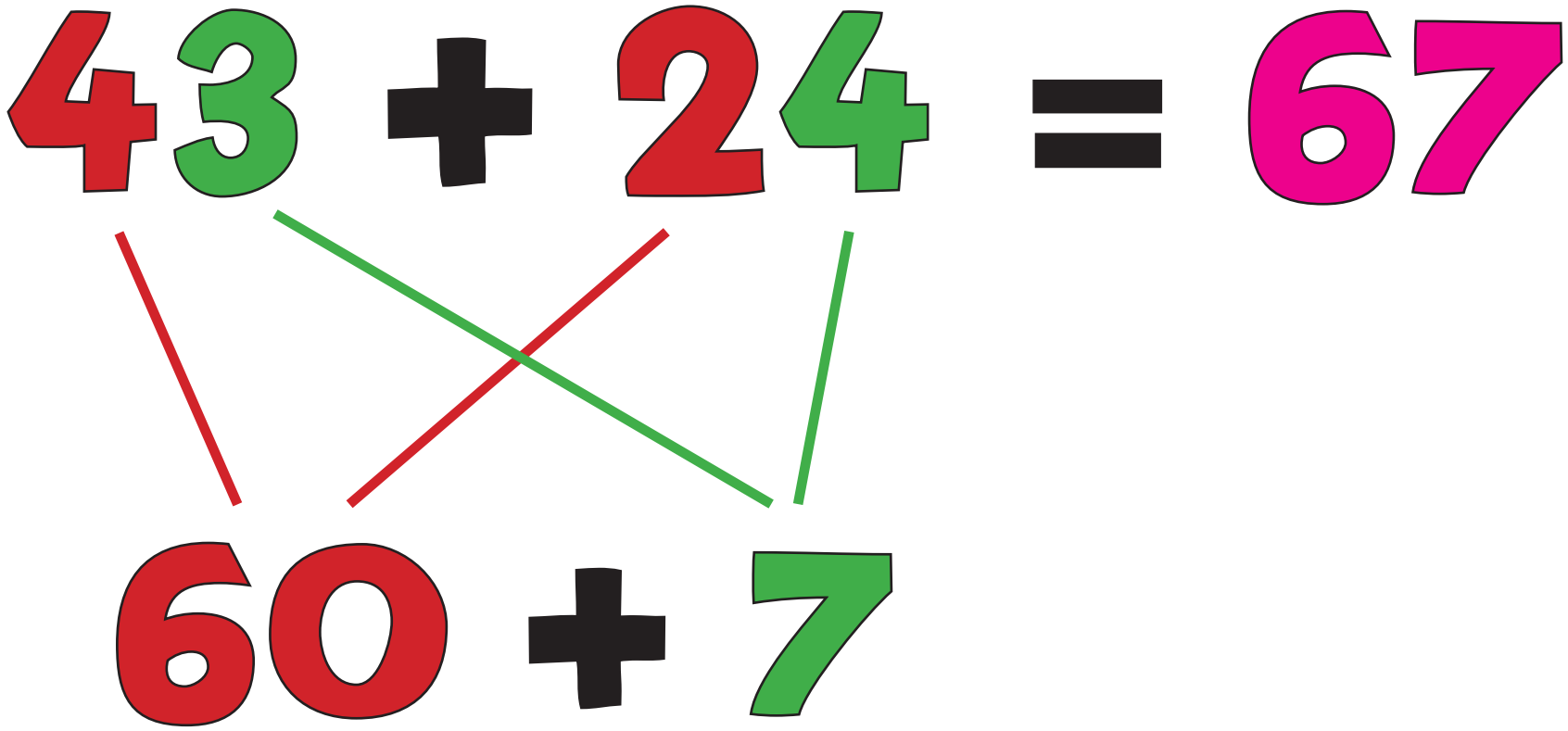
$$43 + 24 = 67$$

$$40 + 20 = 60$$

$$3 + 4 = 7$$

$$67$$

A7: Partition Jot



A8: Column Addition

100	10	1	
	7	8	
+	4	6	
	1	4	(8 + 6)
1	1	0	(70 + 40)
1	2	4	

A9: Expanded Column Addition

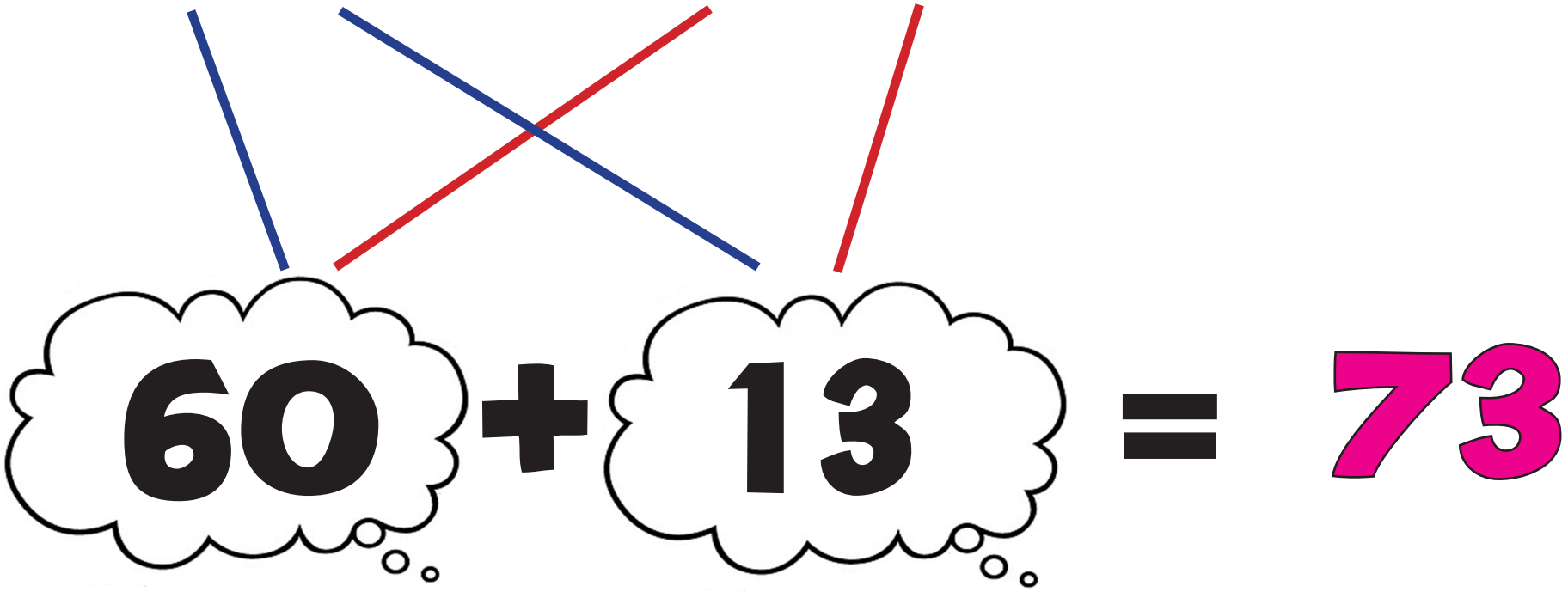
	100	10	1	
	6	8	7	
+	2	4	8	
			15	(7 + 8)
		120		(80 + 40)
	800			(600 + 200)
	9	3	5	

A10: Column Addition

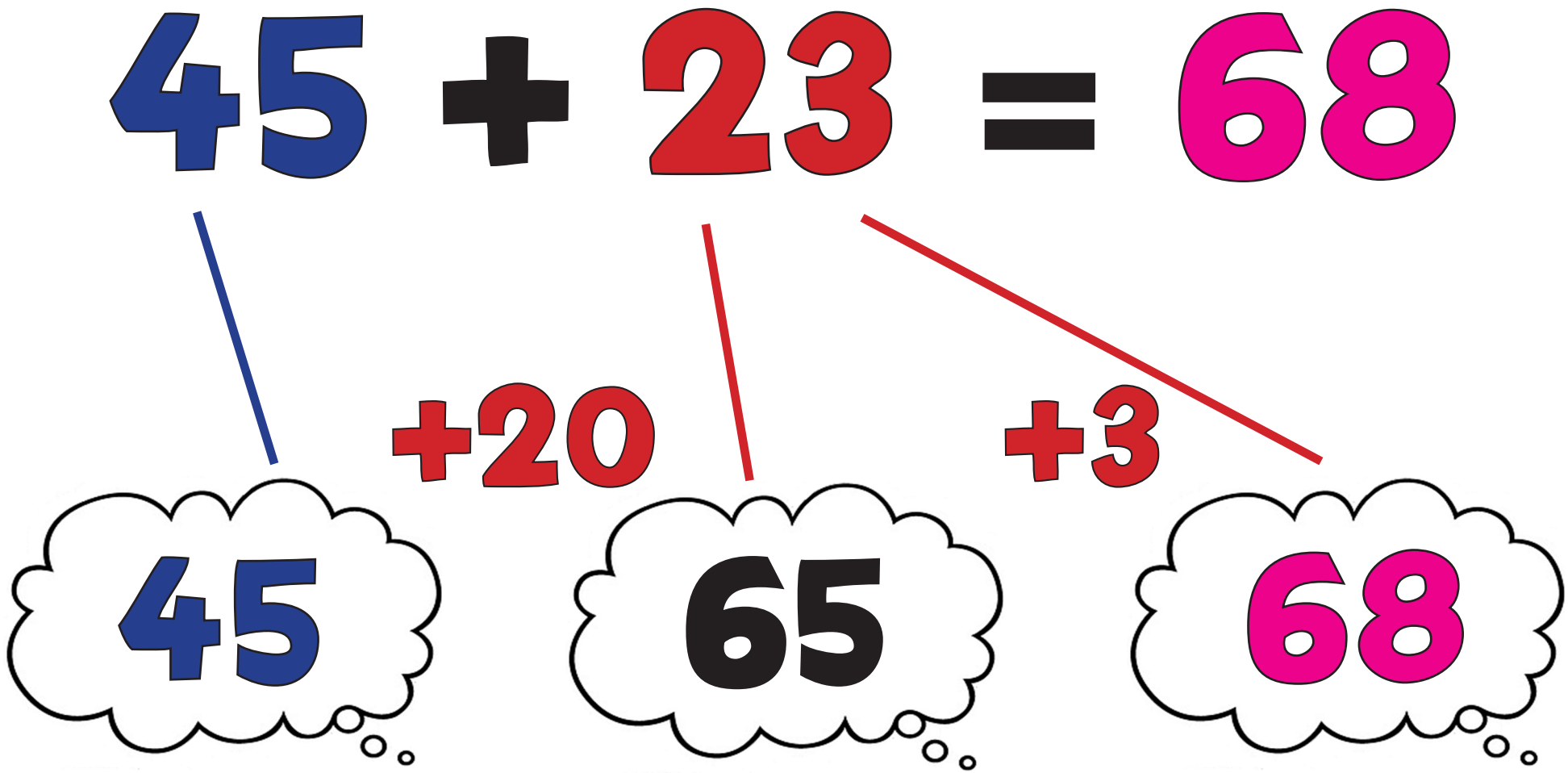
100	10	1
6	8	7
+ 2	4	8
1	1	
9	3	5

MA1: Partitioning

45 + 28 = 73

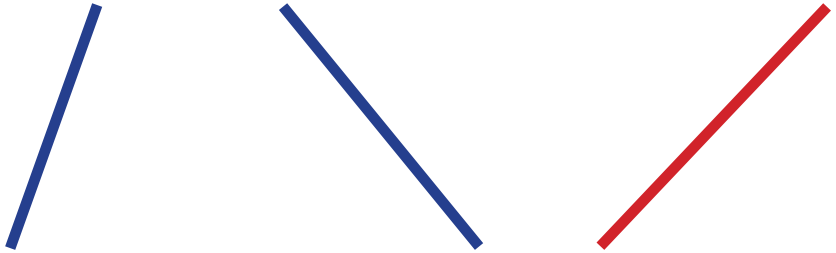


MA2: Counting On



MA3: Number Bonds

45 + 95 = 140



40 + 100 = 140

MA4: Double & Adjust

45 + 46 = 91

45 + 45 + 1

90 + 1 = 91

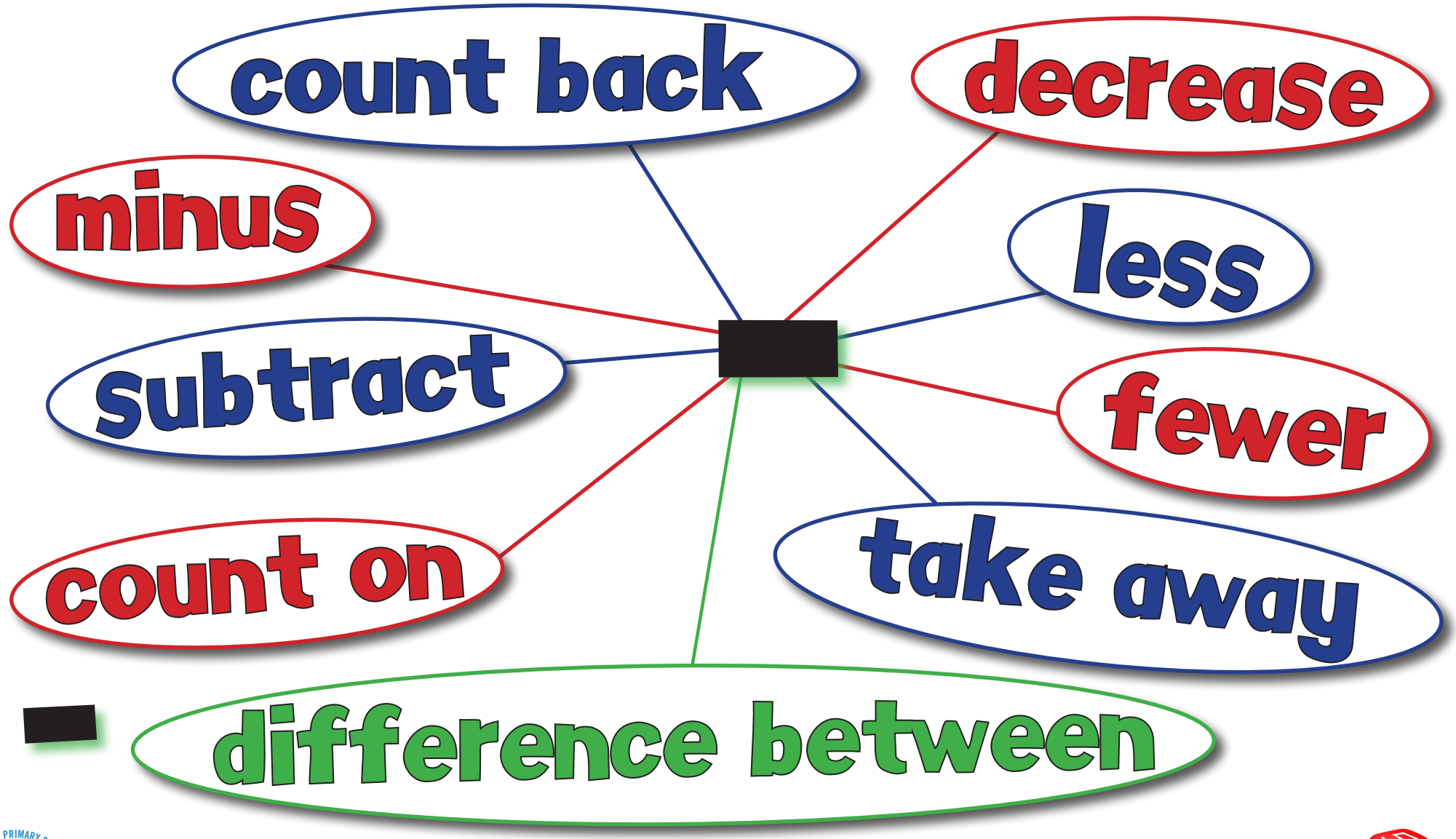
MA5: Round & Adjust

45 + 39 = 84

45 + 40 - 1

85 - 1 = 84

Subtraction Vocabulary



Subtraction Calculation

$$6 - 2 = 4$$

(subtract) (equals or same as)

$$\square - 4 = 6 - 2$$

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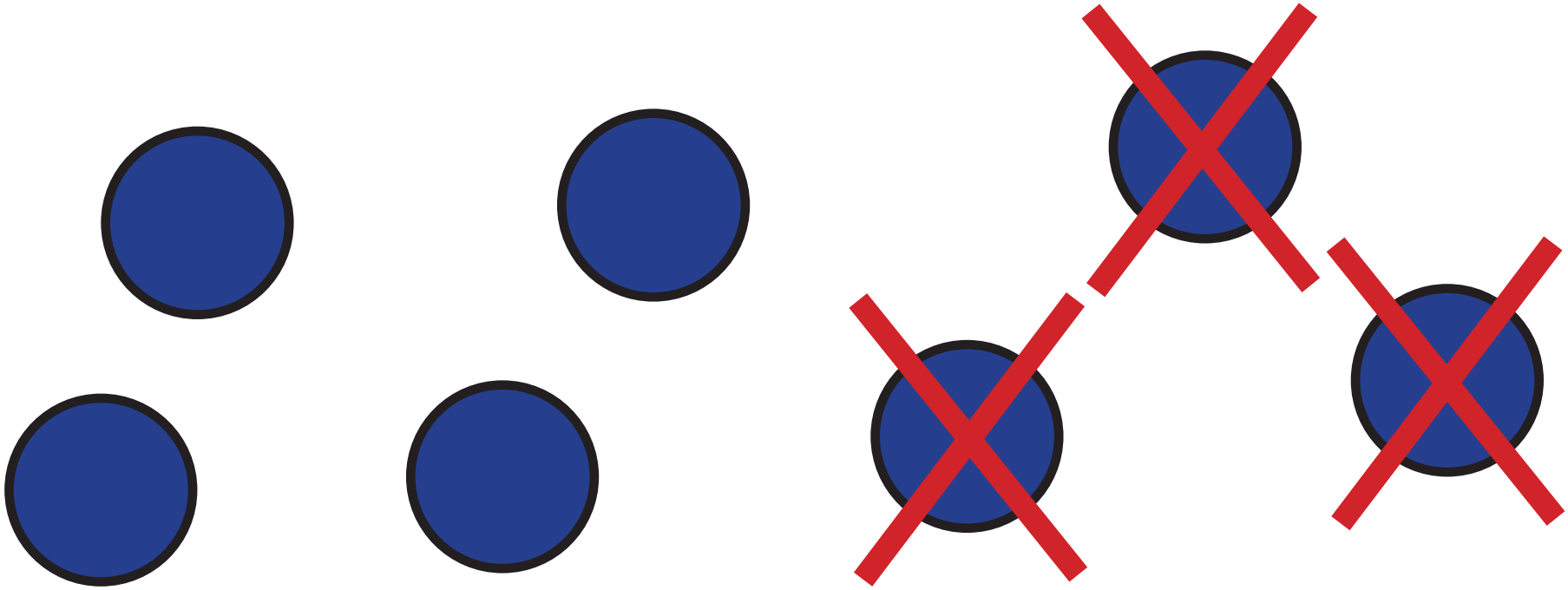
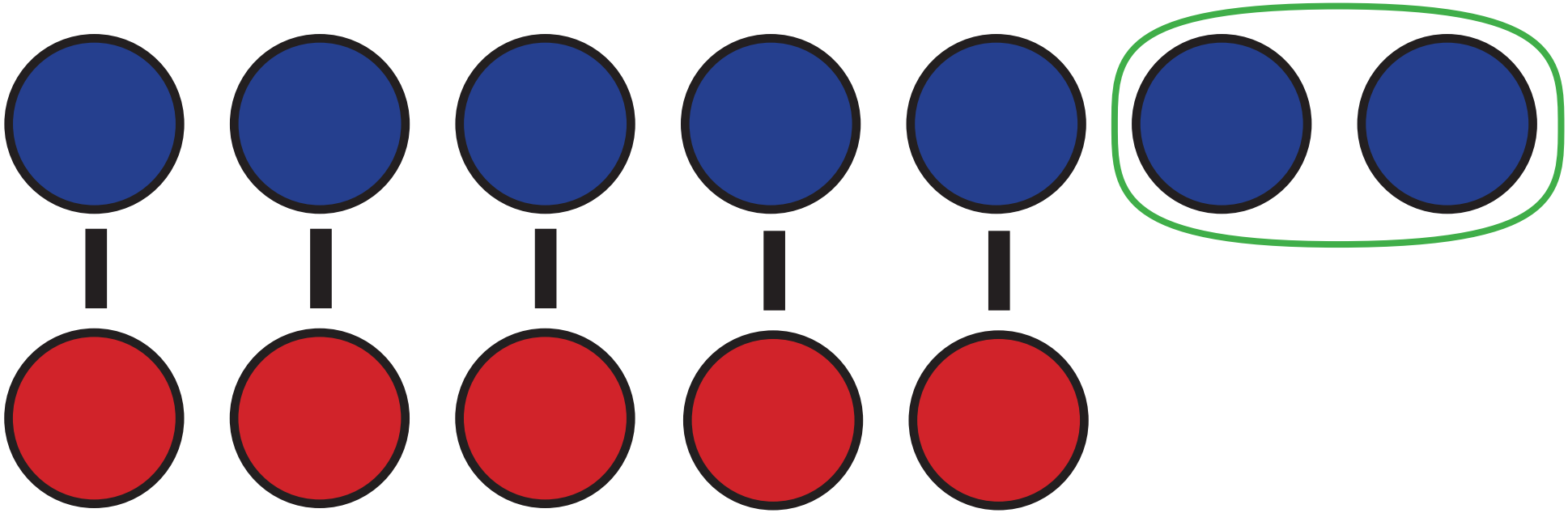
S1: Objects



$$7 - 3 = 4$$

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

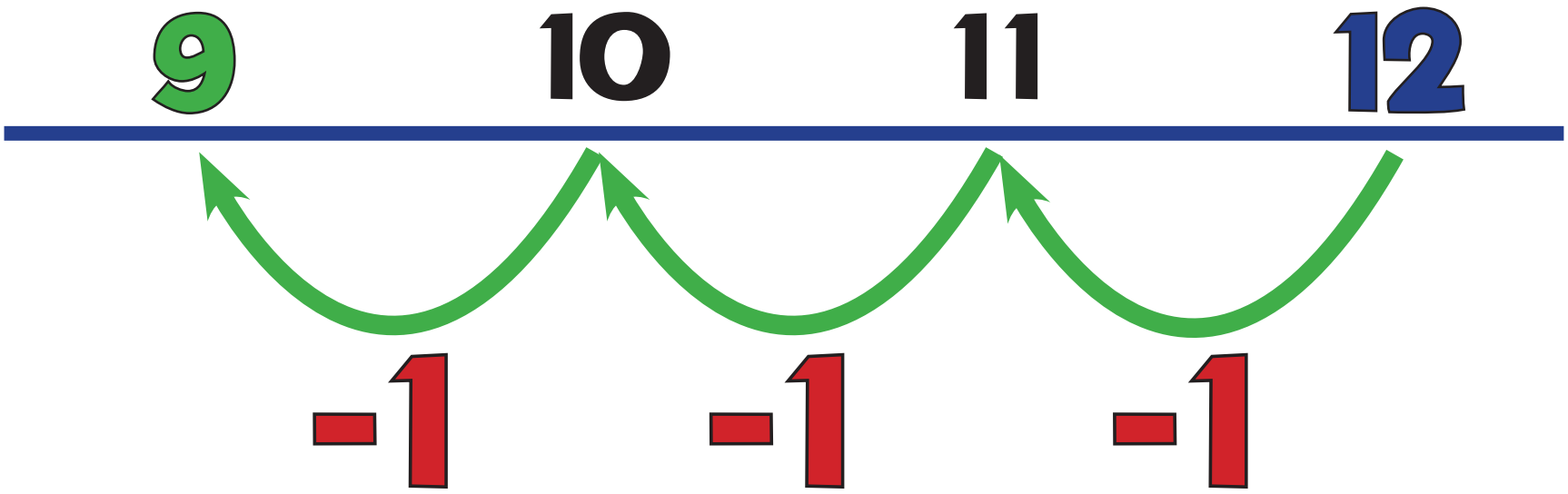
S2: What's the Difference?



7 - 5 = 2

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

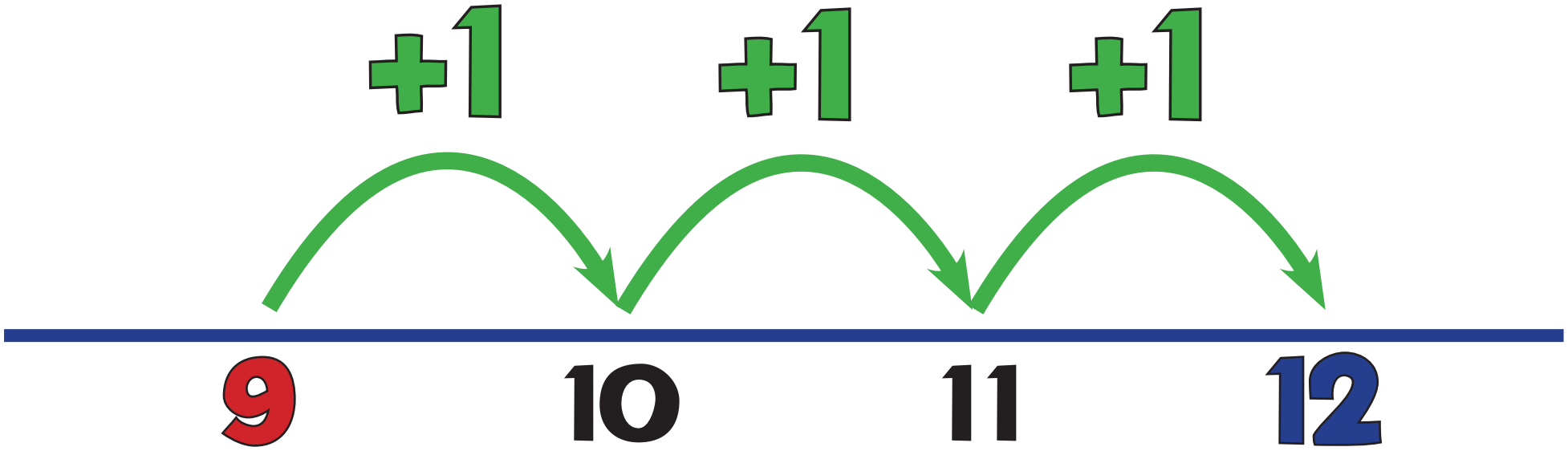
S3: Counting Back



12 - 3 = 9

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

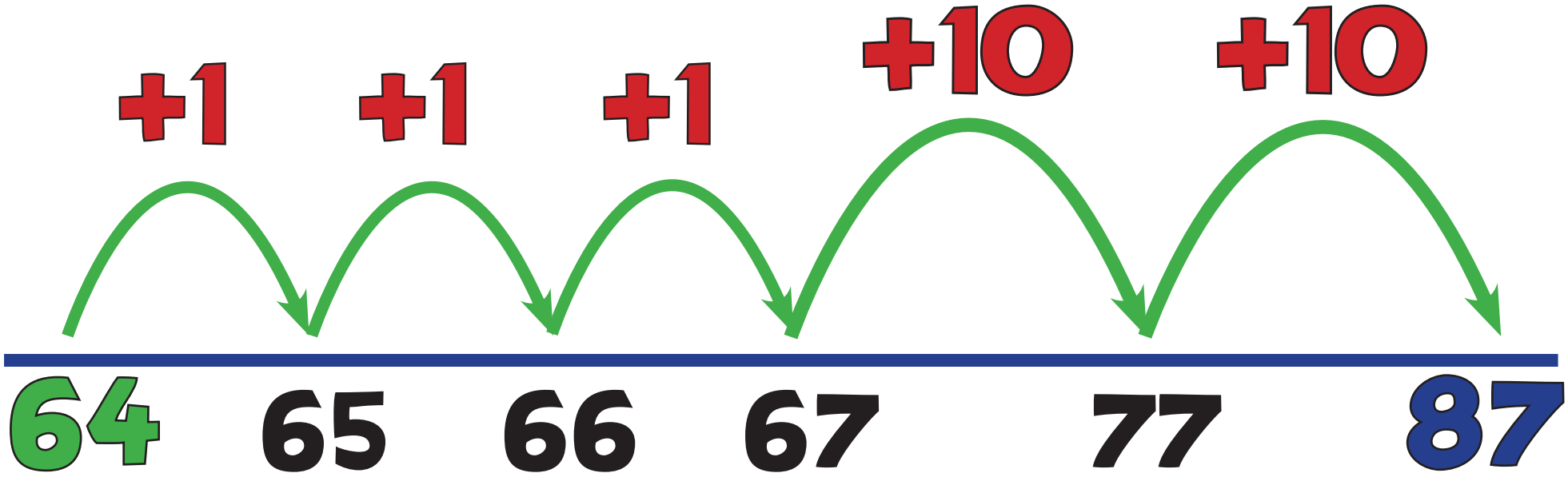
S4: Counting On



12 - 9 = 3

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

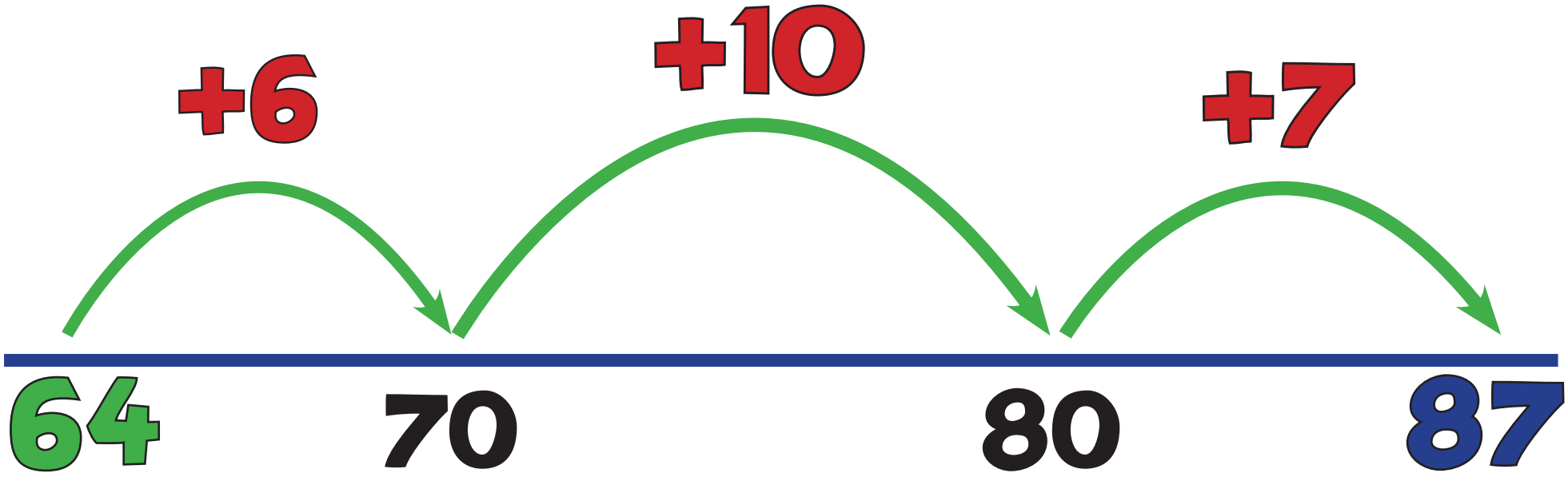
S5: Forward Bounce



87 - 64 = 23

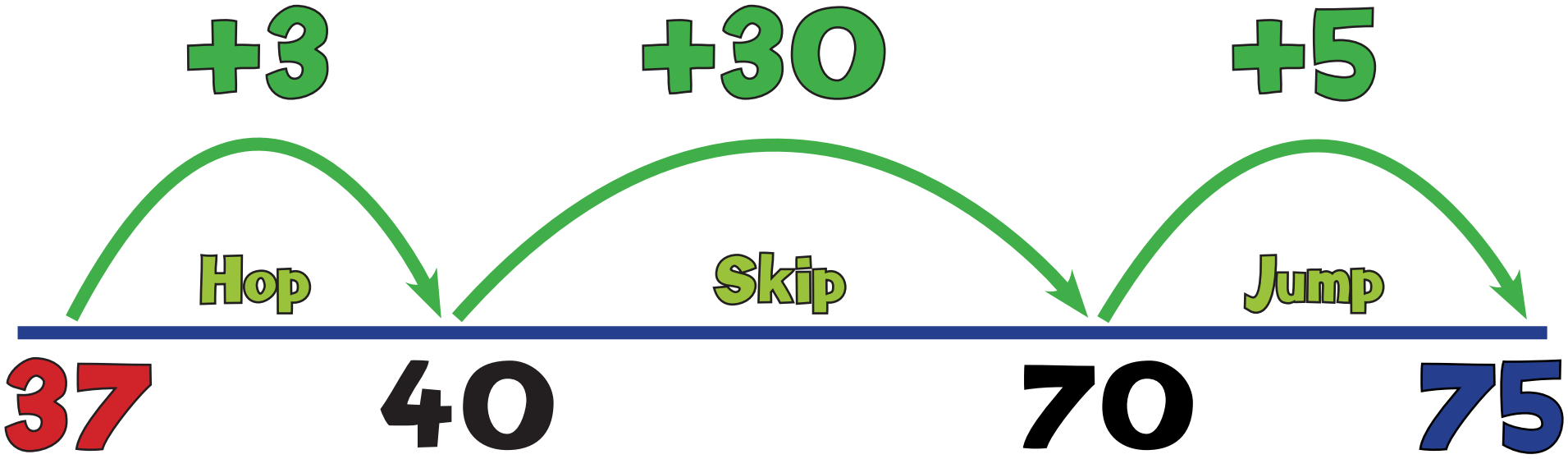
S6: Forward Bounce

to tens



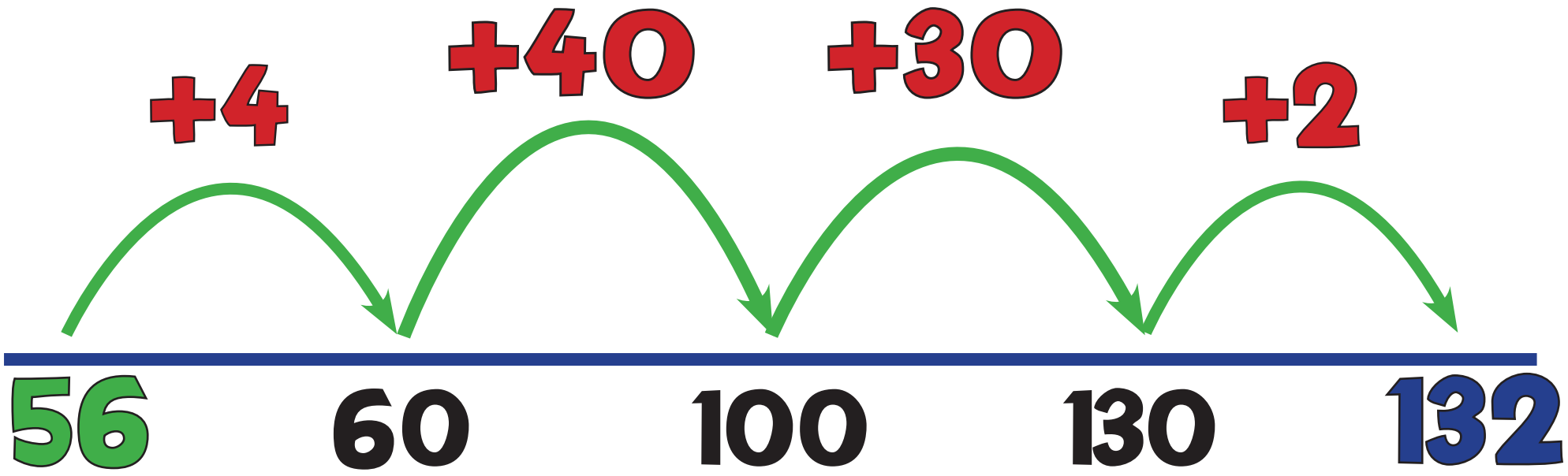
87 - 64 = 23

S7: Triple Jump!



75 - 37 = 38

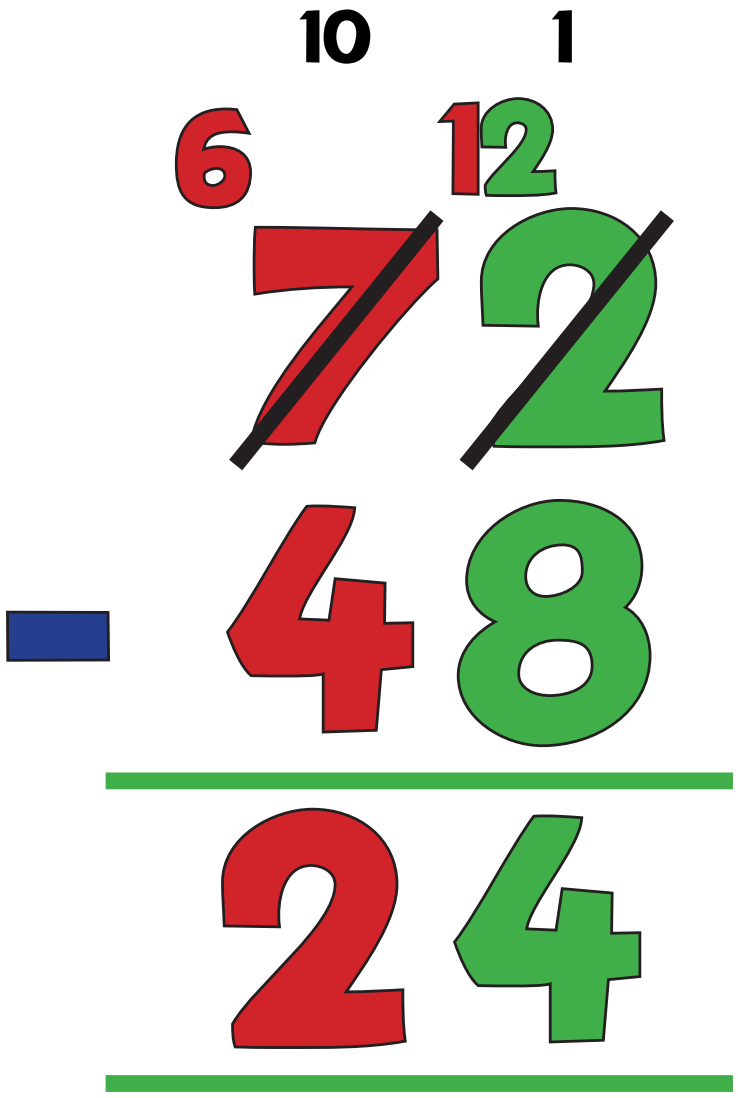
S8: Quad Jump



132 - 56 = 76

S9: Column Subtraction

First

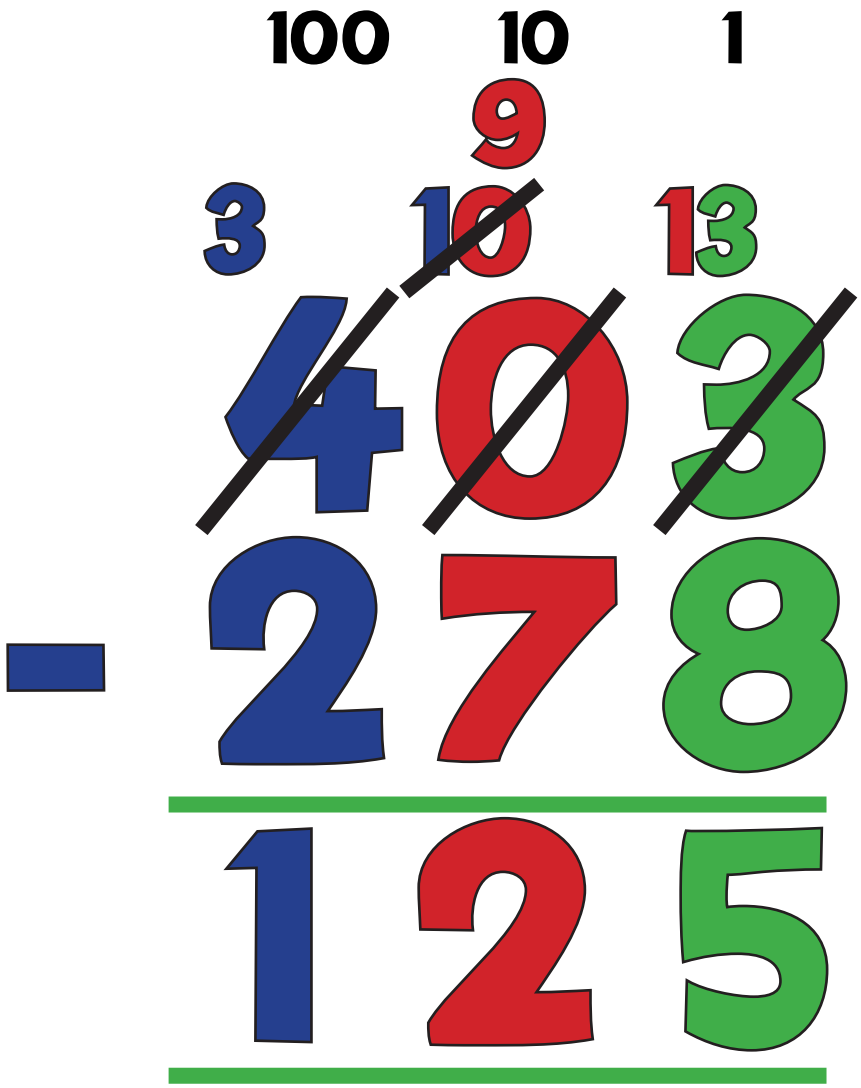


S10: Column Subtraction

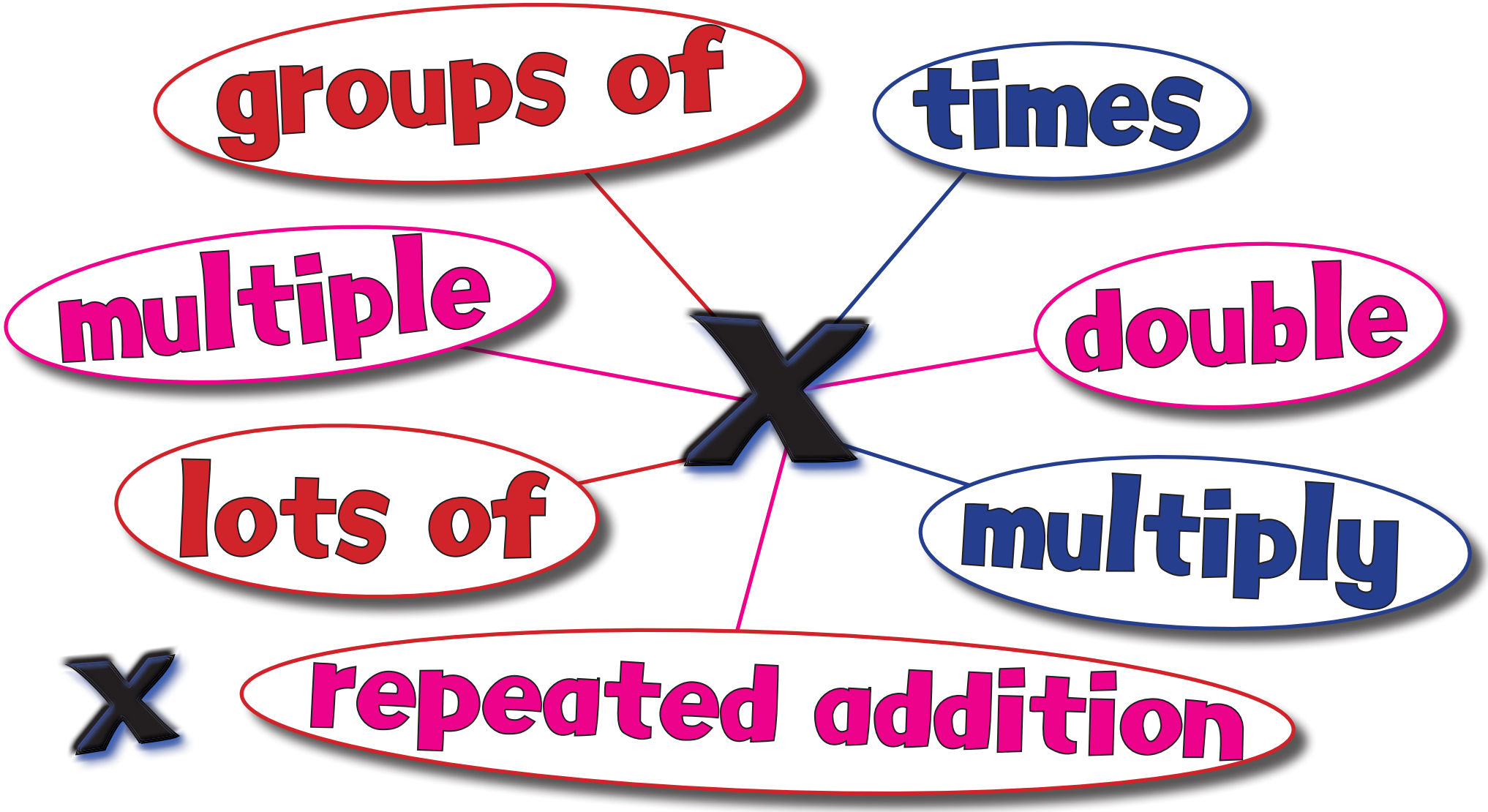
100	10	1
6	11	13
~~7~~	~~2~~	~~3~~
− 3	5	6
3	6	7

S11: Column Subtraction

Tricky



Multiplication Vocabulary



Multiplication Calculation

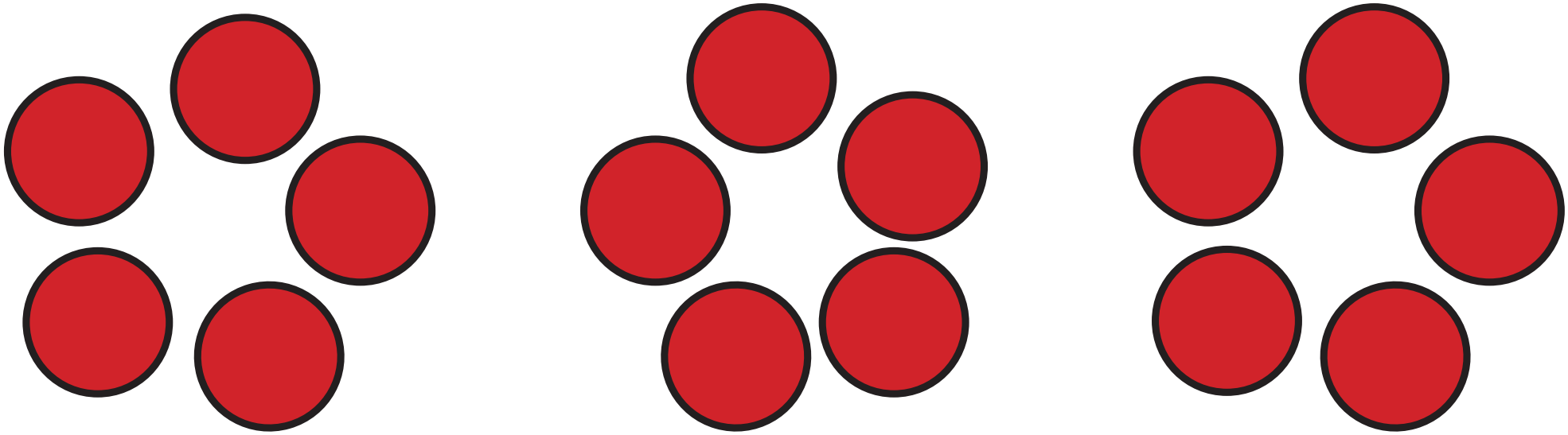
$4 \times 2 = 8$

(multiplied by)

(equals or same as)

M1: Repeated Addition

(Groups)



5 x 3 = 5 + 5 + 5 = 15

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

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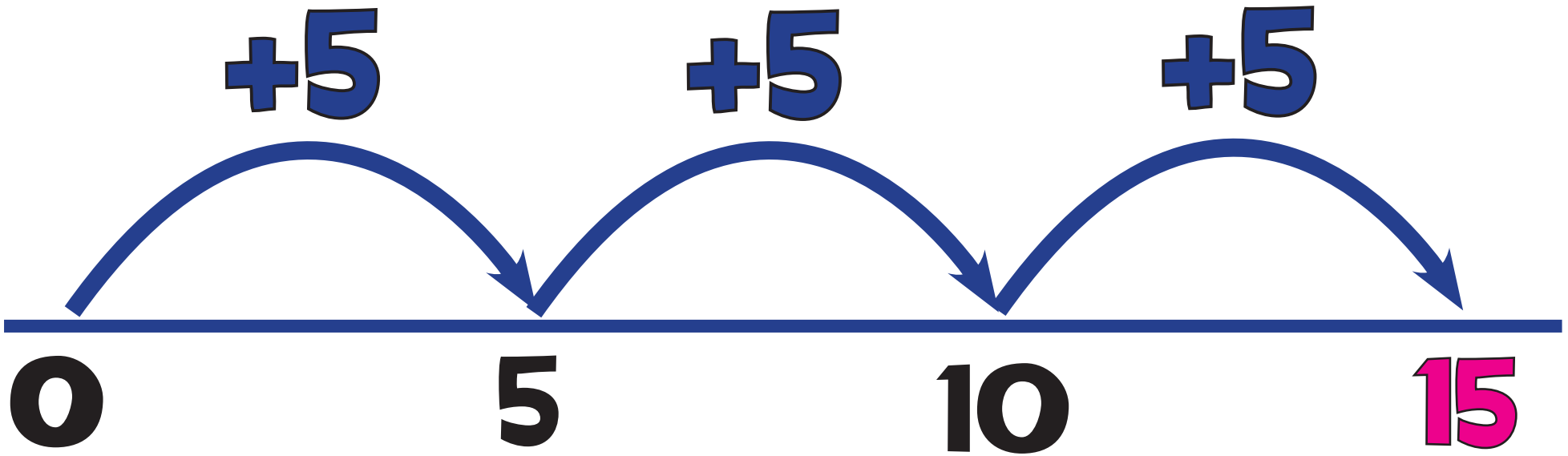
M2: Repeated Addition

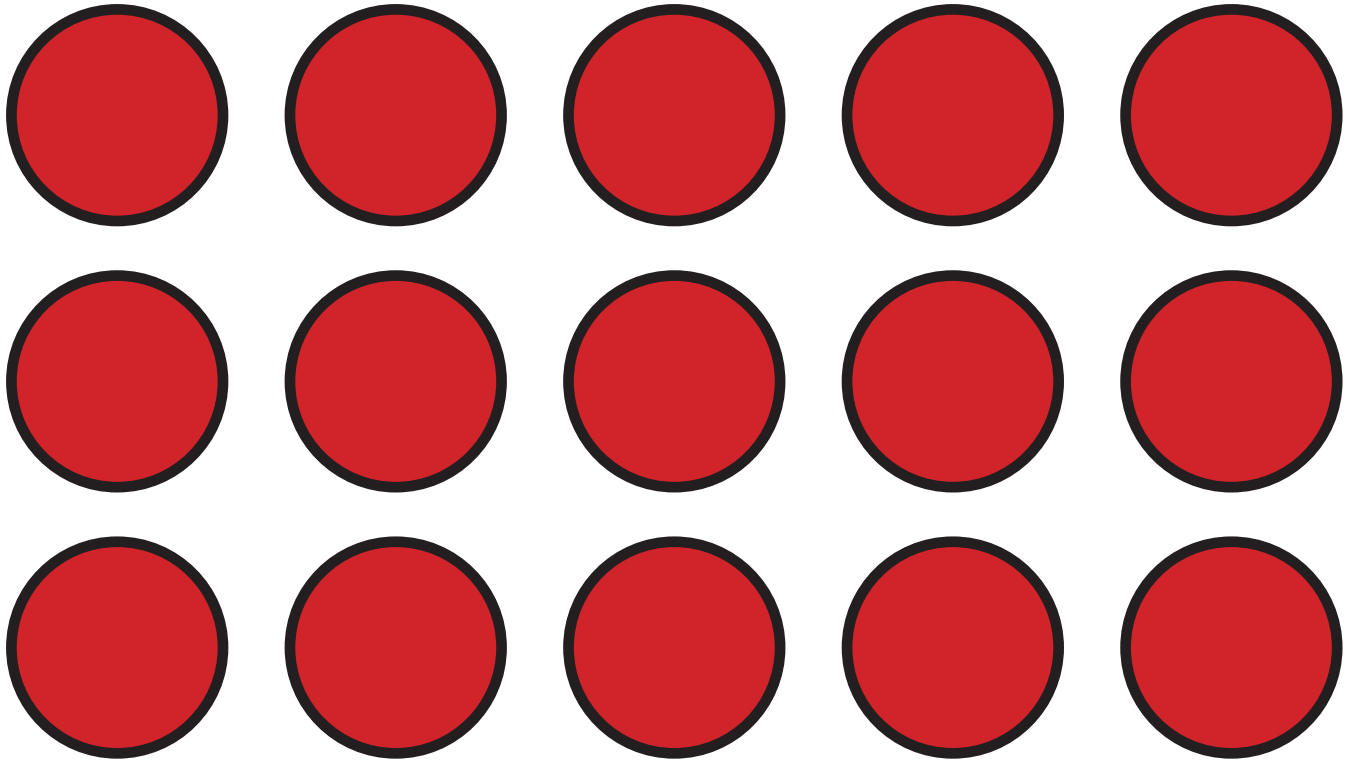
(Number Line)



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

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

M3: Arrays



3 x 5 = 15 or 5 x 3 = 15

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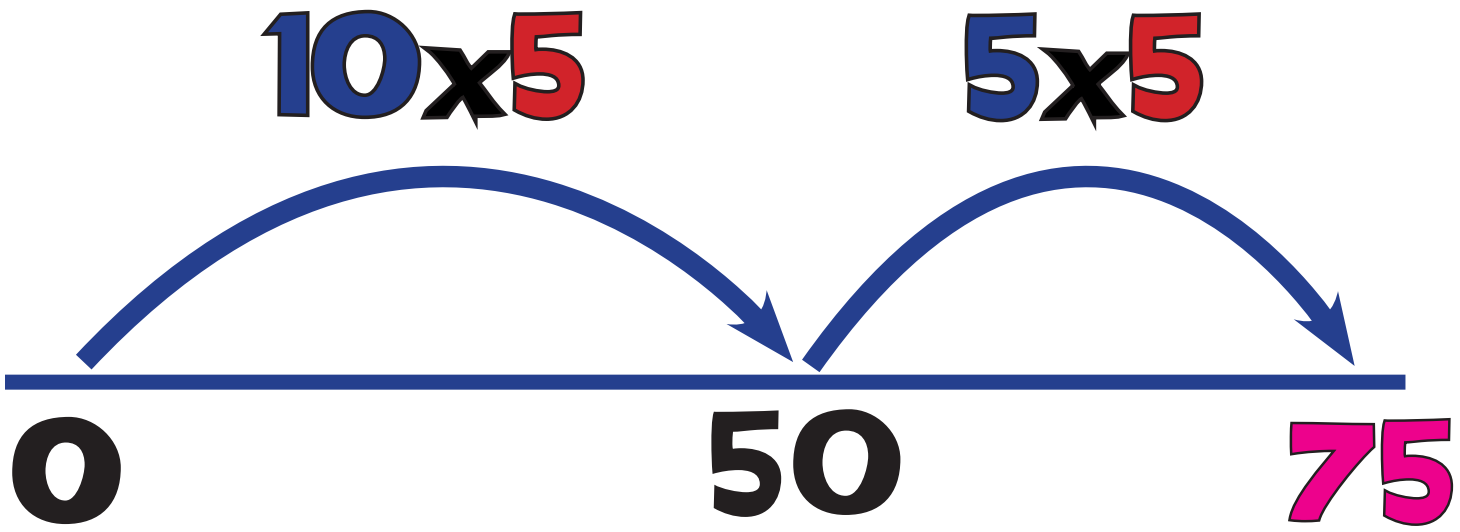
M4: Multi Boing!



10 x 5 = 50

5 x 5 = 25

75

15 x 5 = 75

M5: Grid Method

Short Multiplication

15 x 5 = 75

x	10	5
5	50	25

50 + 25 = 75

M6: Expanded Column

100	10	1	
	4	3	
x		6	
	1	8	(3 x 6)
2	4	0	(40 x 6)
2	5	8	

M7: Column Multiplication

100	10	1
	4	3
x		6
	2	1
2	5	8

M8: Grid Method

Long Multiplication

43 x 65 = 2795

x	40	3
60	2400	180
5	200	15

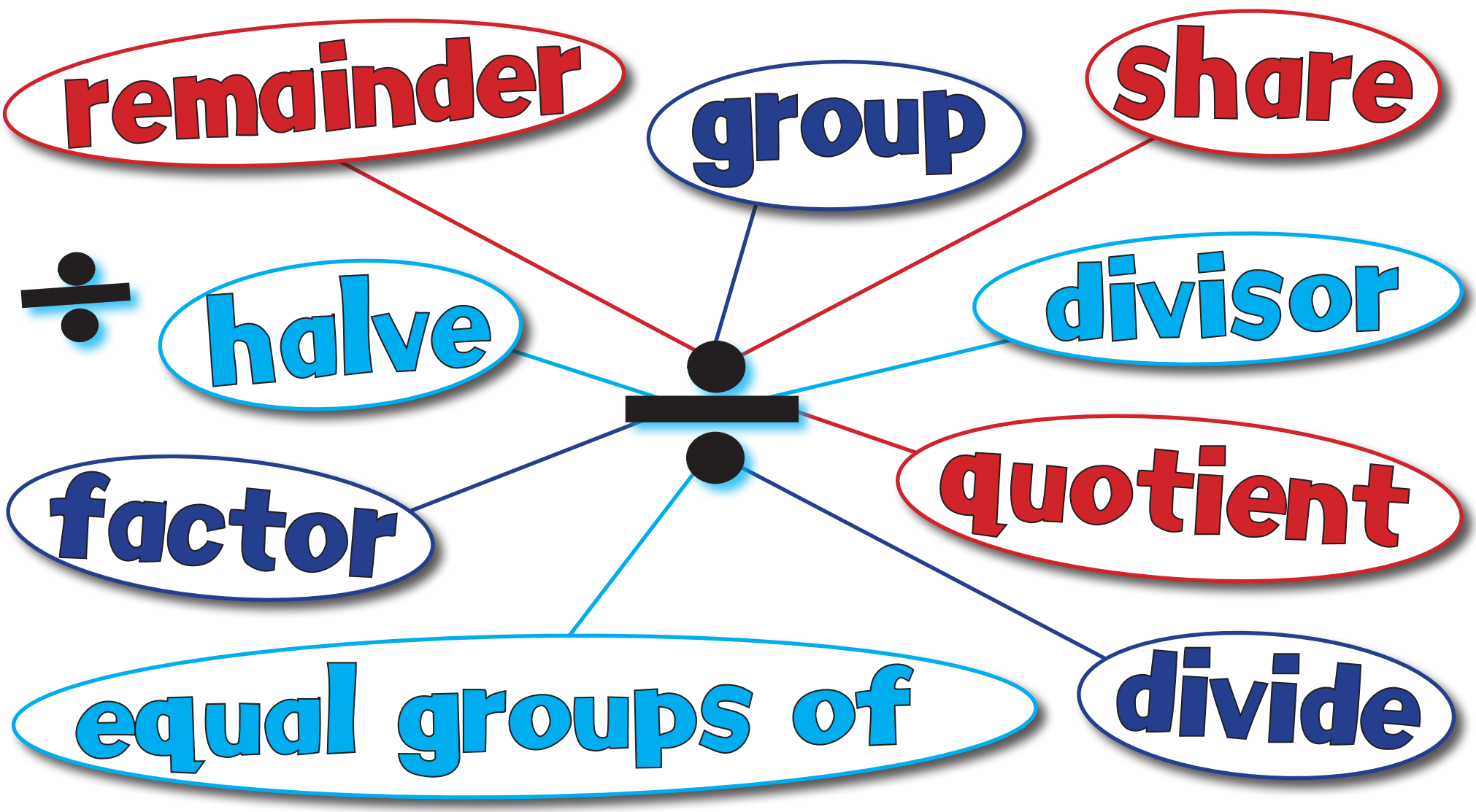
2400 + 180 + 200 + 15 = 2795

M9: Long Multiplication

Column

$$
\begin{array}{rr}
 & 43 \\
\times & 65 \\
\hline
 & 215 \quad (5 \times 43) \\
+ & 2580 \quad (60 \times 43) \\
\hline
 & 2795
\end{array}
$$

Division Vocabulary



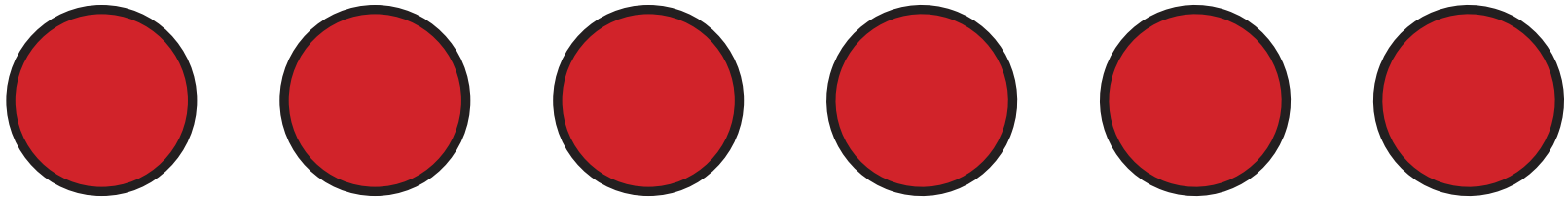
Division Calculation

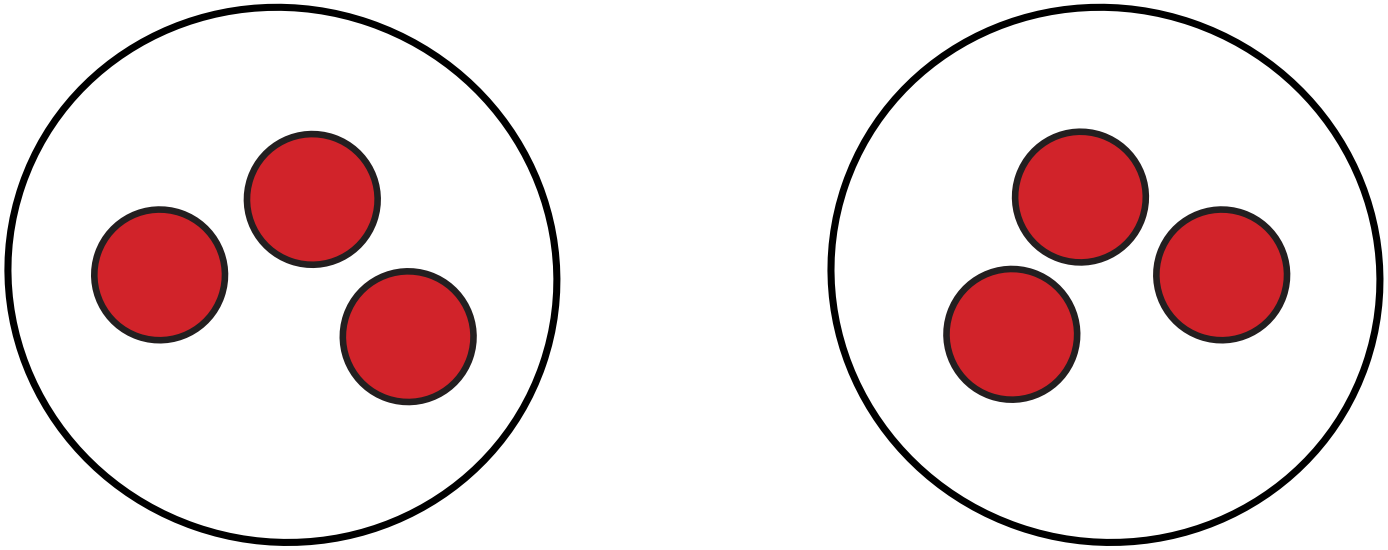
$8 \div 2 = 4$

(divided by) (equals or same as)

$8 \div 4 = 2$

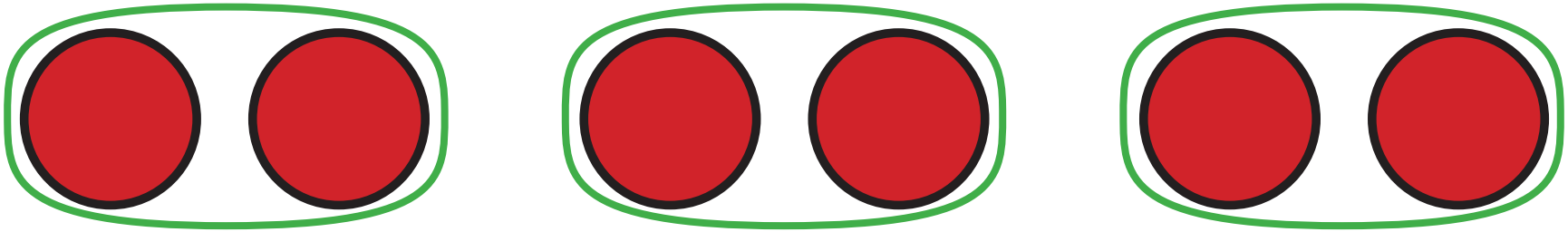
D1: Sharing (Concept)





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

D2: Grouping (Concept)

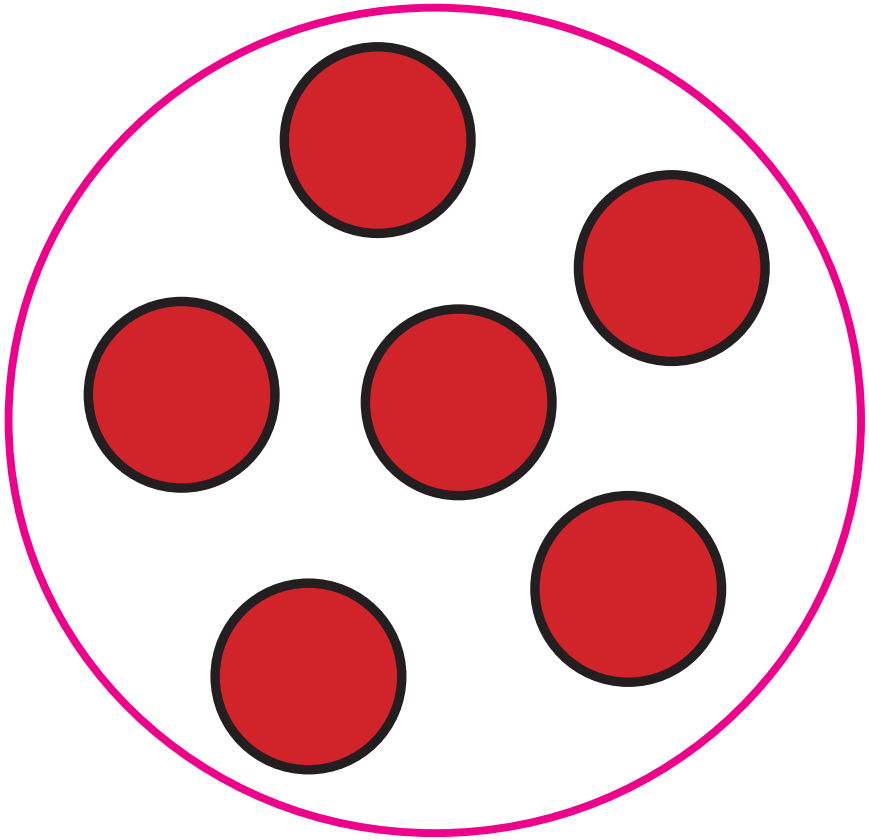


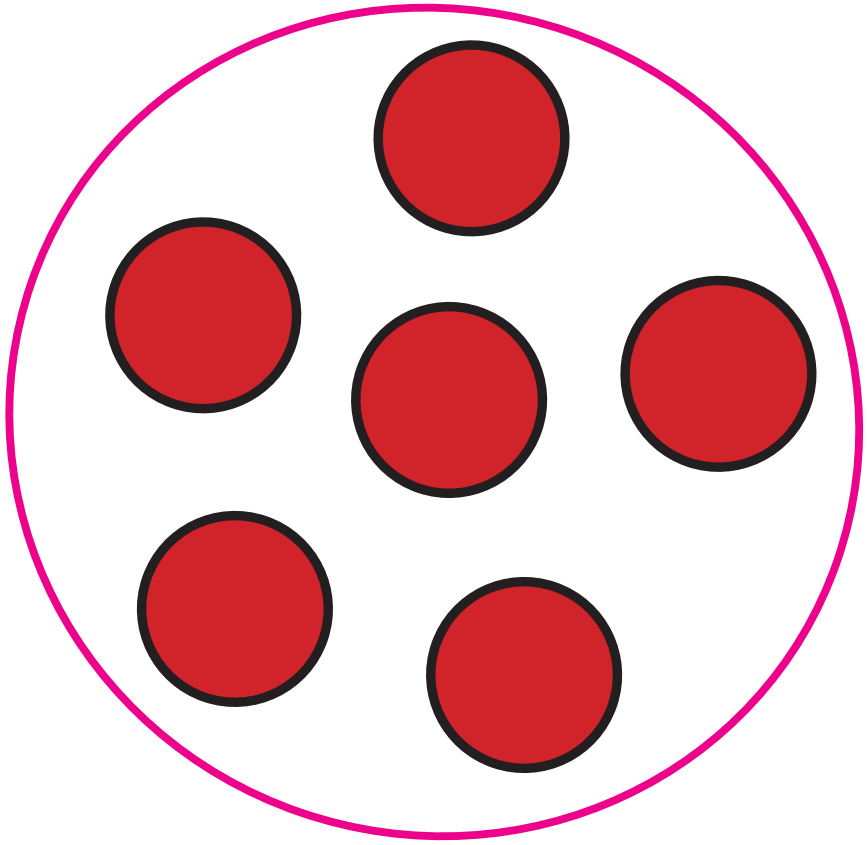
"How many groups of 2 can I make out of 6?
Answer: 3

D3: Division as Sharing

12 ÷ 2 = 6

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

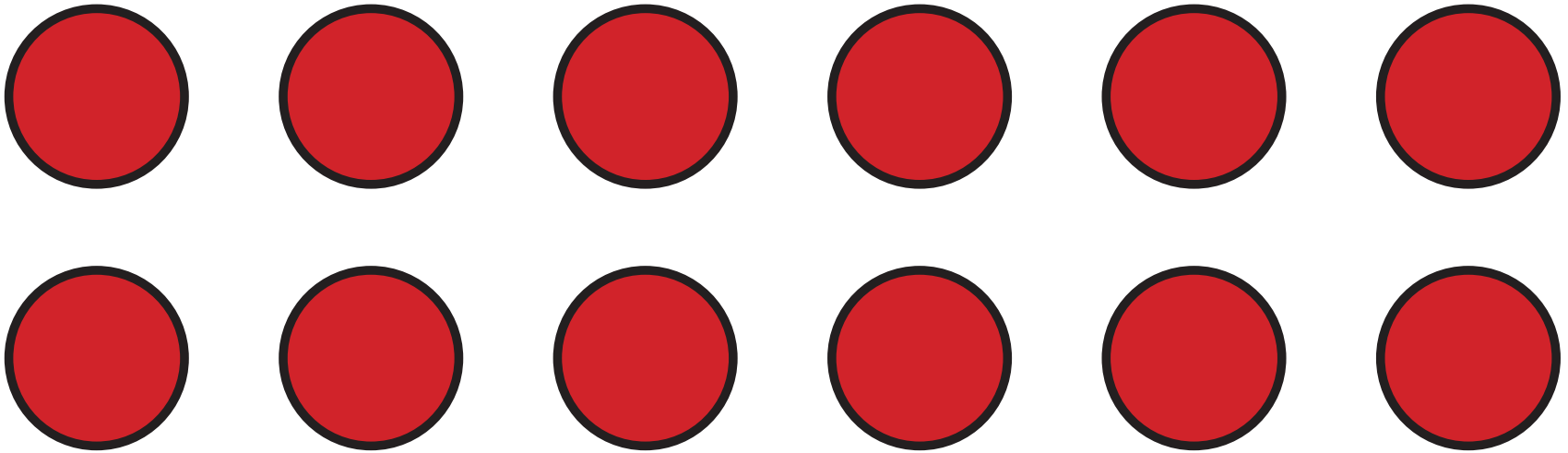




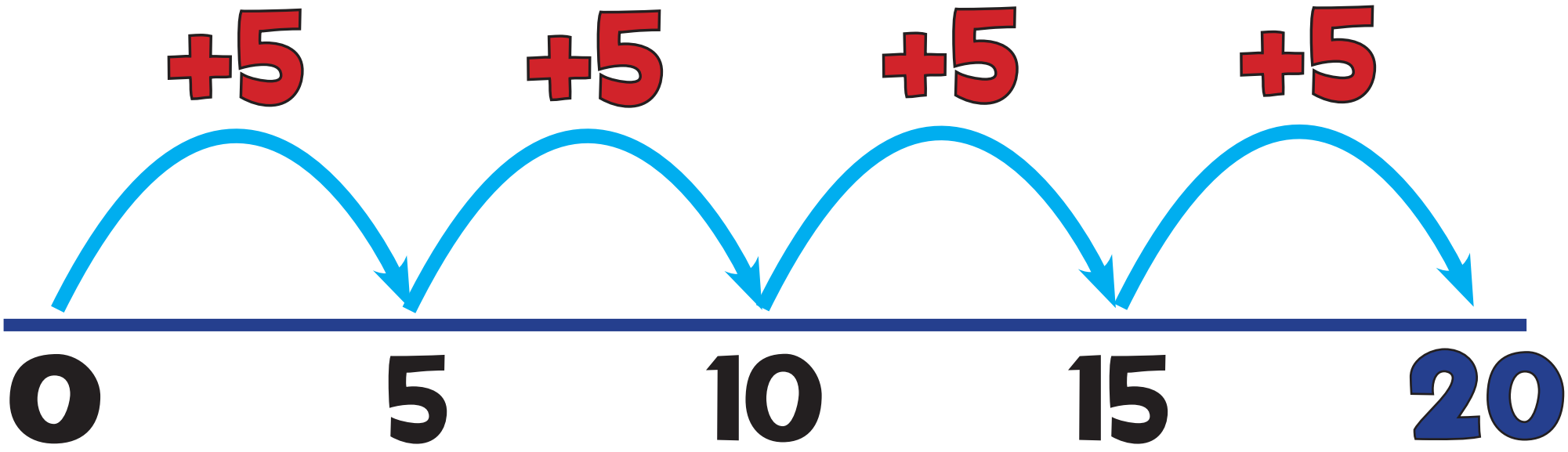
D4: Division as Grouping

12 ÷ 2 = 6

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



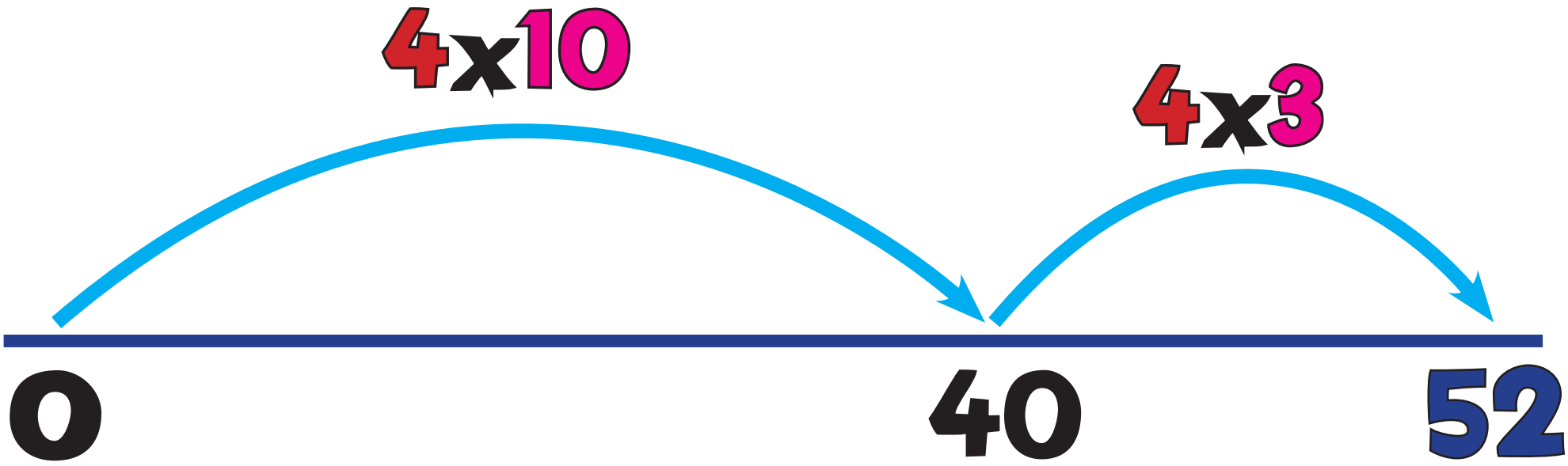
D5: Grouping on a Number Line



"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

$$\begin{array}{r} 26\,r21 \\ 37\overline{)\,9^{9}8^{24}3} \end{array}$$

D9: Long Division

Decimal Remainder

$$432 \div 5 = 86.4$$

$$
\begin{array}{r}
086.4 \\
5\overline{)\,4^{1}3^{3}2^{2}.0} \\
\end{array}
$$

D10: Long Division

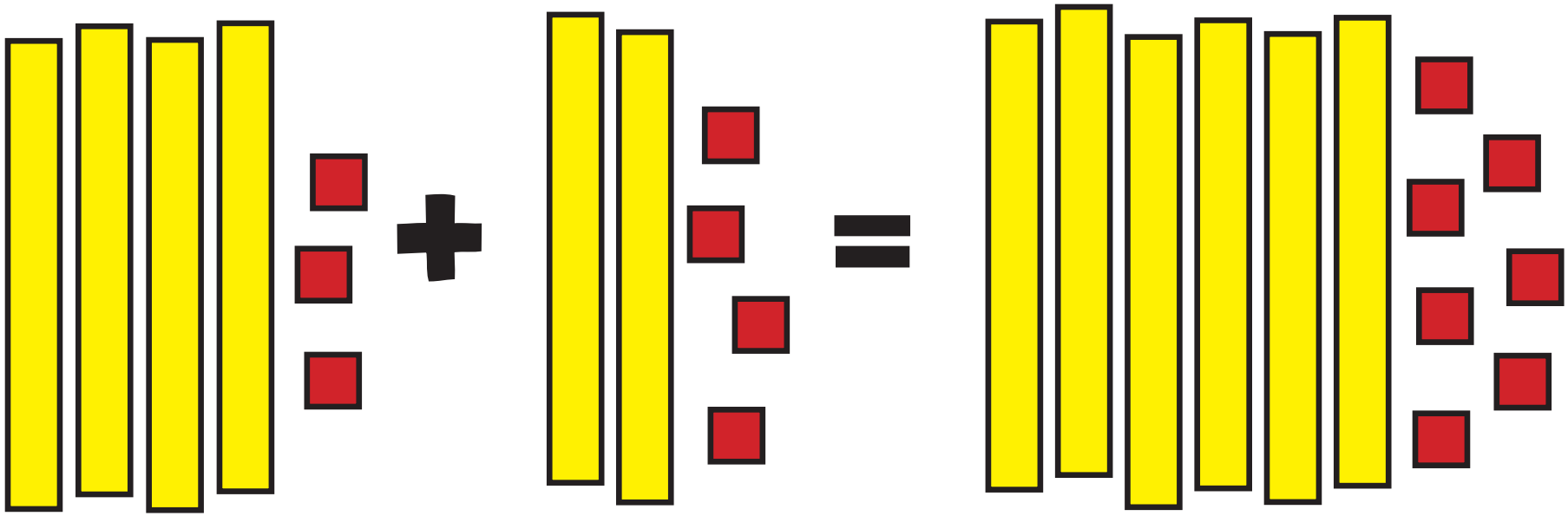
Traditional Method

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

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

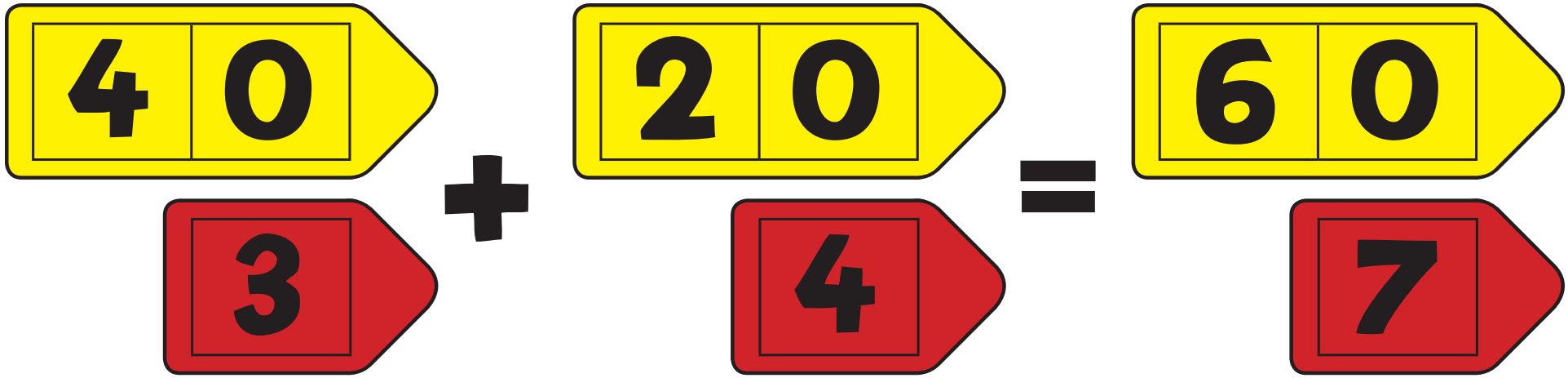
A: Base 10

43 + 24 = 67



B: Arrow Cards

43 + 24 = 67



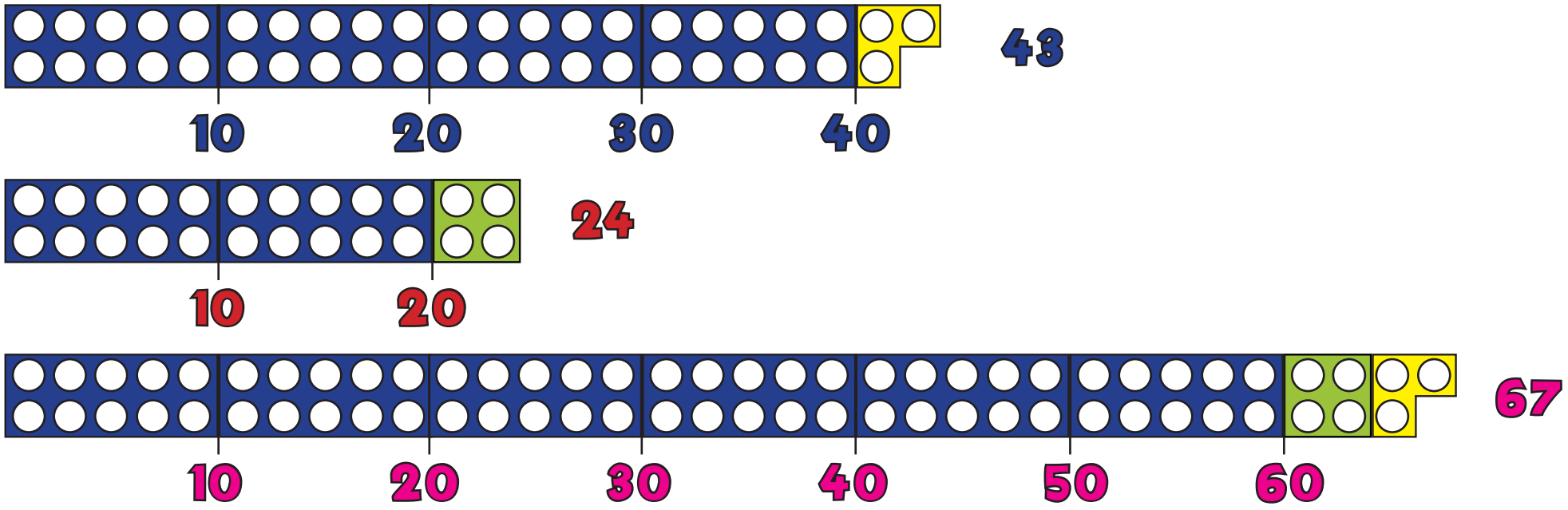
C: Hundred Square

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