Sense of Number
Visual Calculation Policy

Expanded Edition for
Jesson's C. of E. Primary School
November 2016

Graphic Design by Dave Godfrey
Compiled by the Sense of Number Maths Team

For sole use within Jesson's C. of E. Primary School.

'A picture is worth 1000 words!'
www.senseofnumber.co.uk

Jesson's C. of E. Primary School

Poster Guide

Visual Calculation Policy

Code	Section	Basic Edition (99 Slides)		Expanded Edition (316 Slides)	
		How many posters?	Slide Numbers	How many posters?	Slide Numbers
	Introduction Slides	3	1-3	3	1-3
KS	KS: Key Concepts	7	4-10	7	4-10
	Vocabulary Slides	9	11-19	9	11-19
C	Counting Policy	-	-	13	21-33
A	Addition	7	20-26	40	34-73
MA	Mental Addition	7	27-33	55	74-128
S	Subtraction	11	34-44	33	129-161
MS	Mental Subtraction	-	-	4	162-165
M	Multiplication	9	45-53	32	166-197
MM	Mental Multiplication	1	54	30	198-227
D	Division	14	55-68	41	228-268
	Calculation Cards	-	-	9	269-277
	Multiplication Tables	-	-	11	278-288
	Expanded Edition Progression (Year groups for New Curriculum)	13	69-81	12	289-300
	Alternative layouts (Column and Subtraction on a Number Line)	11	87-98	28	301-327

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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 school's 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

×

8 x 2 = 16

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

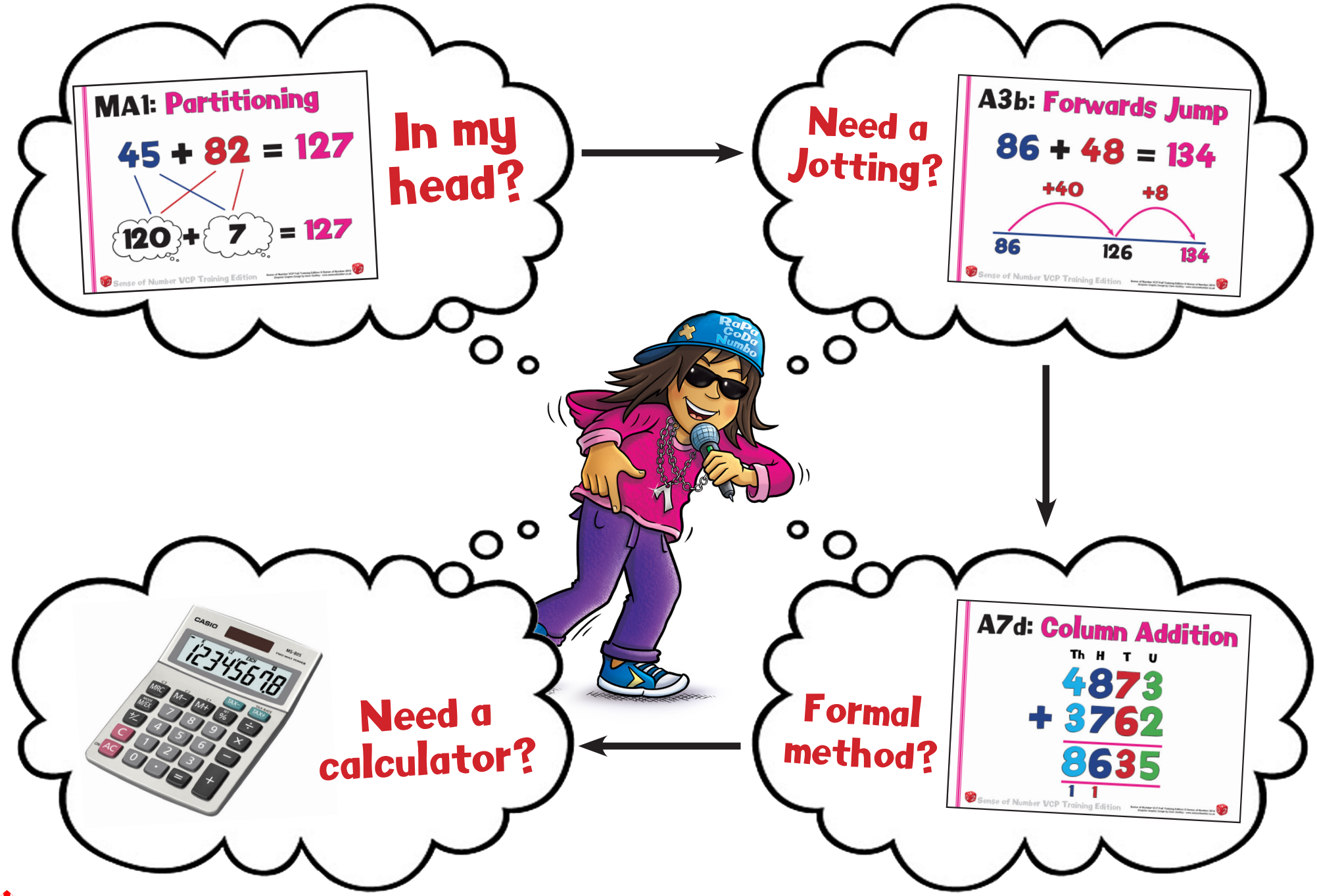
Division

÷

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")



1

Can I do this in my head?

2

Do I need to use a drawing or a jotting?

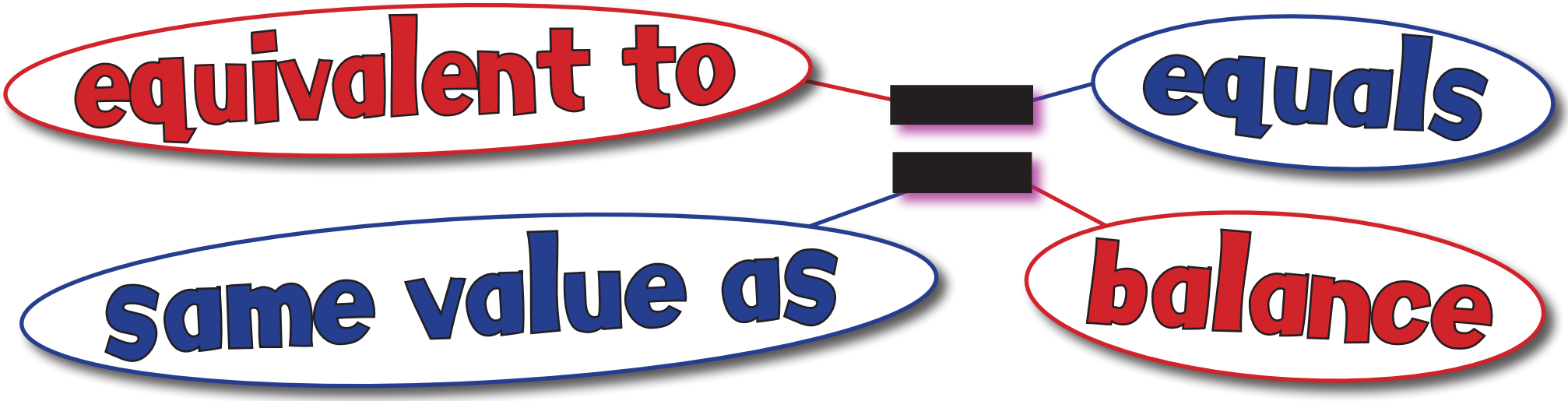
3

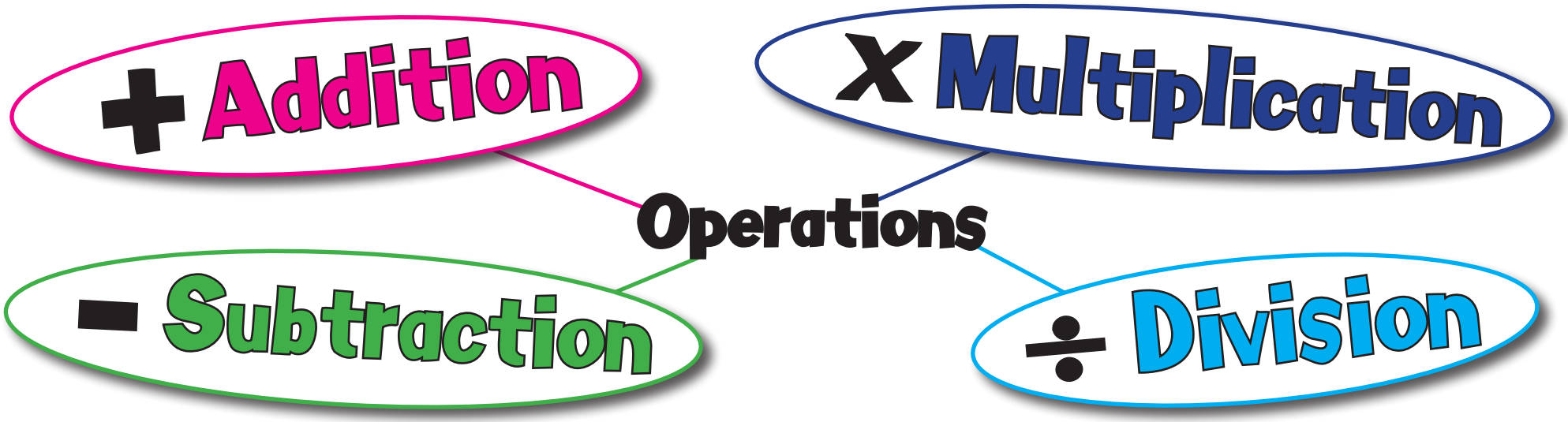
Do I need an expanded or a standard method?

4

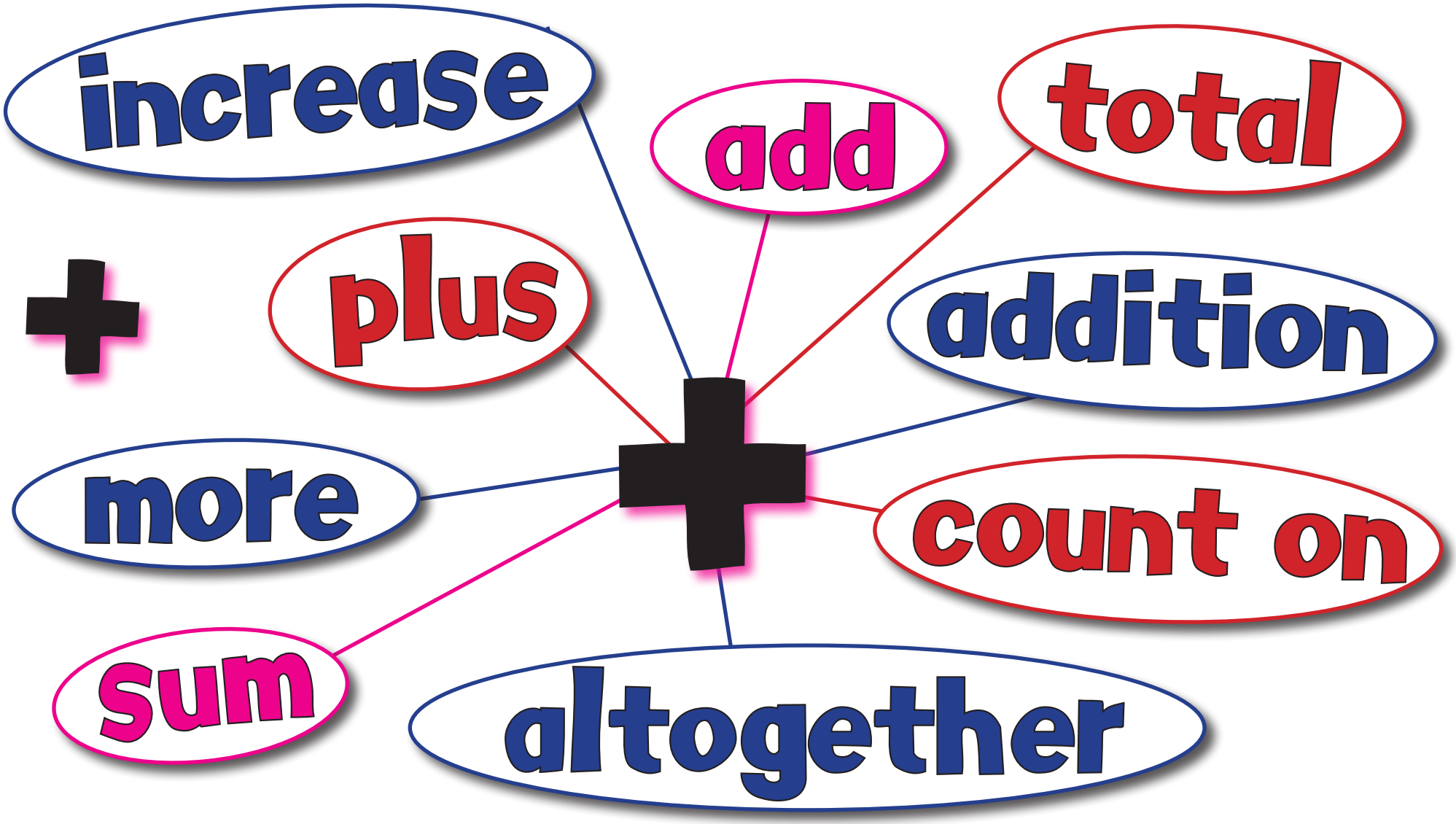
Do I need a calculator?

Calculation Vocabulary

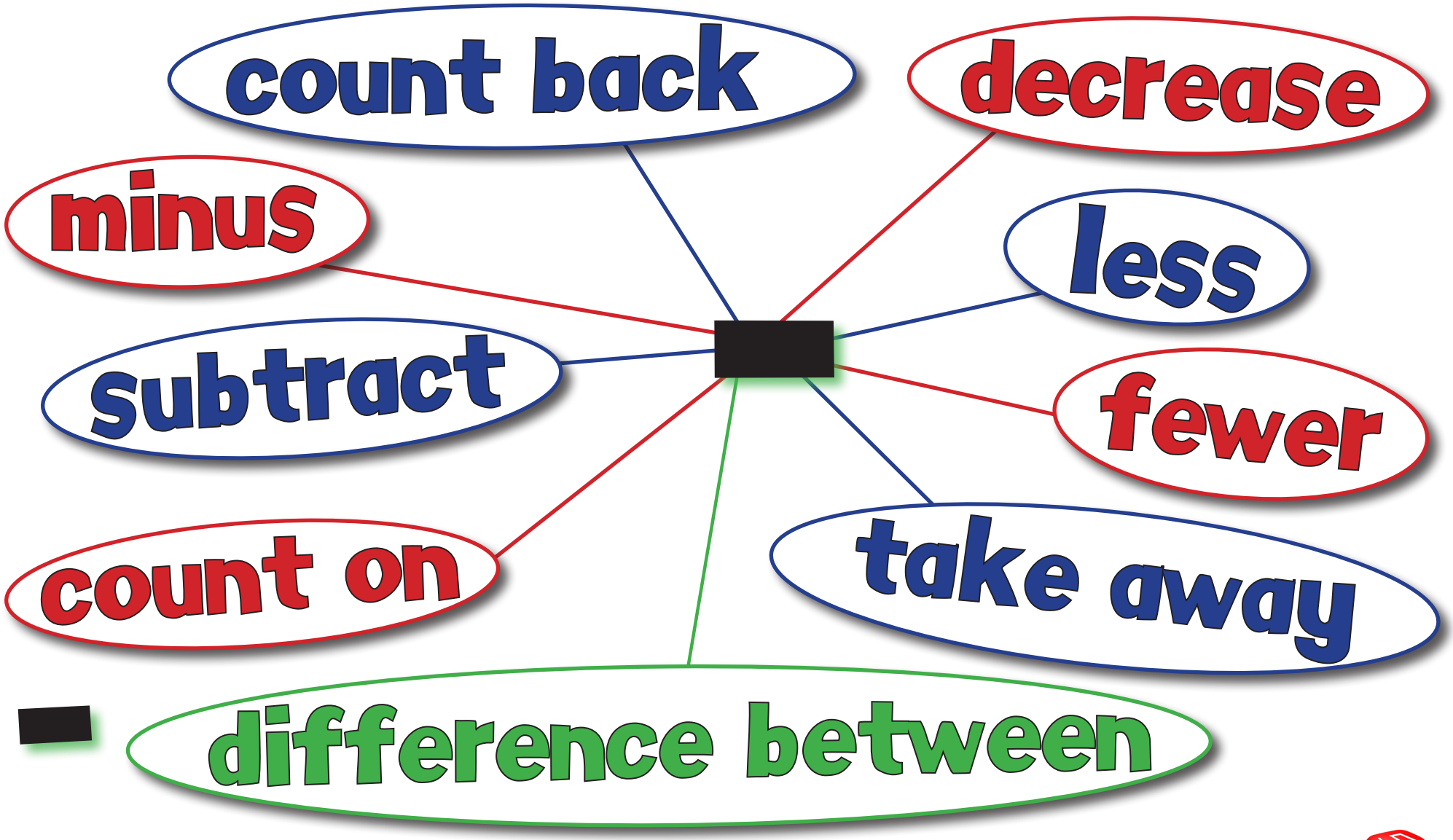




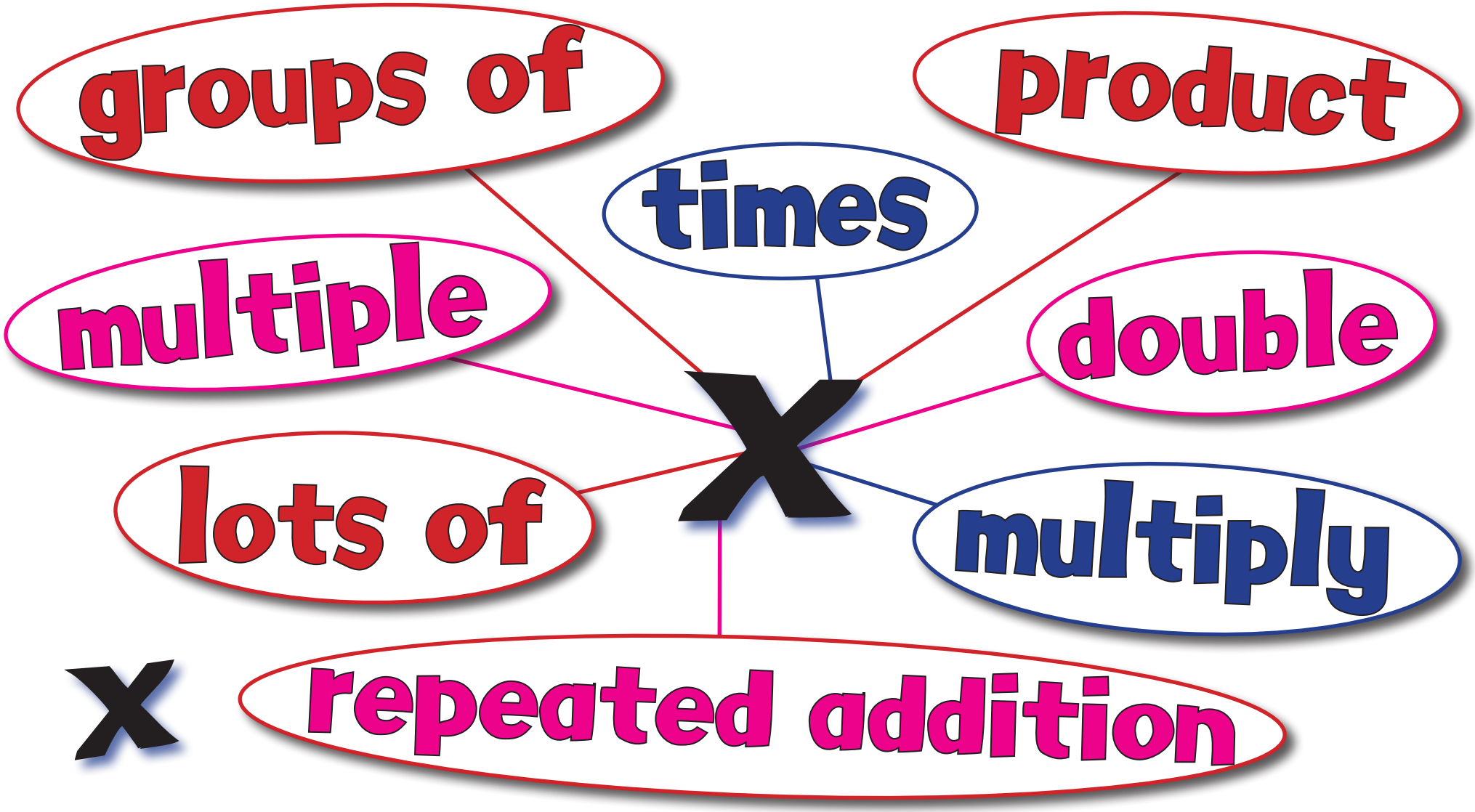
Addition Vocabulary



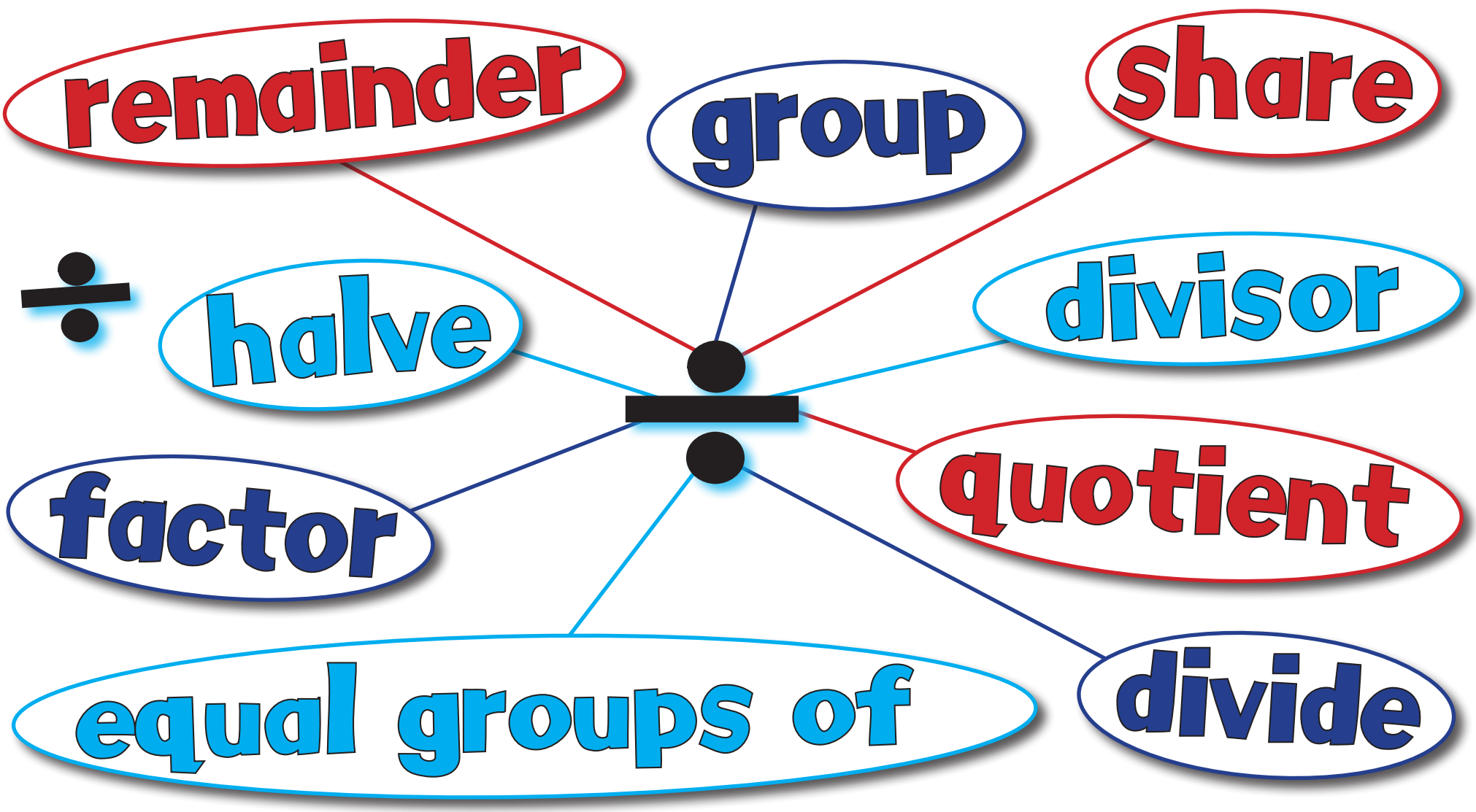
Subtraction Vocabulary



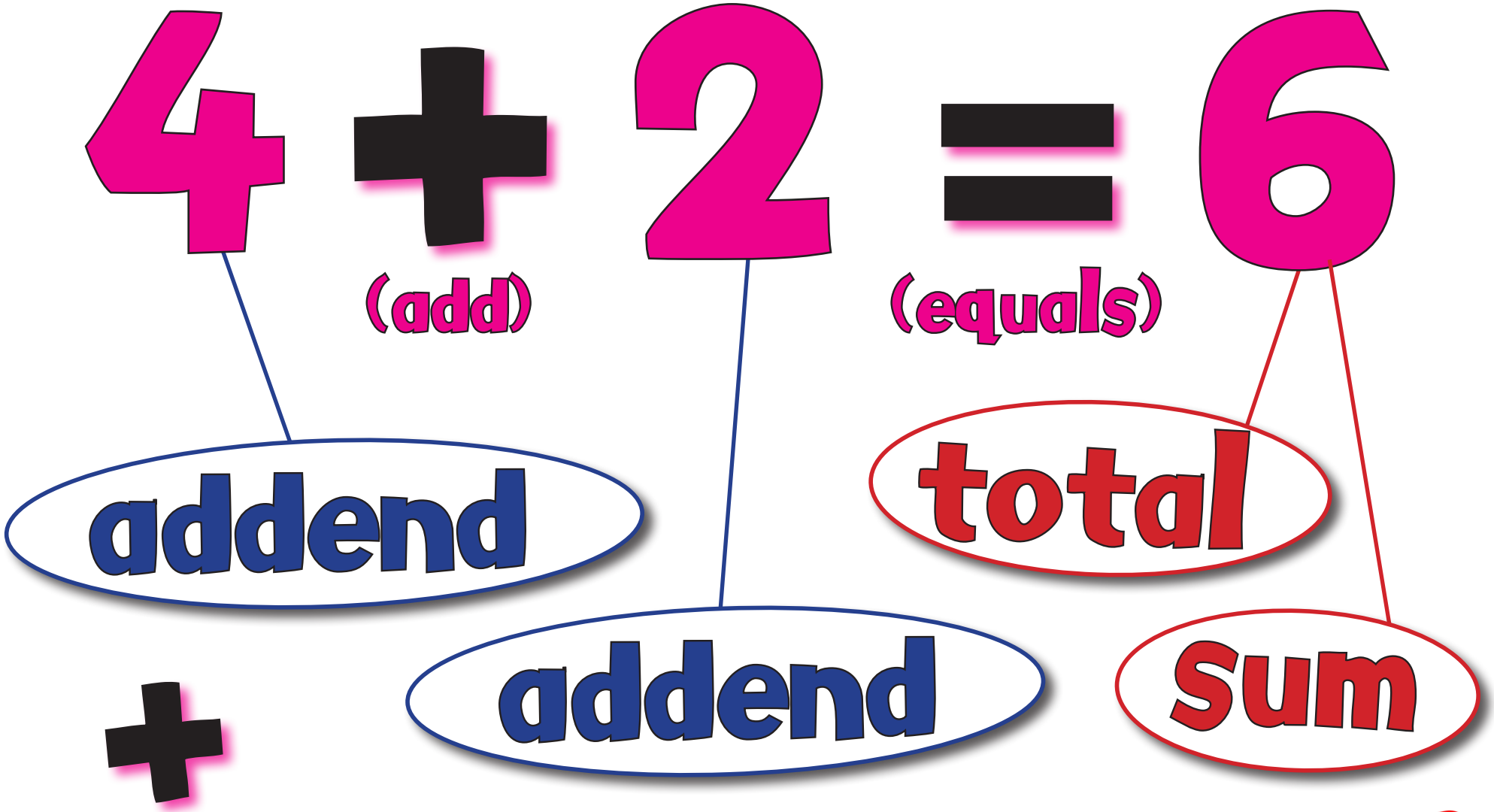
Multiplication Vocabulary



Division Vocabulary



Addition Calculation



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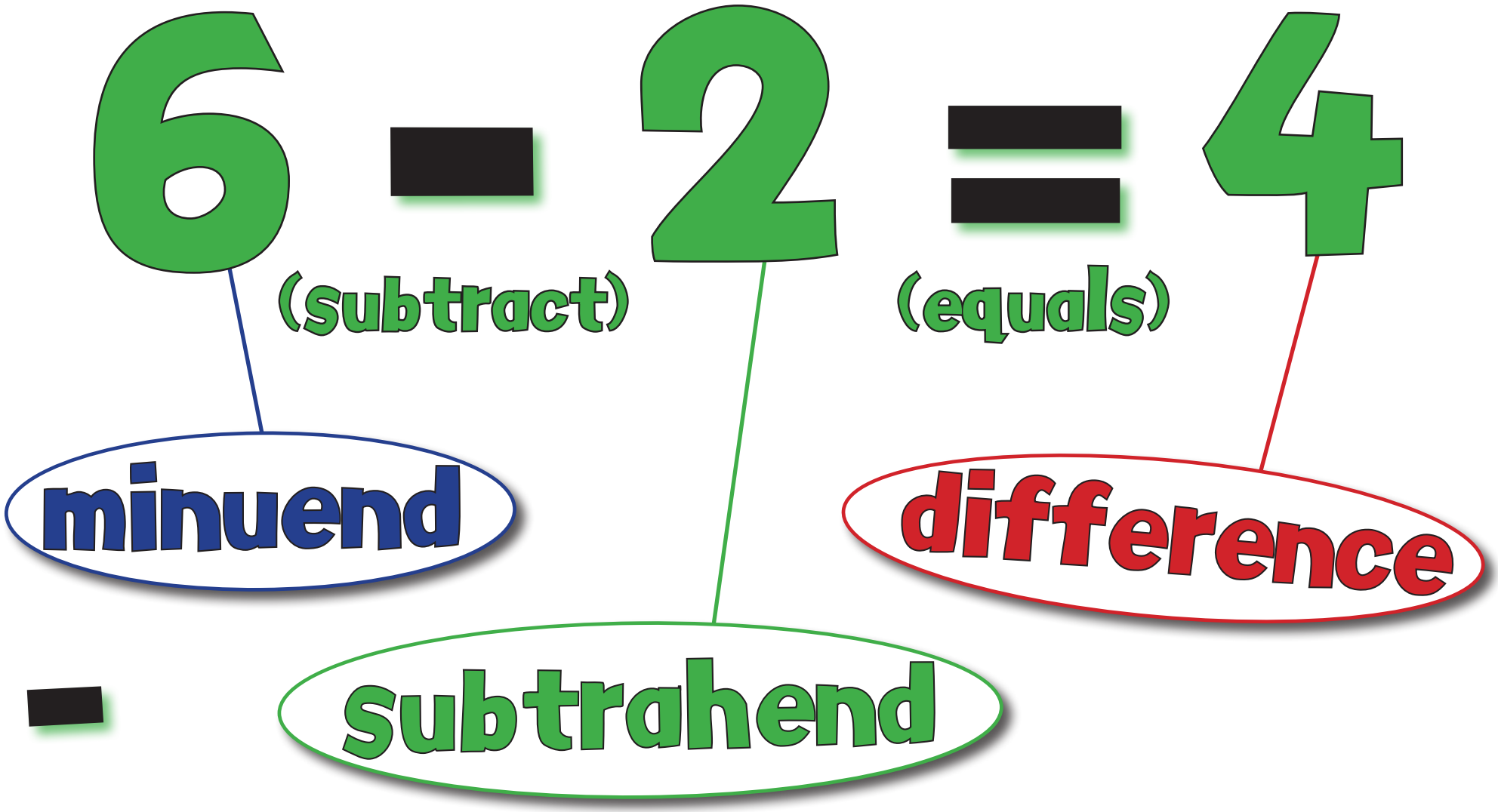
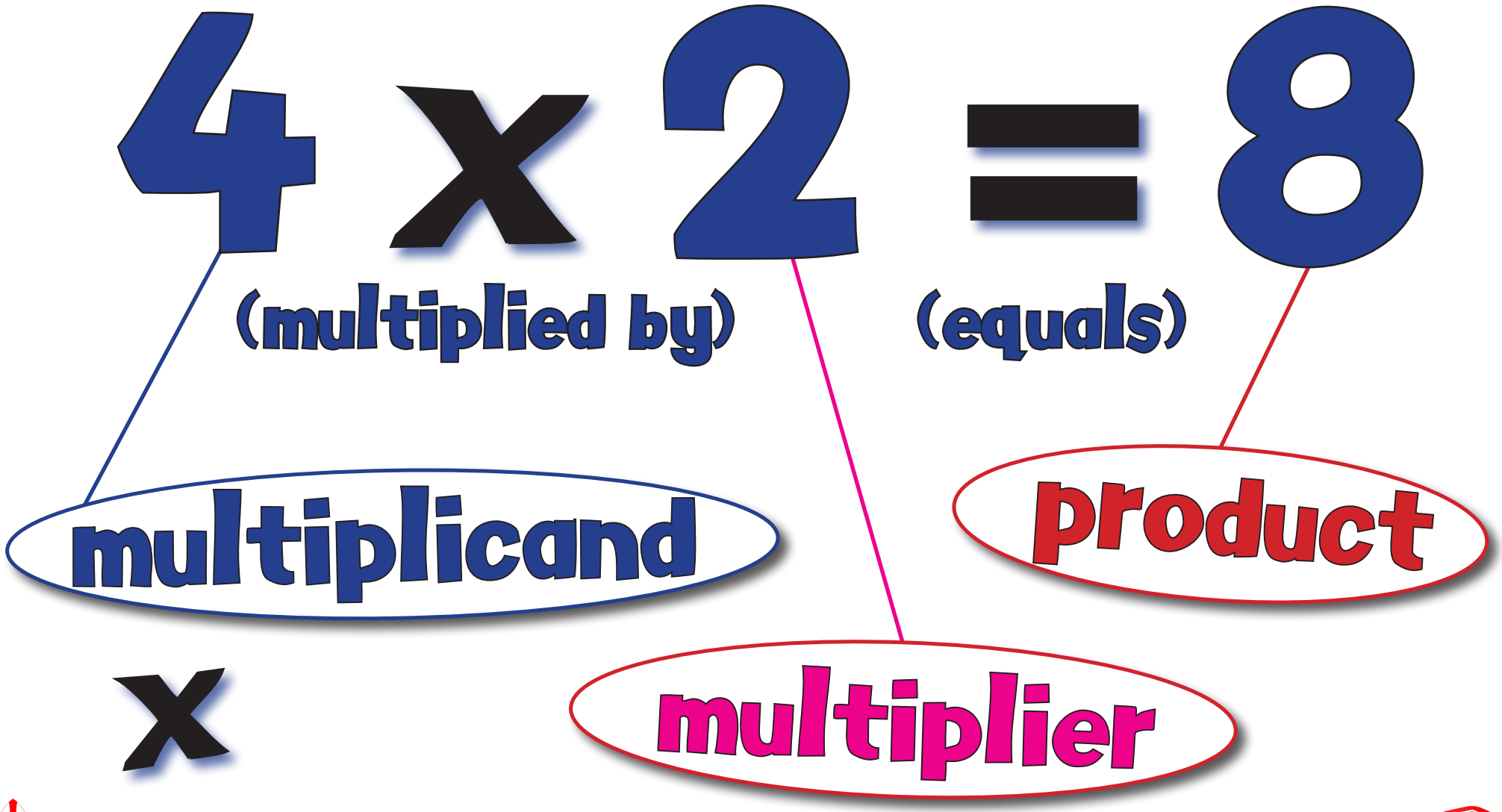
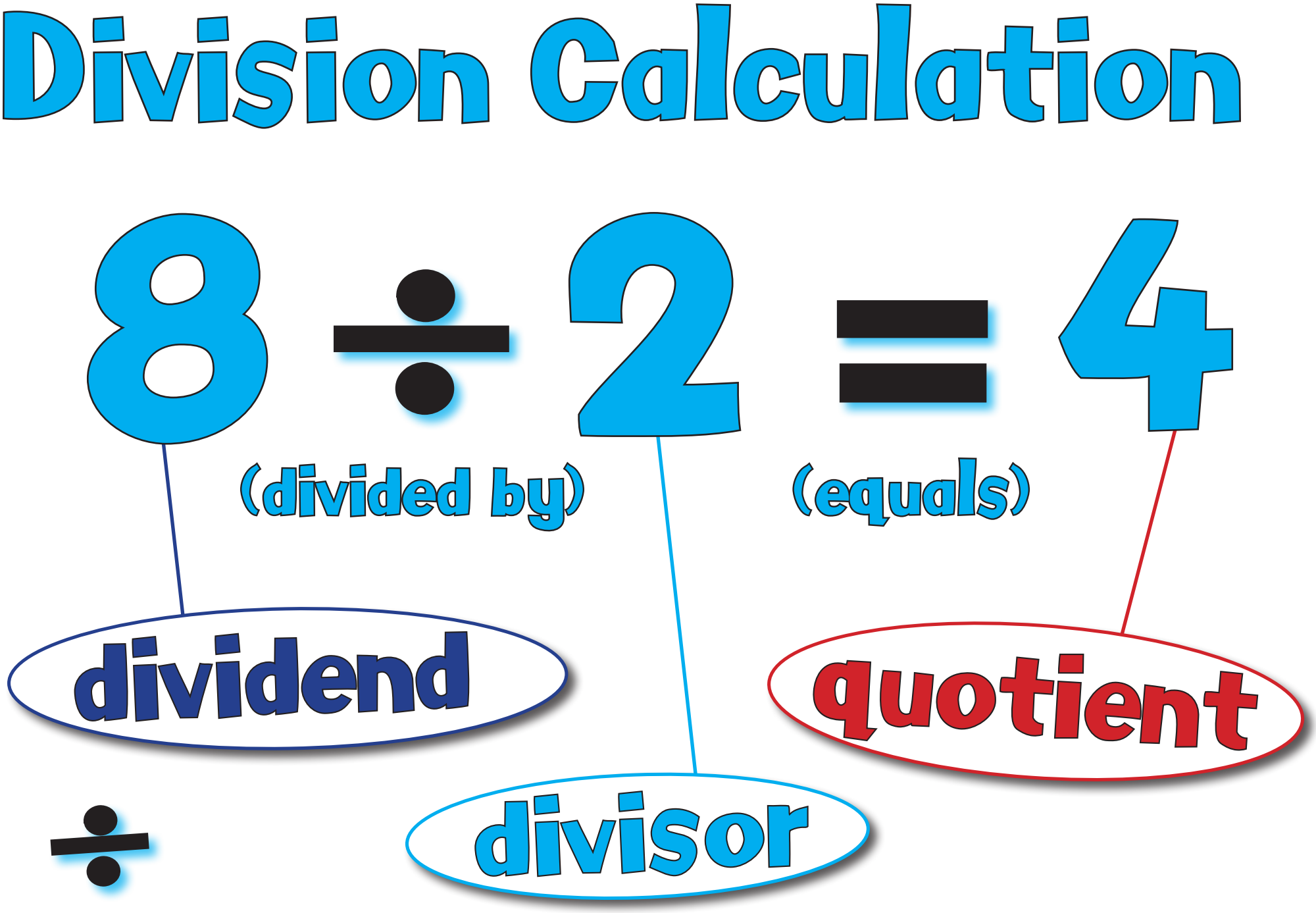
Subtraction Calculation



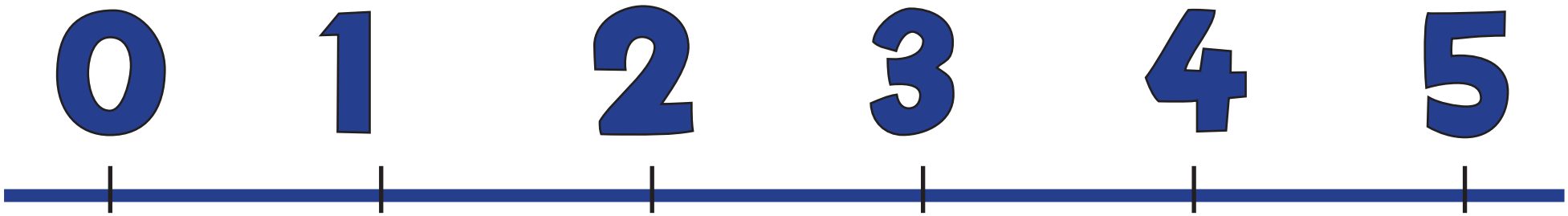
Multiplication Calculation



Division Calculation



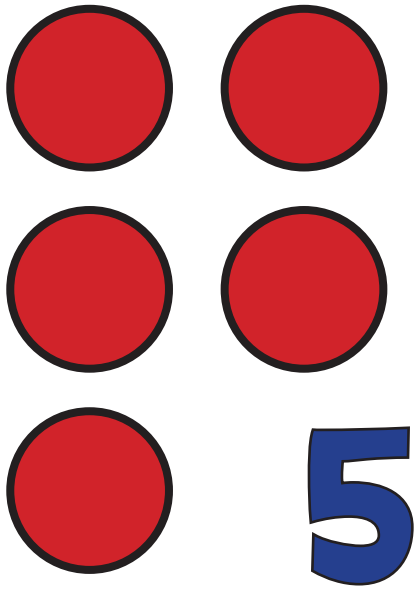
C1a: Number Order

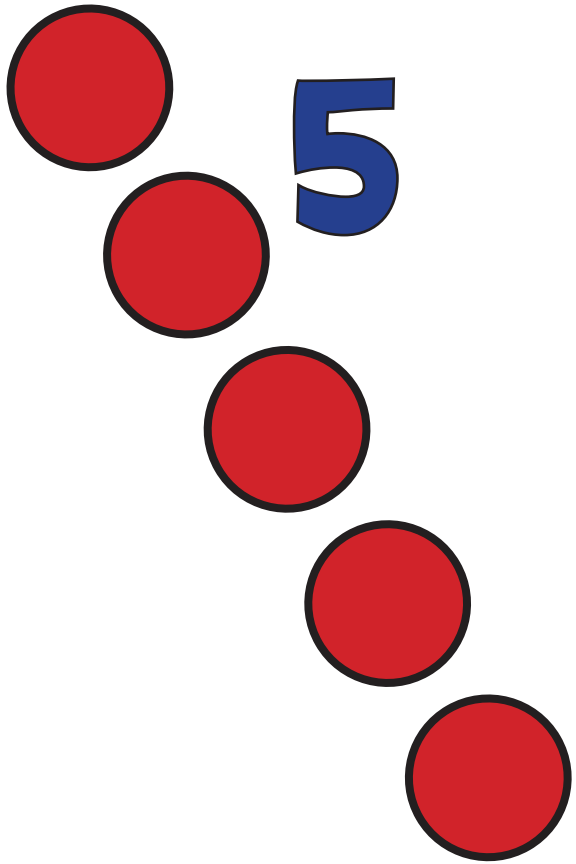


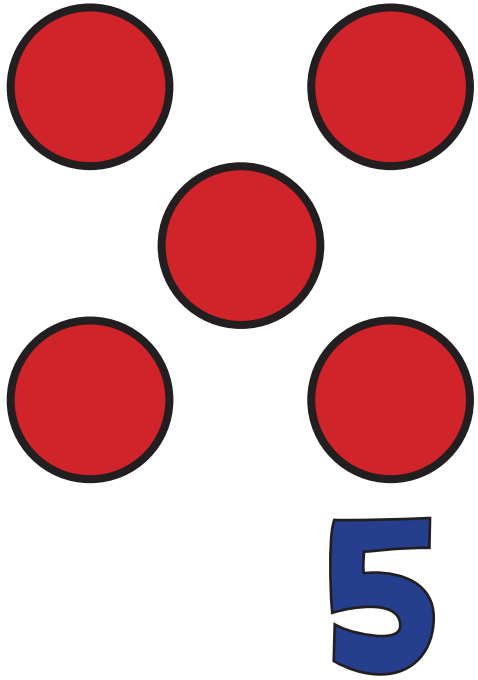
The Numbers must be said once and always in the conventional order.

C1b: At a Glance

Subitising



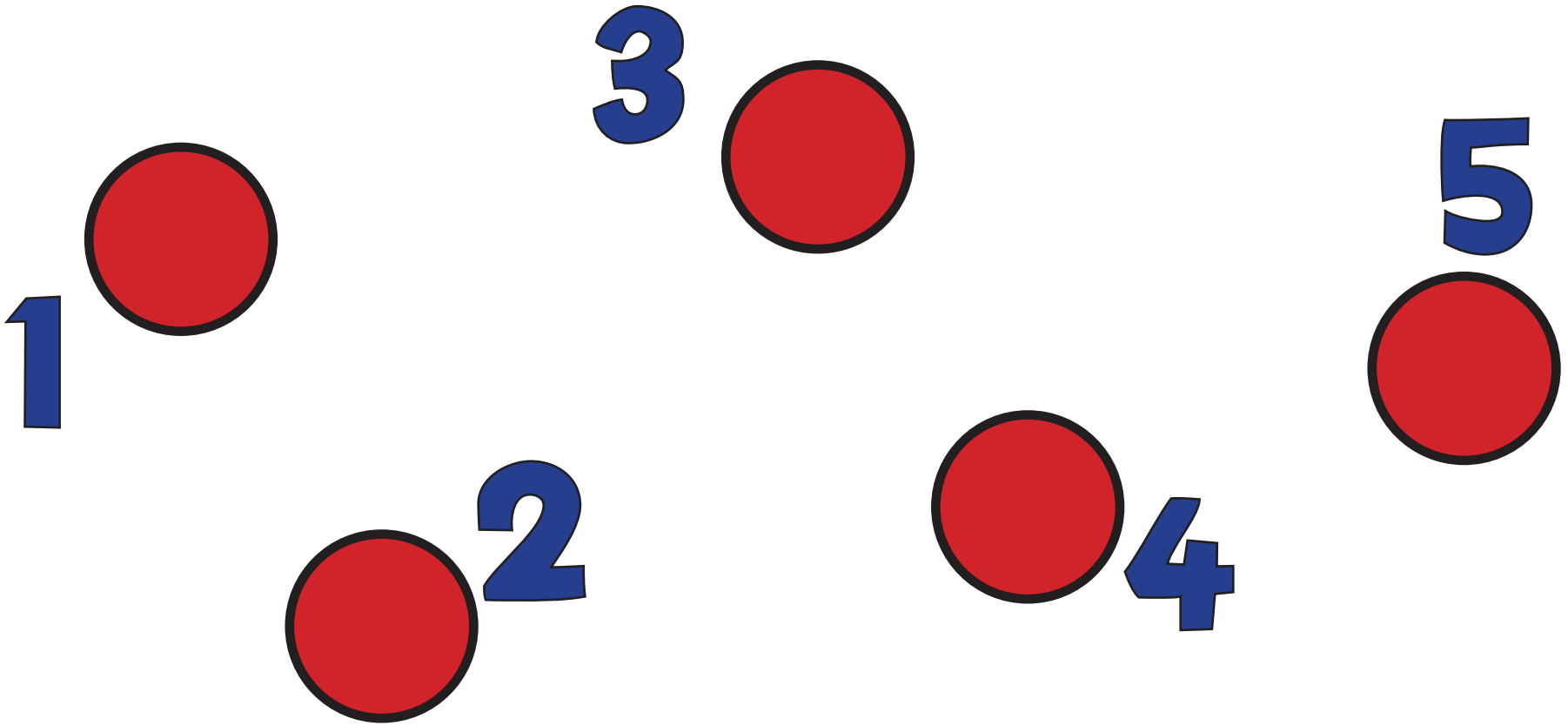




See at a glance how many are in small collections and attach correct number names to such collections.

C2a: Number Match

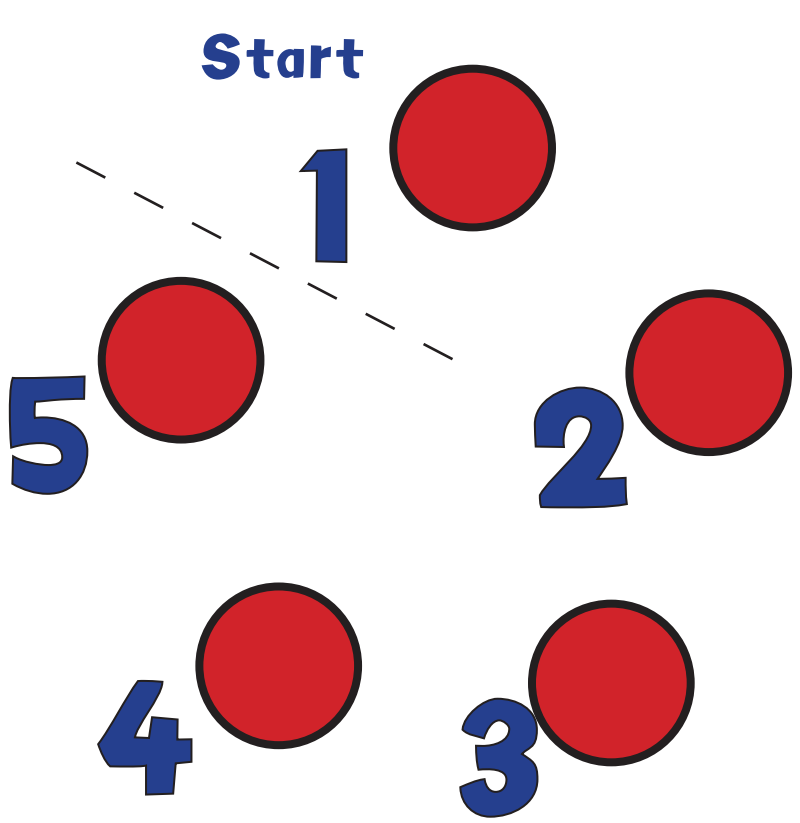
One to One Correspondence

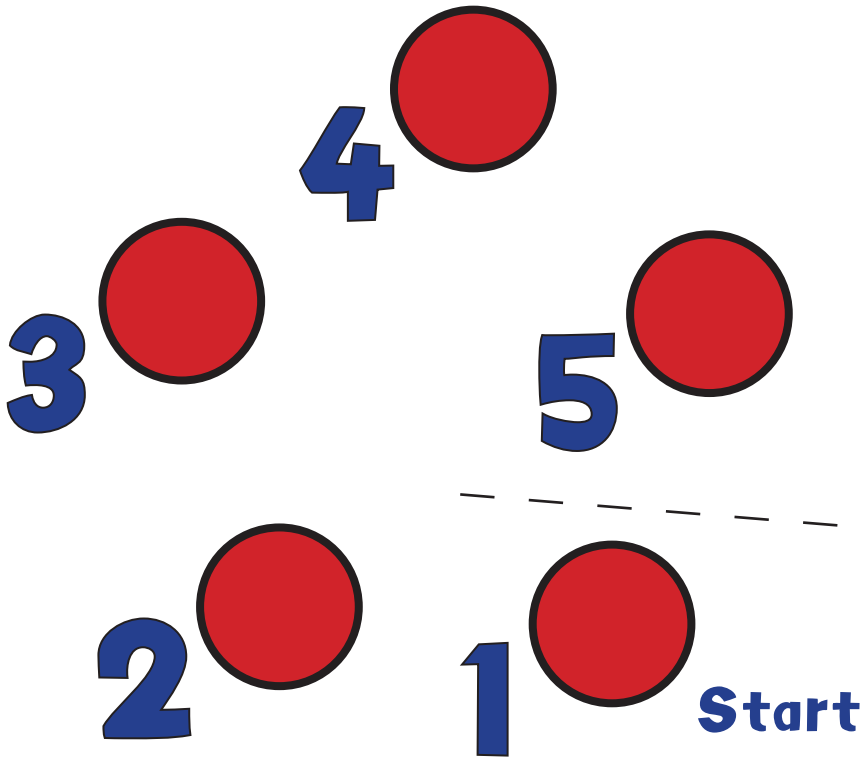


Each object to be counted must be touched or 'included' exactly once as the numbers are said.

C2b: Counting Objects

Starting Point and Order Irrelevance

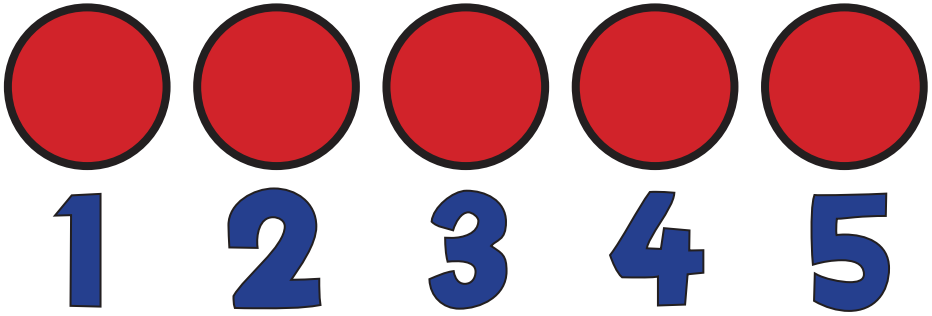


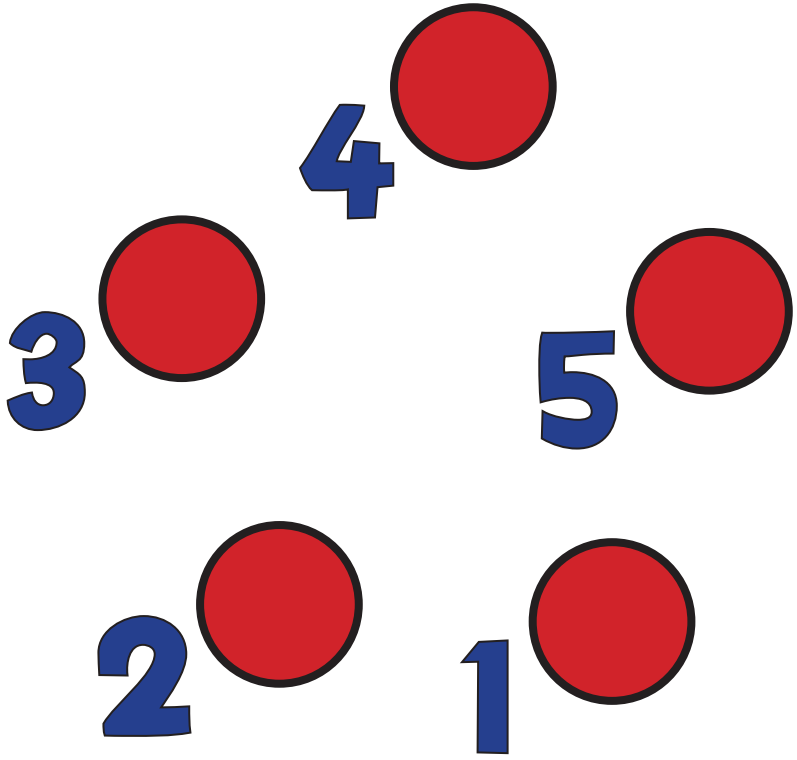


The objects can be touched in any order. The starting point and order in which the objects are counted does not affect how many there are.

C2c: Order Arrangement

Arrangement Irrelevance

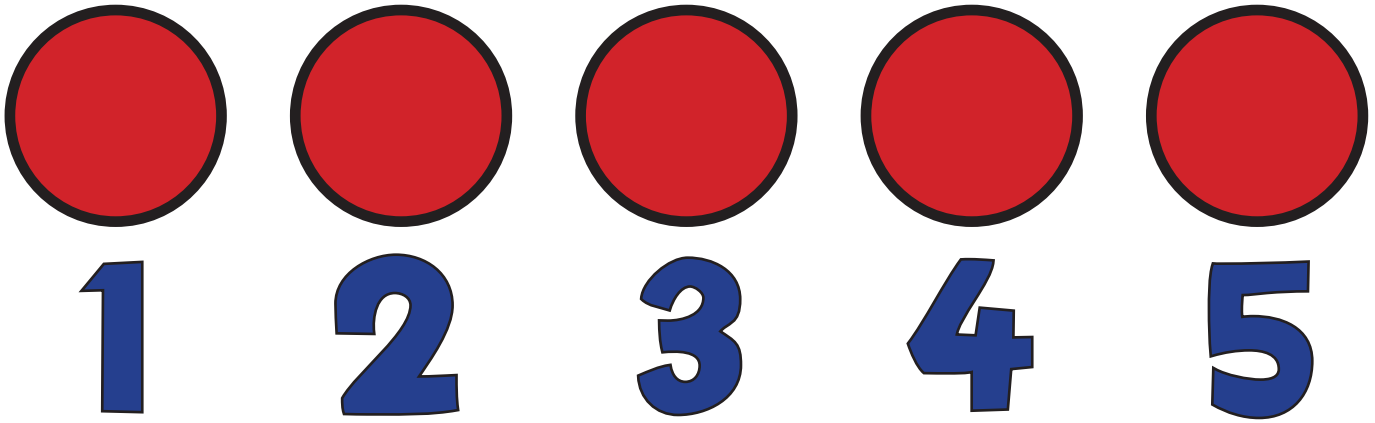




The arrangement of the objects does not affect how many there are.

C3: How Many?

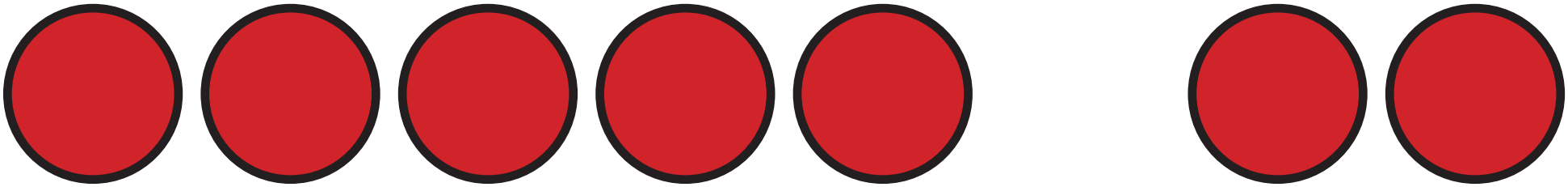
Final number is the total



The last number said tells 'how many' in the whole collection.
It does not describe the last object touched.

C4: Arranging

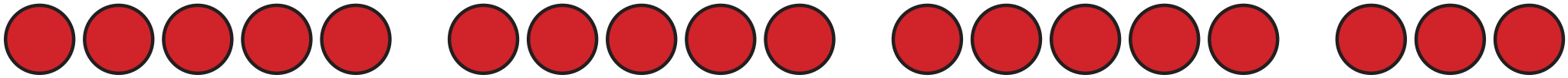
Sets of 5



7

C4a: Arranging

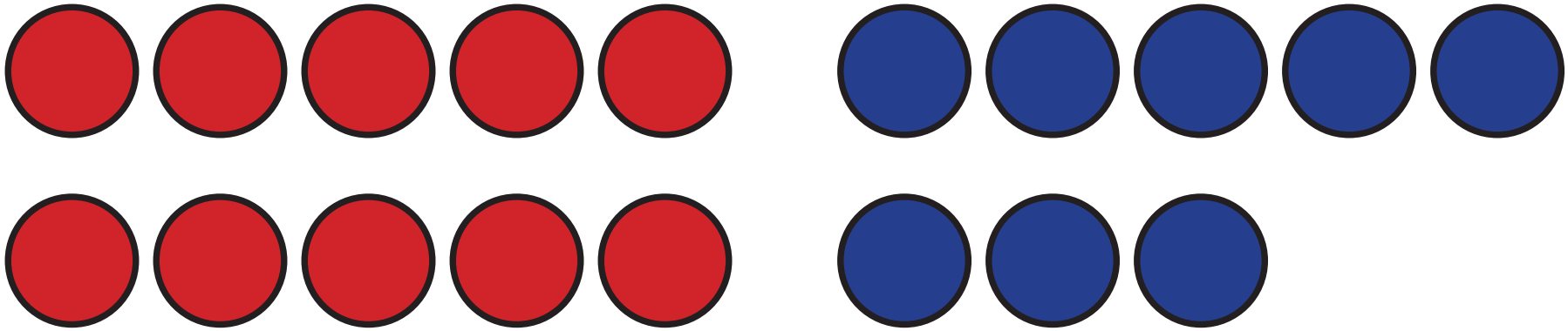
Sets of 5



18

C4b: Arranging

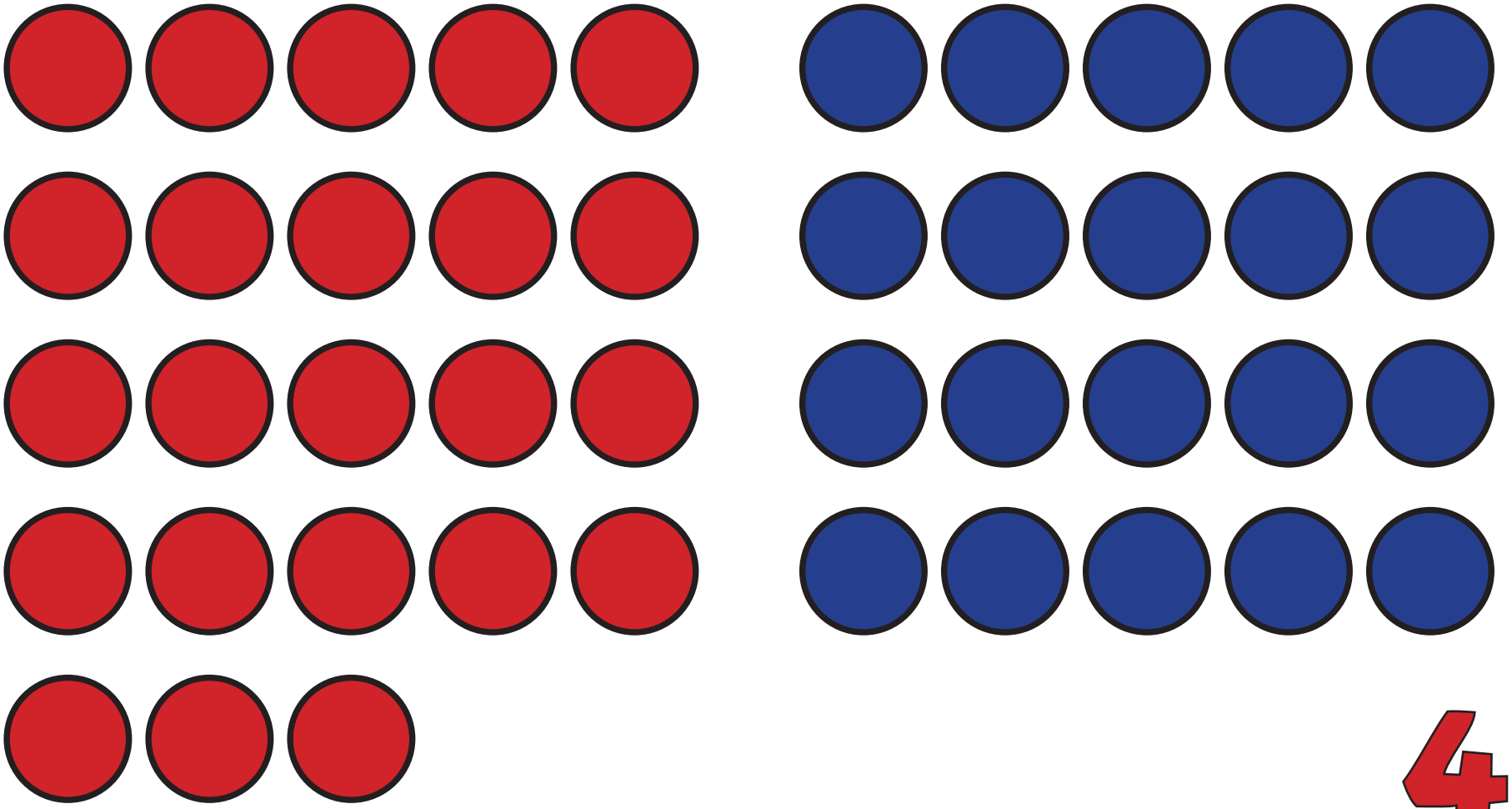
Sets of 5 (Non Linear)



18

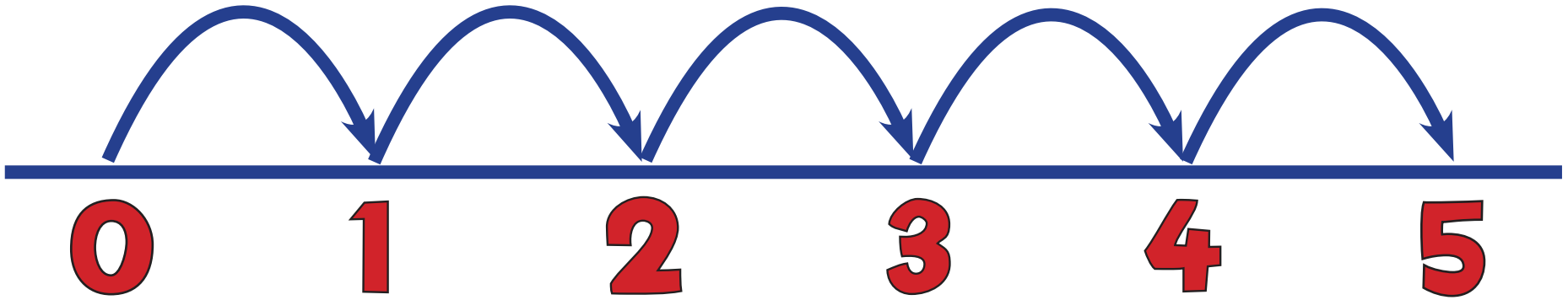
C4c: Arranging

Sets of 5 (Non Linear)

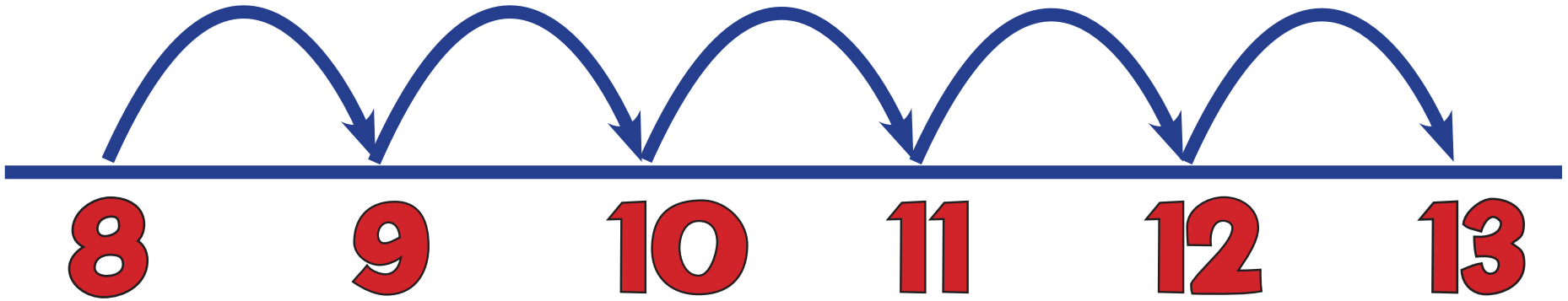


43

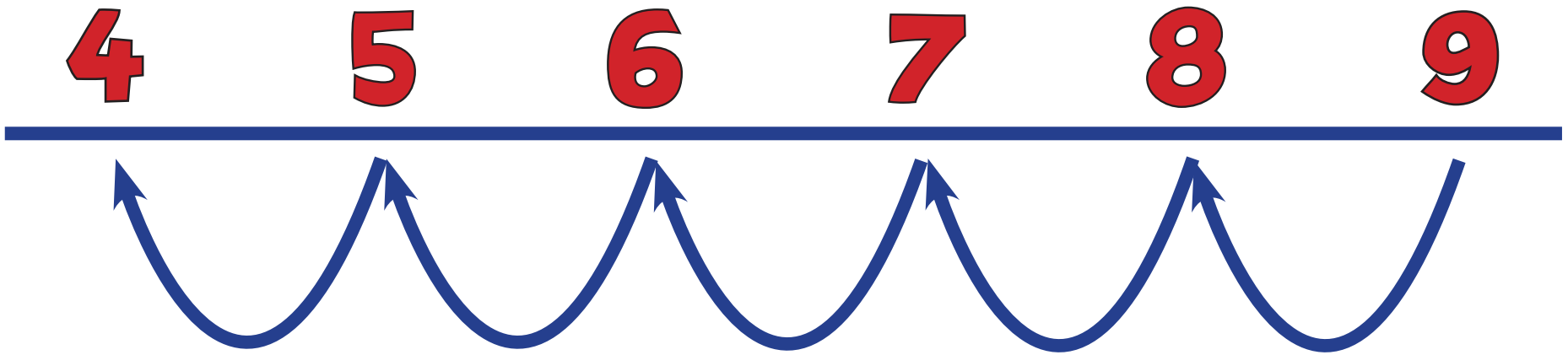
C5: Counting Forwards



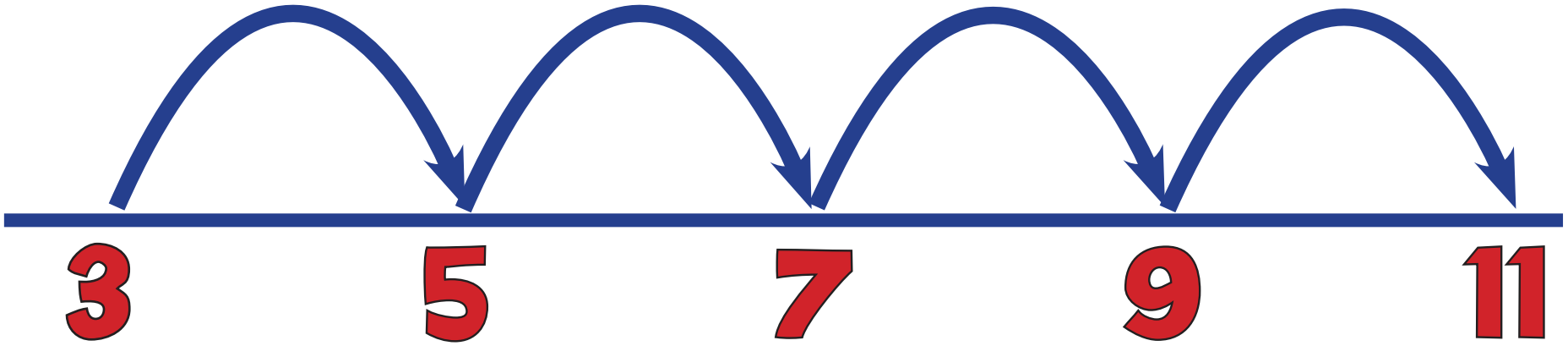
C6: Counting On



C7: Counting Back

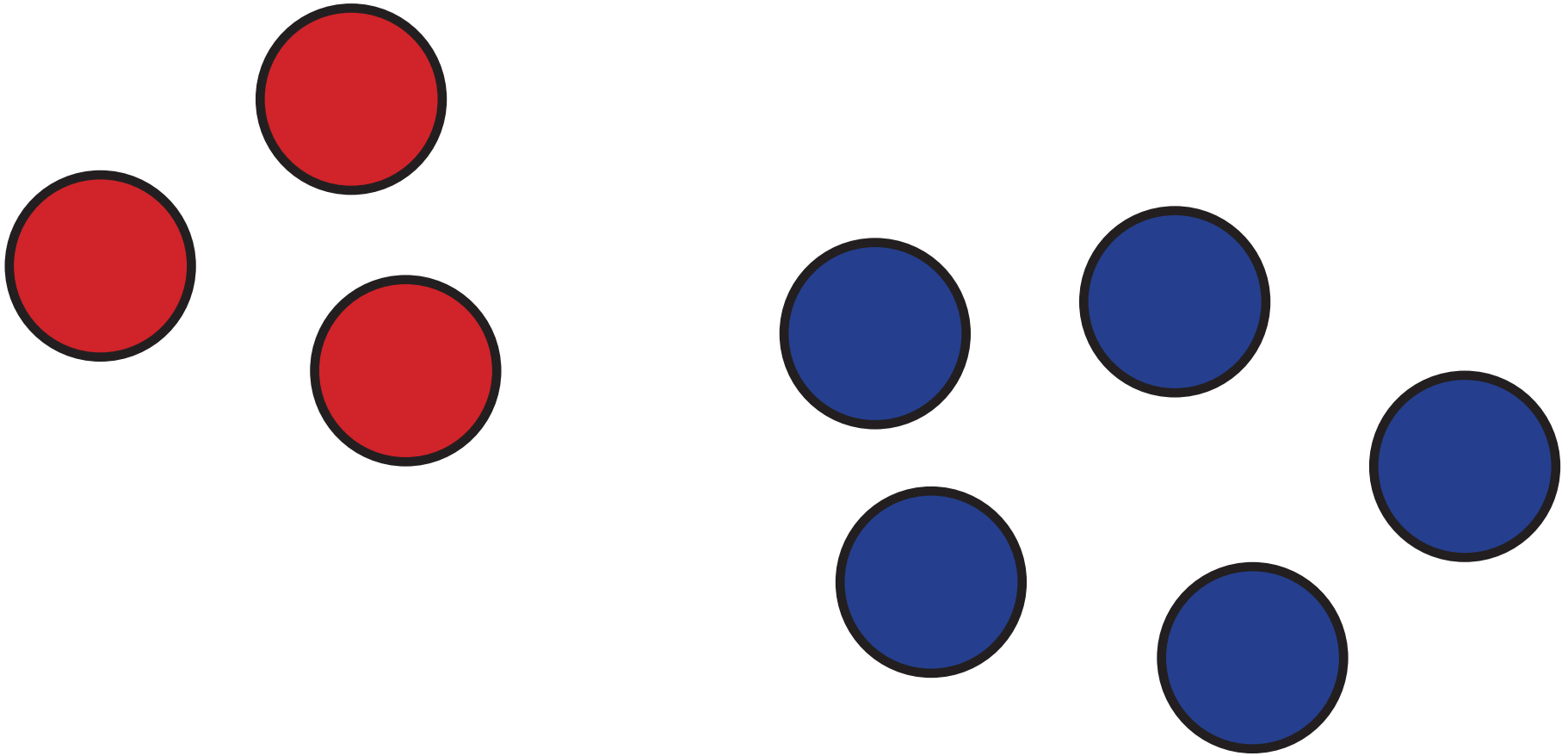


C8: Counting in Steps



A1: Objects & Pictures

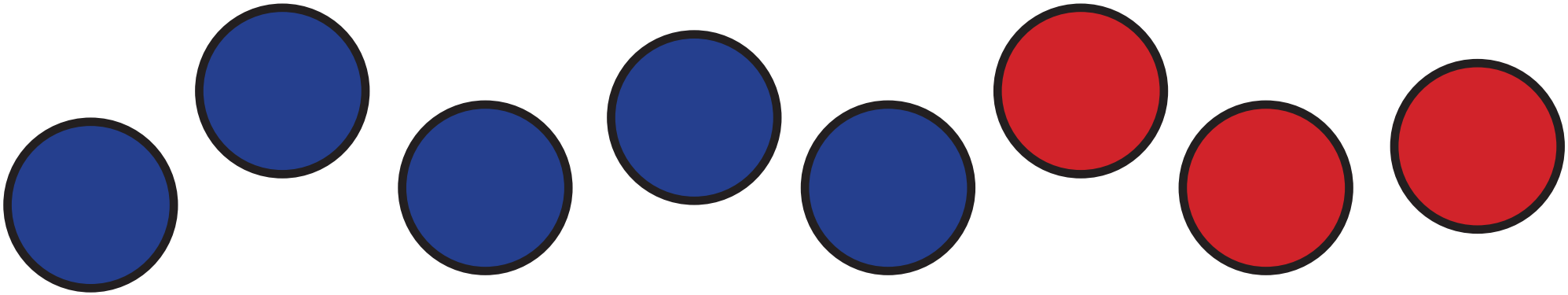
1



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

A1a: Largest Number 1st

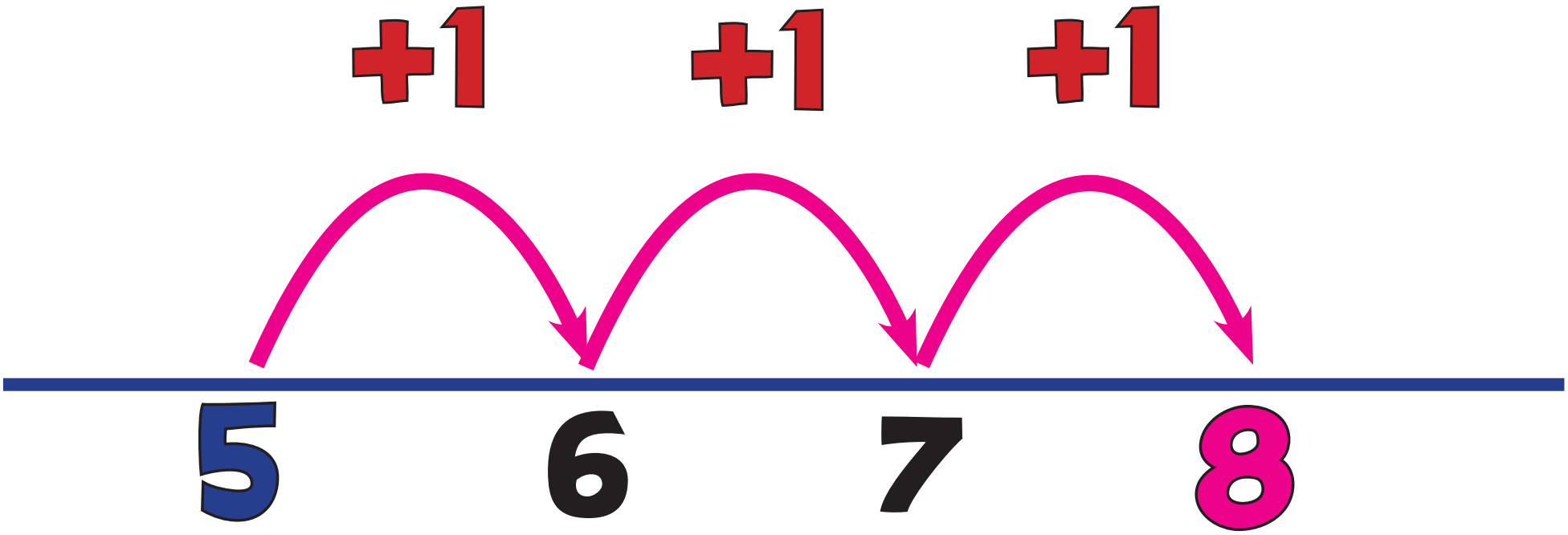
1



5 + 3 = 8

A2: Counting On

1

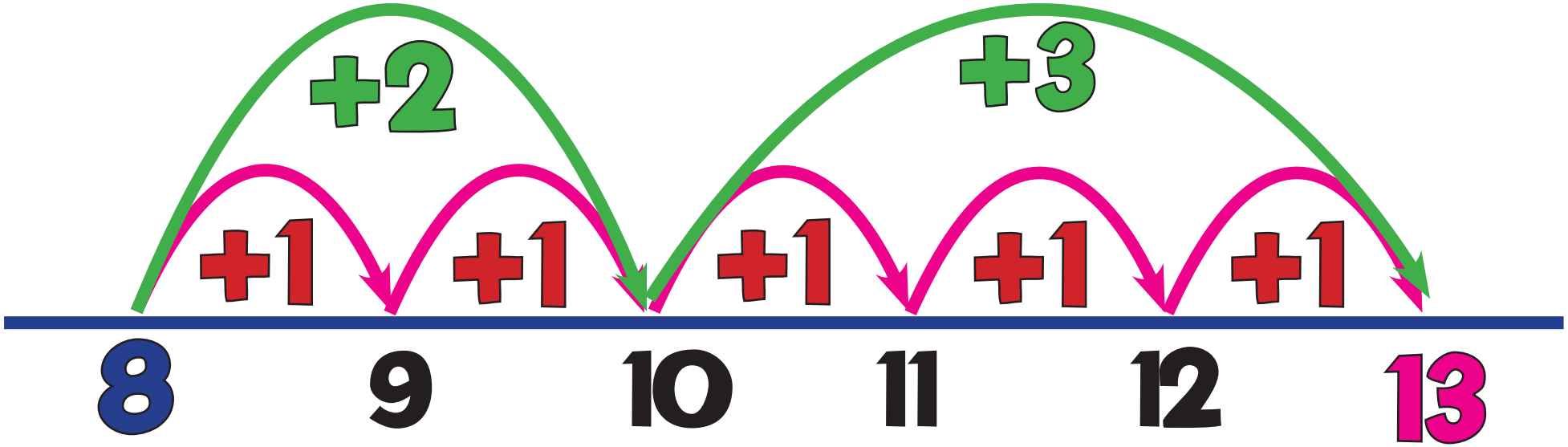


$$5 + 3 = 8$$

A2a: Counting On

1

Bridging 10

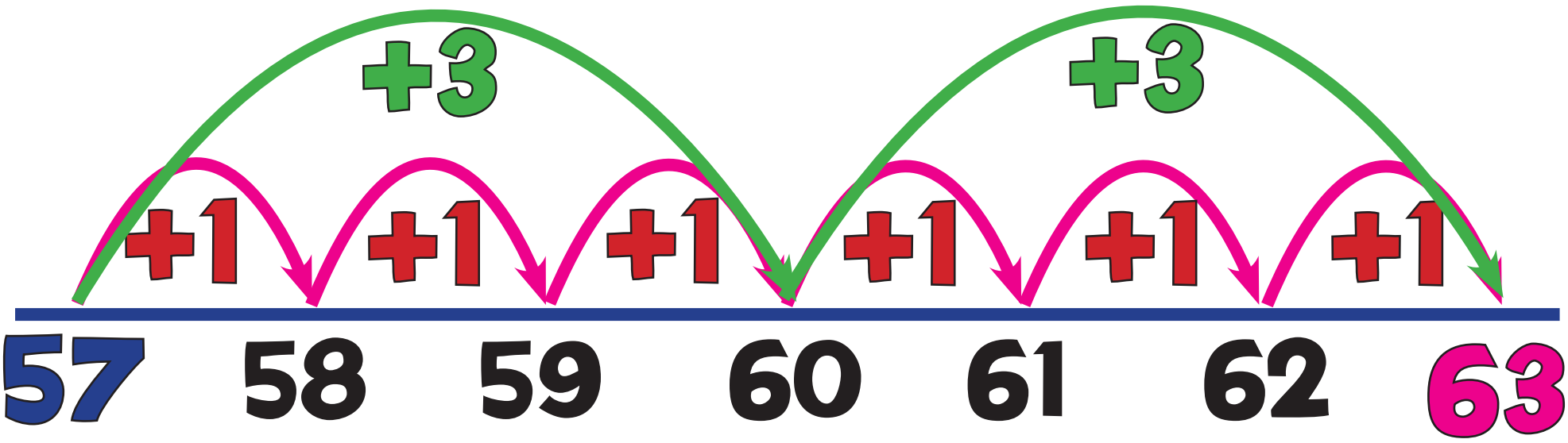


$$8 + 5 = 13$$

A2b: Counting On

2

Bridging 10s Number

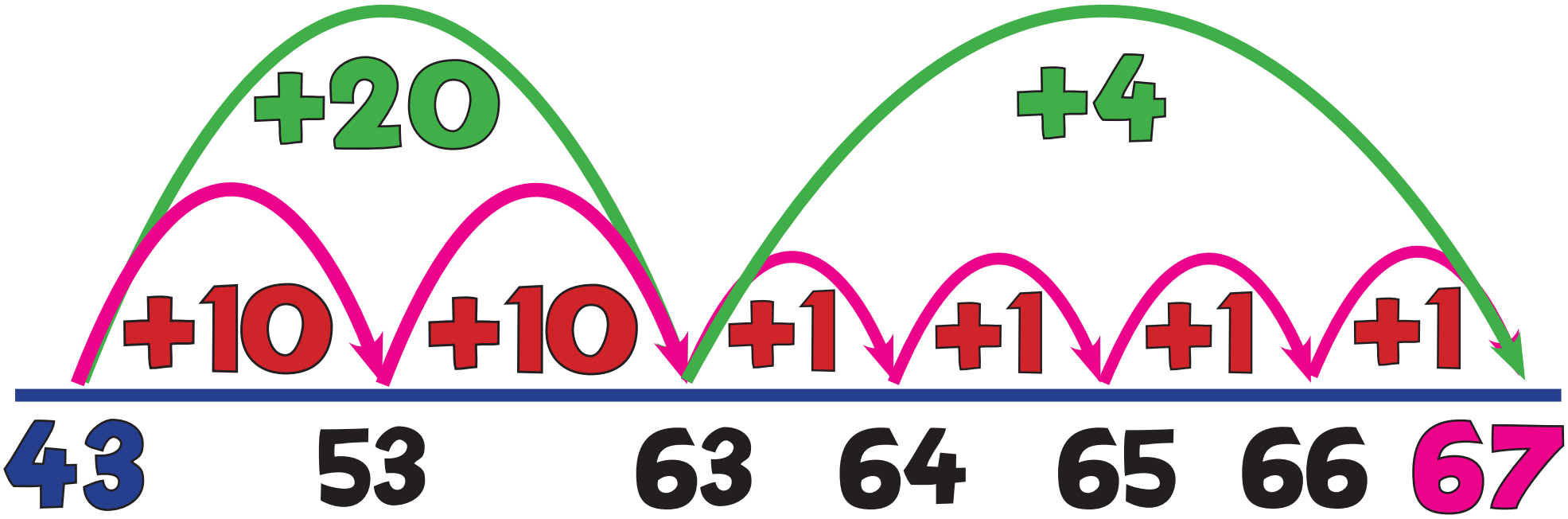


57 + 6 = 63

A3: Forwards Jump

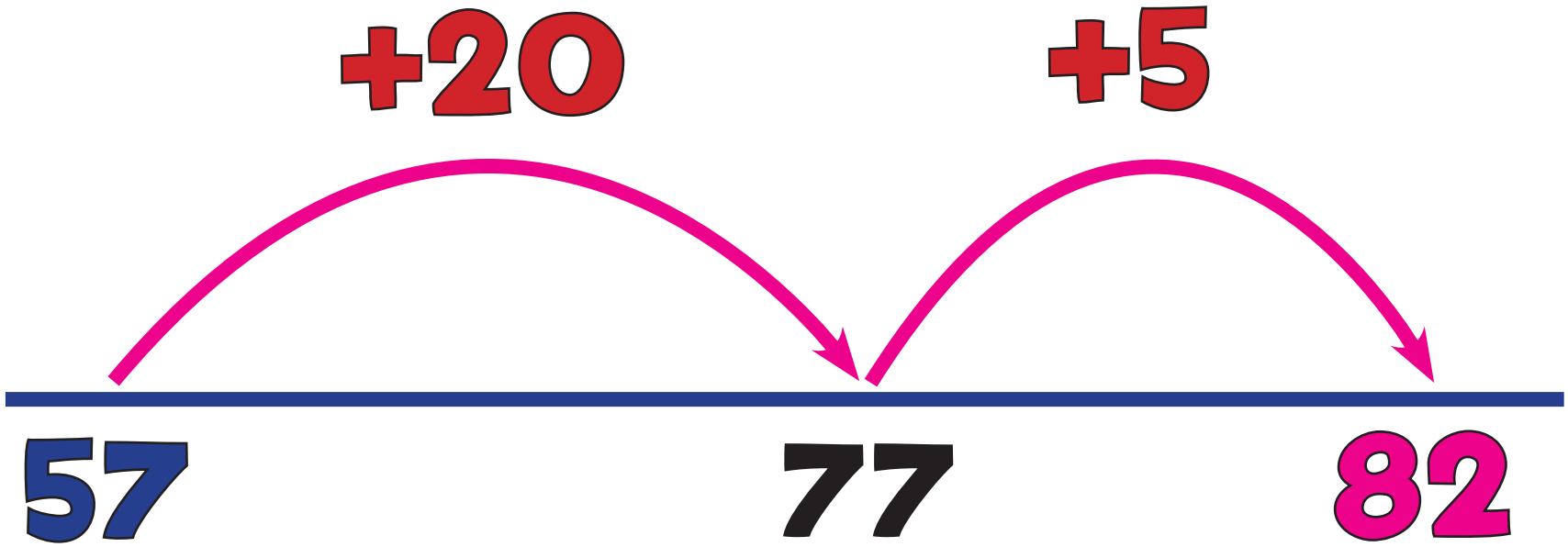
2

43 + 24 = 67



A3a: Forwards Jump 2

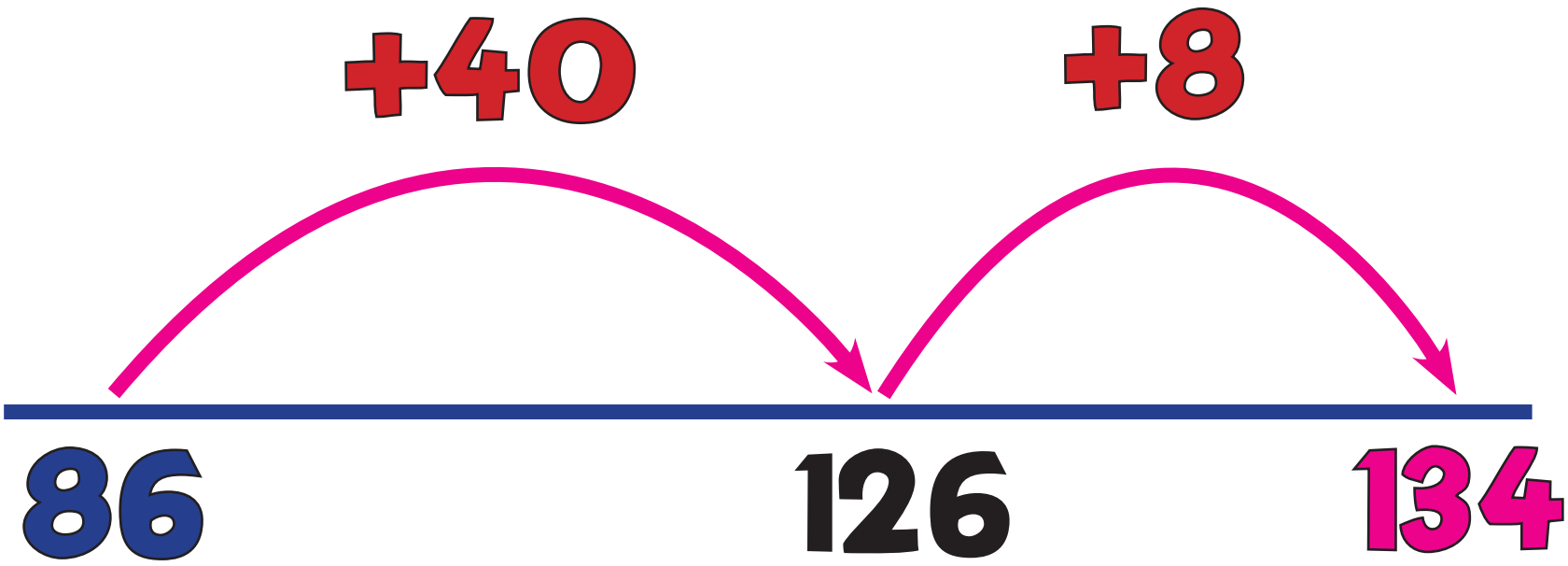
57 + 25 = 82



A3b: Forwards Jump

2/3

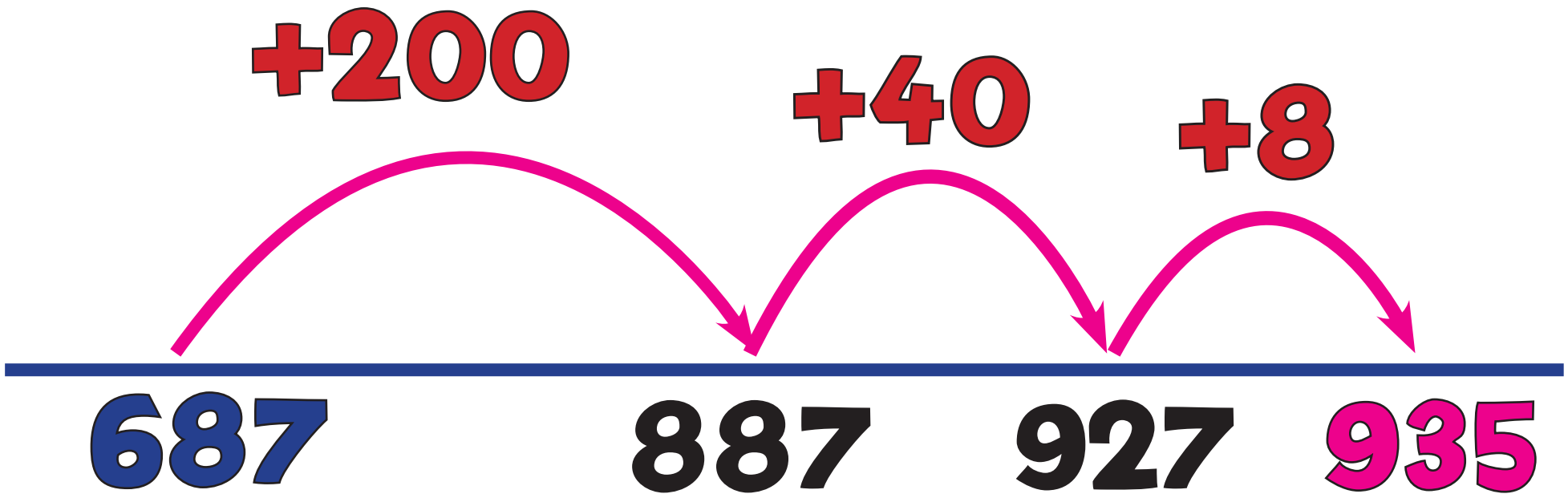
86 + 48 = 134



A3c: Forwards Jump

3

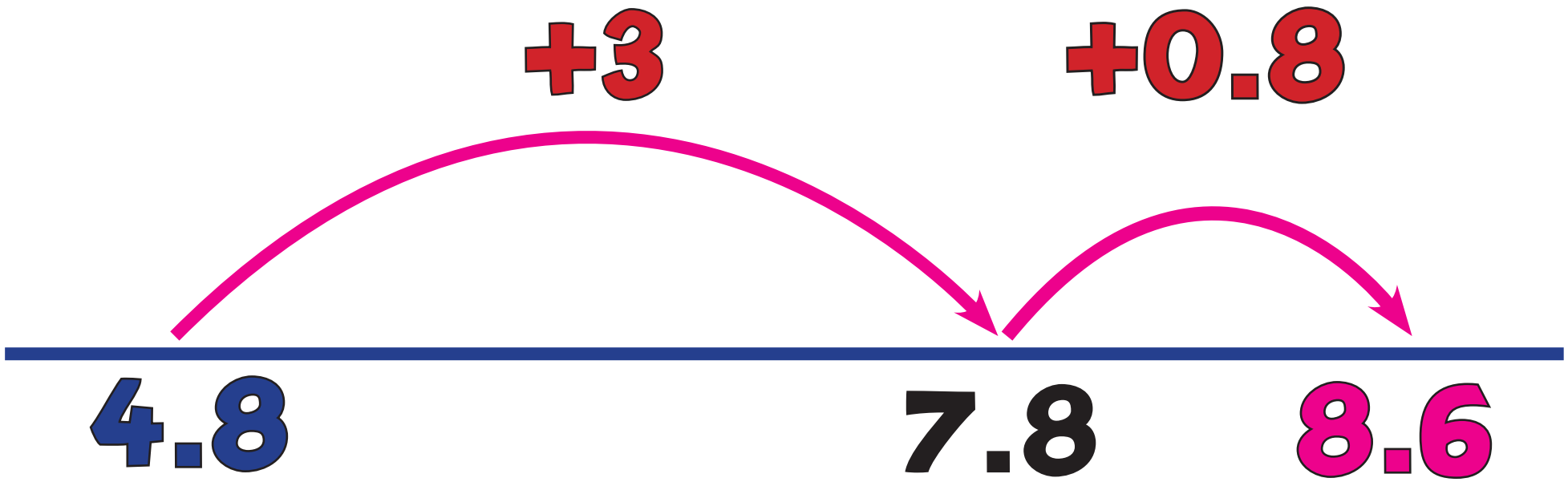
687 + 248 = 935



A3f: Decimal Jump

5

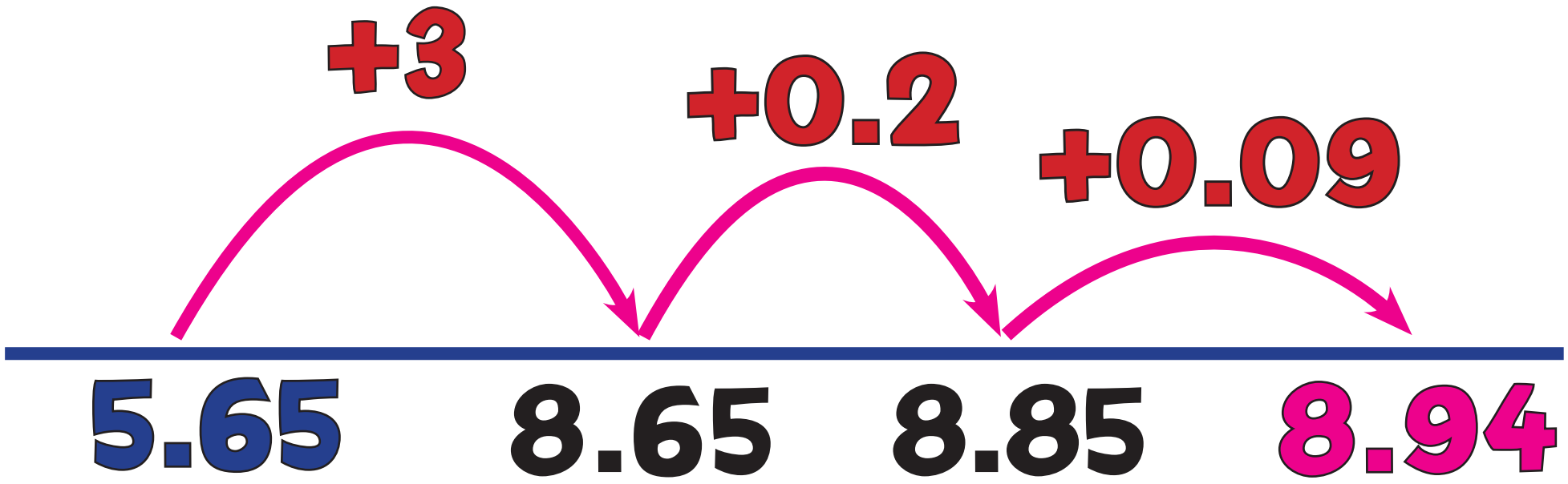
4.8 + 3.8 = 8.6



A3g: Decimal Jump

5

5.65 + 3.29 = 8.94



A4: Partitioning

2

$$43 + 24 = 67$$

$$40 + 20 = 60$$

$$3 + 4 = 7$$

$$67$$

A4a: Partitioning

2

$$57 + 25 = 82$$

$$50 + 20 = 70$$

$$7 + 5 = 12$$

$$82$$

A4b: Partitioning

2/3

$$86 + 48 = 134$$

$$80 + 40 = 120$$

$$6 + 8 = 14$$

$$134$$

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A4c: Partitioning

3

687 + 248 = 935

600 + 200 = 800

80 + 40 = 120

7 + 8 = 15

935

A4f: Partitioning

5

$$4.8 + 3.8 = 8.6$$

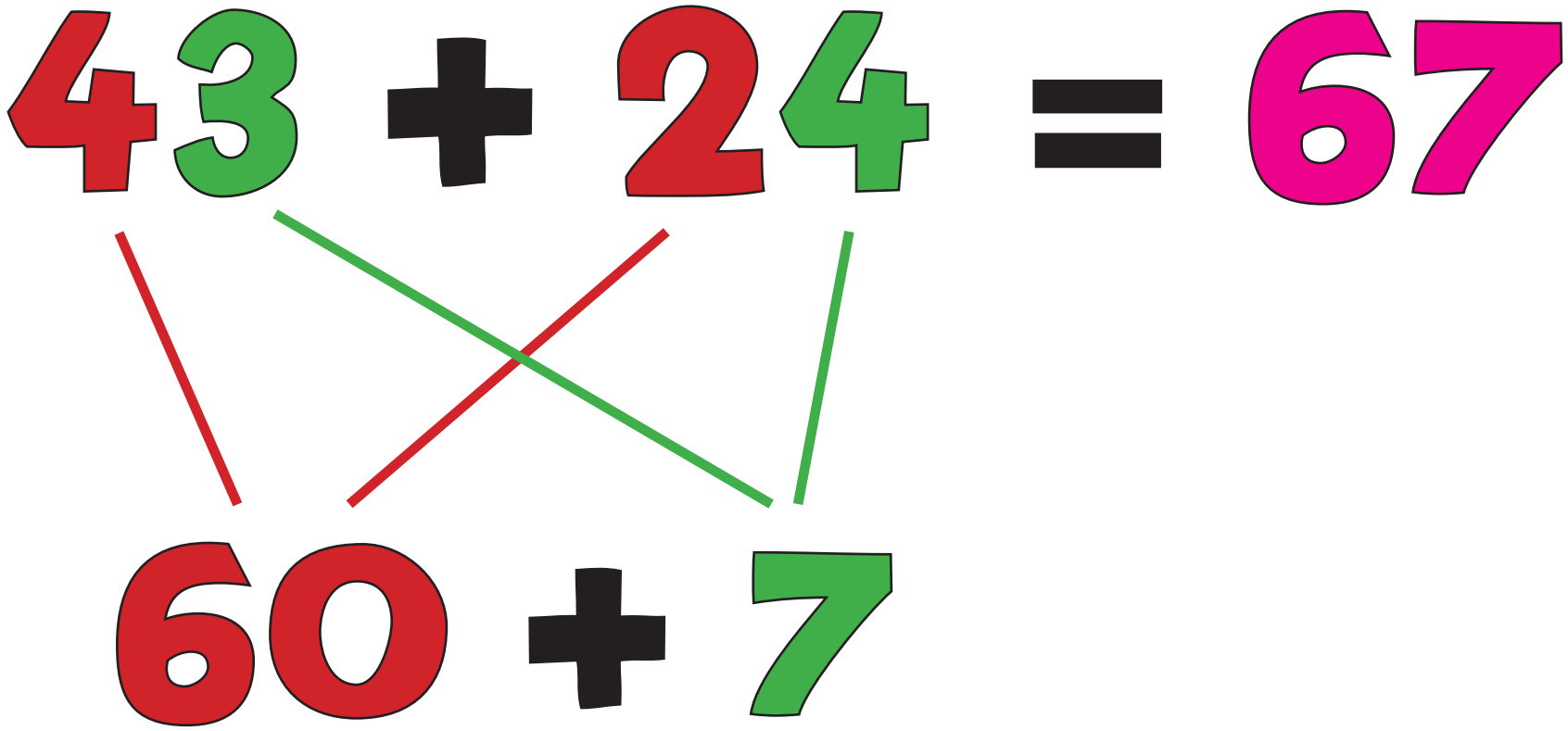
$$4 + 3 = 7$$

$$0.8 + 0.8 = 1.6$$

$$8.6$$

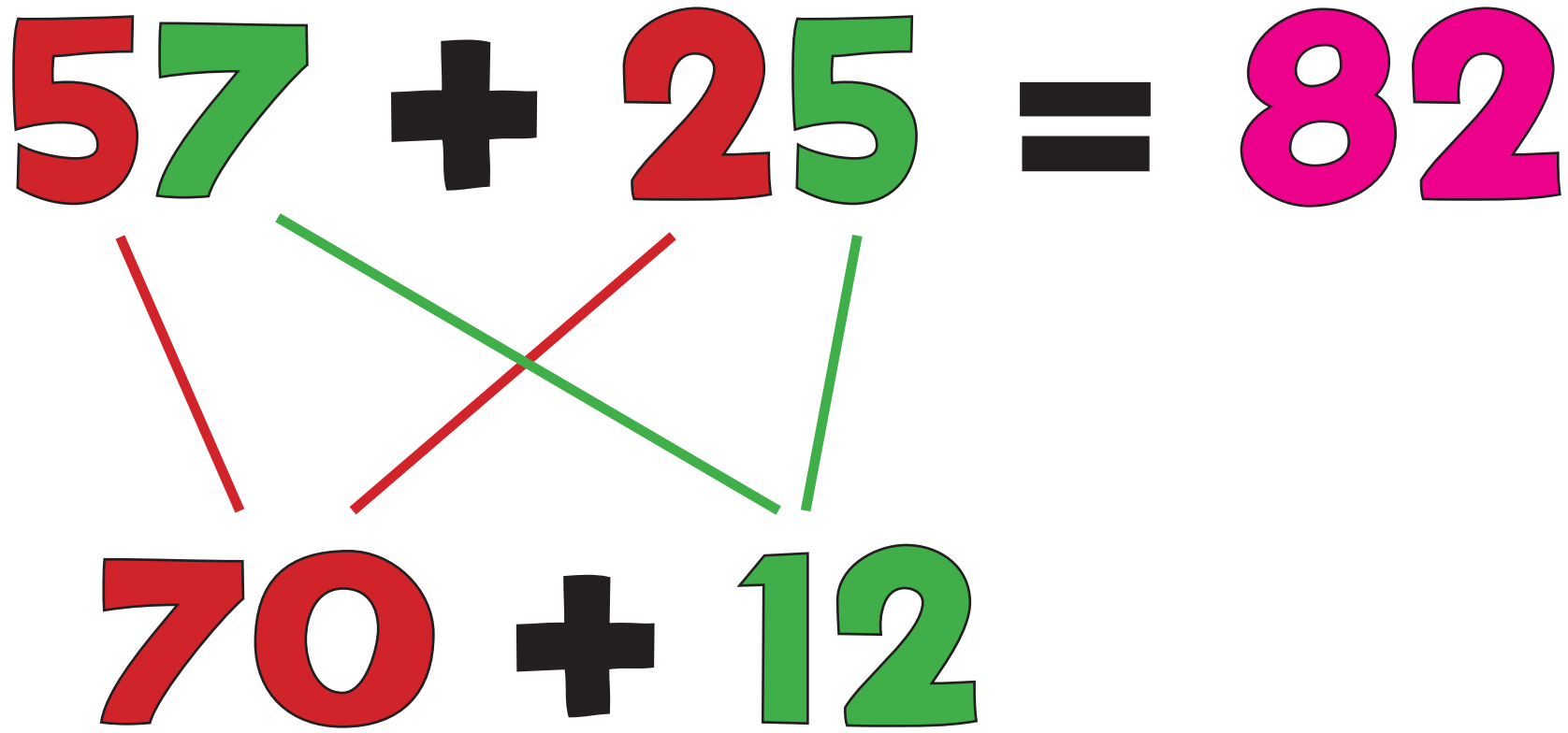
A5: Partition Jot

2



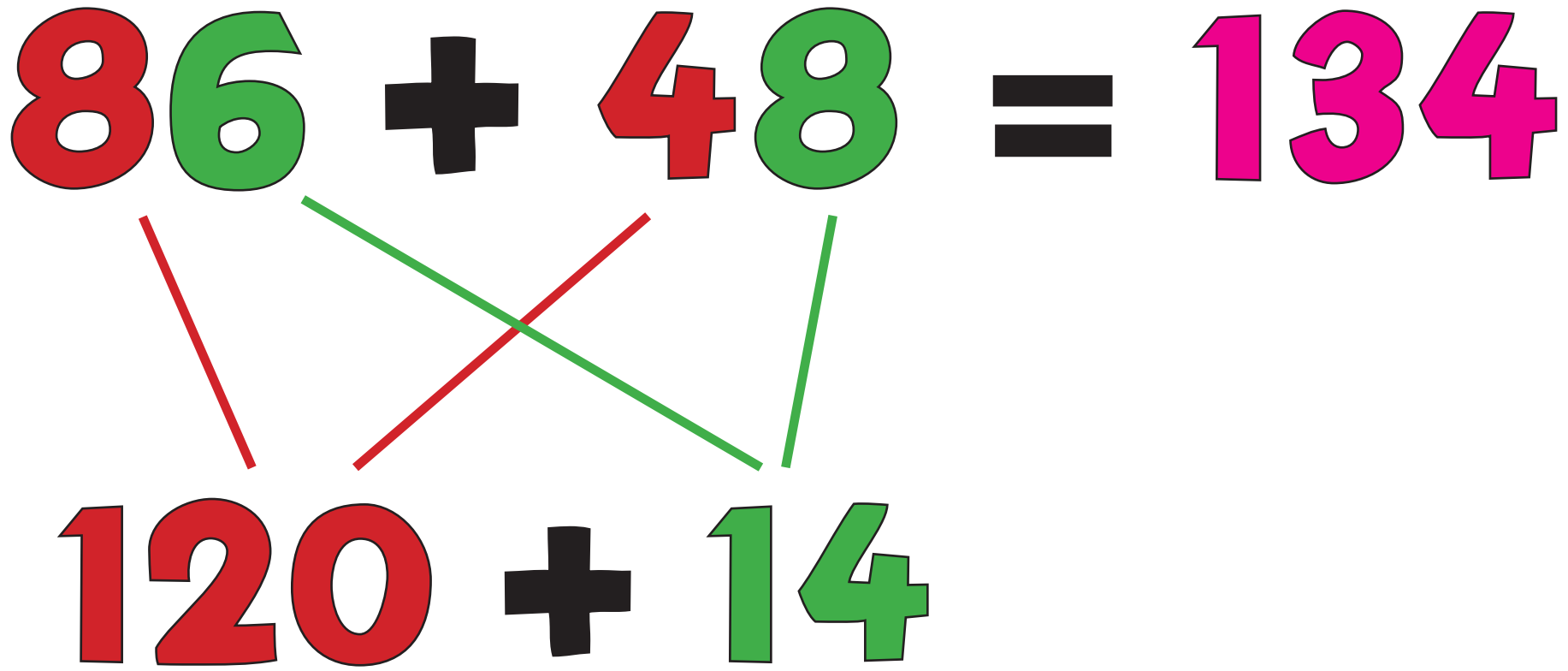
A5a: Partition Jot

2



A5b: Partition Jot

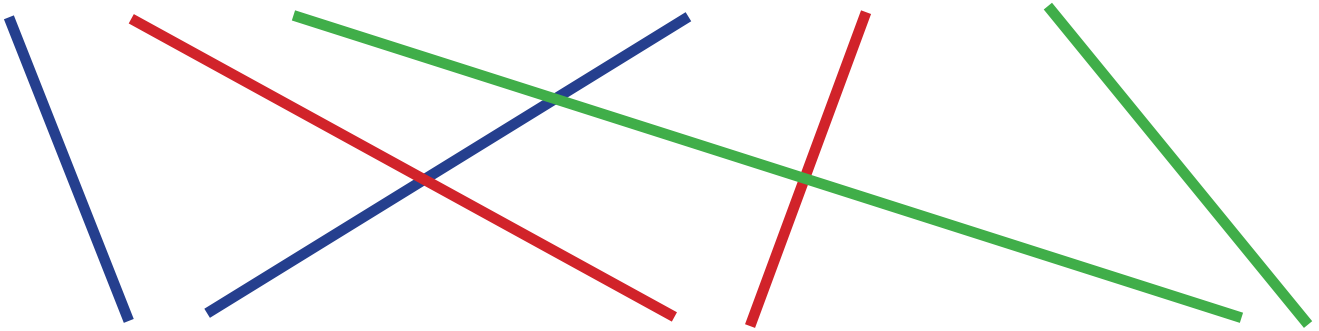
2/3



A5c: Partition Jot

3

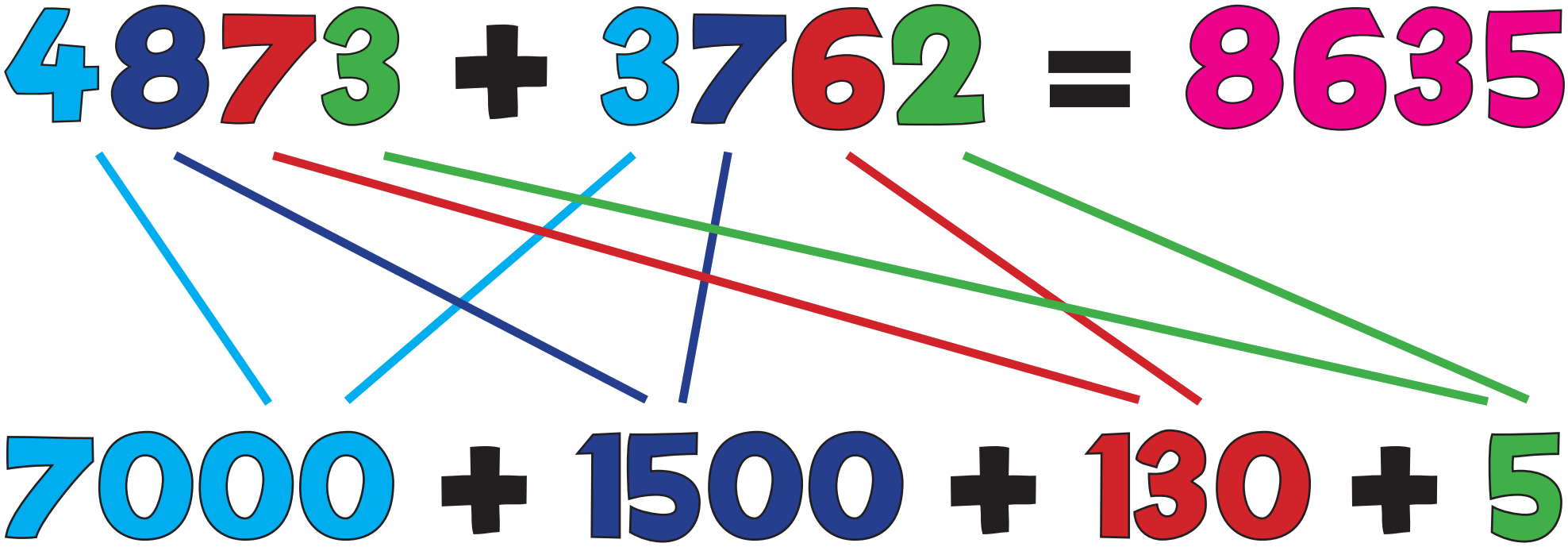
687 + 248 = 935



800 + 120 + 15

A5d: Partition Jot

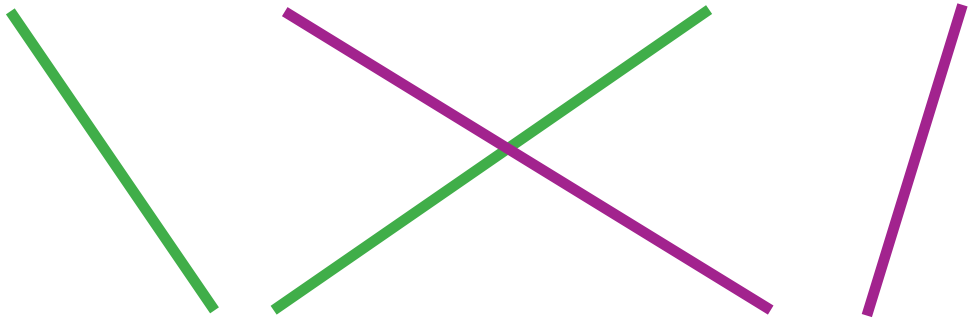
4



A5f: Partition Jot

5

$$4.8 + 3.8 = 8.6$$

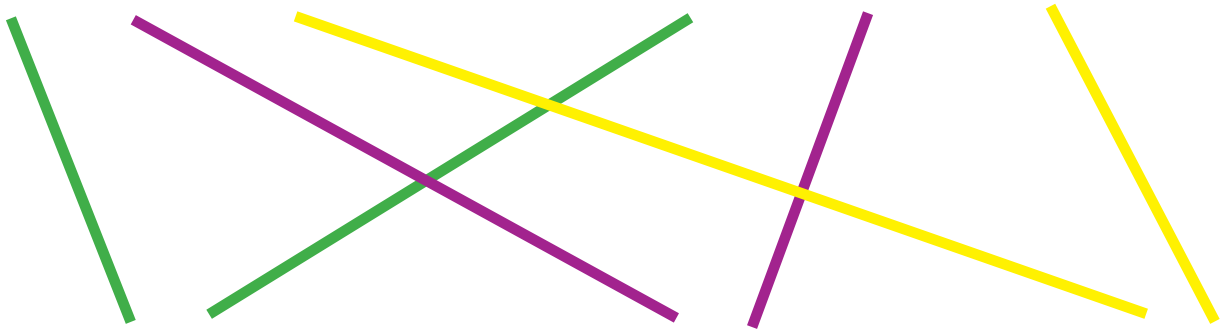


$$7 + 1.6$$

A5g: Partition Jot

5

$$5.65 + 3.29 = 8.94$$

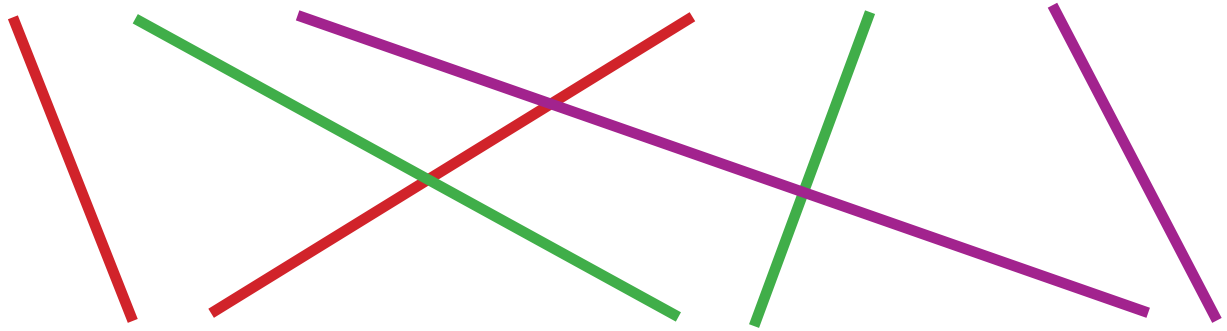


$$8 + 0.8 + 0.14$$

A5h: Partition Jot

5

76.7 + 58.5 = 135.2

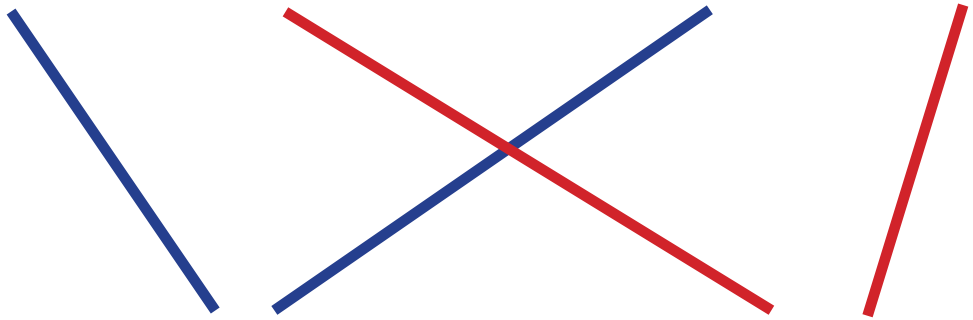


120 + 14 + 1.2

A5i: Partition Jot

5

£38.25 + £27.46 = £65.71



£65.00 + £0.71

(A6: Expanded Column)

2 Additional

Addition

	10	1
	40	3
+	20	4
	60	7
	67	

(A6: Expanded Column)

2 Additional:a

Addition

	10	1
	5	7
+	2	5
	1	2
	7	0
	8	2

(A6: Expanded Column)

2/3 Additional:b

Addition

100	10	1
	8	6
+	4	8
	1	4
1	2	0
1	3	4

A6: Expanded Column Addition

3

	100	10	1
	6	8	7
+	2	4	8
		1	5
	1	2	0
	8	0	0
	9	3	5

(A7: Column Addition)

2 Additional

10	1
4	3
+ 2	4
6	7

(A7: Column Addition)

2 Additional:a

	10	1
	5	7
+	2	5
	8	2
	1	

(A7: Column Addition)

2/3 Additional:b

100	10	1
	8	6
+	4	8
1	3	4
1	1	

A7: Column Addition

3

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

A7d: Column Addition

4

$$\begin{array}{r} 4873 \\ +\ 3762 \\ \hline 8635 \\ \hline 1\ \ 1 \end{array}$$

A7e: Column Addition

5

$$
\begin{array}{r}
787567 \\
+\ 446278 \\
\hline
1233845 \\
\hline
1\ 1\ 11\ 1
\end{array}
$$

A7f: Column Addition

5

$$\begin{array}{r} {\scriptstyle 1}\quad\;\; {\scriptstyle \frac{1}{10}} \\ 4.8 \\ +\;\; 3.8 \\ \hline 8.6 \\ \hline {\scriptstyle 1} \end{array}$$

A7g: Column Addition

5

1	.	$\frac{1}{10}$	$\frac{1}{100}$
5	.	6	5
+ 3	.	2	9
8	.	9	4
1			

A7h: Column Addition

5

10	1	.	$\frac{1}{10}$
	76	.	7
+	58	.	5
1	35	.	2
1	1		1

A7i: Column Addition

5

With Money

£38.25

\+ £27.46

£65.71

1 1

MC RaPa CoDa Numbo

MA1 MC = Manipulate Calculation
MA2 Ra = Round and Adjust
MA3 Pa = Partitioning
MA4 Co = Counting On
MA5 Da = Double and Adjust
MA6 Numbo = Number Bonds

6 Cool Strategies for Mental Addition!

Jesson's C. of E. Primary School

A7 j: Column Addition

5

With Decimals

$$73.4 + 5.67 = 79.07$$

10	1	.	$\frac{1}{10}$	$\frac{1}{100}$
	7	3	.	4
+	5	.	6	7
	7	9	.	0	7
	1			

MA1: Manipulate Calculation

MC RaPa CoDa Numbo

$$45 + 39 = 84$$

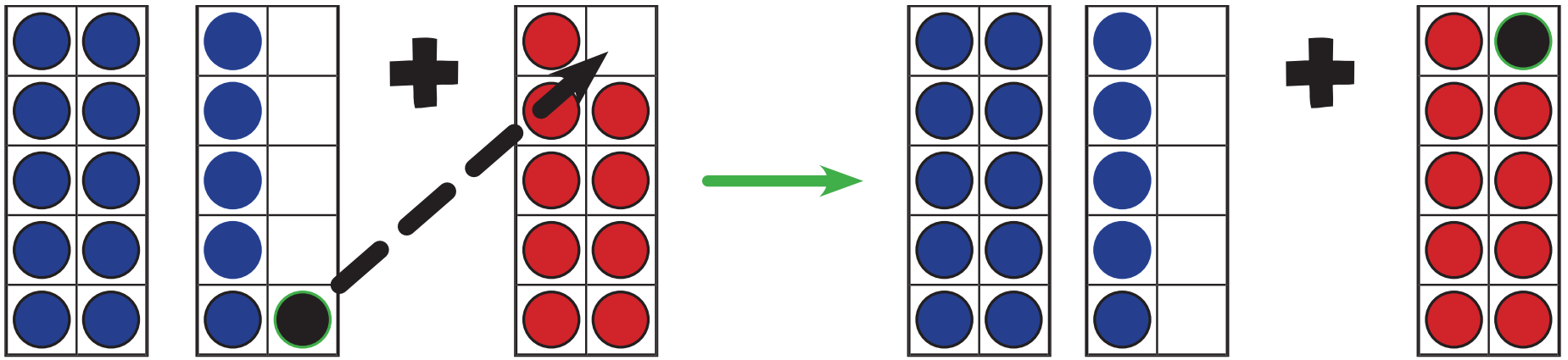
44 | 1 | 39

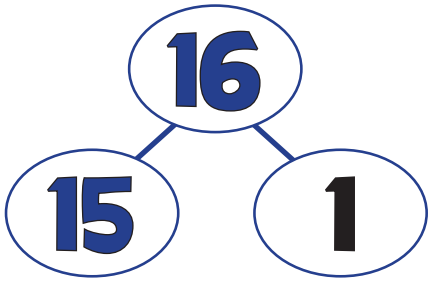
$$44 + 40 = 84$$

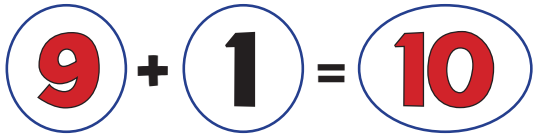
MA1: Manipulate Calculation

MC RaPa CoDa Numbo
Visualisation

$$16 + 9 = 25$$







$$15 + 10$$

MA1: Manipulate Calculation

MC RaPa CoDa Numbo

1

$$16 + 9 = 25$$

15 | 1 | 9

$$15 + 10 = 25$$

MA1: Manipulate Calculation

MC RaPa CoDa Numbo 2

$$45 + 19 = 64$$

44 | 1 | 19

$$44 + 20 = 64$$

MA1: Manipulate Calculation

MC RaPa CoDa Numbo

3

$$45 + 97 = 142$$

42 | 3 | 97

$$42 + 100 = 142$$

MA1: Manipulate Calculation

MC RaPa CoDa Numbo

4

$$345 + 298 = 643$$

343 | 2 | 298

$$343 + 300 = 643$$

MA1: Manipulate Calculation

MC RaPa CoDa Numbo

5

$$4645 + 1996 = 6641$$

4641 | 4 | 1996

$$4641 + 2000 = 6641$$

MA1: Manipulate Calculation

MC RaPa CoDa Numbo

6

$$45.2 + 49.9 = 95.1$$

45.1 | 0.1 | 49.9

$$45.1 + 50 = 95.1$$

MA2: Round & Adjust

MC RaPa CoDa Numbo

$$45 + 39 = 84$$

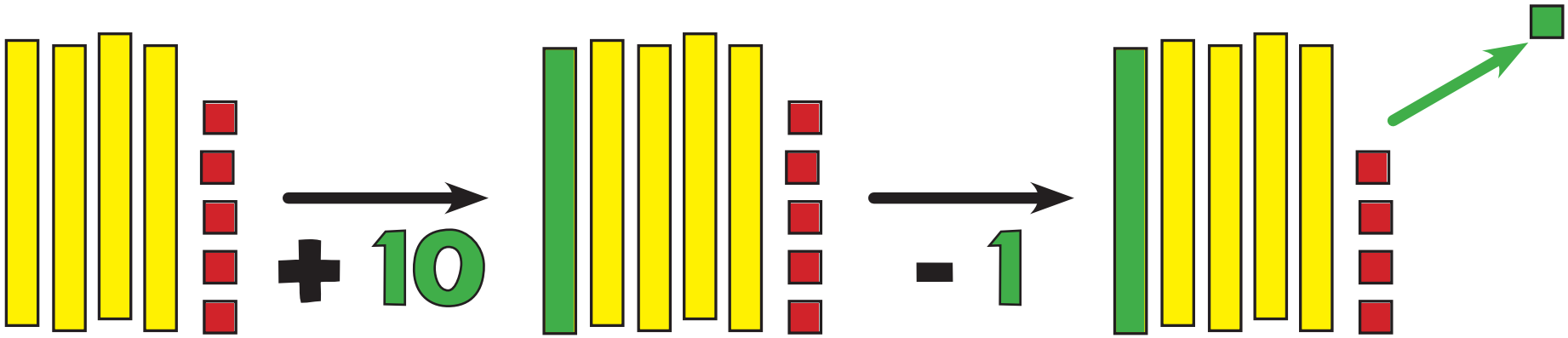
$$45 + 40 - 1$$

$$85 - 1 = 84$$

MA2: Round & Adjust

MC RaPa CoDa Numbo Visualisation

45 + 9 = 54



45

54

MA2: Round & Adjust

MC RaPa CoDa Numbo 1

$$45 + 9 = 54$$

$$45 + 10 - 1 =$$

$$55 - 1 = 54$$

MA2: Round & Adjust

MC RaPa CoDa Numbo 2

$$45 + 19 = 64$$

$$45 + 20 - 1$$

$$65 - 1 = 64$$

MA2: Round & Adjust

MC RaPa CoDa Numbo 3

$$45 + 97 = 142$$

$$45 + 100 - 3$$

$$145 - 3 = 142$$

MA2: Round & Adjust

MC RaPa CoDa Numbo 4

$$345 + 298 = 643$$

$$345 + 300 - 2$$

$$645 - 2 = 643$$

MA2: Round & Adjust

MC RaPa CoDa Numbo 5

4645 + 1996 = 6641

4645 + 2000 - 4

6645 - 4 = 6641

MA2: Round & Adjust

MC RaPa CoDa Numbo 6

$$45.2 + 49.9 = 95.1$$

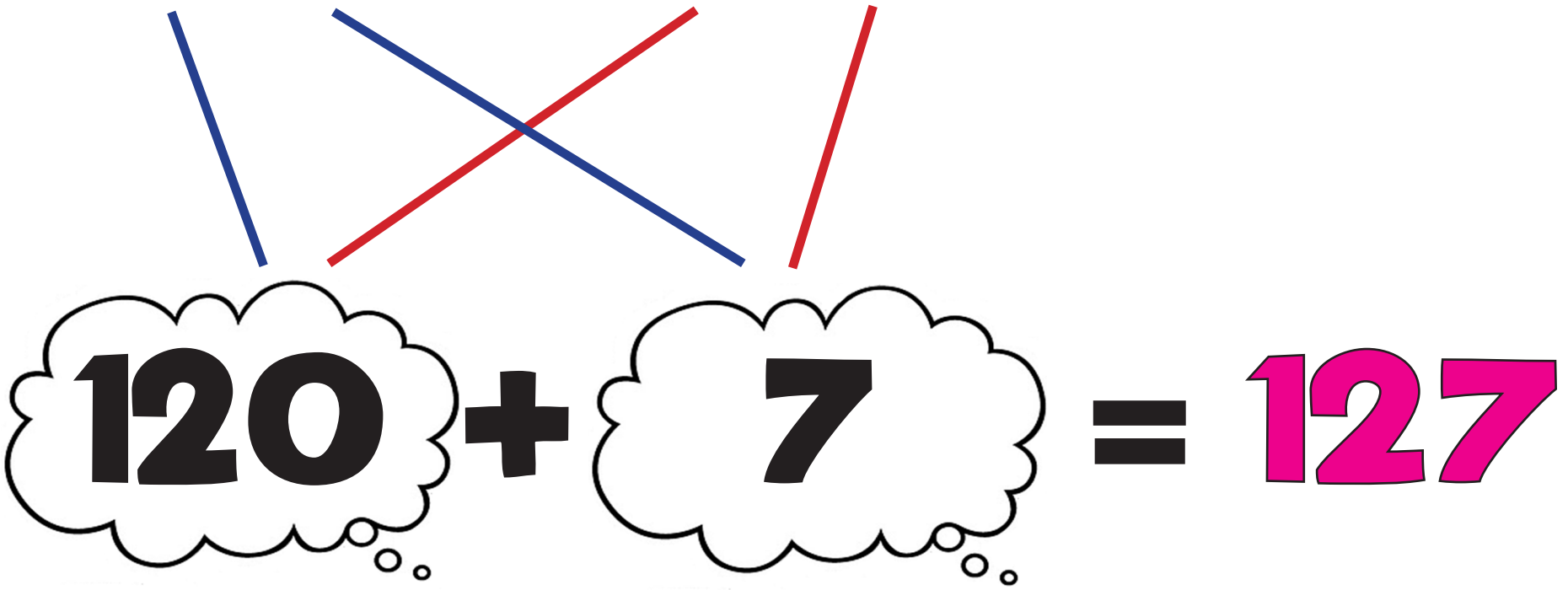
$$45.2 + 50 - 0.1$$

$$95.2 - 0.1 = 95.1$$

MA3: Partitioning

MC RaPa CoDa Numbo

45 + 82 = 127

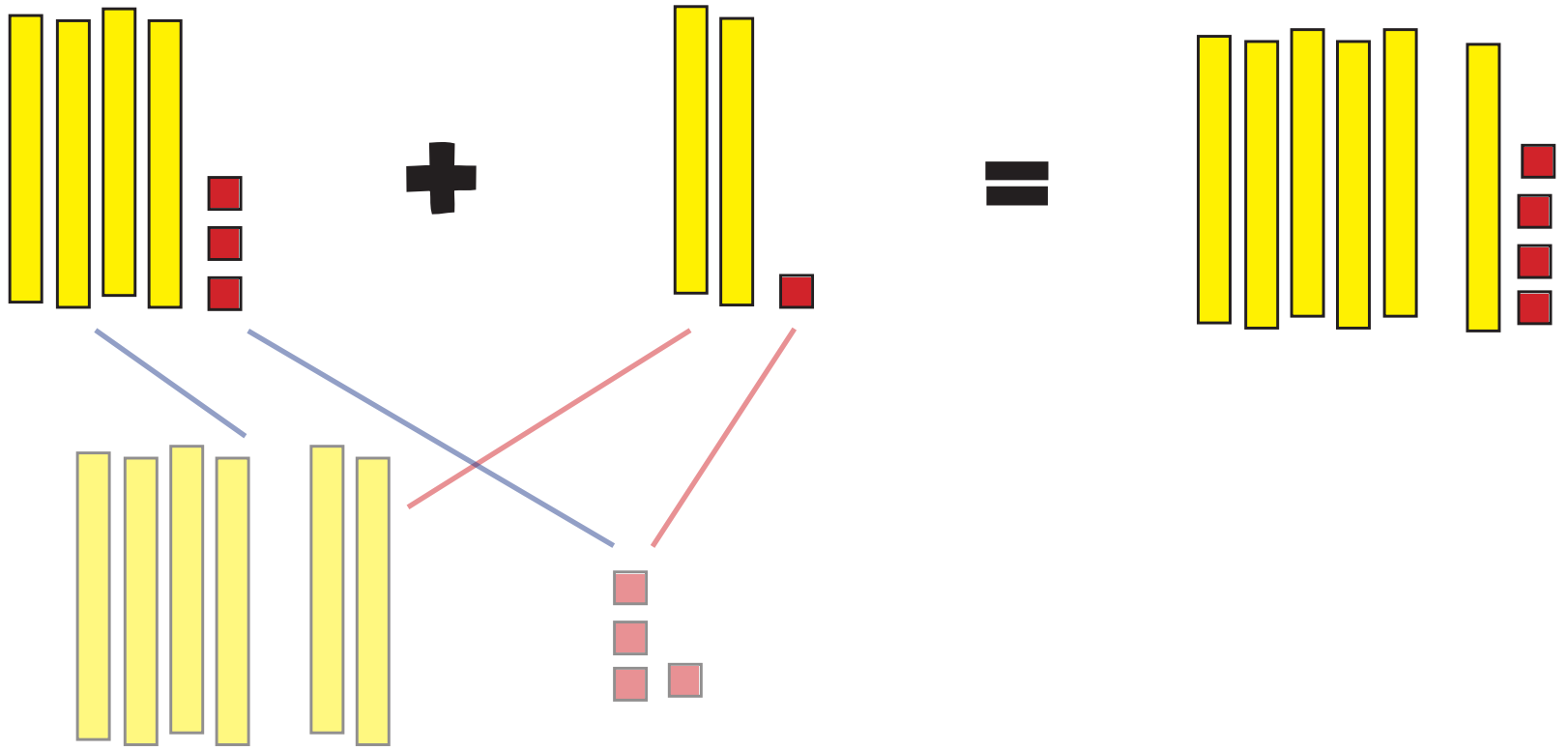


MA3: Partitioning

MC RaPa CoDa Numbo
Visualisation

Visualisation

43 + 21 = 64



MA3: Partitioning

MC RaPa CoDa Numbo 1

$$8 + 6 = 14$$

$$8 + 2 + 4 = 14$$

MA3: Partitioning

MC RaPa CoDa Numbo 2

$$43 + 21 = 64$$

$$60 + 4 = 64$$

MA1: Partitioning

MC RaPa CoDa Numbo 3

57 + 25 = 82

70 + 12 = 82

MA1: Partitioning

MC RaPa CoDa Numbo 4

648 + 231 = 879

800 + 70 + 9 = 879

MA3: Partitioning

MC RaPa CoDa Numbo 5

576 + 258 = 834

700 + 120 + 14 = 834

MA3: Partitioning

MC RaPa CoDa Numbo 6

4.73 + 2.21 = 6.94

6 + 0.9 + 0.04 = 6.94

MA4: Counting On

MC RaPa CoDa Numbo

$$45 + 20 = 65$$

+20

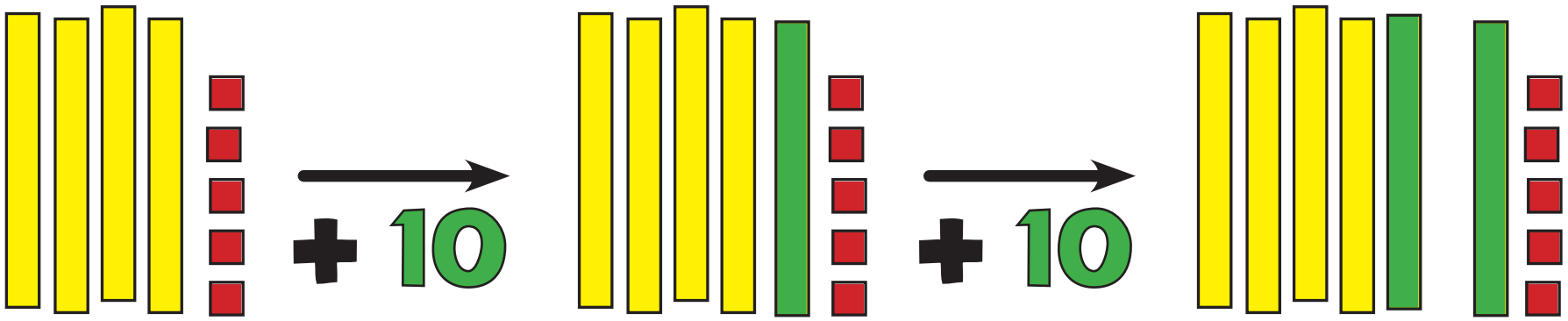
45

65

MA4: Counting On

MC RaPa CoDa Numbo Visualisation

45 + 20 = 65



45 55 65

MA4a: Counting On

MC RaPa CoDa Numbo 1

Ones

$$12 + 5 = 17$$

+5

MA4b: Counting On Tens

MC RaPa CoDa Numbo 1

$$57 + 10 = 67$$

+10

57

67

MA4a: Counting On

MC RaPa CoDa Numbo 2

Ones

$$78 + 7 = 85$$

+7

78

85

MA4b: Counting On Tens

MC RaPa CoDa Numbo 2

$$58 + 40 = 98$$

+40

58

98

MA4a: Counting On

MC RaPa CoDa Numbo 3

Tens

85 + 50 = 135

+50

85

135

MA4b: Counting On

MC RaPa CoDa Numbo 3

Hundreds

$$534 + 300 = 834$$

+300

534

834

MA4a: Counting On

MC RaPa CoDa Numbo 4

Tens

784 + 60 = 844

+60

784

844

MA4b: Counting On

MC RaPa CoDa Numbo 4

Hundreds

4837 + 3000 = 7837

+3000

4837

7837

MA4a: Counting On

MC RaPa CoDa Numbo 5

Hundreds

837 + 500 = 1337

+500

837

1337

MA4b: Counting On

MC RaPa CoDa Numbo 5

Thousands

7583 + 5000 = 12583

+5000

7583

12583

MA4a: Counting On

MC RaPa CoDa Numbo 6

Ten Thousands

43,826 + 30,000 = 73,826

+30,000

43,826

73,826

MA4b: Counting On

MC RaPa CoDa Numbo 6

Millions

5,763,947 + 4,000,000 = 9,763,947

+4,000,000

5,763,947

9,763,947

MA5: Double & Adjust

MC RaPa CoDa Numbo

$$45 + 46 = 91$$

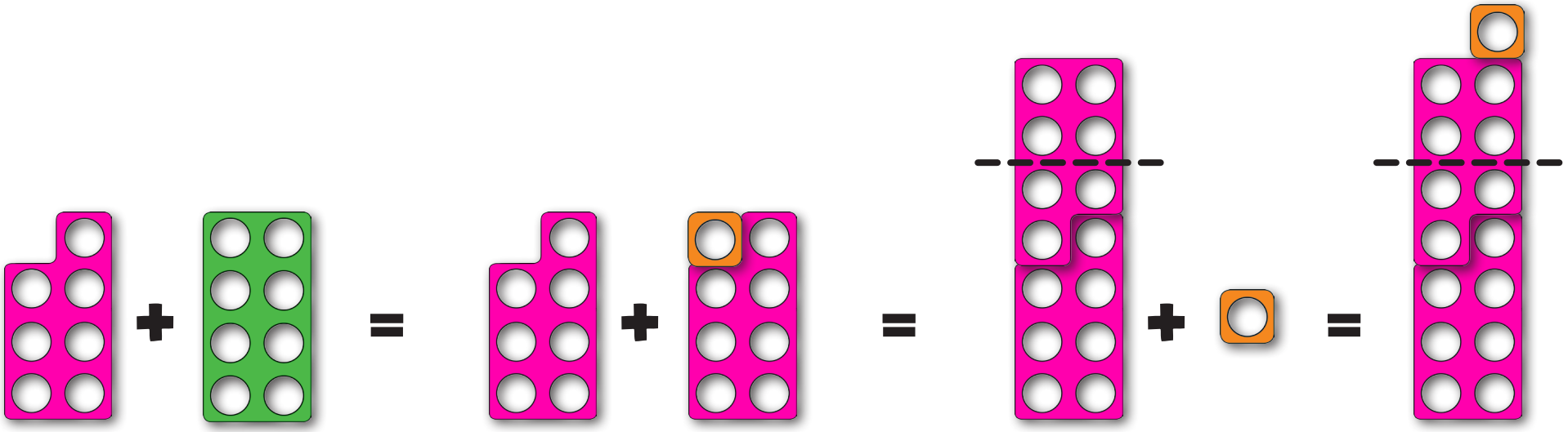
$$45 + 45 + 1$$

$$90 + 1 = 91$$

MA5: Double & Adjust

MC RaPa CoDa Numbo
Visualisation

7 + 8 = 15



7 + 8 = 7 + 7 + 1 = 14 + 1 = 15

MA5: Double & Adjust

MC RaPa CoDa Numbo 1

$$5 + 6 = 11$$

$$5 + 5 + 1$$

$$10 + 1 = 11$$

MA5: Double & Adjust

MC RaPa CoDa Numbo 2

$$7 + 8 = 15$$

$$7 + 7 + 1$$

$$14 + 1 = 15$$

MA5: Double & Adjust

MC RaPa CoDa Numbo 3

$$16 + 17 = 33$$

$$16 + 16 + 1$$

$$32 + 1 = 33$$

MA5: Double & Adjust

MC RaPa CoDa Numbo 4

$$37 + 38 = 75$$

$$37 + 37 + 1$$

$$74 + 1 = 75$$

MA5: Double & Adjust

MC RaPa CoDa Numbo 5

$$125 + 127 = 252$$

$$125 + 125 + 2$$

$$250 + 2 = 252$$

MA5: Double & Adjust

MC RaPa CoDa Numbo 6

$$4.5 + 4.7 = 9.2$$

$$4.5 + 4.5 + 0.2$$

$$9 + 0.2 = 9.2$$

MA6: Number Bonds

MC RaPa CoDa Numbo

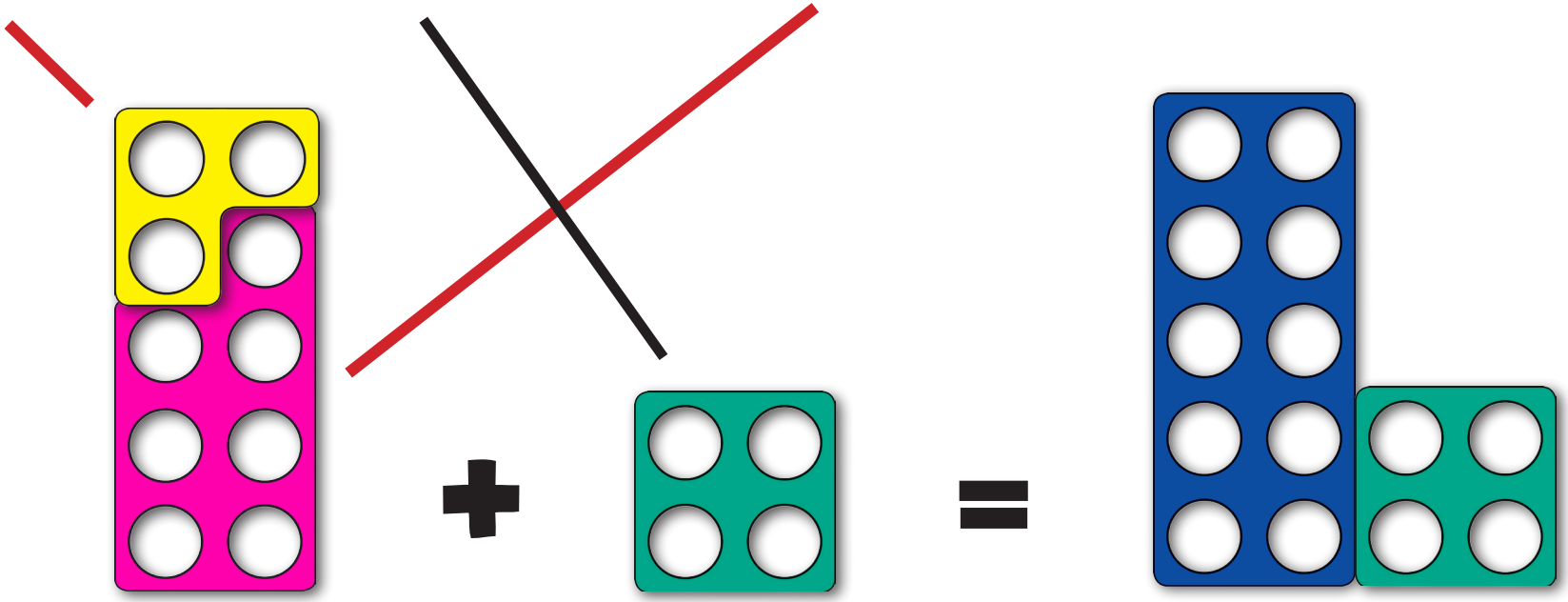
$$45 + 95 = 140$$

$$40 + 100 = 140$$

MA6: Number Bonds

MC RaPa CoDa Numbo
Visualisation

3 + 4 + 7 = 14



MA6: Number Bonds

MC RaPa CoDa Numbo 1

Learn Bonds

0	+	10	0 + 10 = 10
1	+	9	1 + 9 = 10
2	+	8	2 + 8 = 10
3	+	7	3 + 7 = 10
4	+	6	4 + 6 = 10
5	+	5	5 + 5 = 10
6	+	4	6 + 4 = 10
7	+	3	7 + 3 = 10
8	+	2	8 + 2 = 10
9	+	1	9 + 1 = 10
10	+	0	10 + 0 = 10

MA6: Number Bonds

MC RaPa CoDa Numbo 2

$$3 + 4 + 7 = 14$$

10 4

MA6: Number Bonds

MC RaPa CoDa Numbo 3

$$43 + 9 + 7 + 21 = 80$$

50 30

MA6: Number Bonds

MC RaPa CoDa Numbo 4

$$42 + 16 + 28 + 54 = 140$$

70 70

MA6: Number Bonds

MC RaPa CoDa Numbo 5

£4.56 + £3.27 + £1.44 = £9.27

£6.00 £3.27

MA6: Number Bonds

MC RaPa CoDa Numbo 6

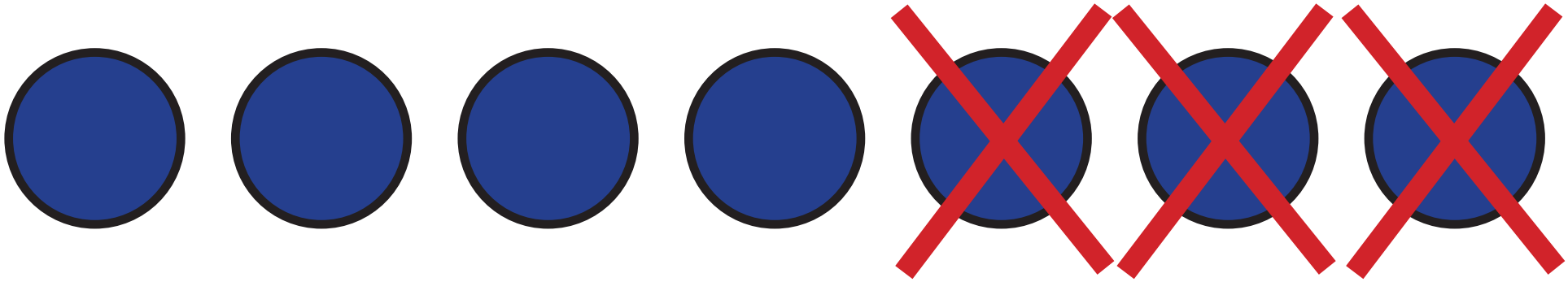
$$24.25 + 31.63 + 21.75 = 77.63$$

46

31.63

S1: Objects

1

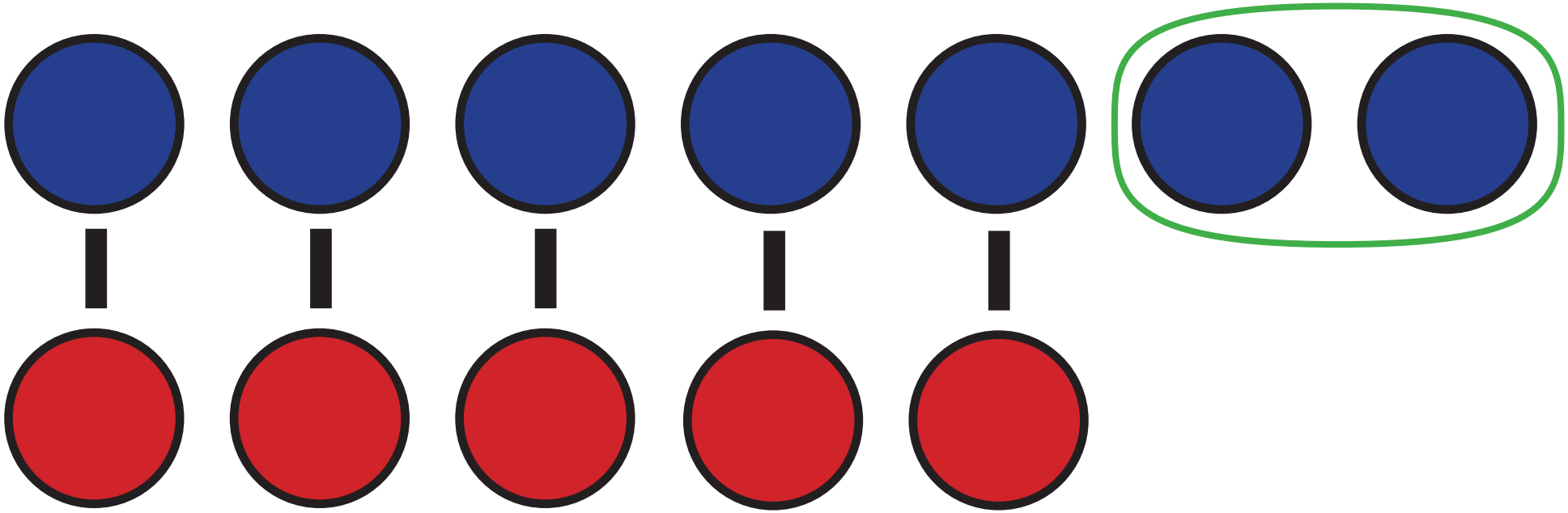


$$7 - 3 = 4$$

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

S2: What's the Difference?

1

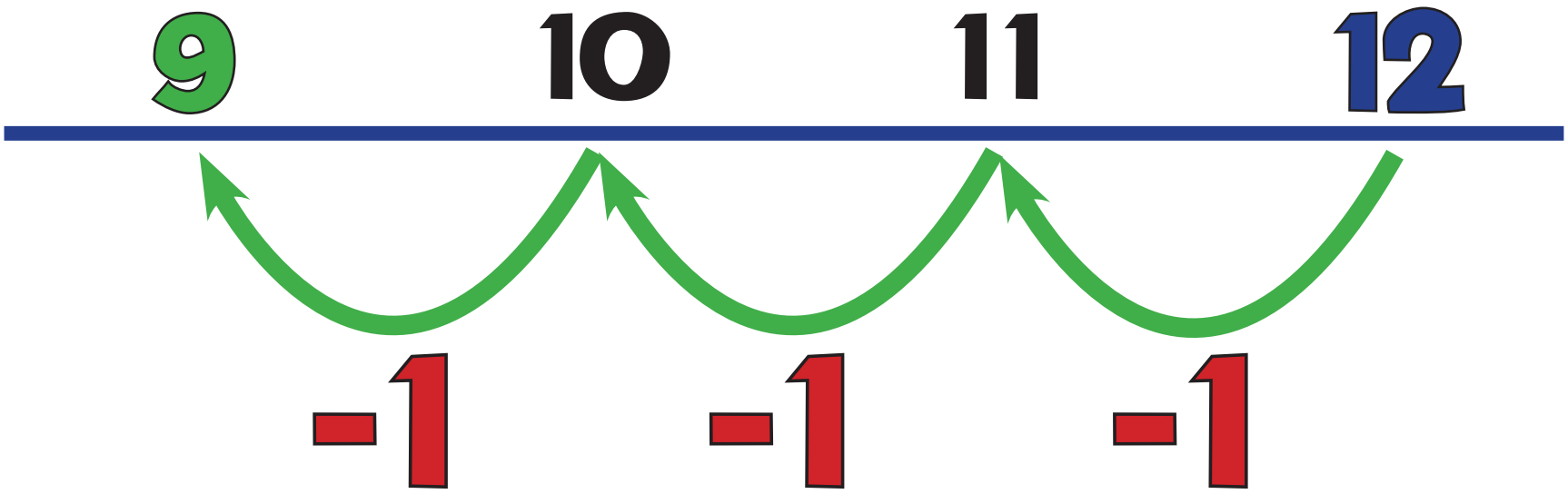


$$7 - 5 = 2$$

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

S3: Counting Back

1

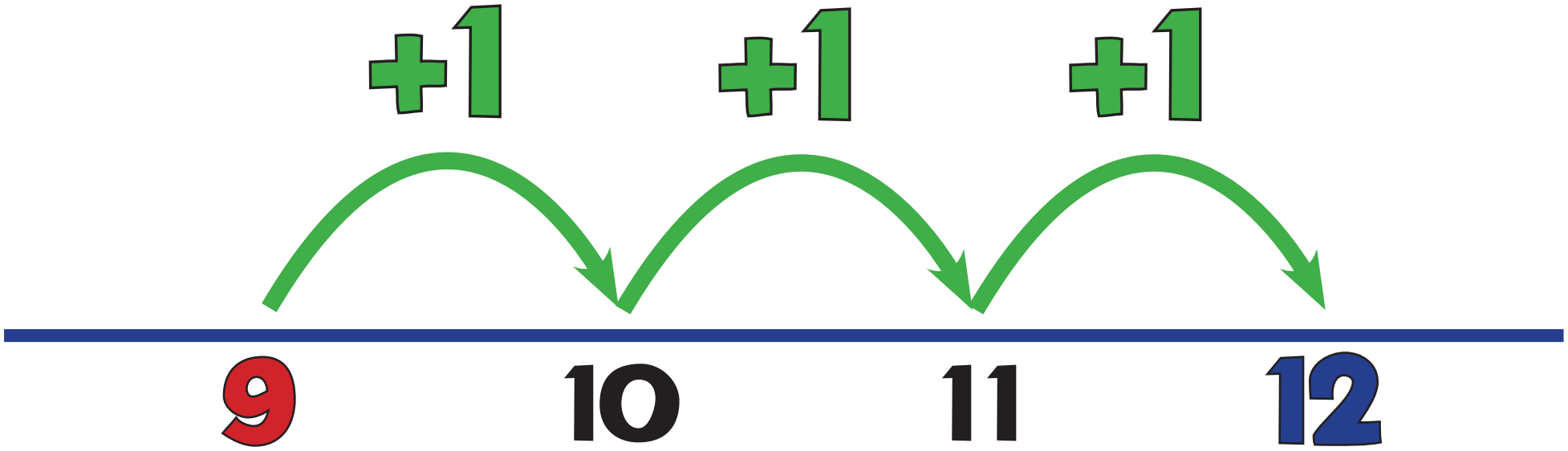


12 - 3 = 9

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

S4: Counting On

1

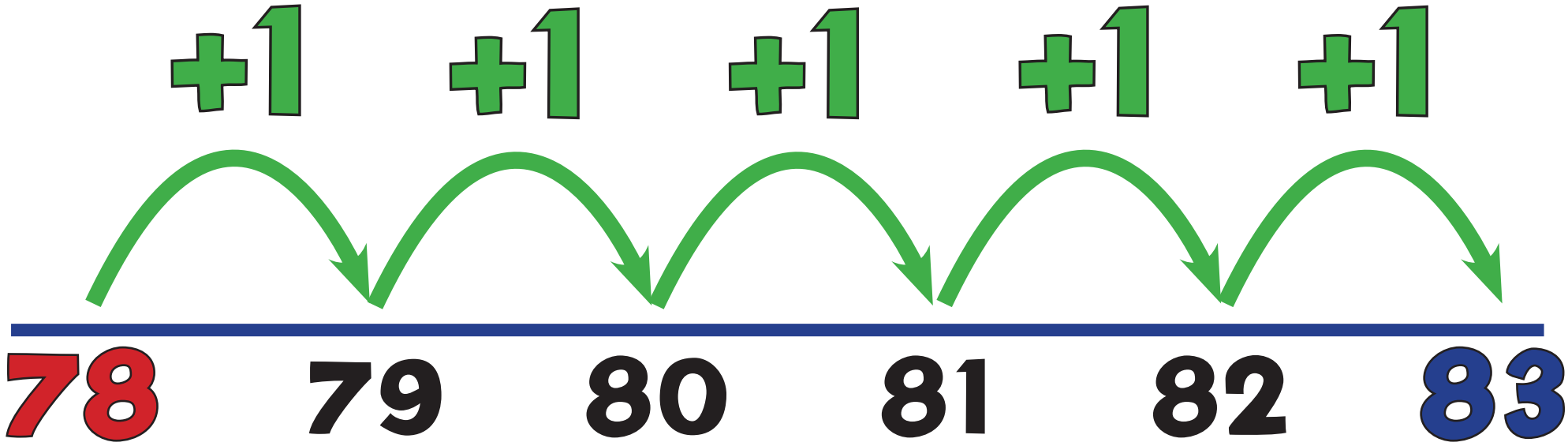


12 - 9 = 3

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

S4a: Counting On

2

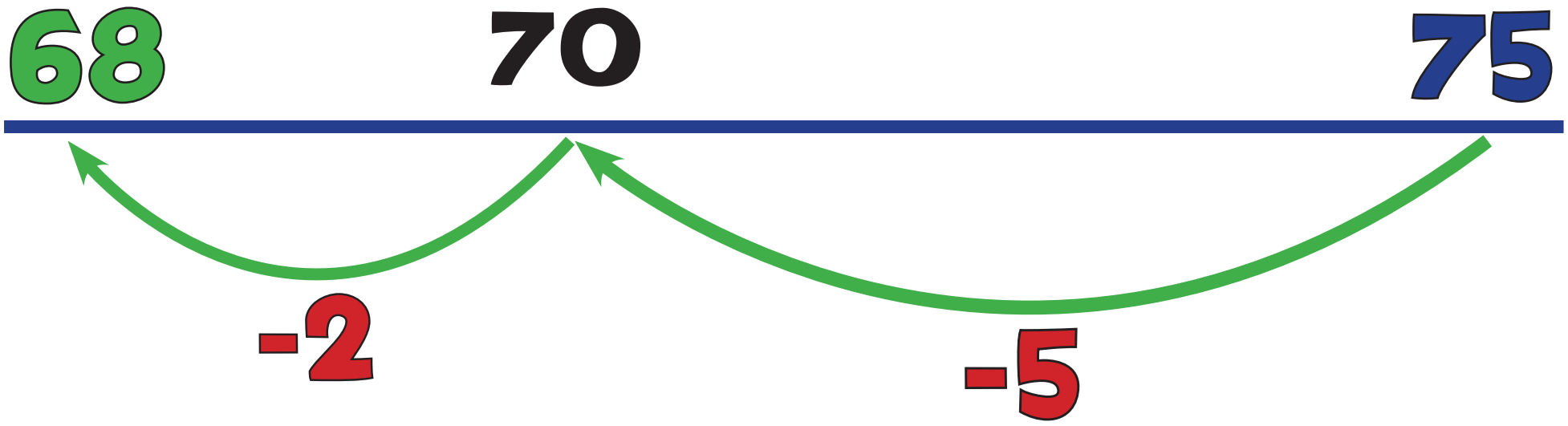


83 - 78 = 5

"How many more is 83 than 78? What is the difference?"

S5: Backwards Boing

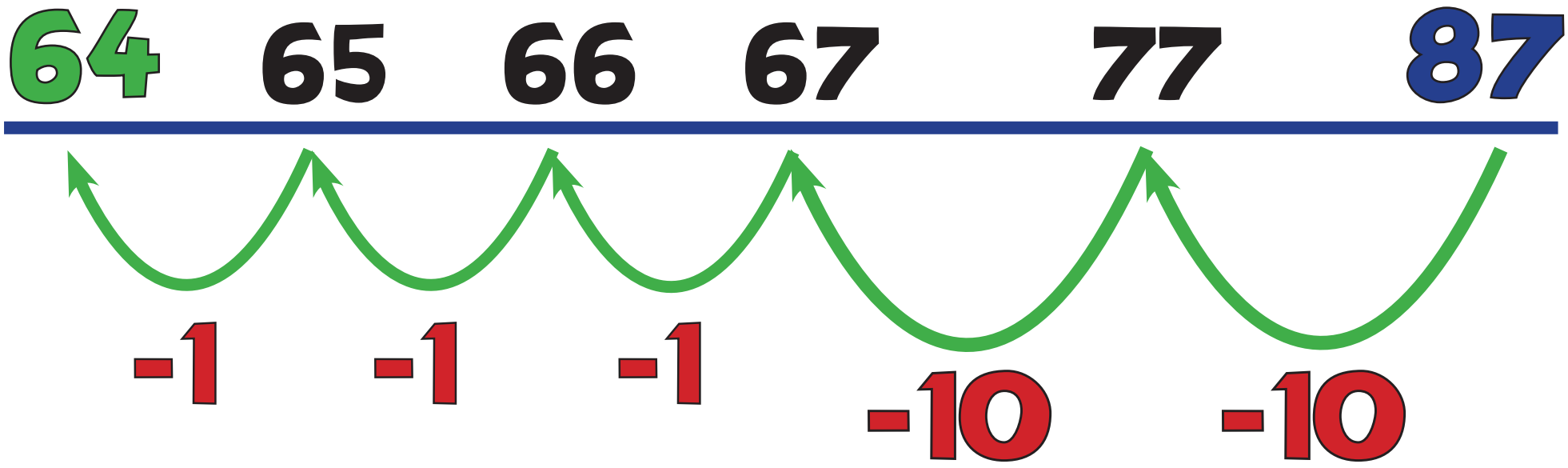
2



75 - 7 = 68

S6: Backwards Bounce

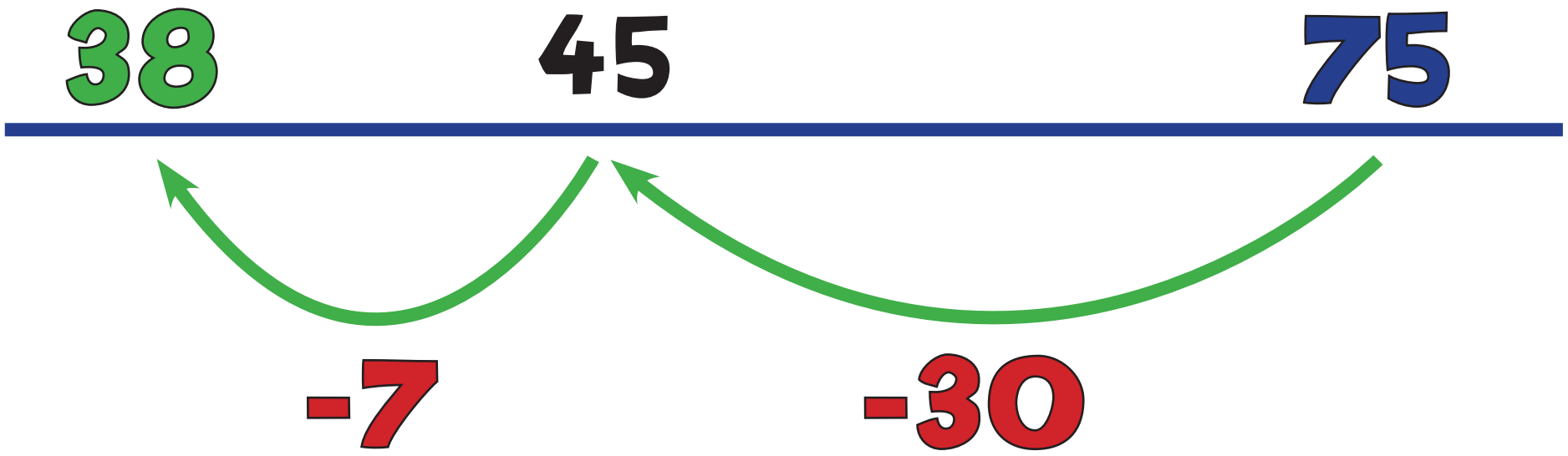
2



87 - 23 = 64

S7: Backwards Jump

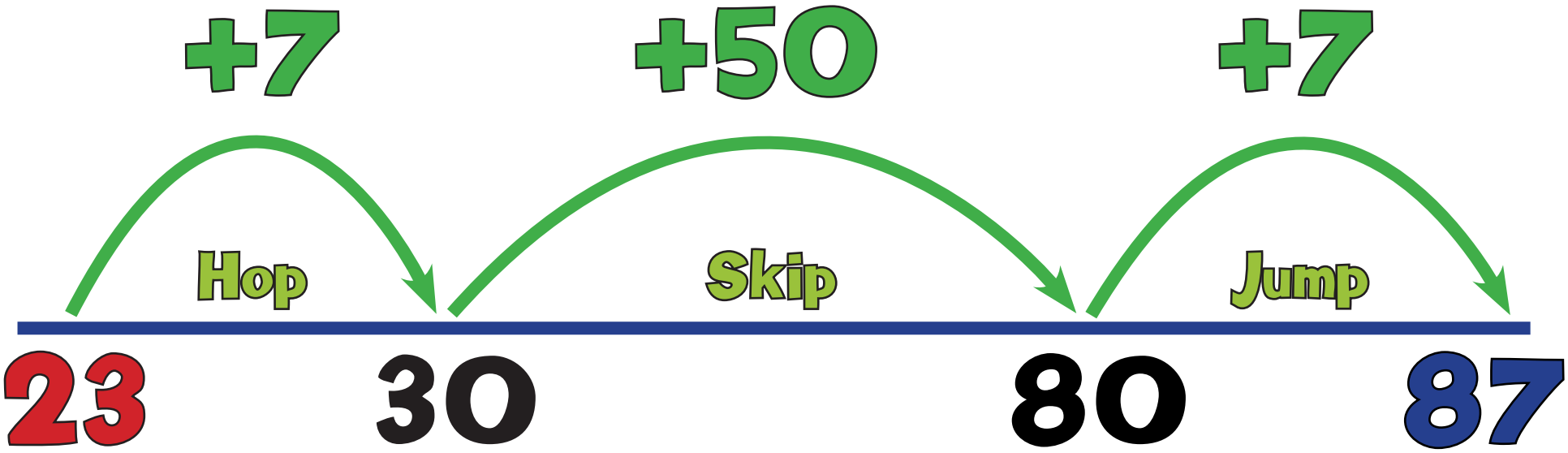
2



75 - 37 = 38

(S8: Triple Jump!)

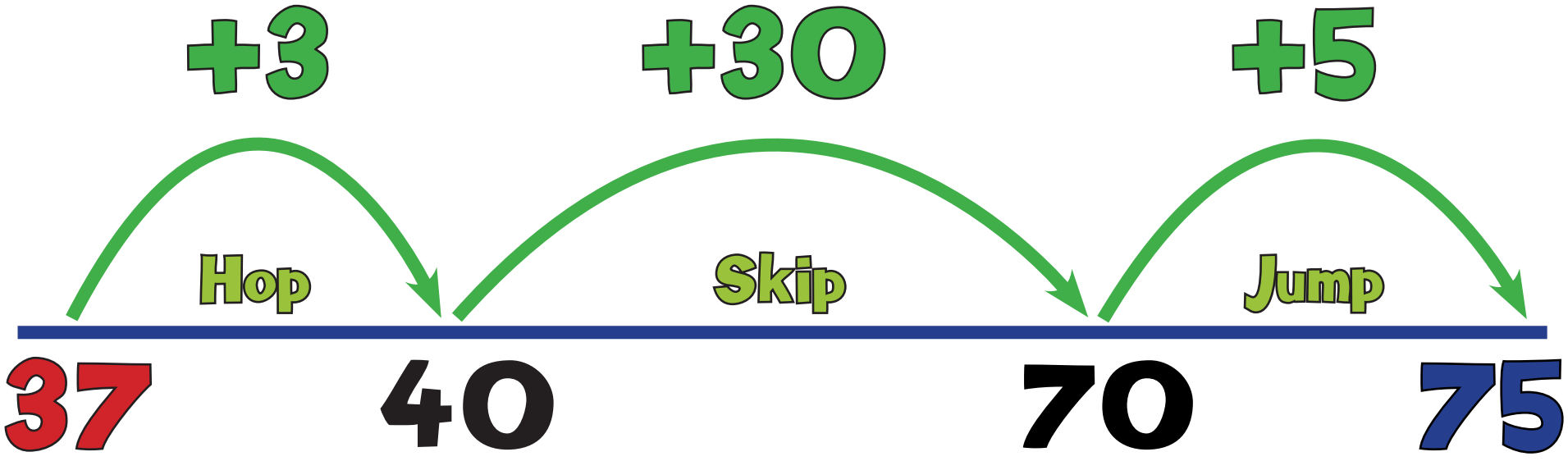
2 Additional



$$87 - 23 = 64$$

S8: Triple Jump!

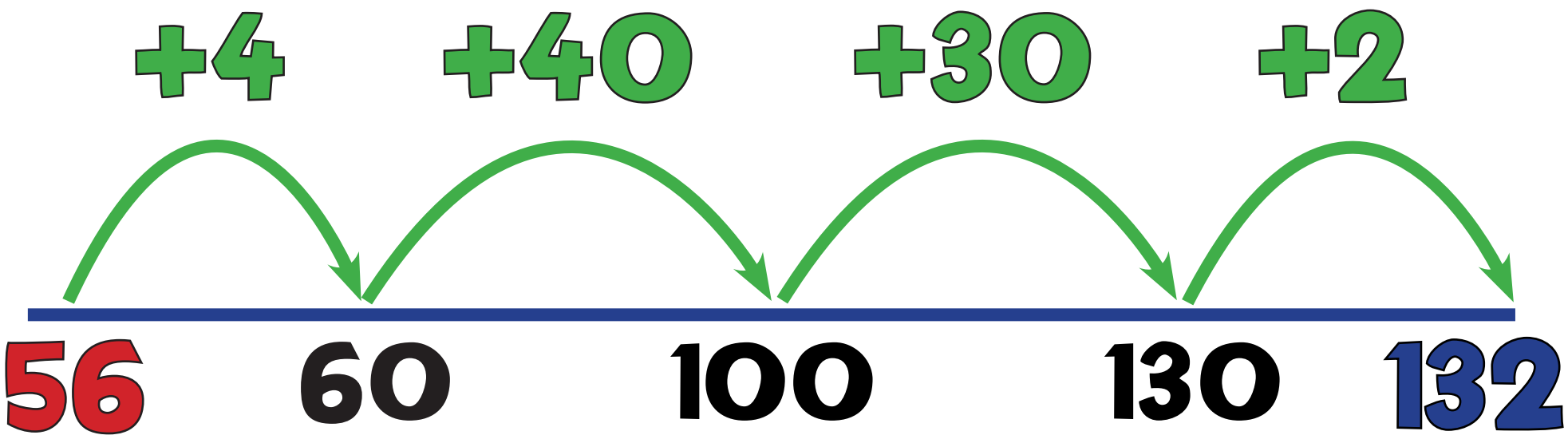
2



75 - 37 = 38

S8b: Quad Jump!

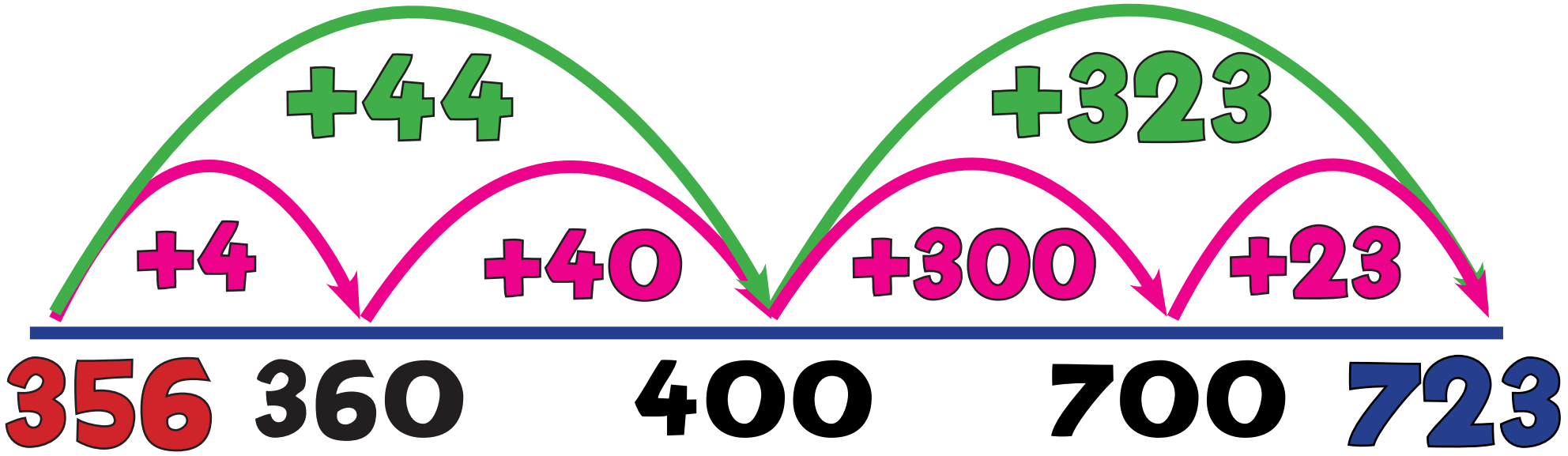
3



132 - 56 = 76

S8c: Big Jump!

3

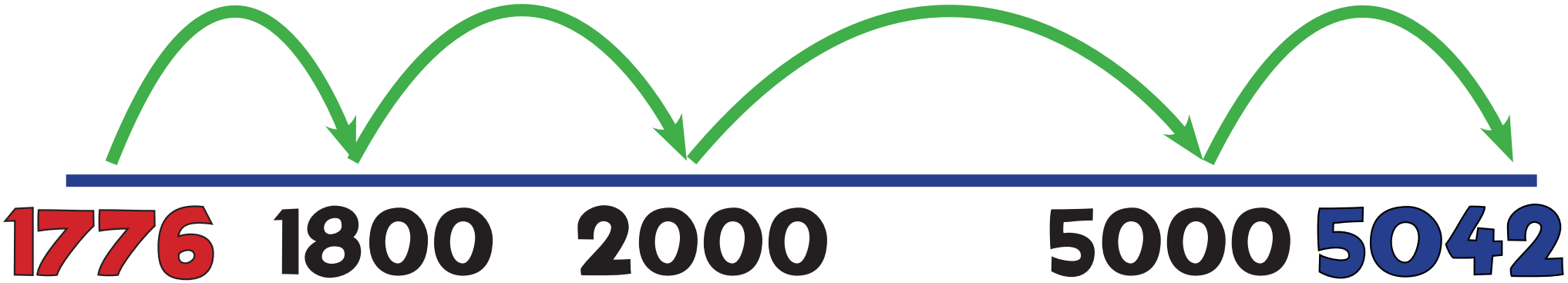


723 - 356 = 367

S8d: Quad Jump Extreme

4

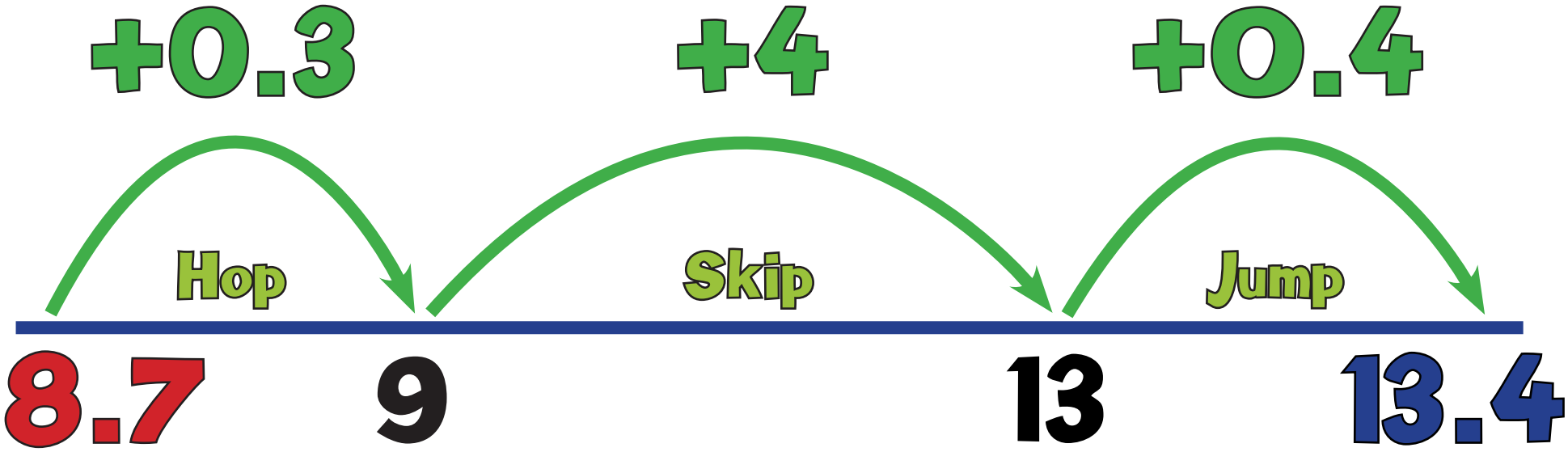
+24 +200 +3000 +42



5042 - 1776 = 3266

S8f: Decimal T-J!

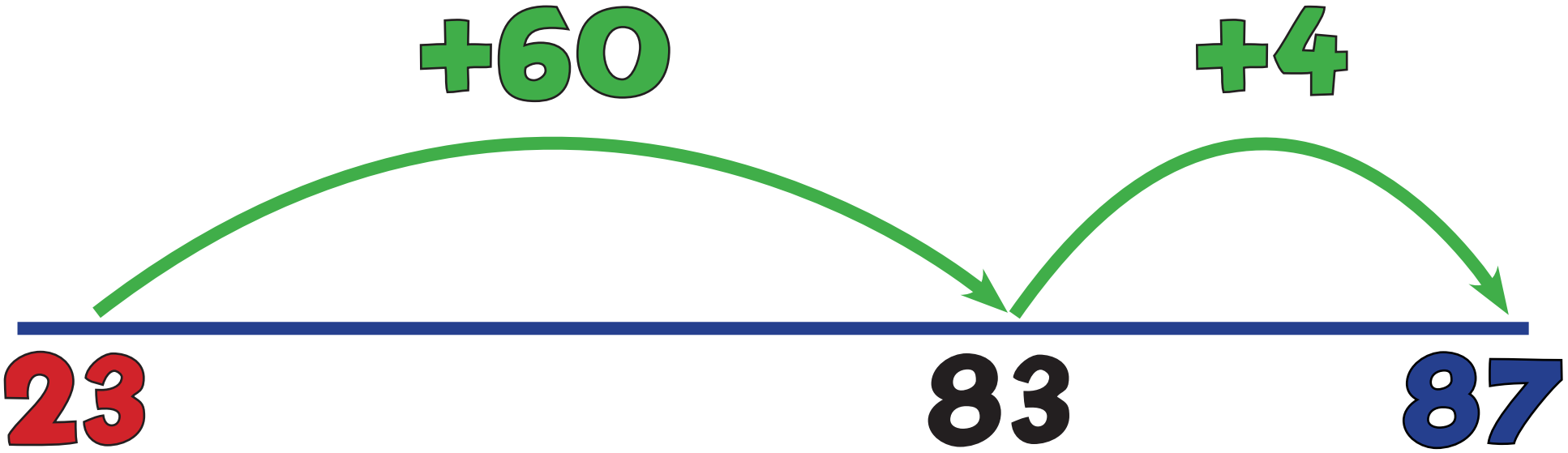
5



$$13.4 - 8.7 = 4.7$$

(S9: 10s Jump, 1s Jump!)

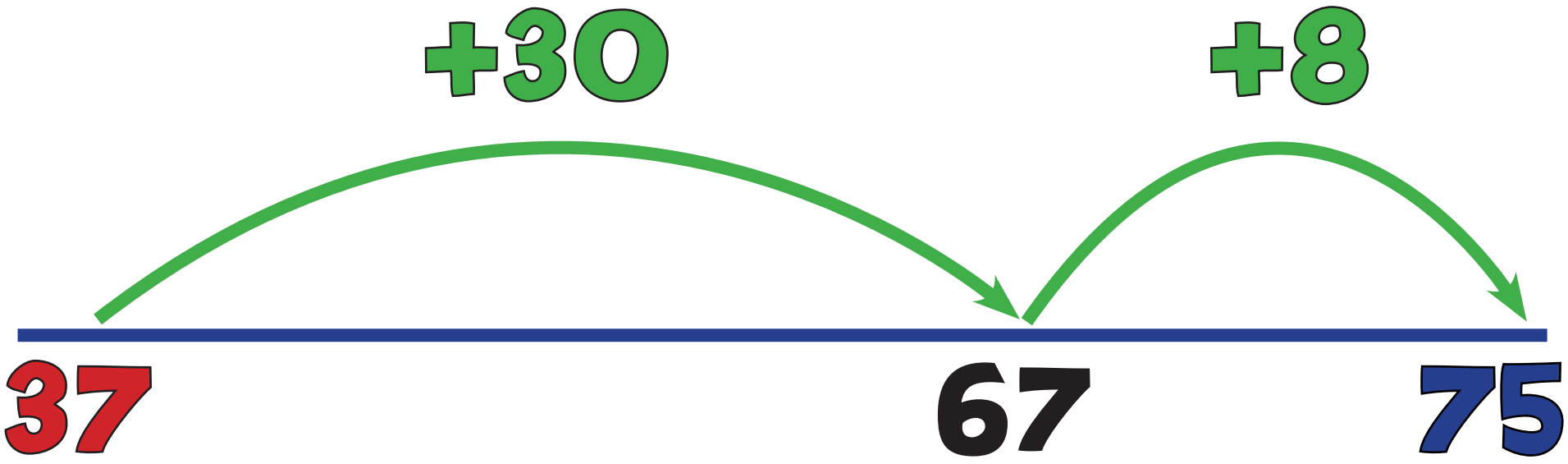
2 Additional



87 - 23 = 64

S9: 10s Jump, 1s Jump!

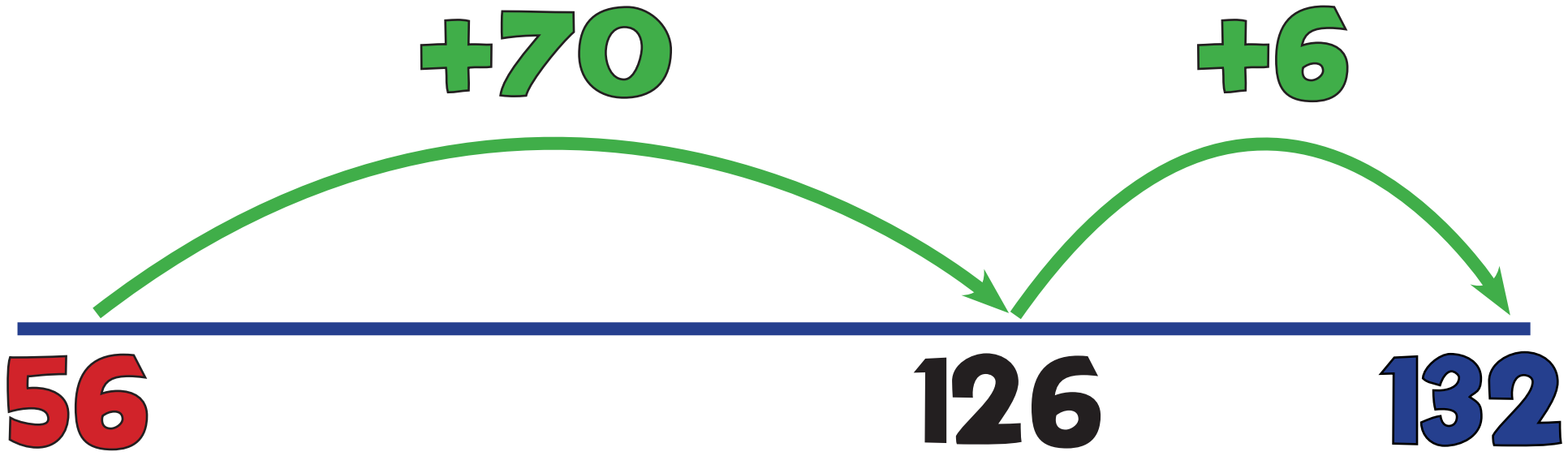
2



75 - 37 = 38

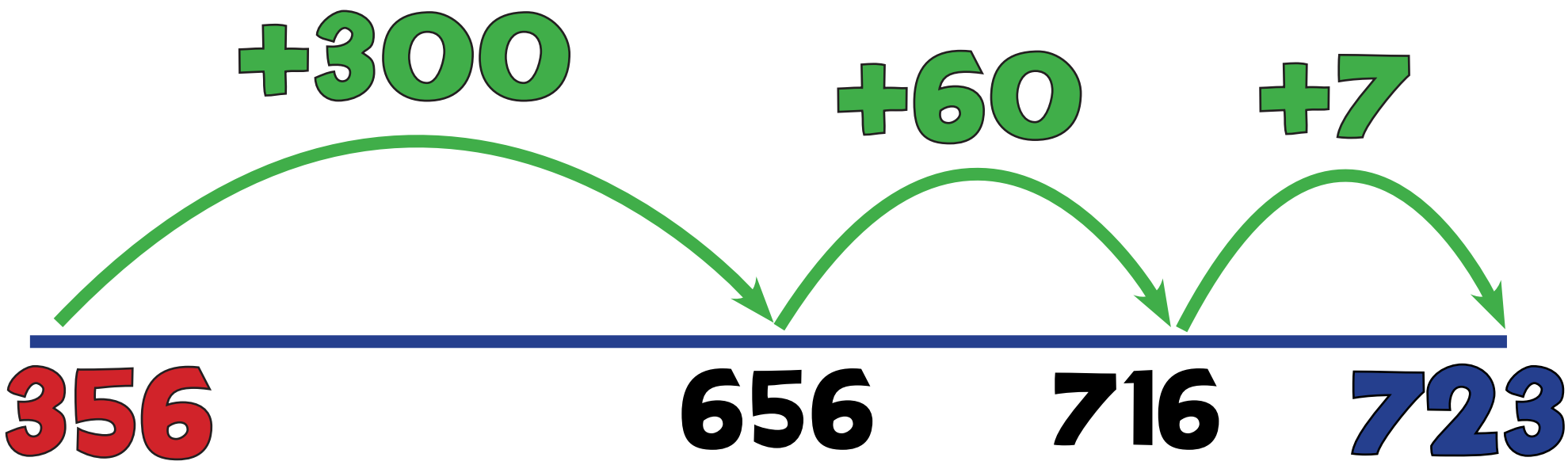
S9b: 10s Jump, 1s Jump!

3



132 - 56 = 76

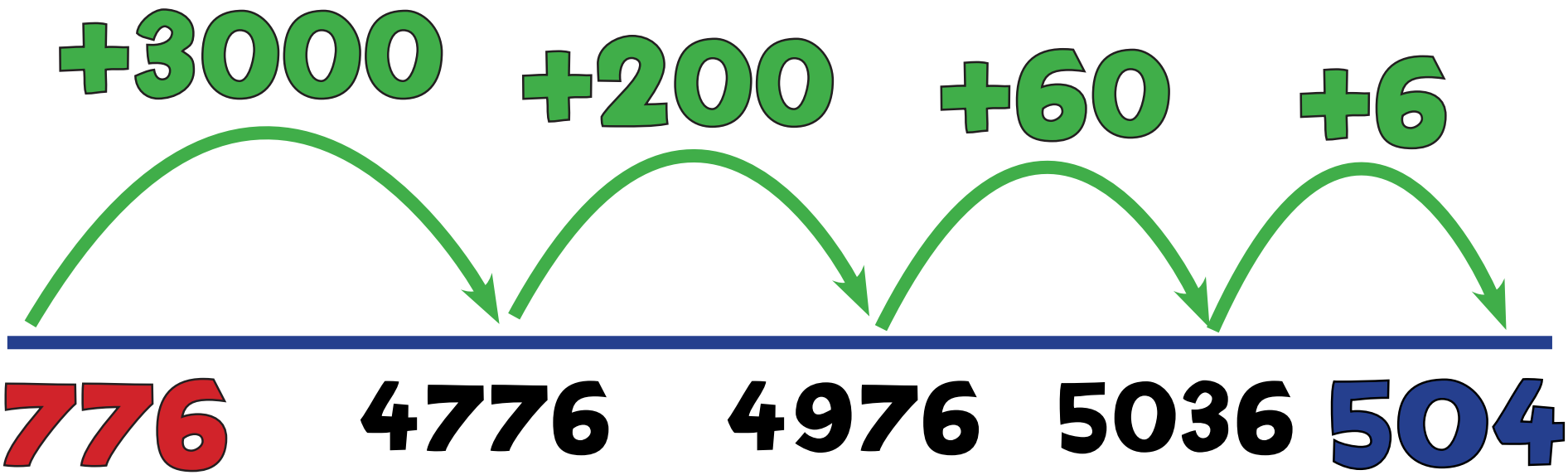
S9c: 100s, 10s, 1s Jump 3



723 - 356 = 367

S9d: 1000s, 100s, 10s, 1s Jump

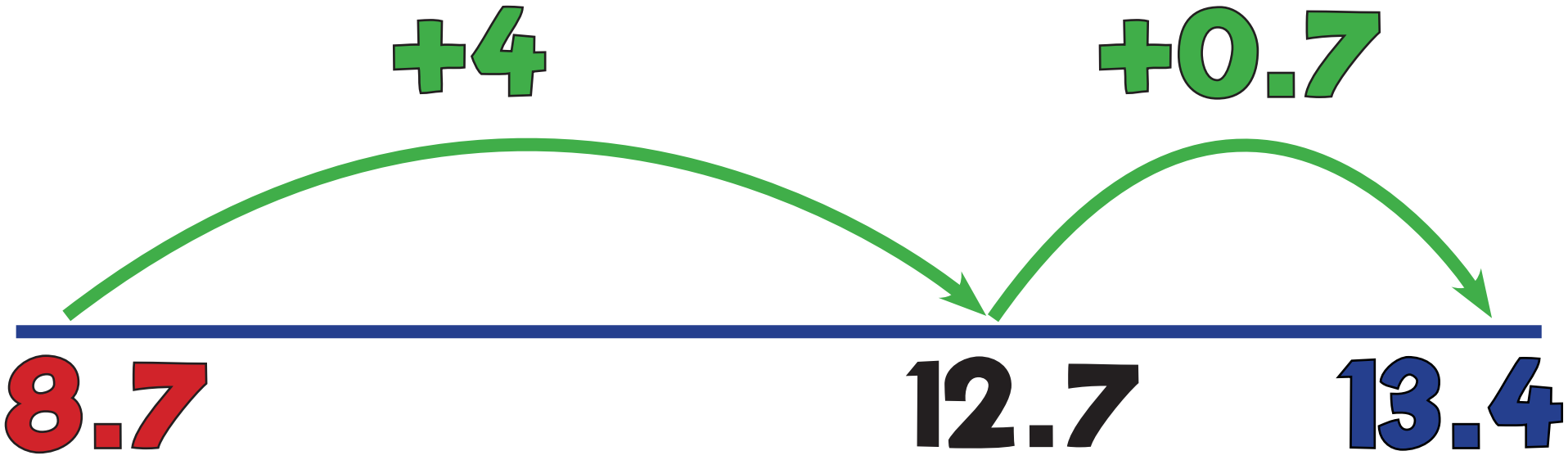
4



5042 - 1776 = 3266

S9f: 1s Jump, Tenths Jump!

5



$$13.4 - 8.7 = 4.7$$

(S10: Expanded Column)

2 Additional

Subtraction

$$87 - 23 = 64$$

80	7
20	3
60	4

(S10: Expanded Column)

2 Additional:a

Subtraction

$$75 - 37 = 38$$

$$\begin{array}{rr} {}^{60}\cancel{70} & {}^{1}5 \\ 30 & 7 \\ \hline 30 & 8 \end{array}$$

(S10: Expanded Column)

3 Additional:b

Subtraction

$$132 - 56 = 38$$

0	120	1
~~100~~	~~30~~	2
-	50	6
	70	6

S10: Expanded Column

3

Subtraction (100, 10, 1s)

723 - 356 = 367

	600	110	1
	~~700~~	~~20~~	3
-	300	50	6
	300	60	7

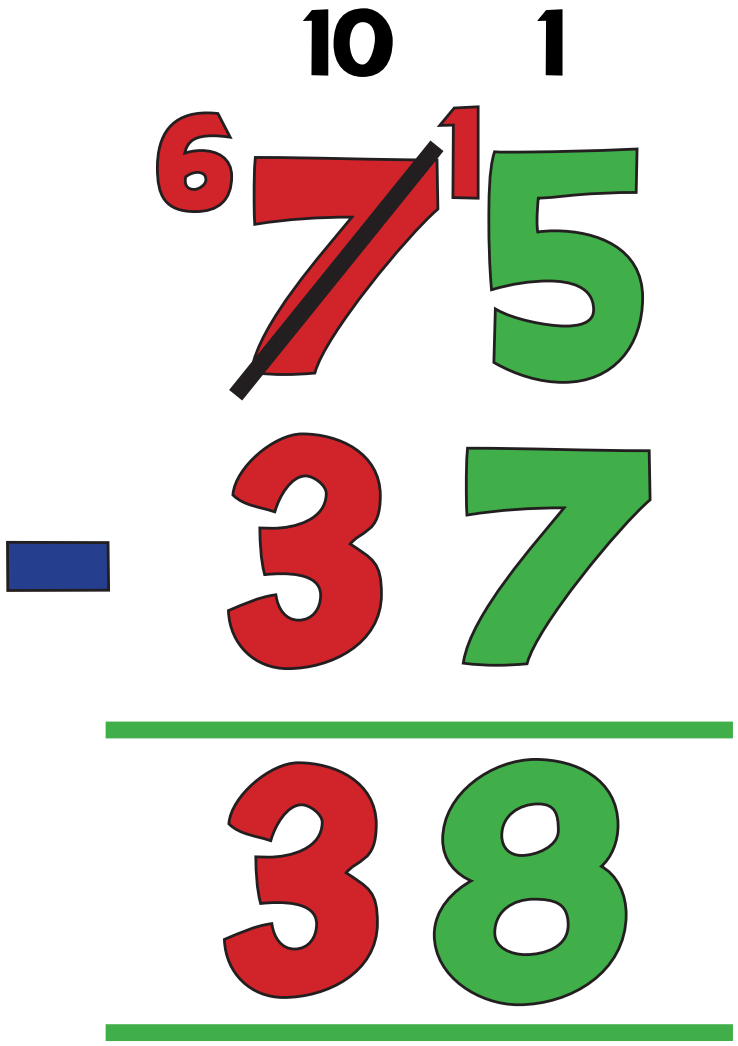
(S11: Column Subtraction)

2 Additional

10	1
8	7
− 2	3
6	4

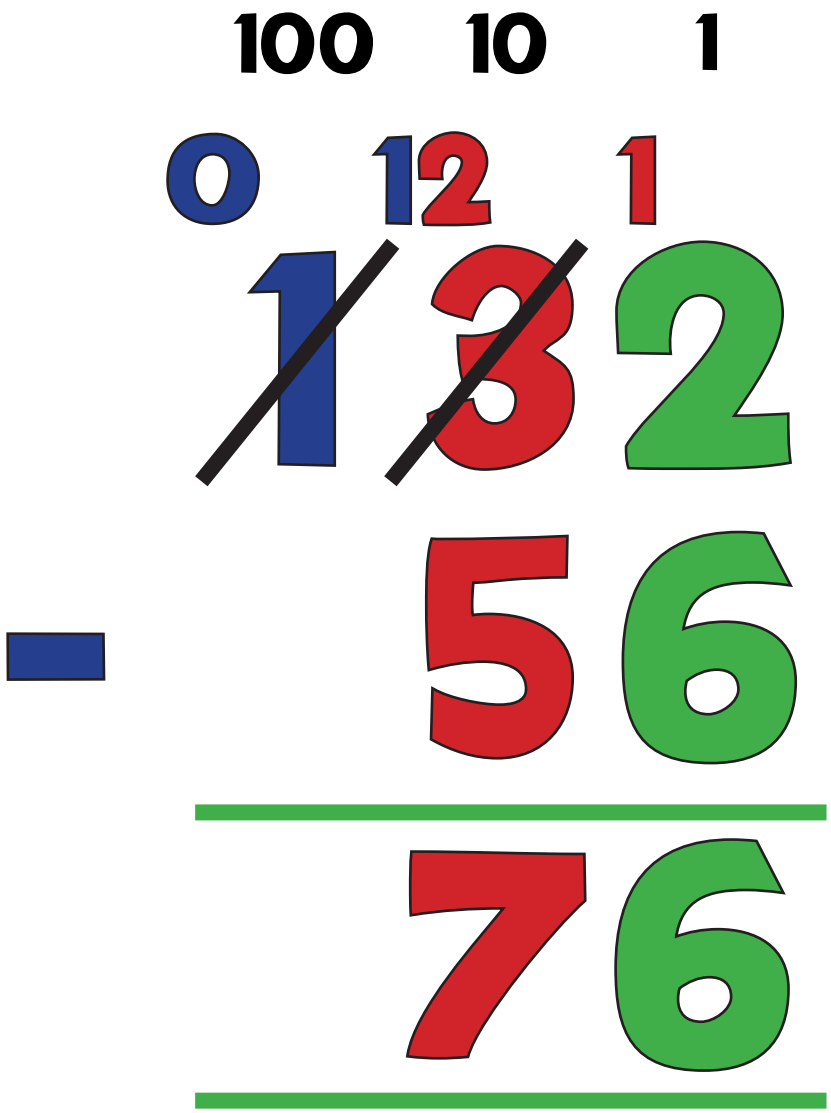
(S11: Column Subtraction)

2 Additional:a



(S11: Column Subtraction)

3 Additional:b



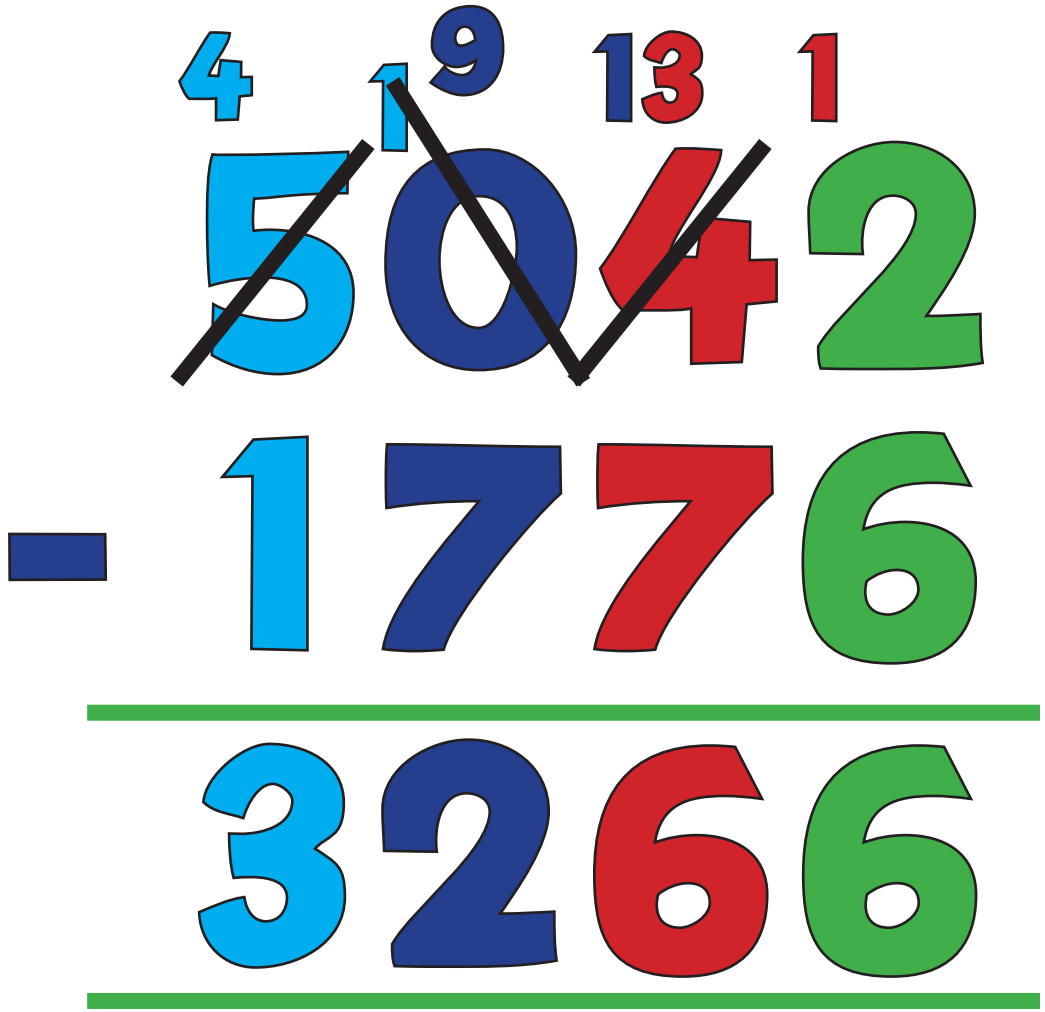
S11: Column Subtraction

3

100	10	1
6	11	1
7	2	3
− 3	5	6
3	6	7

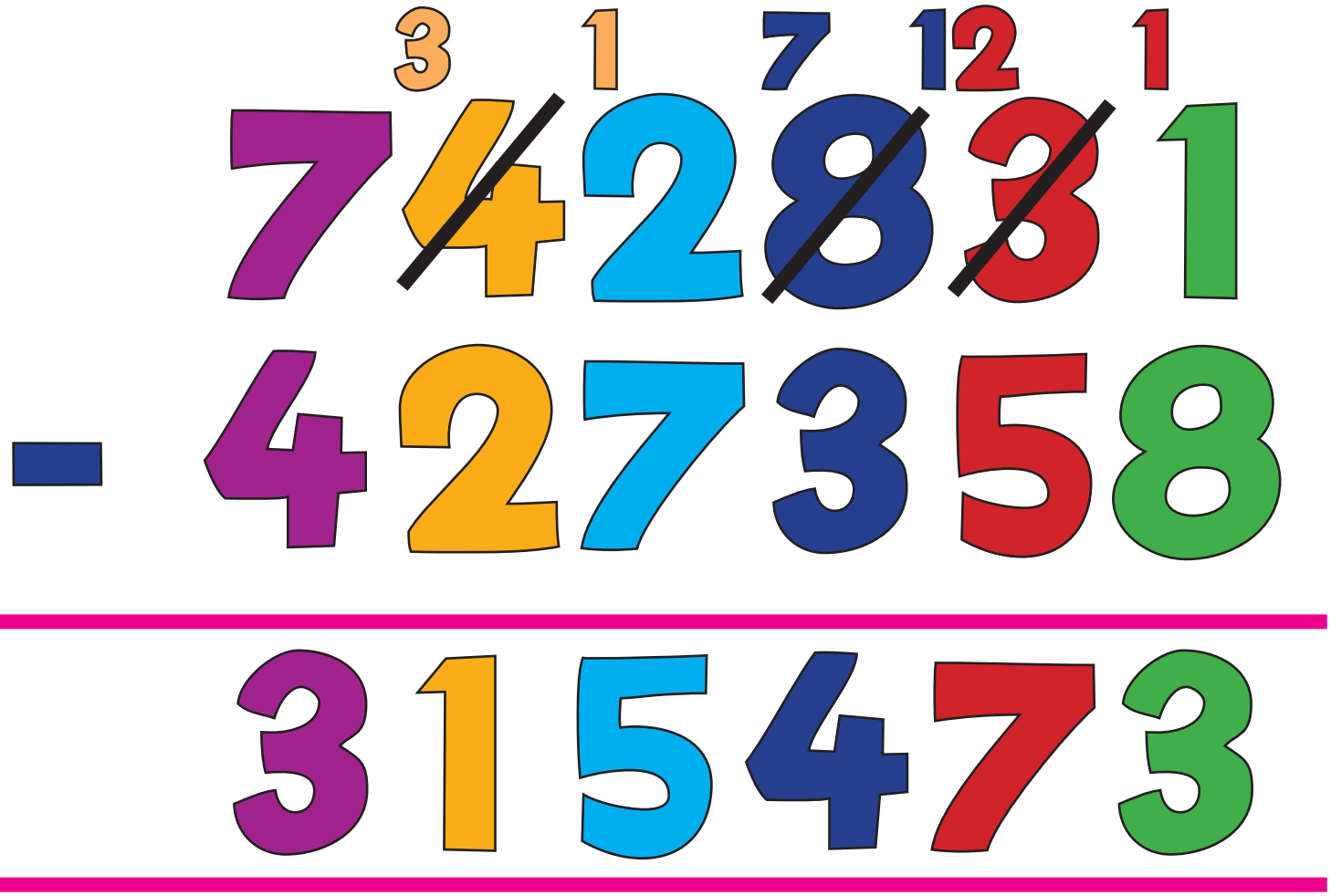
S11d: Column Subtraction

4



S11e: Column Subtraction

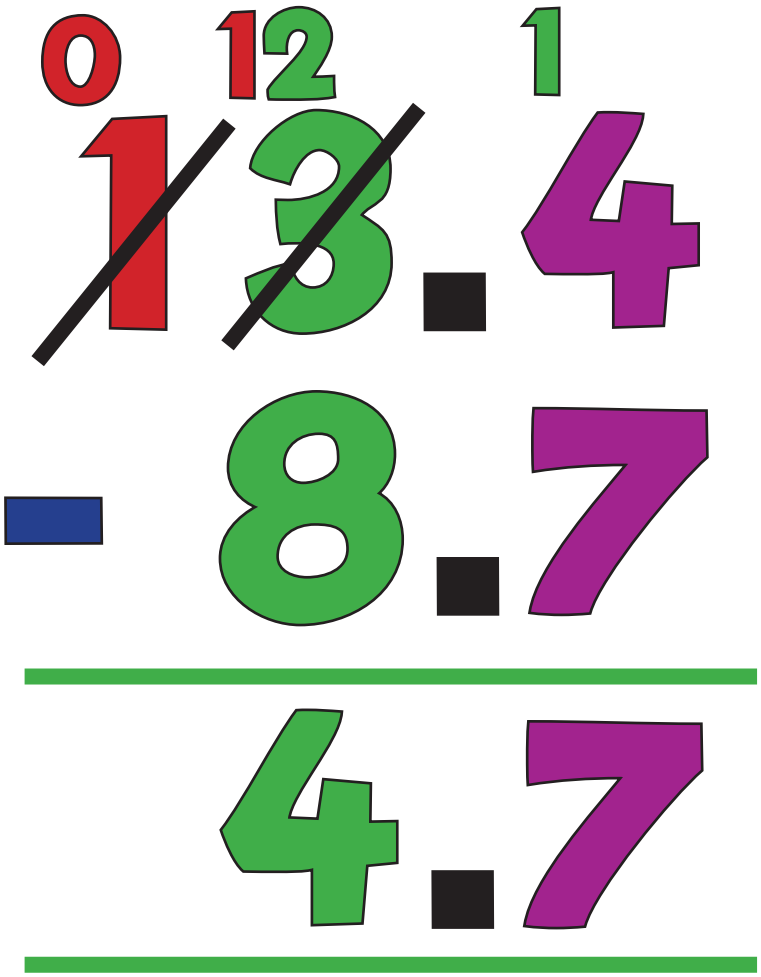
5



S11f: Column Subtraction

5

10 1 . $\frac{1}{10}$



S11g: Column Subtraction

5

10 1 . $\frac{1}{10}$ $\frac{1}{100}$

6 11 13 1

~~7~~ ~~2~~ . ~~4~~ 3

− 4 7 . 8 5

2 4 . 5 8

S11h: Column Subtraction

5

With Decimals

$$12.4 - 5.97 = 6.43$$

10	1	.	$\frac{1}{10}$	$\frac{1}{100}$
0	11		13	1
~~1~~	~~2~~	.	~~4~~	0
−	5	.	9	7
	6	.	4	3

MS1: Counting Back

46 - 21 = 25

-20 -1

MS2: Counting On

75 - 47 = 28

+20 +8

MS2a: Counting On

75 - 47 = 28

MS3: Round & Adjust

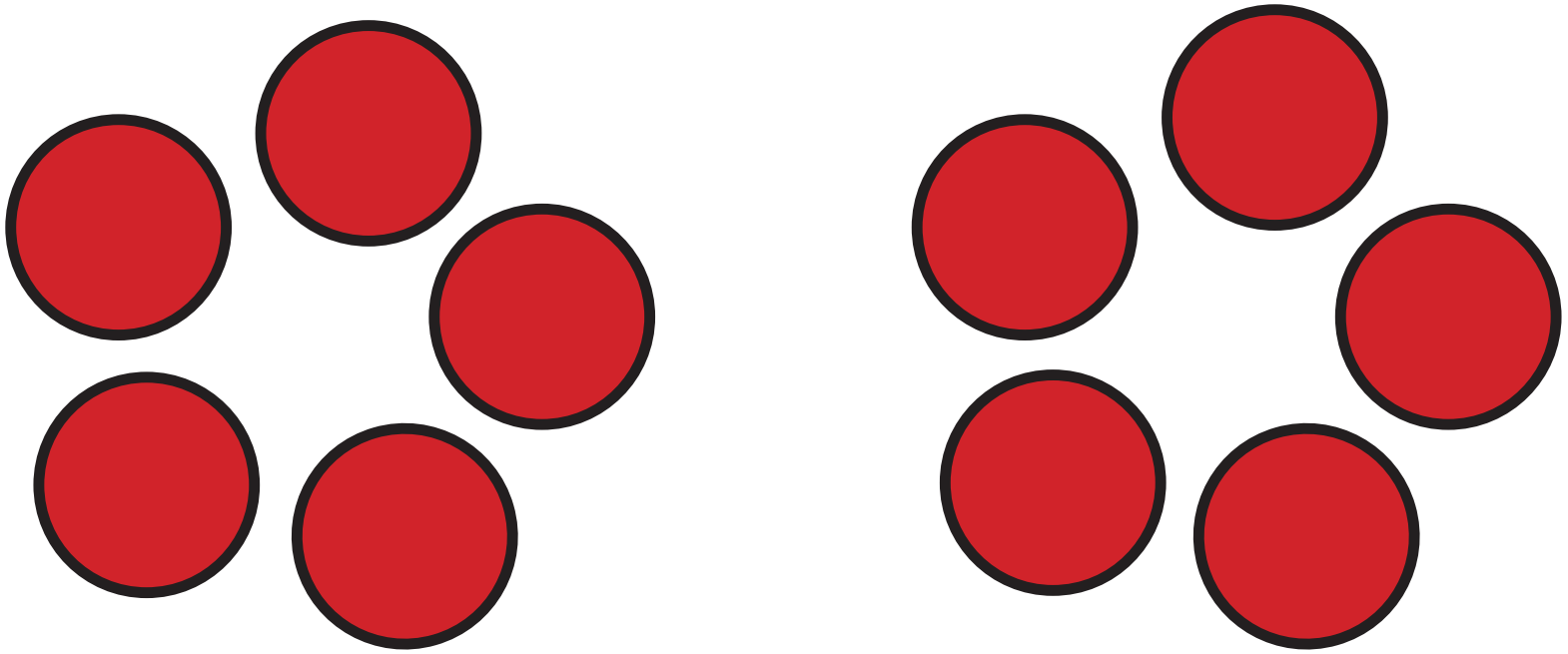
$$84 - 29 = 55$$

$$84 - 30 + 1$$

$$54 + 1 = 55$$

(M1: Groups)

1

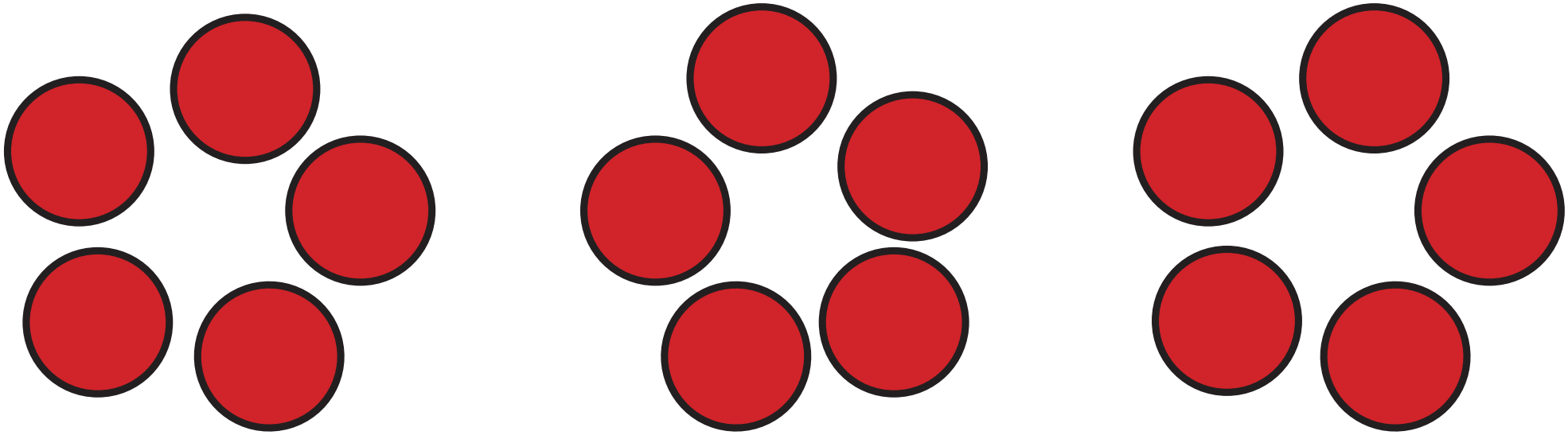


"2 groups of 5 counters makes 10 counters altogether"

M1: Repeated Addition

2

(Groups)



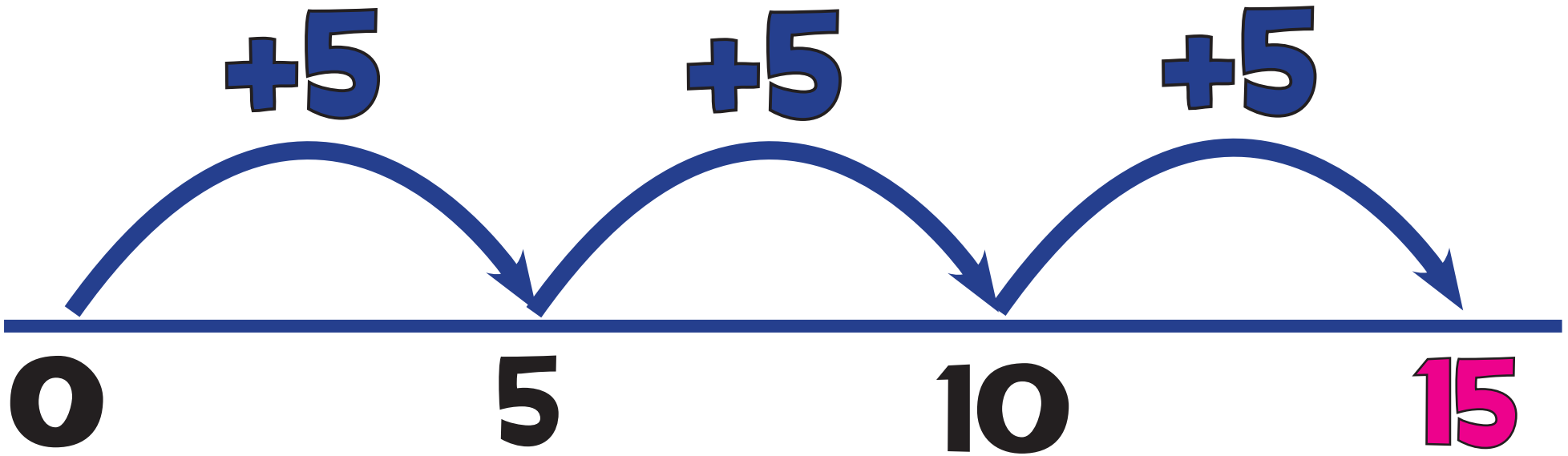
5 x 3 = 5 + 5 + 5 = 15

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

M2: Repeated Addition

2

(Number Line)

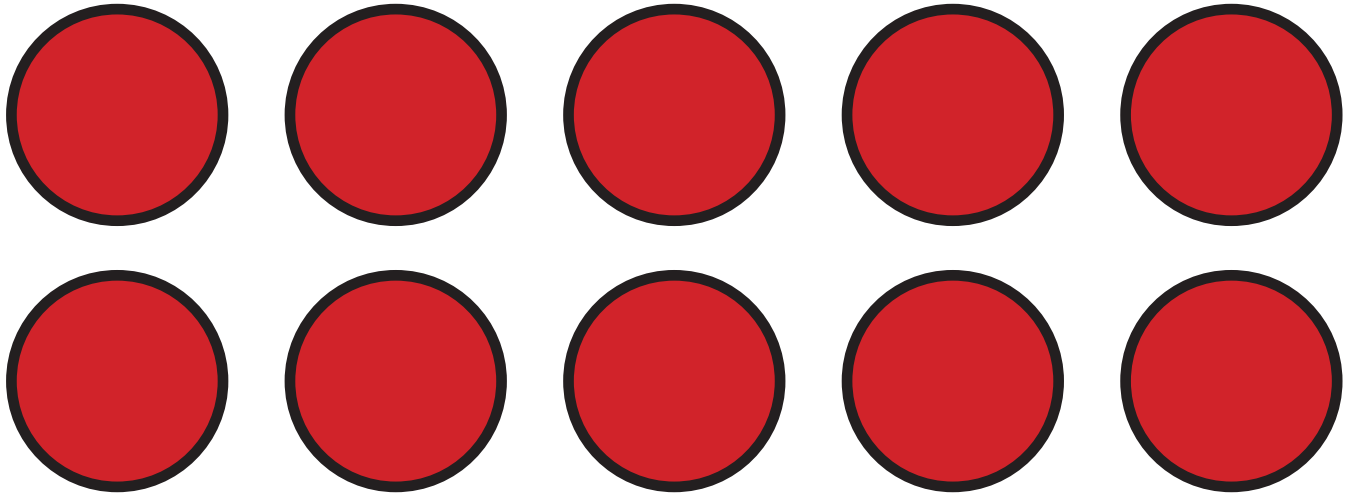


5 x 3 = 5 + 5 + 5 = 15

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

(M3: Arrays)

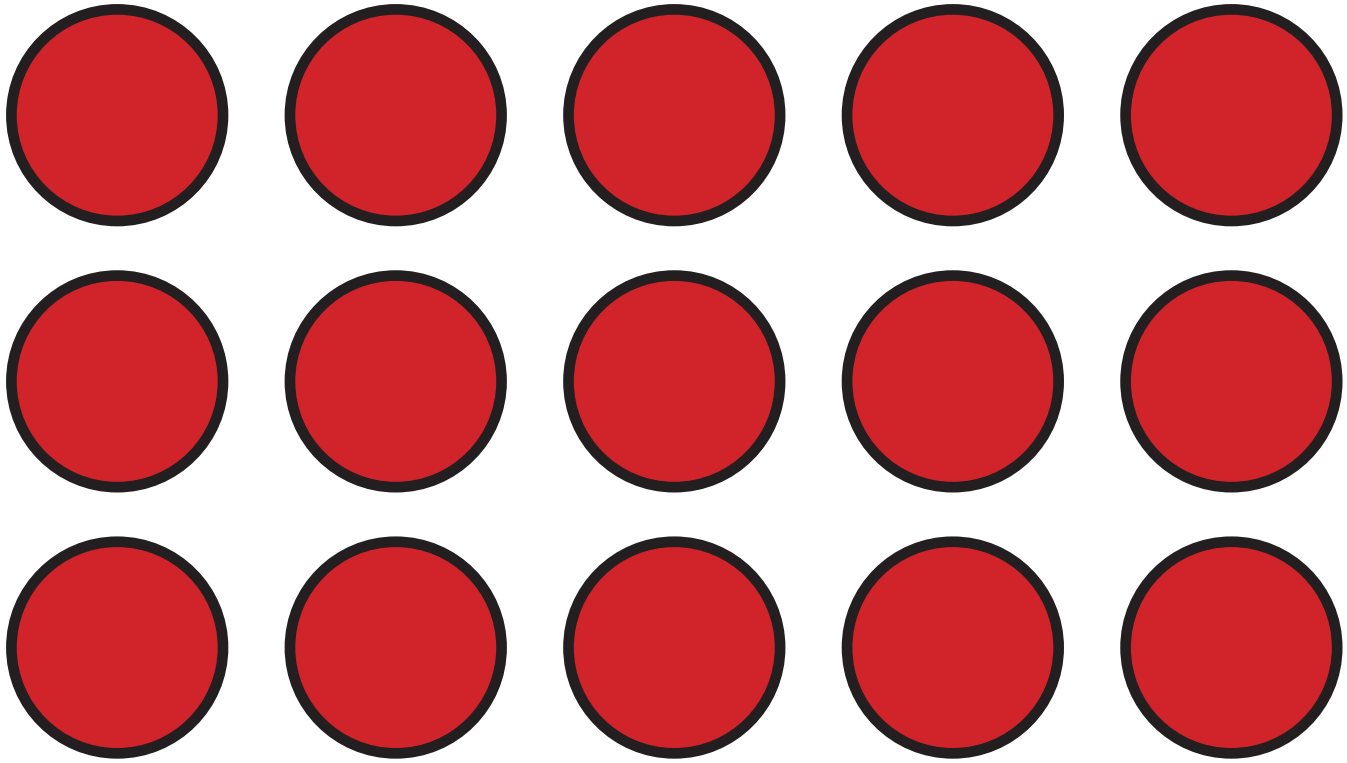
1



"2 groups of 5 counters" or "5 groups of 2 counters" - "10 counters altogether"

M3: Arrays

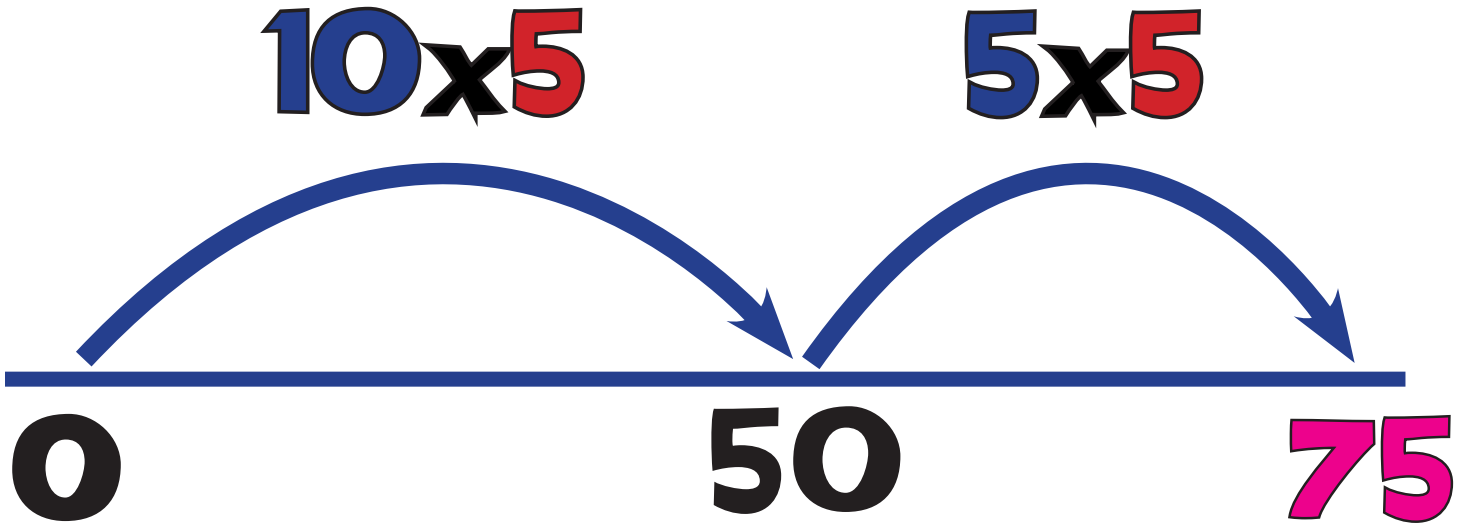
2



$3 \times 5 = 15$ or $5 \times 3 = 15$

M4: Multi Boing!

3



10 x 5 = 50

5 x 5 = 25

75

15 x 5 = 75

M4a: Partitioning

3

$$15 \times 5 = 75$$

$$10 \times 5 = 50$$

$$5 \times 5 = 25$$

$$50 + 25 = 75$$

M5: Grid Method

3

Short Multiplication

15 x 5 = 75

x	10	5
5	50	25

50 + 25 = 75

M5a: Grid Method

4

Short Multiplication

43 x 6 = 258

x	40	3
6	240	18

240 + 18 = 258

M5b: Grid Method

4

Short Multiplication

$$147 \times 4 = 588$$

x	100	40	7
4	400	160	28

$$400 + 160 + 28 = 588$$

(M6: Expanded Column)

3 Additional

	10	1	
	1	5	
x		5	
	2	5	(5 x 5)
	5	0	(5 x 10)
	7	5	

(M6: Expanded Column)

4 Additional a

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

M6: Expanded Column

4

100	10	1	
1	4	7	
x		4	
	2	8	(4 x 7)
1	6	0	(4 x 40)
4	0	0	(4 x 100)
5	8	8	

(M7: Column Multiplication)

3 Additional

10	1
1	5
x	5
7	5
2	

(M7: Column Multiplication)

4 Additional:a

100	10	1
	4	3
x		6
2	5	8
	1	

M7: Column Multiplication

4

100	10	1
1	4	7
x		4
5	8	8
1		2

M7a: Column Multiplication

4

$$\begin{array}{r} 3647 \\ \times \quad 4 \\ \hline 14588 \\ \hline 212 \end{array}$$

M8: Grid Method

5

Long Multiplication

43 x 65 = 2795

x	40	3
60	2400	180
5	200	15

2400 + 180 + 200 + 15 = 2795

M8a: Grid Method

5

Long Multiplication

243 x 68 = 16,524

x	200	40	3	
60	12000	2400	180	= 14,580
8	1600	320	24	= 1,944

14580 + 1944 = 16,524

M8b: Grid Method

5

Long Multiplication

203 x 68 = 13,804

x	200	0	3
60	12000	0	180
8	1600	0	24

= 12,180

= 1,624

12180 + 1624 = 13,804

M8c: Decimal Grid

5

Short Multiplication

$3.6 \times 4 = 14.4$

x	3	0.6
4	12	2.4

$12 + 2.4 = 14.4$

M8d: Decimal Grid

6

Short Multiplication

47.2 x 3 = 141.6

x	40	7	0.2
3	120	21	0.6

120 + 21 + 0.6 = 141.6

M8e: Grid Method

6

Short Multiplication

$$7.38 \times 6 = 44.28$$

x	7	0.3	0.08
6	42	1.8	0.48

$$42 + 1.8 + 0.48 = 44.28$$

M8f: Grid Method

6

Long Multiplication

$$24.3 \times 2.5 = 60.75$$

x	20	4	0.3	
2	40	8	0.6	= 48.6
0.5	10	2	0.15	= 12.15

$$48.6 + 12.15 = 60.75$$

M9: Long Multiplication

6

Column

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

M9a: Long Multiplication

6

Column

$$
\begin{array}{rr}
 & 243 \\
\times & 68 \\
\hline
 & 1944 \quad (8 \times 243) \\
 & {\scriptstyle 1\ 3\ 2} \\
+ & 14580 \quad (60 \times 243) \\
 & {\scriptstyle 1\ 2\ 1} \\
\hline
 & 16524 \\
 & {\scriptstyle 1} \\
\hline
\end{array}
$$

M9b: Long Multiplication

6

Column

$$
\begin{array}{rr}
 & 203 \\
\times & 68 \\
\hline
 & 1624 \quad (8 \times 203) \\
+ & 12180 \quad (60 \times 203) \\
\hline
 & 13804 \\
\hline
\end{array}
$$

M9c: Column Multiplication

5

10 1 . $\frac{1}{10}$

$$\begin{array}{r} 3.6 \\ \times \quad 4 \\ \hline 14.4 \\ \hline 2 \end{array}$$

M9d: Column Multiplication

6

100	10	1	.	$\frac{1}{10}$
4	7	.	2	
	×		3	
1	4	1	.	6
				2

M9e: Column Multiplication

6

10	1	.	$\frac{1}{10}$	$\frac{1}{100}$
	7	.	3	8
x	6			
4	4	.	2	8
4	2			4

M9f: Long Multiplication

Column Decimals

6

10	1	.	$\frac{1}{10}$	$\frac{1}{100}$
	24	.	3	
x	2	.	5	
	12	.	15	(0.5 x 24.3)
+	48	.	60	(2 x 24.3)
	60	.	75	

1 2 1

1

M9g: Long Multiplication

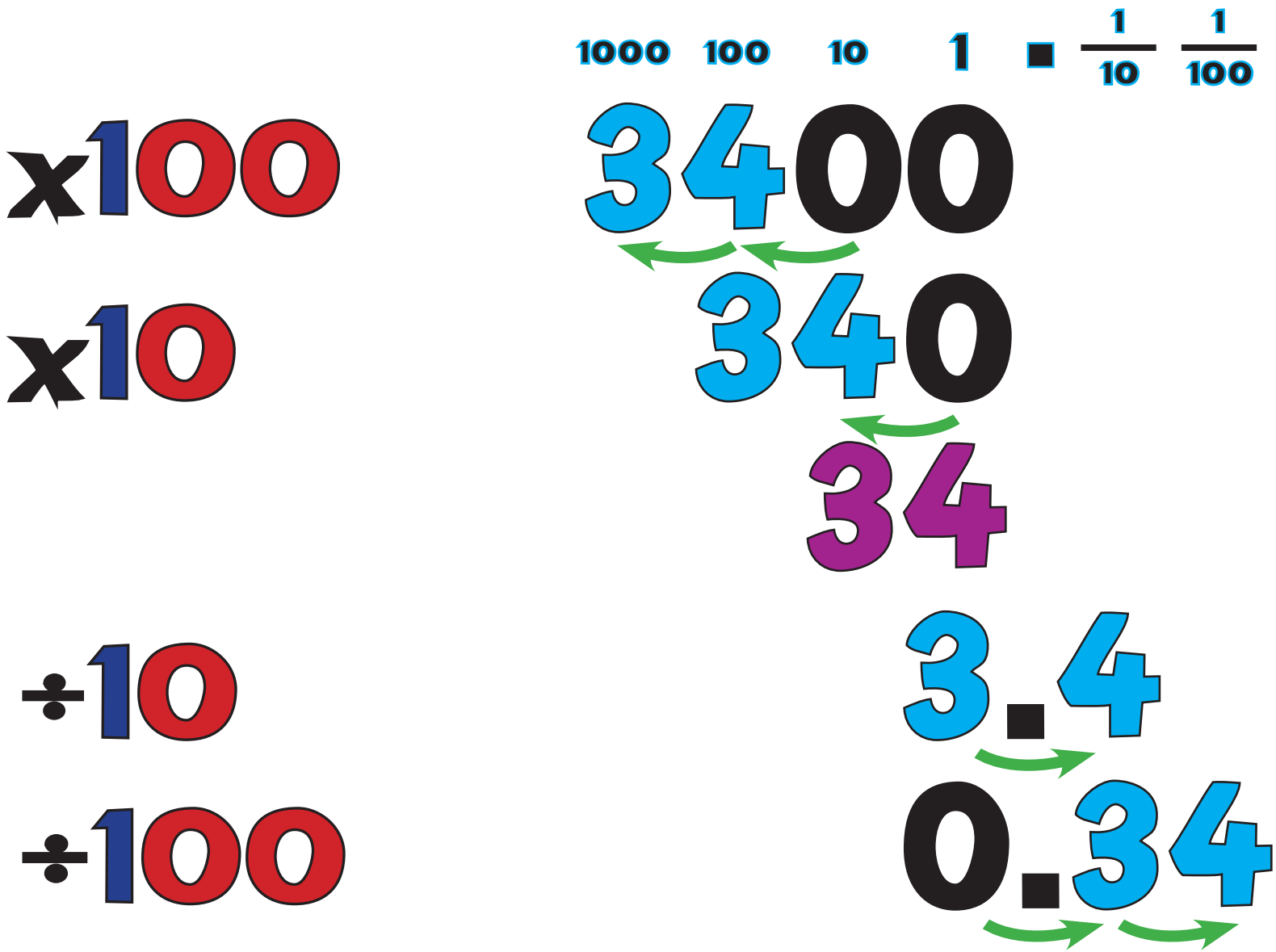
6 Column

		3	7	8	6
x				4	8
	3	0	2	8	8
		6	6	4	
+	1	5	1	4	4 0
	1	3	3	2	
	1	8	1	7	2 8
				1	

(8 x 3786)

(40 x 3786)

MM1: Jump!



MM1a: Jump!

MM2: Re-ordering

$(9 \times 2) \times 5$

$18 \times 5 = 90$

$(9 \times 5) \times 2$

$45 \times 2 = 90$

$(2 \times 5) \times 9$

$10 \times 9 = 90$ *

MM2a: Re-ordering

$(7 \times 4) \times 5$

$28 \times 5 = 140$

$(7 \times 5) \times 4$

$35 \times 4 = 140$

$(4 \times 5) \times 7$

$20 \times 7 = 140$ *

MM2b: Re-ordering

$(9 \times 8) \times 6$

$72 \times 6 = 432$

$(9 \times 6) \times 8$

$54 \times 8 = 432$ *

$(8 \times 6) \times 9$

$48 \times 9 = 432$

MM3: Partitioning

15 x 5 = 75

50 + 25 = 75

(10 x 5) (5 x 5)

MM3a: Partitioning

37 x 4 = 148

120 + 28 = 148

(30 x 4) (7 x 4)

MM4: Round & Adjust

$$49 \times 3 = 147$$

$$(50 \times 3) - (1 \times 3)$$

$$150 - 3 = 147$$

MM4a: Round & Adjust

$$198 \times 4 = 792$$

$$(200 \times 4) - (2 \times 4)$$

$$800 - 8 = 792$$

MM4b: Round & Adjust

$$3.9 \times 5 = 19.5$$

$$(4 \times 5) - (0.1 \times 5)$$

$$20 - 0.5 = 19.5$$

MM4c: Round & Adjust

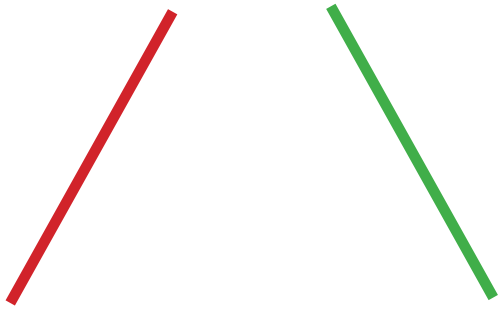
£5.99 x 6 = £35.94

(£6 x 6) - (1p x 6)

£36 - 6p = £35.94

MM5: Doubling

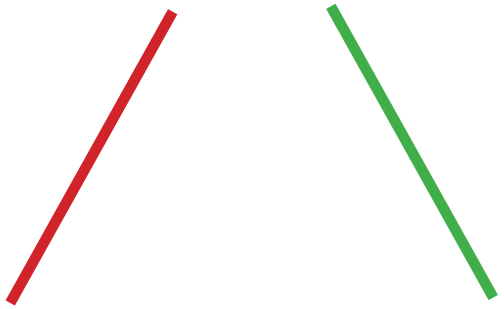
Double 17 = 34



20 + 14 = 34

MM5a: Doubling

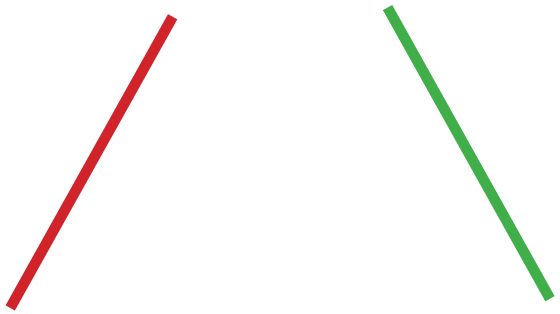
Double 37 = 74



60 + 14 = 74

MM5b: Doubling

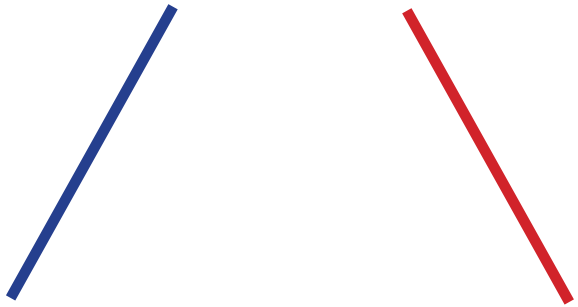
Double 78 = 156



140 + 16 = 156

MM5c: Doubling

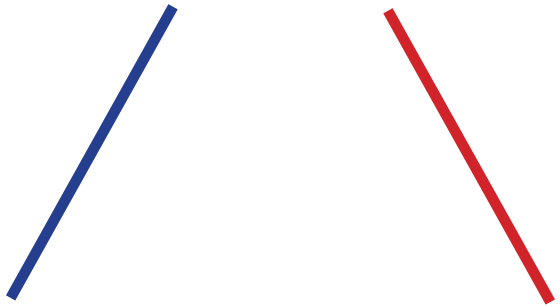
Double 340 = 680



600 + 80 = 680

MM5d: Doubling

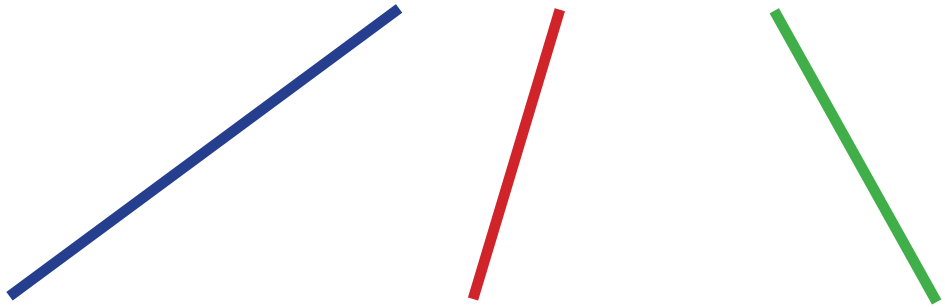
Double 480 = 960



800 + 160 = 960

MM5e: Doubling

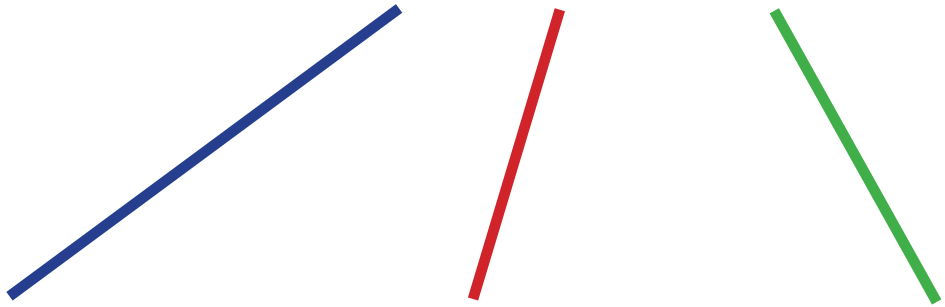
Double 278 = 556



400 + 140 + 16 = 556

MM5f: Doubling

Double 768 = 1536



1400 + 120 + 16 = 1536

MM5g: Doubling

Double 3.7 = 7.4

6 + 1.4 = 7.4

MM6: Doubling Table Facts

16 x 7 = 112

(8 x 2)

8 x 7 = 56

↓ ↓ x 2

16 x 7 = 112

Jesson's C. of E. Primary School

MM7: Doubling Up

17 x 4 = 68

Double 17 = 34 (17 x 2)

Double 34 = 68 (17 x 4)

MM7a: Doubling Up

36 x 8 = 288

Double 36 = 72 (36 x 2)

Double 72 = 144 (36 x 4)

Double 144 = 288 (36 x 8)

MM7b: Doubling Up

125 x 16 = 2000

Double 125 = 250 (125 x 2)

Double 250 = 500 (125 x 4)

Double 500 = 1000 (125 x 8)

Double 1000 = 2000 (125 x 16)

MM8: Mult by 10, 100 & 1000 then Halve

$$86 \times 5 = 430$$

$$86 \times 10 = 860$$

$$860 \div 2 = 430$$

MM8a: Mult by 10, 100 & 1000 then Halve

56 x 25 = 1400

56 x 100 = 5600

5600 ÷ 2 = 2800

2800 ÷ 2 = 1400

MM9: Doubling & Halving

45 x 14

90 x 7 = 630

MM9a: Doubling & Halving

36 x 25

18 x 50

9 x 100 = 900

MM9b: Doubling & Halving

26 x 32

52 x 16

104 x 8 = 832

208 x 4 etc.

MM10: Factorising

$$32 \times 15 = 480$$

$$(32 \times 5 \times 3)$$

$$160 \times 3 = 480$$

MM10a: Factorising

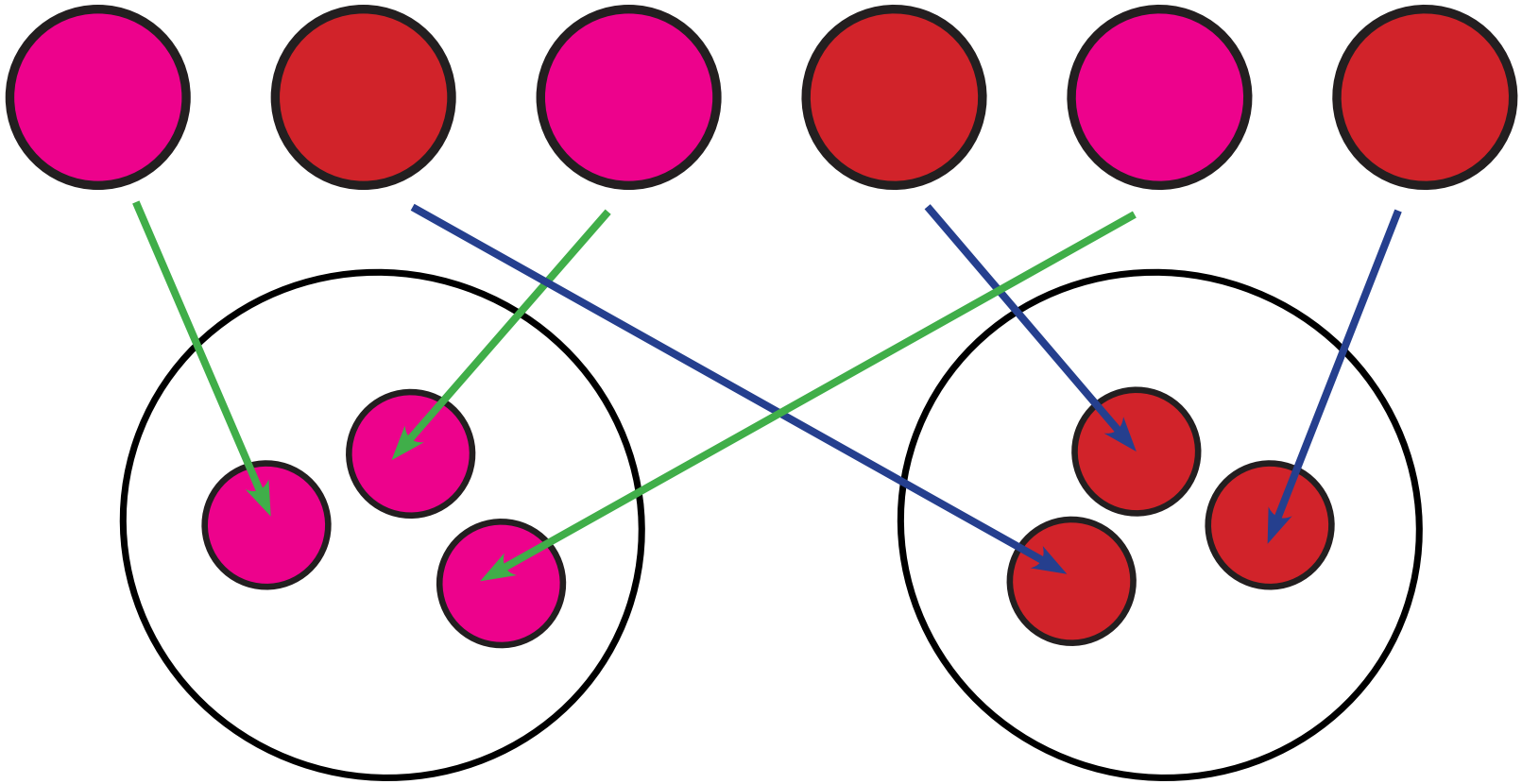
$52 \times 24 = 1248$

$(52 \times 4 \times 6)$

$208 \times 6 = 1248$

D1: Sharing (Concept)

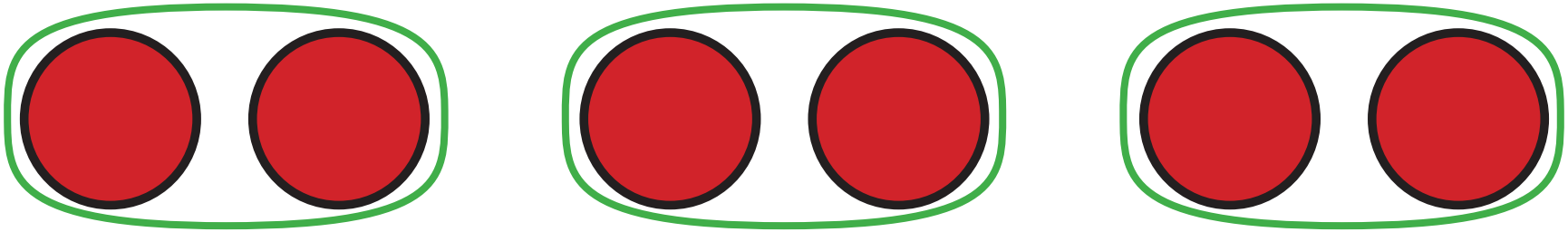
1



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

D2: Grouping (Concept)

1



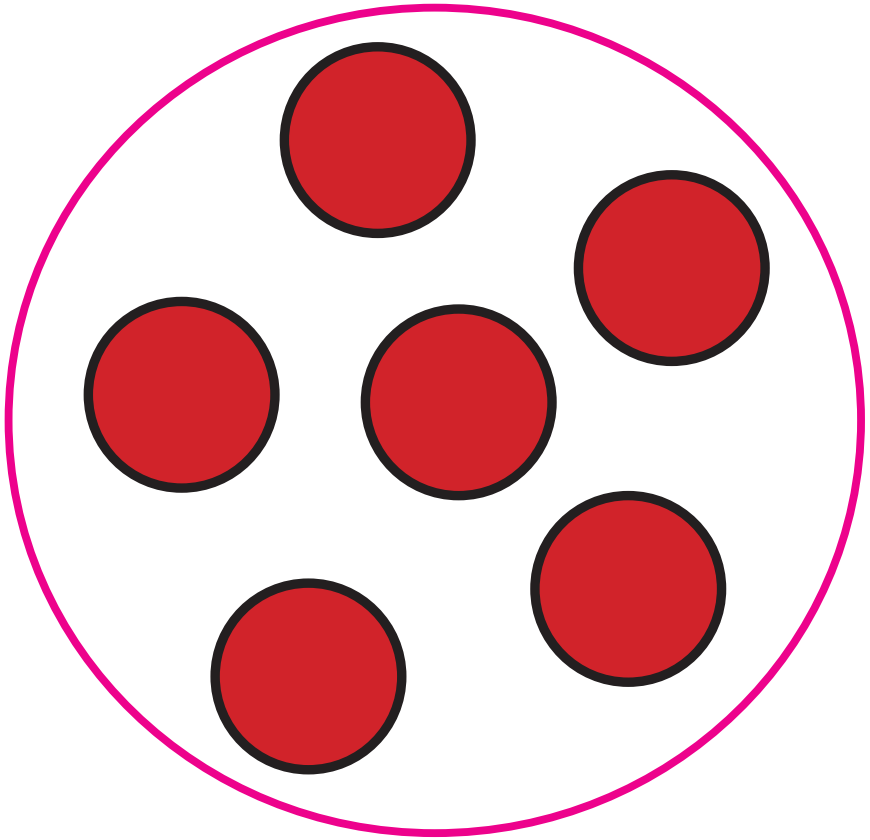
"How many groups of 2 can I make out of 6?
Answer: 3

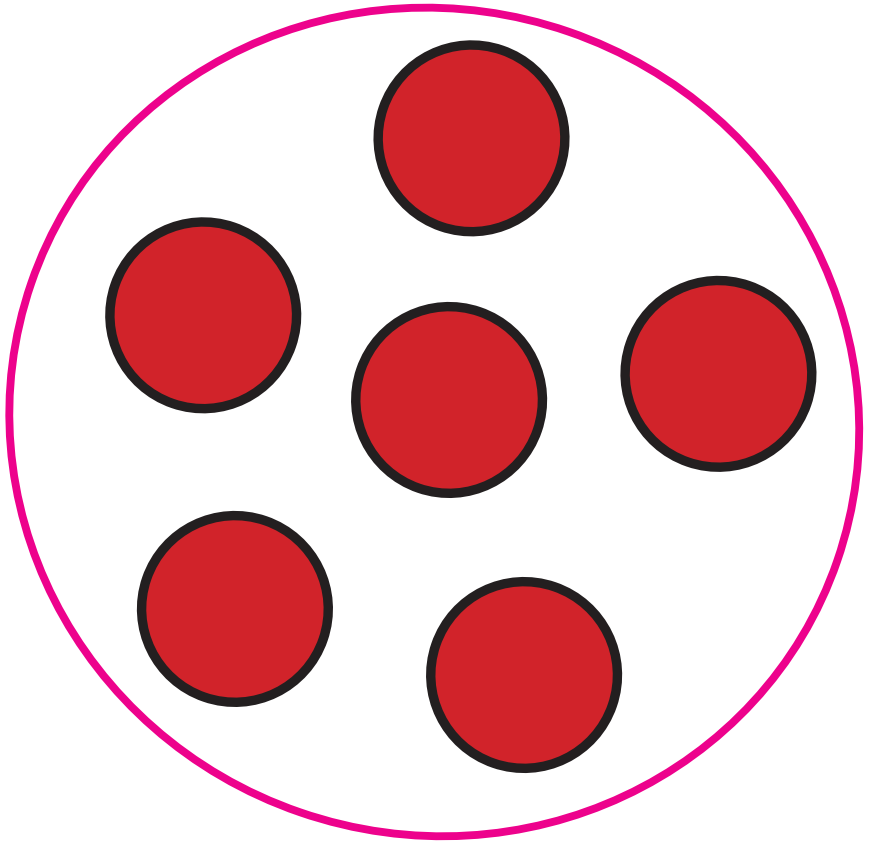
D3: Division as Sharing

2

12 ÷ 2 = 6

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



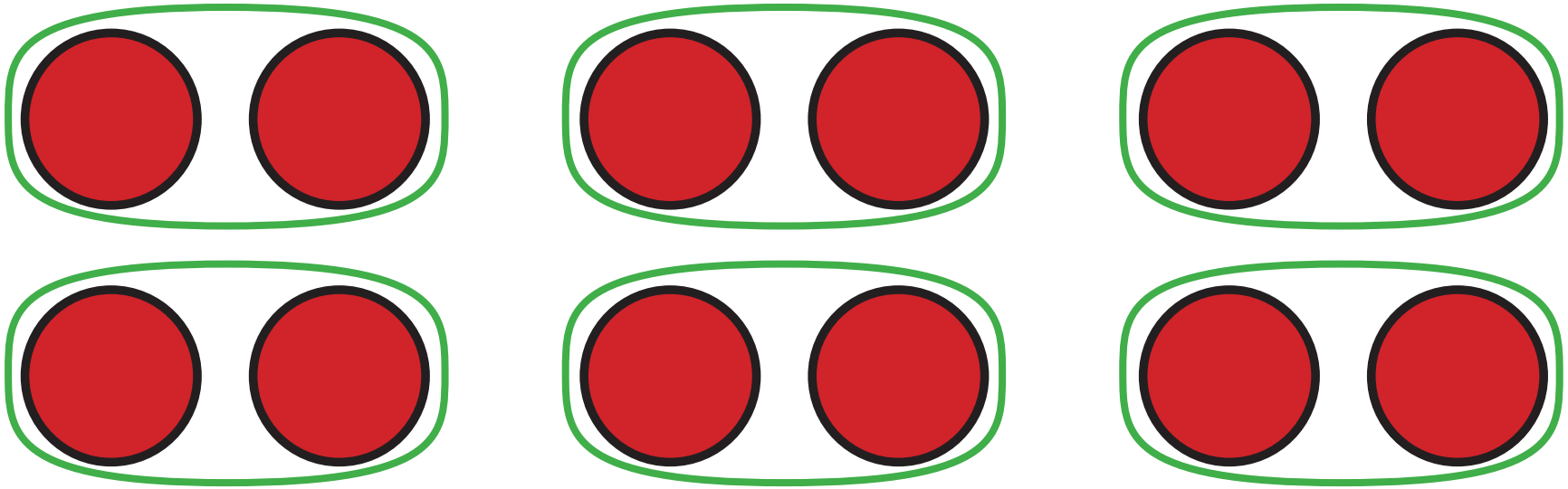


D4: Division as Grouping

2

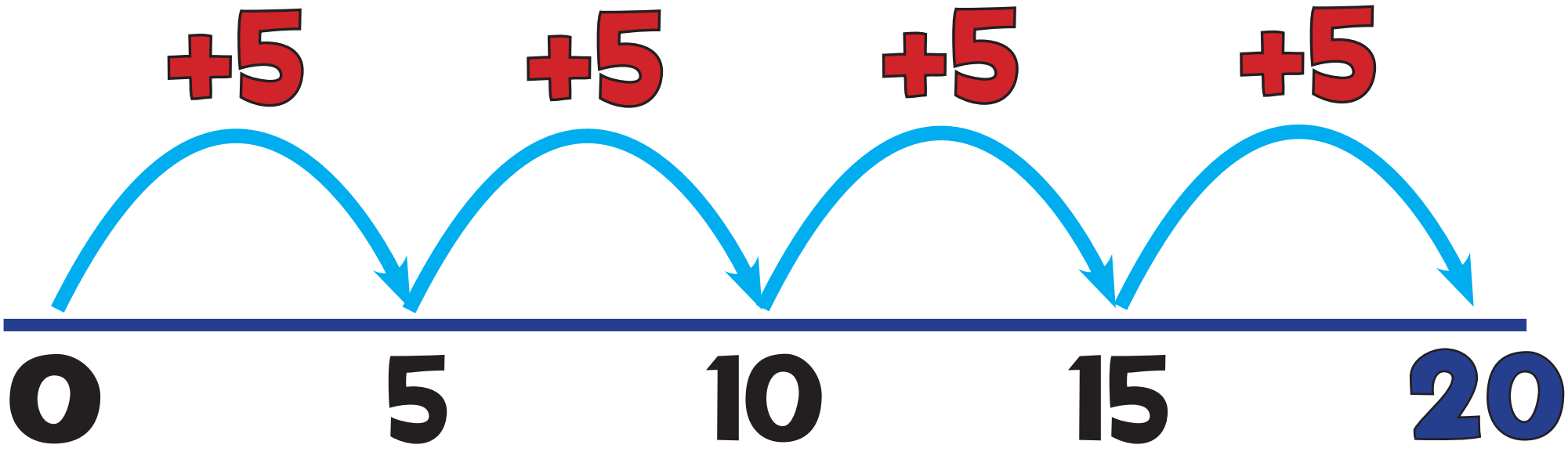
12 ÷ 2 = 6

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



D5: Grouping on a Number Line

2



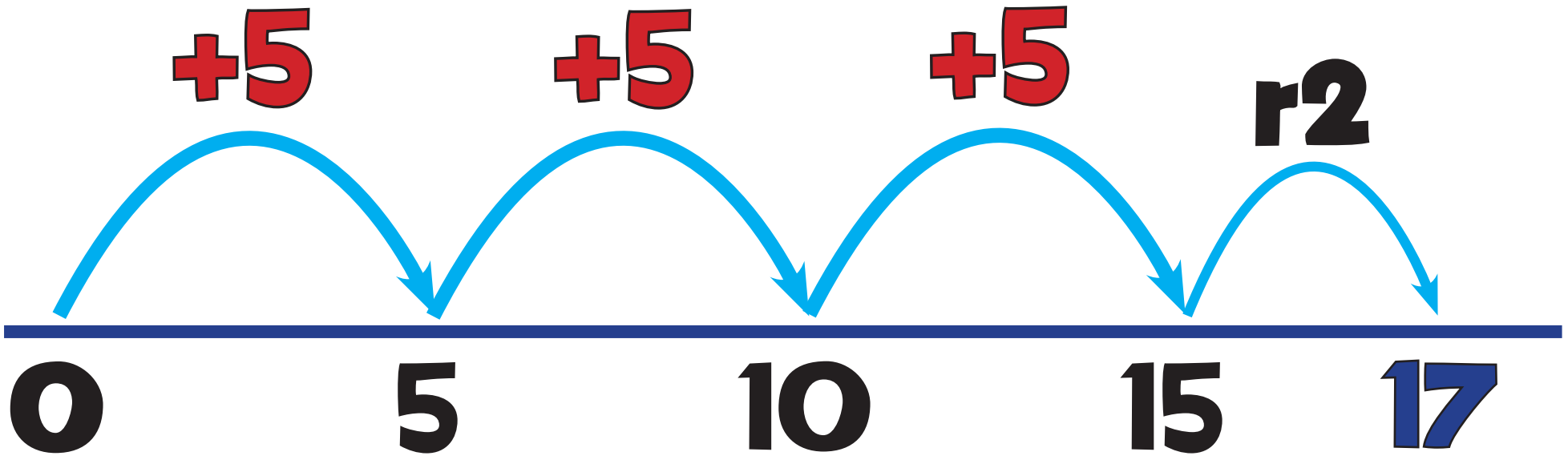
"How many 5s in 20?"
Answer: 4

$$20 \div 5 = 4$$

D5a: Grouping on a Number Line

2

Remainders



"How many 5s in 17?"
Answer: 3 remainder 2

$$17 \div 5 = 3r2$$

D6: Grouping Grid

3

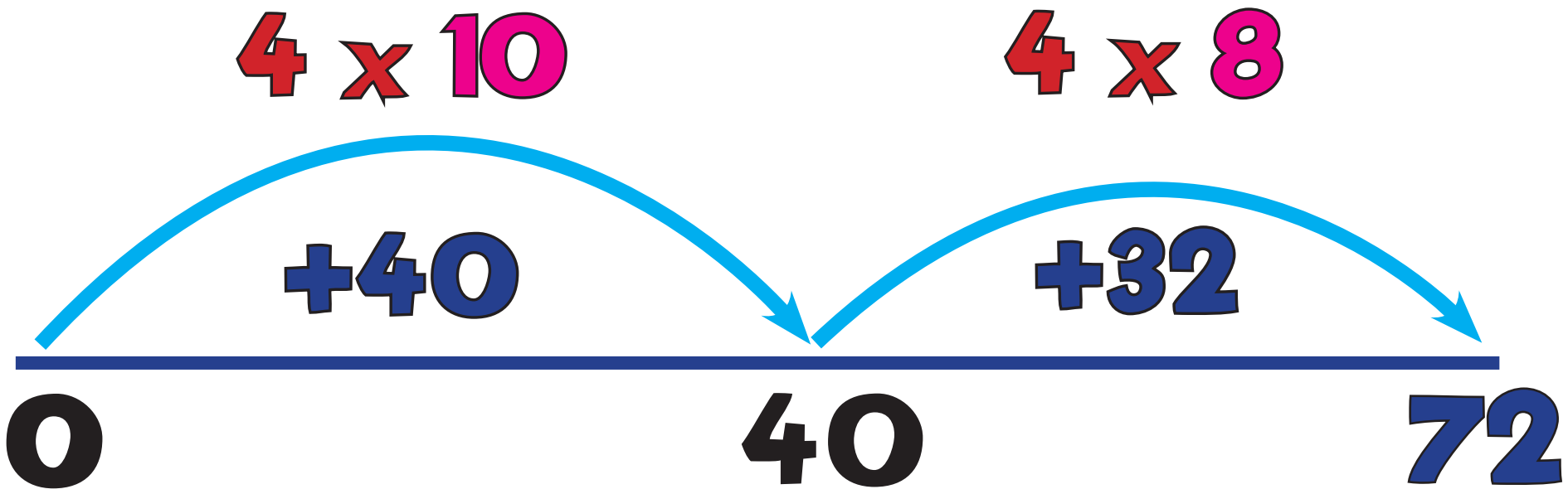
4	4	4	4	4
4				3

"How many times can I fit (groups of) 4 into 27?"
Answer: 6r3

27 ÷ 4 = 6r3

D7: Chunking Jump

3



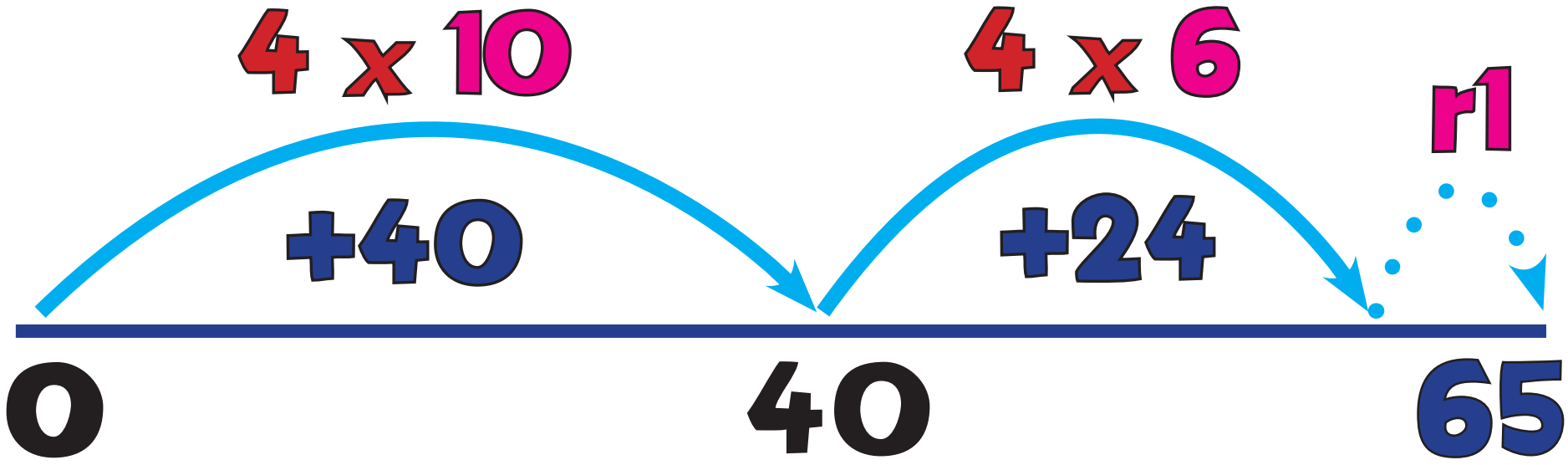
"How many 4s in 72?"
Answer: 18

$$72 \div 4 = 18$$

D7a: Chunking Jump

3

Remainders



"How many 4s in 65?"
Answer: 16r1

$$65 \div 4 = 16r1$$

D8: Find the Hunk!

3

$$72 \div 4 = 18$$

The Hunk!

Chunk

$$40 + 32$$

$$\div 4$$

$$10 + 8 = 18$$

D8a: Find the Hunk!

3

Remainders

65 ÷ 4 = 16r1

The Hunk!

Chunk

40 + 25 ÷ 4

10 + 6r1 = 16r1

D9: Mega Hunk!

4

$$136 \div 4 = 34$$

Mega Hunk!

Chunk

$$120 + 16 \quad \div 4$$

$$30 + 4 = 34$$

D9c: Mega Hunk!

5

Remainders

394 ÷ 6 = 65r4

Mega Hunk!

Chunk

360 + 34

÷ 6

60 + 5r4 = 65r4

D9d: Mega Hunk!

5

$$591 \div 3 = 197$$

Mega Hunk!		Mega Hunk!		Chunk	
300	+	270	+	21	
↓		↓		↓	÷ 3
100	+	90	+	7	= 197

D9e: Mega Hunk!

5

5978 ÷ 7 = 854

Mega Hunk!	Mega Hunk!	Chunk	
5600	+ 350	+ 28	÷ 7
↓	↓	↓	
800	+ 50	+ 4	= 854

D9f: Mega Hunk!

5

846 ÷ 5 = 169r1

Mega Hunk! + Mega Hunk! + Chunk

500 + 300 + 46 ÷ 5

↓ ↓ ↓

100 + 60 + 9r1 = 169r1

D9g: Mega Hunk!

6

Simple Long Division

480 ÷ 15 = 32

Mega Hunk! **Chunk**

450 + 30

↓ ↓ ÷ 15

30 + 2 = 32

D9h: Decimal Hunk!

6

$$18 \div 1.5 = 12$$

The Hunk! — Chunk

$$15 + 3 \quad \div 1.5$$

$$10 + 2 = 12$$

D9i: Decimal Hunk!

6

$$87.5 \div 7 = 12.5$$

Mega Hunk!		Chunk		Chunk	
70	+	14	+	3.5	÷ 7
↓		↓		↓	
10	+	2	+	0.5	= 12.5

(D10: Short Division)

3 Additional

$$72 \div 4 = 18$$

$$\begin{array}{r} 18 \\ 4\overline{)\,7^{3}2} \end{array}$$

(D10: Short Division)

3 Additional:a

$65 \div 4 = 16\text{r}1$

$$\begin{array}{r} 16\text{r}1 \\ 4\overline{)\,6^{2}5} \end{array}$$

D10: Short Division

4

$$136 \div 4 = 34$$

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

D10c: Short Division

5

$$394 \div 6 = 65r4$$

$$\begin{array}{r} 65r4 \\ 6\overline{)394} \end{array}$$

D10d: Short Division

5

$$591 \div 3 = 197$$

$$\begin{array}{r} 197 \\ 3\overline{)\,5^{2}9^{2}1} \end{array}$$

D10e: Short Division

5

$$5978 \div 7 = 854$$

$$7\overline{)5^{5}9^{3}7^{2}8} \quad 854$$

D10f: Short Division

5

Different Remainders

$$5\overline{)8^{3}4^{4}6.^{1}0} \quad 169.2$$

$$846 \div 5$$

$$5\overline{)8^{3}4^{4}6} \quad 169\text{r}1$$

$$5\overline{)8^{3}4^{4}6} \quad 169\,\frac{1}{5}$$

D10i: Short Division

6

$$87.5 \div 7 = 12.5$$

$$7 \overline{)\,87.5} = 12.5$$

(1 above 8, 3 above 5)

(D11: Chunking)

3 Additional

$$
\begin{array}{r}
18 \\
4\overline{)72} \\
-\ 40 \quad (4 \times 10) \\
\hline
32 \\
-\ 32 \quad (4 \times 8) \\
\hline
0
\end{array}
$$

$72 \div 4 = 18$

(D11: Chunking)

Additional:a

$$
\begin{array}{r}
16\text{r}1 \\
4\overline{)\,65} \\
-\ 40 \quad (4 \times 10) \\
\hline
25 \\
-\ 24 \quad (4 \times 6) \\
\hline
1
\end{array}
$$

$65 \div 4 = 16\text{r}1$

D11: Chunking

4

$$
\begin{array}{r}
34 \\
4 \overline{)\,136} \\
-120 \quad (4 \times 30) \\
\hline
16 \\
-\ 16 \quad (4 \times 4) \\
\hline
0
\end{array}
$$

$136 \div 4 = 34$

D11b: Chunking

4

```
      34
   ┌────
4  │136
```

- 40 (4 x 10)

96

- 40 (4 x 10)

56

- 40 (4 x 10)

16

- 16 (4 x 2)

0

136 ÷ 4 = 34

D11c: Chunking

5

Remainders

65r4

6 ⟌ 394

- 360 (6 x 60)

34

- 30 (6 x 5)

4

394 ÷ 6 = 65r4

D11d: Chunking

5

Mega Chunk

$$
\begin{array}{r}
197 \\
3 \overline{)\,591} \\
-\ 300 \quad (3 \times 100) \\
\hline
291 \\
-\ 270 \quad (3 \times 90) \\
\hline
21 \\
-\ 21 \quad (3 \times 7) \\
\hline
0
\end{array}
$$

$591 \div 3 = 197$

D11e: Chunking

5

Mega Chunk

```
      854
   ┌─────
7  │5978
   - 5600   (7 x 800)
   ──────
     378
   - 350    (7 x 50)
   ──────
      28
   - 28     (7 x 4)
   ──────
       0
```

5978 ÷ 7 = 854

D11f: Chunking

5

Mega Chunk

$$
\begin{array}{r}
169\text{r}1 \\
5\overline{)\,846} \\
-\ 500 \quad (5 \times 100) \\
\hline
346 \\
-\ 300 \quad (5 \times 60) \\
\hline
46 \\
-\ 45 \quad (5 \times 9) \\
\hline
1
\end{array}
$$

$846 \div 5 = 169\text{r}1$

D11g1: Chunking

6

Long Division

$$
\begin{array}{r}
32 \\
15 \overline{)\,480} \\
-\ 450 \quad (15 \times 30) \\
\hline
30 \\
-\ 30 \quad (15 \times 2) \\
\hline
0
\end{array}
$$

$480 \div 15 = 32$

D11g2: Chunking

6

Long Division

$$
\begin{array}{r}
32 \\
15 \overline{)\,480} \\
-\ 150 \quad (15 \times 10) \\
\hline
330 \\
-\ 150 \quad (15 \times 10) \\
\hline
180 \\
-\ 150 \quad (15 \times 10) \\
\hline
30 \\
-\ 30 \quad (15 \times 2) \\
\hline
0
\end{array}
$$

$480 \div 15 = 32$

D12: Long Division

6

Short Division Method

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

9 24

D13: Long Division

6

Chunking Method

$$
\begin{array}{r}
26 \text{ r } 21 \\
37 \overline{)\,983} \\
-\ 740 \quad (37 \times 20) \\
\hline
243 \\
-\ 222 \quad (37 \times 6) \\
\hline
21
\end{array}
$$

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

D13 j: Long Division

6

Chunking Method

$$
\begin{array}{r}
26 \text{ r } 21 \\
37 \overline{)\,983} \\
-\,370 \quad (37 \times 10) \\
\hline
613 \\
-\,370 \quad (37 \times 10) \\
\hline
243 \\
-\,222 \quad (37 \times 6) \\
\hline
21
\end{array}
$$

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

D14: Long Division

6

Traditional Method

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

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

Sense of Number
Calculation Cards

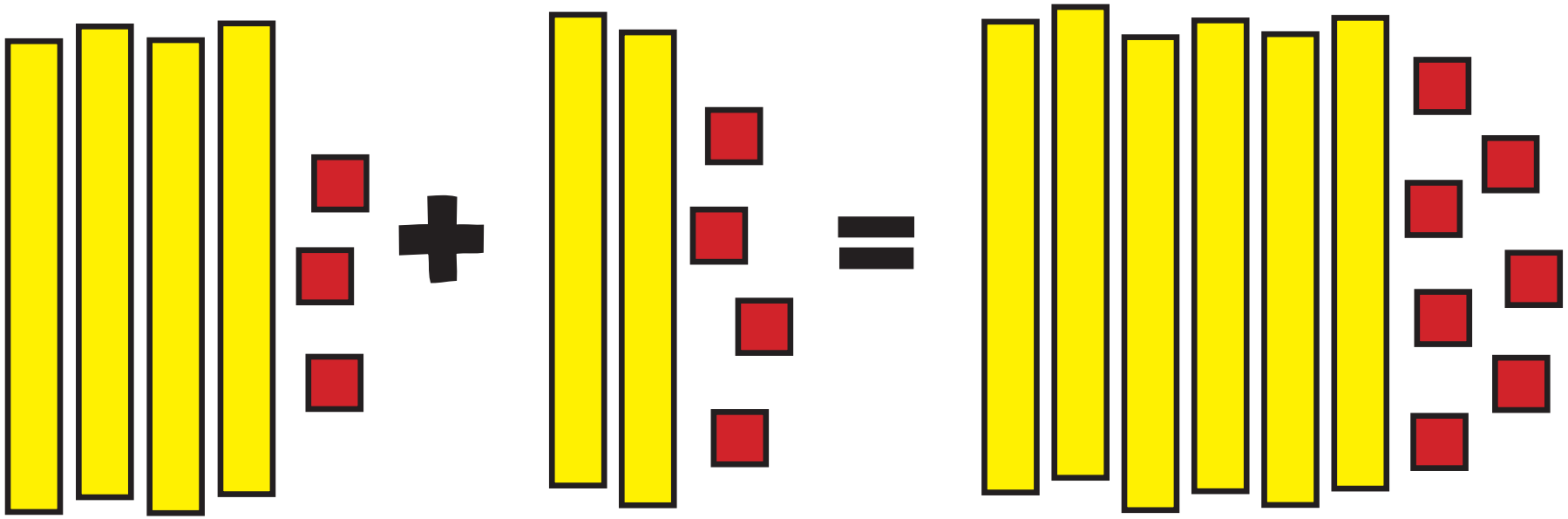
by Dave Godfrey

dave@senseofnumber.co.uk Tel: 01904 778848

The following slides show the calculation 43 + 24 using a variety of resources and manipulatives.

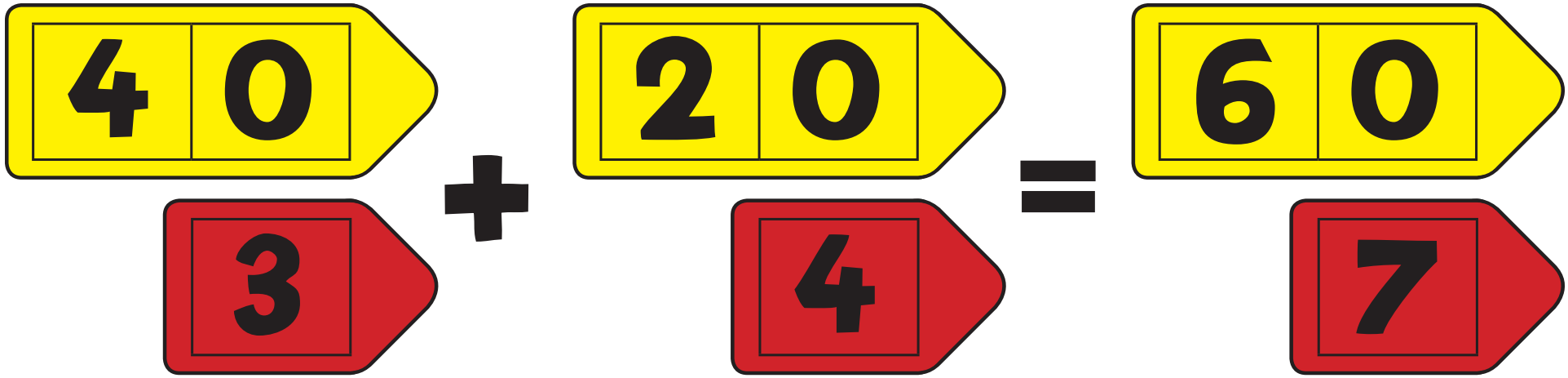
A: Base 10

43 + 24 = 67



B: Arrow Cards

43 + 24 = 67



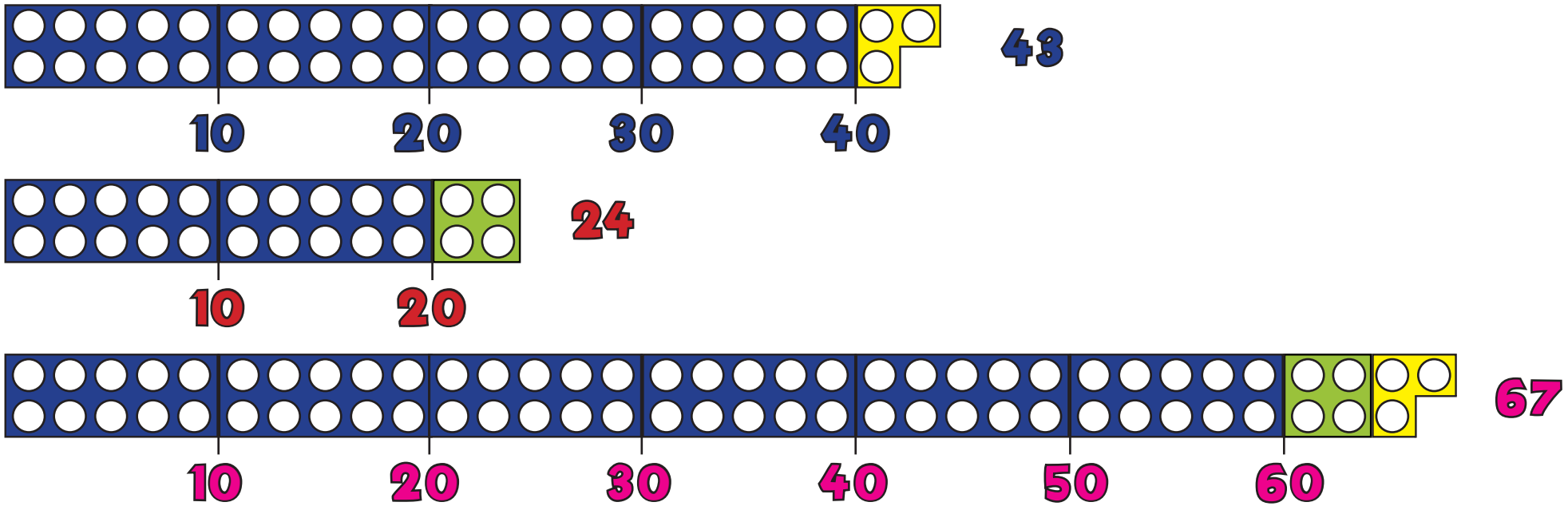
C: Hundred Square

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: Place Value Counters

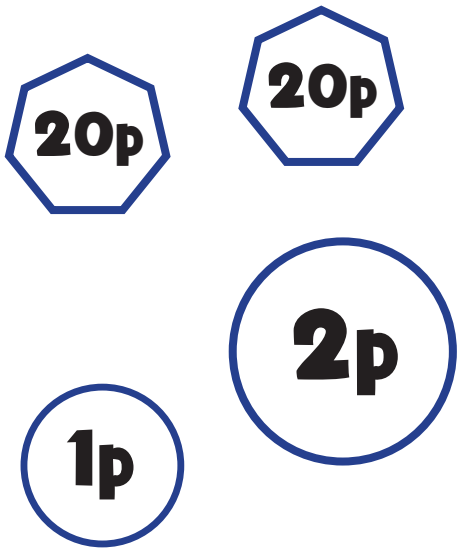
43 + 24 = 67

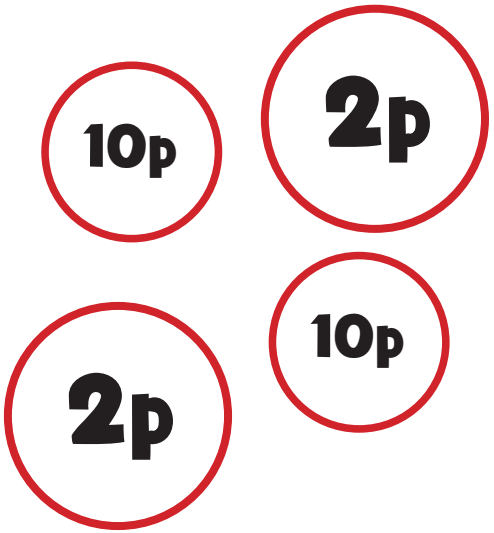
10s	1s
10 10 10 10	1 1 1
10 10	1 1 1 1
60	7

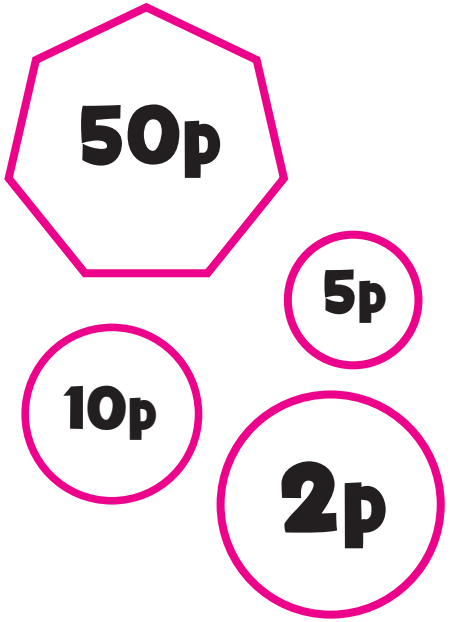
67

F: Money

43 + 24 = 67

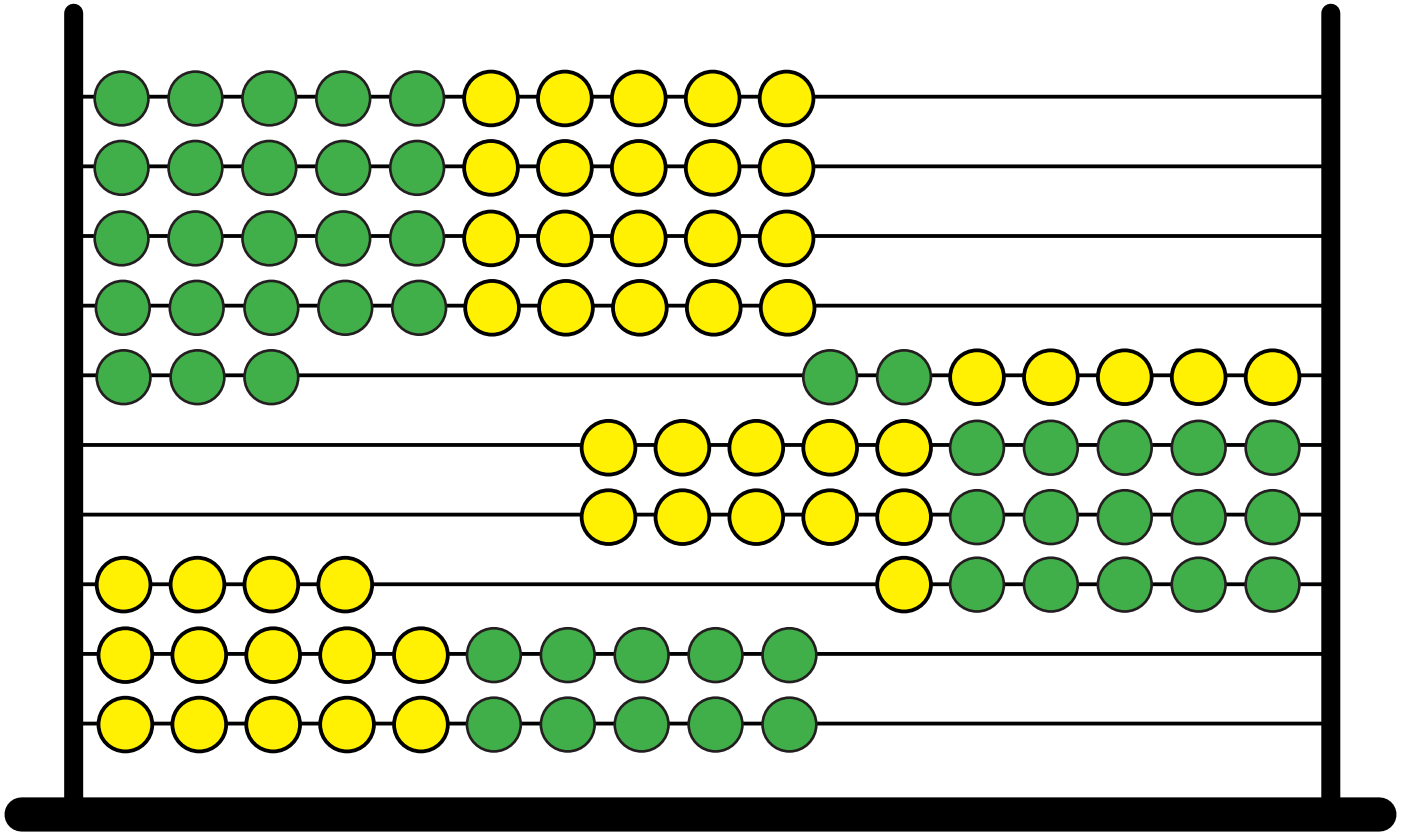






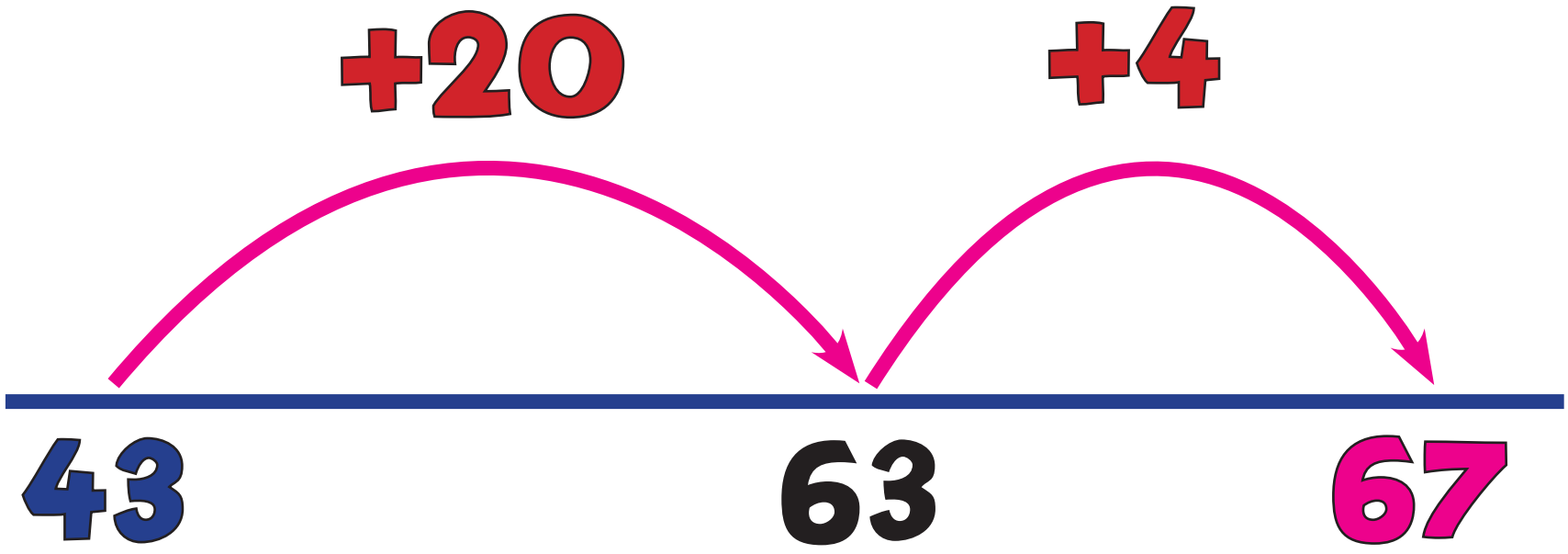
G: Abacus

43 + 24 = 67



H: Number Line

43 + 24 = 67



MF: 2x Table Facts

2 x 1 = 2	2 x 7 = 14
2 x 2 = 4	2 x 8 = 16
2 x 3 = 6	2 x 9 = 18
2 x 4 = 8	2 x 10 = 20
2 x 5 = 10	2 x 11 = 22
2 x 6 = 12	2 x 12 = 24

MF: 3x Table Facts

3 x 1 = 3	3 x 7 = 21
3 x 2 = 6	3 x 8 = 24
3 x 3 = 9	3 x 9 = 27
3 x 4 = 12	3 x 10 = 30
3 x 5 = 15	3 x 11 = 33
3 x 6 = 18	3 x 12 = 36

MF: 4x Table Facts

4 x 1 = 4	4 x 7 = 28
4 x 2 = 8	4 x 8 = 32
4 x 3 = 12	4 x 9 = 36
4 x 4 = 16	4 x 10 = 40
4 x 5 = 20	4 x 11 = 44
4 x 6 = 24	4 x 12 = 48

MF: 5x Table Facts

5 x 1 = 5	5 x 7 = 35
5 x 2 = 10	5 x 8 = 40
5 x 3 = 15	5 x 9 = 45
5 x 4 = 20	5 x 10 = 50
5 x 5 = 25	5 x 11 = 55
5 x 6 = 30	5 x 12 = 60

MF: 6x Table Facts

6 x 1 = 6	6 x 7 = 42
6 x 2 = 12	6 x 8 = 48
6 x 3 = 18	6 x 9 = 54
6 x 4 = 24	6 x 10 = 60
6 x 5 = 30	6 x 11 = 66
6 x 6 = 36	6 x 12 = 72

MF: 7x Table Facts

7 x 1 = 7	7 x 7 = 49
7 x 2 = 14	7 x 8 = 56
7 x 3 = 21	7 x 9 = 63
7 x 4 = 28	7 x 10 = 70
7 x 5 = 35	7 x 11 = 77
7 x 6 = 42	7 x 12 = 84

MF: 8x Table Facts

8 x 1 = 8	8 x 7 = 56
8 x 2 = 16	8 x 8 = 64
8 x 3 = 24	8 x 9 = 72
8 x 4 = 32	8 x 10 = 80
8 x 5 = 40	8 x 11 = 88
8 x 6 = 48	8 x 12 = 96

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MF: 9x Table Facts

9 x 1 = 9	9 x 7 = 63
9 x 2 = 18	9 x 8 = 72
9 x 3 = 27	9 x 9 = 81
9 x 4 = 36	9 x 10 = 90
9 x 5 = 45	9 x 11 = 99
9 x 6 = 54	9 x 12 = 108

MF: 10x Table Facts

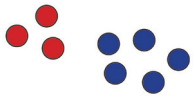
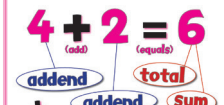
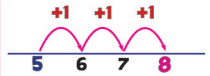
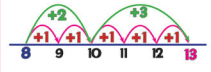
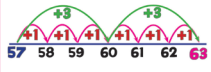
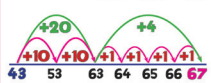
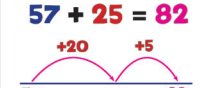
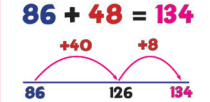
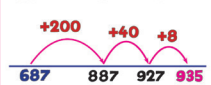
10 x 1 = 10
10 x 2 = 20
10 x 3 = 30
10 x 4 = 40
10 x 5 = 50
10 x 6 = 60
10 x 7 = 70
10 x 8 = 80
10 x 9 = 90
10 x 10 = 100
10 x 11 = 110
10 x 12 = 120

MF: 11x Table Facts

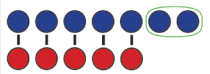
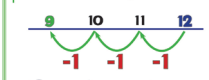
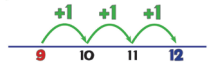
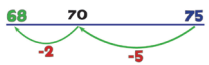
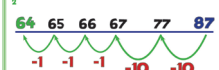
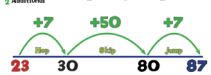
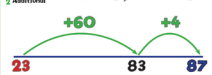
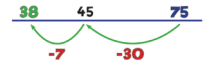
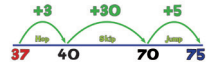
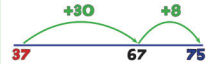
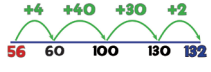
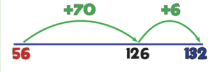
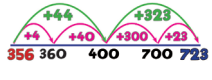
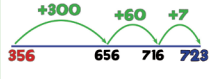
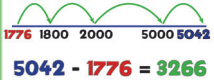
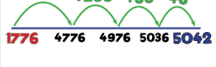
11 x 1 = 11	11 x 7 = 77
11 x 2 = 22	11 x 8 = 88
11 x 3 = 33	11 x 9 = 99
11 x 4 = 44	11 x 10 = 110
11 x 5 = 55	11 x 11 = 121
11 x 6 = 66	11 x 12 = 132

MF: 12x Table Facts

12 x 1 = 12	12 x 7 = 84
12 x 2 = 24	12 x 8 = 96
12 x 3 = 36	12 x 9 = 108
12 x 4 = 48	12 x 10 = 120
12 x 5 = 60	12 x 11 = 132
12 x 6 = 72	12 x 12 = 144

Y1	**A1: Objects & Pictures**  "If I have 3 and then 5 more, how many altogether? Answer: 8"					**A**	**Addition Calculation**  4 + 2 = 6 (add) (equals) addend addend total sum	**Addition Vocabulary**  increase add total plus addition more count on sum altogether
Y1	**A1a: Largest Number 1st**  5 + 3 = 8	**A2: Counting On**  5 6 7 8 5 + 3 = 8						
Y1		**A2a: Counting On** Bridging 10  8 9 10 11 12 13 8 + 5 = 13						
Y2		**A2b: Counting On** Bridging 10s Number  57 58 59 60 61 62 63 57 + 6 = 63						
Y2		**A3: Forwards Jump** 43 + 24 = 67  43 53 63 64 65 66 67	**A4: Partitioning** 43 + 24 = 67 40 + 20 = 60 3 + 4 = 7 67	**A5: Partition Jot** 43 + 24 = 67 60 + 7	**(A6: Expanded Column)** 43 + 24 7 60 67	**(A7: Column Addition)** 43 + 24 67		
Y2		**A3a: Forwards Jump** 57 + 25 = 82  57 77 82	**A4a: Partitioning** 57 + 25 = 82 50 + 20 = 70 7 + 5 = 12 82	**A5a: Partition Jot** 57 + 25 = 82 70 + 12	**(A6: Expanded Column)** 57 + 25 12 70 82	**(A7: Column Addition)** 57 + 25 82		
Y2/3		**A3b: Forwards Jump** 86 + 48 = 134  86 126 134	**A4b: Partitioning** 86 + 48 = 134 80 + 40 = 120 6 + 8 = 14 134	**A5b: Partition Jot** 86 + 48 = 134 120 + 14	**(A6: Expanded Column)** 86 + 48 14 120 134	**(A7: Column Addition)** 86 + 48 134		
Y3		**A3c: Forwards Jump** 687 + 248 = 935  687 887 927 935	**A4c: Partitioning** 687 + 248 = 935 600 + 200 = 800 80 + 40 = 120 7 + 8 = 15 935	**A5c: Partition Jot** 687 + 248 = 935 800 + 120 + 15	**A6: Expanded Column** 687 + 248 15 120 800 935	**A7: Column Addition** 687 + 248 935		

Y4				A5d: Partition Jot 4873 + 3762 = 8635 7000 + 1500 + 130 + 5		A7d: Column Addition 4873 + 3762 8635		
Y5						A7e: Column Addition 787567 + 446278 1233845		
Y5		A3f: Decimal Jump 4.8 + 3.8 = 8.6 +3 +0.8 4.8 7.8 8.6	A4f: Partitioning 4.8 + 3.8 = 8.6 4 + 3 = 7 0.8 + 0.8 = 1.6 8.6	A5f: Partition Jot 4.8 + 3.8 = 8.6 7 + 1.6		A7f: Column Addition 4.8 + 3.8 8.6		
Y5		A3g: Decimal Jump 5.65 + 3.29 = 8.94 +3 +0.2 +0.09 5.65 8.65 8.85 8.94		A5g: Partition Jot 5.65 + 3.29 = 8.94 8 + 0.8 + 0.14		A7g: Column Addition 5.65 + 3.29 8.94		
Y5				A5h: Partition Jot 76.7 + 58.5 = 135.2 120 + 14 + 1.2		A7h: Column Addition 76.7 + 58.5 135.2		
Y5				A5i: Partition Jot £38.25 + £27.46 = £65.71 £65.00 + £0.71		A7i: Column Addition With Money £38.25 + £27.46 £65.71		
Y5						A7j: Column Addition With Decimals 73.4 + 5.67 = 79.07 73.4 + 5.67 79.07		

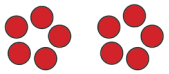
Y1	**S1: Objects**  7 - 3 = 4 "What do I get if I take 3 away from 7?" Answer: 4					**S**	**Subtraction Calculation** 6 − 2 = 4 (subtract) (equals) minuend difference subtrahend	**Subtraction Vocabulary** count back, decrease, minus, less, subtract, fewer, count on, take away, difference between
Y1		**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?"				
Y2			**S5: Backwards Boing**  75 - 7 = 68	**S4a: Counting On**  83 - 78 = 5 "How many more is 83 than 78? What is the difference?"				
Y2			**S6: Backwards Bounce**  87 - 23 = 64	**(S8: Triple Jump!)**  87 - 23 = 64	**(S9: 10s Jump, 1s Jump!)**  87 - 23 = 64	**(S10: Expanded Column)** 87 - 23 = 64 80 7 20 3 60 4	**(S11: Column Subtraction)** 87 - 23 64	
Y2			**S7: Backwards Jump**  75 - 37 = 38	**S8: Triple Jump!**  75 - 37 = 38	**S9: 10s Jump, 1s Jump!**  75 - 37 = 38	**(S10: Expanded Column)** 75 - 37 = 38 60 ~~70~~ 15 30 7 30 8	**(S11: Column Subtraction)** 6 7 15 - 3 7 38	
Y3				**S8b: Quad Jump!**  132 - 56 = 76	**S9b: 10s Jump, 1s Jump!**  132 - 56 = 76	**(S10: Expanded Column)** 132 - 56 = 38 0 ~~100~~ 120 1 - ~~30~~ 2 50 6 70 6	**(S11: Column Subtraction)** 0 12 1 ~~1~~ ~~3~~ 2 - 5 6 7 6	
Y3				**S8c: Big Jump!**  723 - 356 = 367	**S9c: 100s, 10s, 1s Jump**  723 - 356 = 367	**S10: Expanded Column** 723 - 356 = 367 600 ~~110~~ 1 ~~700~~ ~~20~~ 3 - 300 50 6 300 60 7	**S11: Column Subtraction** 6 11 1 ~~7~~ ~~2~~ 3 - 3 5 6 3 6 7	
Y4				**S8d: Quad Jump Extreme**  5042 - 1776 = 3266	**S9d: 1000s, 100s, 10s, 1s Jump**  5042 - 1776 = 3266		**S11d: Column Subtraction** 4 9 13 1 ~~5~~ ~~0~~ ~~4~~ 2 - 1 7 7 6 3 2 6 6	

Y5							S11e: Column Subtraction 742831 - 427358 315473	
Y5				S8f: Decimal T-J! +0.3 +4 +0.4 Hop Skip Jump 8.7 9 13 13.4 13.4 - 8.7 = 4.7	S9f: Is Jump, Tenths Jump! +4 +0.7 8.7 12.7 13.4 13.4 - 8.7 = 4.7		S11f: Column Subtraction 13.4 - 8.7 4.7	
Y5							S11g: Column Subtraction 72.43 - 47.85 24.58	
Y5							S11h: Column Subtraction With Decimals 12.4 - 5.97 = 6.43 12.40 - 5.97 6.43	

MS	MS1: Counting Back 46 - 21 = 25 -20 -1 46 26 25	MS2: Counting On 75 - 47 = 28 +20 +8 47 67 75	MS3: Round & Adjust 84 - 29 = 55 84 - 30 + 1 54 + 1 = 55					
		MS2a: Counting On 75 - 47 = 28 +3 +25 47 50 75						

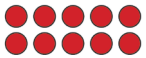
Y1

(M1: Groups)



"2 groups of 5 counters makes 10 counters altogether"

(M3: Arrays)



"2 groups of 5 counters" or "5 groups of 2 counters" - "10 counters altogether"

M

Multiplication Calculation

4 x 2 = 8

(multiplied by) (equals)

multiplicand x multiplier = product

Multiplication Vocabulary

groups of, times, product, multiple, double, lots of, multiply, repeated addition

Y2

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"

M2: Repeated Addition (Number Line)

5 x 3 = 5 + 5 + 5 = 15

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

M3: Arrays

3 x 5 = 15 or 5 x 3 = 15

Y2

MF: 2x Table Facts

2 x 1 = 2	2 x 7 = 14
2 x 2 = 4	2 x 8 = 16
2 x 3 = 6	2 x 9 = 18
2 x 4 = 8	2 x 10 = 20
2 x 5 = 10	2 x 11 = 22
2 x 6 = 12	2 x 12 = 24

MF: 5x Table Facts

5 x 1 = 5	5 x 7 = 35
5 x 2 = 10	5 x 8 = 40
5 x 3 = 15	5 x 9 = 45
5 x 4 = 20	5 x 10 = 50
5 x 5 = 25	5 x 11 = 55
5 x 6 = 30	5 x 12 = 60

MF: 10x Table Facts

10 x 1 = 10	10 x 7 = 70
10 x 2 = 20	10 x 8 = 80
10 x 3 = 30	10 x 9 = 90
10 x 4 = 40	10 x 10 = 100
10 x 5 = 50	10 x 11 = 110
10 x 6 = 60	10 x 12 = 120

Y3

MF: 3x Table Facts

3 x 1 = 3	3 x 7 = 21
3 x 2 = 6	3 x 8 = 24
3 x 3 = 9	3 x 9 = 27
3 x 4 = 12	3 x 10 = 30
3 x 5 = 15	3 x 11 = 33
3 x 6 = 18	3 x 12 = 36

MF: 4x Table Facts

4 x 1 = 4	4 x 7 = 28
4 x 2 = 8	4 x 8 = 32
4 x 3 = 12	4 x 9 = 36
4 x 4 = 16	4 x 10 = 40
4 x 5 = 20	4 x 11 = 44
4 x 6 = 24	4 x 12 = 48

MF: 8x Table Facts

8 x 1 = 8	8 x 7 = 56
8 x 2 = 16	8 x 8 = 64
8 x 3 = 24	8 x 9 = 72
8 x 4 = 32	8 x 10 = 80
8 x 5 = 40	8 x 11 = 88
8 x 6 = 48	8 x 12 = 96

Y3

M4: Multi Boing!

10 x 5 = 50

5 x 5 = 25

15 x 5 = 75 (50 + 25 = 75)

M4a: Partitioning

15 x 5 = 75

10 x 5 = 50

5 x 5 = 25

50 + 25 = 75

M5: Grid Method (Short Multiplication)

15 x 5 = 75

x	10	5
5	50	25

50 + 25 = 75

(M6: Expanded Column)

15

x 5

25 (5 x 5)

50 (5 x 10)

75

(M7: Column Multiplication)

15

x 5

75

2

Y4

MF: 6x Table Facts

6 x 1 = 6	6 x 7 = 42
6 x 2 = 12	6 x 8 = 48
6 x 3 = 18	6 x 9 = 54
6 x 4 = 24	6 x 10 = 60
6 x 5 = 30	6 x 11 = 66
6 x 6 = 36	6 x 12 = 72

MF: 7x Table Facts

7 x 1 = 7	7 x 7 = 49
7 x 2 = 14	7 x 8 = 56
7 x 3 = 21	7 x 9 = 63
7 x 4 = 28	7 x 10 = 70
7 x 5 = 35	7 x 11 = 77
7 x 6 = 42	7 x 12 = 84

MF: 9x Table Facts

9 x 1 = 9	9 x 7 = 63
9 x 2 = 18	9 x 8 = 72
9 x 3 = 27	9 x 9 = 81
9 x 4 = 36	9 x 10 = 90
9 x 5 = 45	9 x 11 = 99
9 x 6 = 54	9 x 12 = 108

M5a: Grid Method (Short Multiplication)

43 x 6 = 258

x	40	3
6	240	18

240 + 18 = 258

(M6: Expanded Column)

43

x 6

18 (6 x 3)

240 (6 x 40)

258

(M7: Column Multiplication)

43

x 6

258

1

Y4

MF: 11x Table Facts

11 x 1 = 11	11 x 7 = 77
11 x 2 = 22	11 x 8 = 88
11 x 3 = 33	11 x 9 = 99
11 x 4 = 44	11 x 10 = 110
11 x 5 = 55	11 x 11 = 121
11 x 6 = 66	11 x 12 = 132

MF: 12x Table Facts

12 x 1 = 12	12 x 7 = 84
12 x 2 = 24	12 x 8 = 96
12 x 3 = 36	12 x 9 = 108
12 x 4 = 48	12 x 10 = 120
12 x 5 = 60	12 x 11 = 132
12 x 6 = 72	12 x 12 = 144

M5b: Grid Method (Short Multiplication)

147 x 4 = 588

x	100	40	7
4	400	160	28

400 + 160 + 28 = 588

M6: Expanded Column

147

x 4

28 (4 x 7)

160 (4 x 40)

400 (4 x 100)

588

M7: Column Multiplication

147

x 4

588

1 2

M7a: Column Multiplication

3647

x 4

14588

2 1 2

Y5

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)

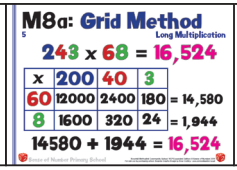
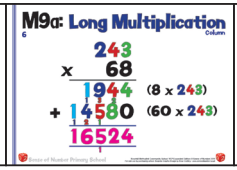
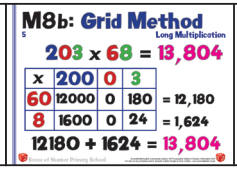
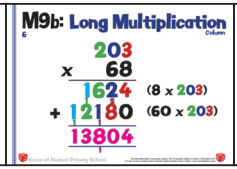
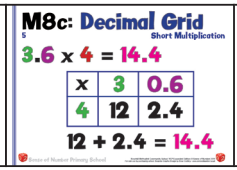
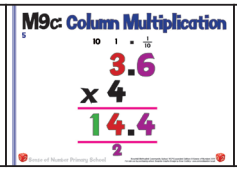
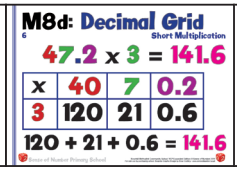
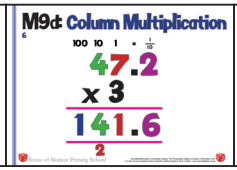
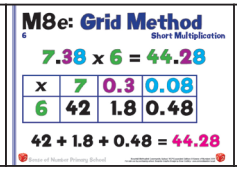
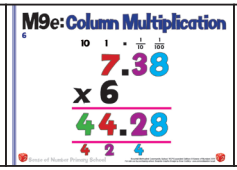
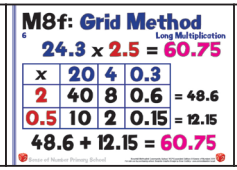
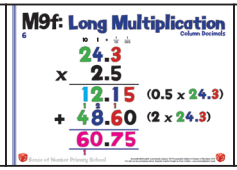
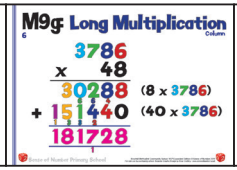
43

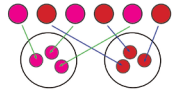
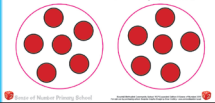
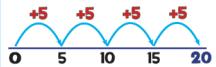
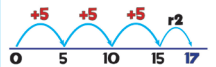
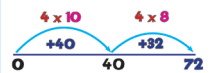
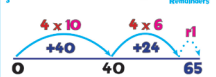
x 65

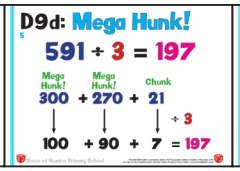
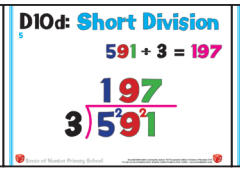
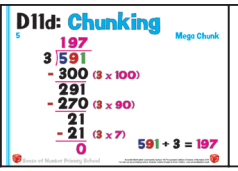
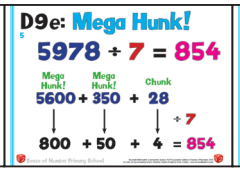
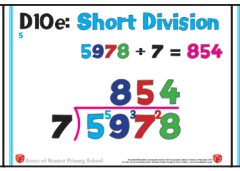
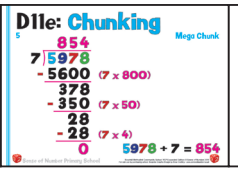
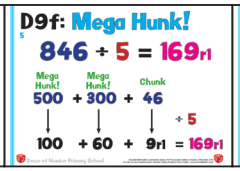
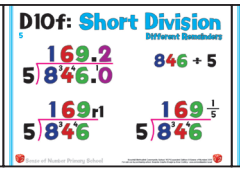
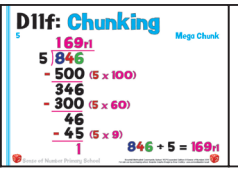
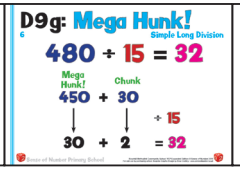
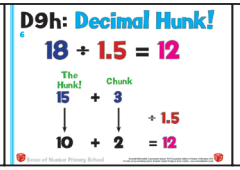
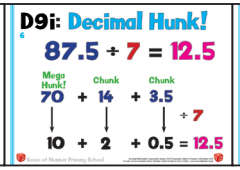
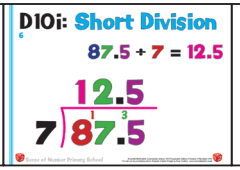
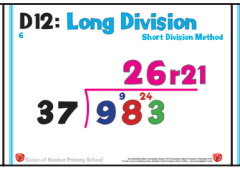
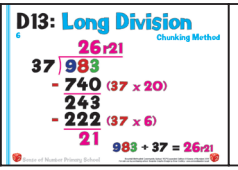
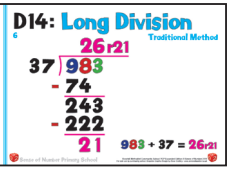
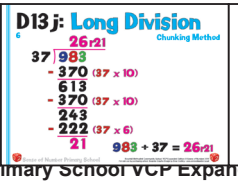
215 (5 x 43)

+ 2580 (60 x 43)

2795

Y5							
Y5							
Y5							
Y6							
Y6							
Y6							
Y6							

Y1	**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				**D**	**Division Calculation** 8 ÷ 2 = 4 (divided by) (equals) dividend quotient ÷ divisor	**Division Vocabulary** remainder group share ÷ halve divisor factor quotient equal groups of divide
Y2	**D3: Division as Sharing** 12 ÷ 2 = 6 	**D4: Division as Grouping** 12 ÷ 2 = 6 	**D5: Grouping on a Number Line**  20 ÷ 5 = 4					
Y2			**D5a: Grouping on a Number Line** Remainders  17 ÷ 5 = 3r2					
Y3		**D6: Grouping Grid** 4 4 4 4 4 4 3 27 ÷ 4 = 6r3						
Y3			**D7: Chunking Jump**  72 ÷ 4 = 18	**D8: Find the Hunk!** 72 ÷ 4 = 18 The Hunk! 40 + Chunk 32 ÷ 4 10 + 8 = 18	**(D10: Short Division)** 72 ÷ 4 = 18 18 4) 7 2	**(D11: Chunking)** 18 4) 72 - 40 (4 x 10) 32 - 32 (4 x 8) 0 72 ÷ 4 = 18		
Y3			**D7a: Chunking Jump** Remainders  65 ÷ 4 = 16r1	**D8a: Find the Hunk!** Remainders 65 ÷ 4 = 16r1 The Hunk! 40 + Chunk 25 ÷ 4 10 + 6r1 = 16r1	**(D10: Short Division)** 65 ÷ 4 = 16r1 16r1 4) 6 5	**(D11: Chunking)** 16r1 4) 65 - 40 (4 x 10) 25 - 24 (4 x 6) 1 65 ÷ 4 = 16r1		
Y4				**D9: Mega Hunk!** 136 ÷ 4 = 34 Mega Hunk! 120 + Chunk 16 ÷ 4 30 + 4 = 34	**D10: Short Division** 136 ÷ 4 = 34 34 4) 1 3 6	**D11: Chunking** 34 4) 136 -120 (4 x 30) 16 - 16 (4 x 4) 0 136 ÷ 4 = 34	**D11b: Chunking** 34 4) 136 - 40 (4 x 10) 96 - 40 (4 x 10) 56 - 40 (4 x 10) 16 - 16 (4 x 4) 0 136 ÷ 4 = 34	
Y5				**D9c: Mega Hunk!** Remainders 394 ÷ 6 = 65r4 Mega Hunk! 360 + Chunk 34 ÷ 6 60 + 5r4 = 65r4	**D10c: Short Division** 394 ÷ 6 = 65r4 65r4 6) 3 9 4	**D11c: Chunking** Remainders 65r4 6) 394 - 360 (6 x 60) 34 - 30 (6 x 5) 4 394 ÷ 6 = 65r4		

Y5								
Y5								
Y5								
Y6								
Y6								
Y6								
Y6								
Y6								

MA

MA1: Manipulate Calculation

45 + 39 = 84

44 + 1 + 39

44 + 40 = 84

MA2: Round & Adjust

45 + 39 = 84

45 + 40 - 1

85 - 1 = 84

MA3: Partitioning

45 + 82 = 127

120 + 7 = 127

MA4: Counting On

45 + 20 = 65

+20

45 → 65

MA5: Double & Adjust

45 + 46 = 91

45 + 45 + 1

90 + 1 = 91

MA6: Number Bonds

45 + 95 = 140

40 + 100 = 140

MC RaPa CoDa Numbo

MA1 MC = Manipulate Calculation
MA2 Ra = Round and Adjust
MA3 Pa = Partitioning
MA4 Co = Counting On
MA5 Da = Double and Adjust
MA6 Numbo = Number Bonds

6 Cool Strategies for Mental Addition!

MA1: Manipulate Calculation

16 + 9 = 25

15 + 10

MA2: Round & Adjust

45 + 9 = 54

45 +10 → 55 -1 → 54

MA3: Partitioning

43 + 21 = 64

MA4: Counting On

45 + 20 = 65

45 +10 → 55 +10 → 65

MA5: Double & Adjust

7 + 8 = 15

7 + 8 = 7 + 7 + 1 = 14 + 1 = 15

MA6: Number Bonds

3 + 4 + 7 = 14

Y1

MA1: Manipulate Calculation

16 + 9 = 25

15 + 1 + 9

15 + 10 = 25

MA2: Round & Adjust

45 + 9 = 54

45 + 10 - 1 =

55 - 1 = 54

MA3: Partitioning

8 + 6 = 14

8 + 2 + 4 = 14

MA4a: Counting On

12 + 5 = 17

+5

12 → 17

MA4b: Counting On

57 + 10 = 67

+10

57 → 67

MA5: Double & Adjust

5 + 6 = 11

5 + 5 + 1

10 + 1 = 11

MA6: Number Bonds

Learn Bonds

0 + 10 = 10
1 + 9 = 10
2 + 8 = 10
3 + 7 = 10
4 + 6 = 10
5 + 5 = 10
6 + 4 = 10
7 + 3 = 10
8 + 2 = 10
9 + 1 = 10
10 + 0 = 10

Y2

MA1: Manipulate Calculation

45 + 19 = 64

44 + 1 + 19

44 + 20 = 64

MA2: Round & Adjust

45 + 19 = 64

45 + 20 - 1

65 - 1 = 64

MA3: Partitioning

43 + 21 = 64

60 + 4 = 64

MA4a: Counting On

78 + 7 = 85

+7

78 → 85

MA4b: Counting On

58 + 40 = 98

+40

58 → 98

MA5: Double & Adjust

7 + 8 = 15

7 + 7 + 1

14 + 1 = 15

MA6: Number Bonds

3 + 4 + 7 = 14

10 4

Y3

MA1: Manipulate Calculation

45 + 97 = 142

42 + 3 + 97

42 + 100 = 142

MA2: Round & Adjust

45 + 97 = 142

45 + 100 - 3

145 - 3 = 142

MA1: Partitioning

57 + 25 = 82

70 + 12 = 82

MA4a: Counting On

85 + 50 = 135

+50

85 → 135

MA4b: Counting On

534 + 300 = 834

+300

534 → 834

MA5: Double & Adjust

16 + 17 = 33

16 + 16 + 1

32 + 1 = 33

MA6: Number Bonds

43 + 9 + 7 + 21 = 80

50 30

Y4

MA1: Manipulate Calculation

345 + 298 = 643

343 + 2 + 298

343 + 300 = 643

MA2: Round & Adjust

345 + 298 = 643

345 + 300 - 2

645 - 2 = 643

MA1: Partitioning

648 + 231 = 879

800 + 70 + 9 = 879

MA4a: Counting On

784 + 60 = 844

+60

784 → 844

MA4b: Counting On

4837 + 3000 = 7837

+3000

4837 → 7837

MA5: Double & Adjust

37 + 38 = 75

37 + 37 + 1

74 + 1 = 75

MA6: Number Bonds

42 + 16 + 28 + 54 = 140

70 70

Y5

MA1: Manipulate Calculation

4645 + 1996 = 6641

4641 + 4 + 1996

4641 + 2000 = 6641

MA2: Round & Adjust

4645 + 1996 = 6641

4645 + 2000 - 4

6645 - 4 = 6641

MA3: Partitioning

576 + 258 = 834

700 + 120 + 14 = 834

MA4a: Counting On

837 + 500 = 1337

+500

837 → 1337

MA4b: Counting On

7583 + 5000 = 12583

+5000

7583 → 12583

MA5: Double & Adjust

125 + 127 = 252

125 + 125 + 2

250 + 2 = 252

MA6: Number Bonds

£4.56 + £3.27 + £1.44 = £9.27

£6.00 £3.27

Y6

MA1: Manipulate Calculation

45.2 + 49.9 = 95.1

45.1 + 0.1 + 49.9

45.1 + 50 = 95.1

MA2: Round & Adjust

45.2 + 49.9 = 95.1

45.2 + 50 - 0.1

95.2 - 0.1 = 95.1

MA3: Partitioning

4.73 + 2.21 = 6.94

6 + 0.9 + 0.04 = 6.94

MA4a: Counting On

Tm Thousands

43,826 + 30,000 = 73,826

+30,000

43,826 → 73,826

MA4b: Counting On

Millions

5,763,947 + 4,000,000 = 9,763,947

+4,000,000

5,763,947 → 9,763,947

MA5: Double & Adjust

4.5 + 4.7 = 9.2

4.5 + 4.5 + 0.2

9 + 0.2 = 9.2

MA6: Number Bonds

24.25 + 31.63 + 21.75 = 77.63

46 31.63

MM

MM1: Jump!

x100 3400
x10 340
34
+10 3.4
+100 0.34

MM2: Re-ordering

(9 x 2) x 5
18 x 5 = 90
(9 x 5) x 2
45 x 2 = 90
(2 x 5) x 9
10 x 9 = 90 *

MM3: Partitioning

15 x 5 = 75

50 (10 x 5) + 25 (5 x 5) = 75

MM4: Round & Adjust

49 x 3 = 147
(50 x 3) - (1 x 3)
150 - 3 = 147

MM5: Doubling

Double 17 = 34
20 + 14 = 34

MM1a: Jump!

x1000 634000
x100 63400
x10 6340
6340
+10 634
+100 63.4
+1000 6.34

MM2a: Re-ordering

(7 x 4) x 5
28 x 5 = 140
(7 x 5) x 4
35 x 4 = 140
(4 x 5) x 7
20 x 7 = 140 *

MM3a: Partitioning

37 x 4 = 148

120 (30 x 4) + 28 (7 x 4) = 148

MM4a: Round & Adjust

198 x 4 = 792
(200 x 4) - (2 x 4)
800 - 8 = 792

MM5a: Doubling

Double 37 = 74
60 + 14 = 74

MM2b: Re-ordering

(9 x 8) x 6
72 x 6 = 432
(9 x 6) x 8
54 x 8 = 432 *
(8 x 6) x 9
48 x 9 = 432

MM4b: Round & Adjust

3.9 x 5 = 19.5
(4 x 5) - (0.1 x 5)
20 - 0.5 = 19.5

MM5b: Doubling

Double 78 = 156
140 + 16 = 156

MM4c: Round & Adjust

£5.99 x 6 = £35.94
(£6 x 6) - (1p x 6)
£36 - 6p = £35.94

MM5c: Doubling

Double 340 = 680
600 + 80 = 680

MM5d: Doubling

Double 480 = 960
800 + 160 = 960

MM5e: Doubling

Double 278 = 556
400 + 140 + 16 = 556

MM5f: Doubling

Double 768 = 1536
1400 + 120 + 16 = 1536

MM5g: Doubling

Double 3.7 = 7.4
6 + 1.4 = 7.4

	MM6: Doubling Table Facts 16 x 7 = 112 (8 x 2) 8 x 7 = 56 x 2 16 x 7 = 112	**MM7: Doubling Up** 17 x 4 = 68 Double 17 = 34 (17 x 2) Double 34 = 68 (17 x 4)	**MM8: Mult by: 10, 100, 1000 then Halve** 86 x 5 = 430 86 x 10 = 860 860 ÷ 2 = 430	**MM9: Doubling & Halving** 45 x 14 90 x 7 = 630	**MM10: Factorising** 32 x 15 = 480 (32 x 5 x 3) 160 x 3 = 480			
		MM7a: Doubling Up 36 x 8 = 288 Double 36 = 72 (36 x 2) Double 72 = 144 (36 x 4) Double 144 = 288 (36 x 8)	**MM8a: Mult by: 10, 100, 1000 then Halve** 56 x 25 = 1400 56 x 100 = 5600 5600 ÷ 2 = 2800 2800 ÷ 2 = 1400	**MM9a: Doubling & Halving** 36 x 25 18 x 50 9 x 100 = 900	**MM10a: Factorising** 52 x 24 = 1248 (52 x 4 x 6) 208 x 6 = 1248			
		MM7b: Doubling Up 125 x 16 = 2000 Double 125 = 250 (125 x 2) Double 250 = 500 (125 x 4) Double 500 = 1000 (125 x 8) Double 1000 = 2000 (125 x 16)		**MM9b: Doubling & Halving** 26 x 32 52 x 16 104 x 8 = 832 208 x 4 etc.				

Sense of Number
Visual Calculation Policy

Expanded Edition for
Sense of Number Primary School
September 2015

Graphic Design by Dave Godfrey
Compiled by the Sense of Number Maths Team

For sole use within Sense of Number Primary School.

'A picture is worth 1000 words!'
www.senseofnumber.co.uk

Poster Guide
Visual Calculation Policy

Date	Section	Days Edition (A1 Poster)		Counters Edition (A4 Slides)	
		From	To	From	To
	Title Slides	1	1	1	1
KS	KS Key Concepts	2	4–10	2	4–10
	Vocabulary Slides	3	11–18	3	11–19
C	Counting Policy	+	+	11	21–33
A	Addition	7	20–26	40	34–72
MA	Mental Addition	5	27–31	40	74–113
S	Subtraction	11	32–43	33	114–146
MS	Mental Subtraction	+	+	+	147–162
M	Multiplication	3	44–52	28	163–189
MM	Mental Multiplication	3	53	10	190–199
D	Division	11	54–64	41	200–253
	Calculation Cards	+	+	1	254–255
	Multiplication Tables	+	+	1	256–257
	Calculation Vocabulary Page (Page 6 in Main Guidebook)	1	12–13	1	258–259
	Calculation Vocabulary (As Mentioned on Number Line)	1	14–15	1	260–261

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 taught in the school.
Website: Slides from the VCP are inserted on a school's 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 x 2 = 16

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

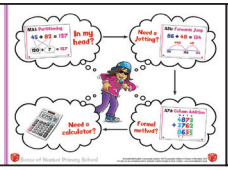
Division ÷

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"

Calculation Vocabulary

equivalent to = equals
same value as = balance
+ Addition
x Multiplication
Operations
− Subtraction
÷ Division



1 Can I do this in my head?

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

3 Do I need an expanded or a standard method?

4 Do I need a calculator?

C1a: Number Order

0 1 2 3 4 5

The Numbers must be said once and always in the conventional order.

C1b: At a Glance

Subitising

See at a glance how many are in small collections and attach correct number names to such collections.

C2a: Number Match

One to One Correspondence

Each object to be counted must be touched or 'included' exactly once as the numbers are said.

C2b: Counting Objects

Starting Point and Order Irrelevance

The objects can be touched in any order. The starting point and order in which the objects are counted does not affect how many there are.

C2c: Order Arrangement

Arrangement Irrelevance

1 2 3 4 5

The arrangement of the objects does not affect how many there are.

C3: How Many?

Final number is the total

1 2 3 4 5

The last number said tells 'how many' in the whole collection. It does not describe the last object touched.

C4: Arranging

Sets of 5

7

C4a: Arranging

Sets of 5

18

C4b: Arranging

Sets of 5 (Non Linear)

18

C4c: Arranging

Sets of 5 (Non Linear)

43

C5: Counting Forwards

0 1 2 3 4 5

C6: Counting On

8 9 10 11 12 13

C7: Counting Back

4 5 6 7 8 9

C8: Counting in Steps

3 5 7 9 11

Sense of Number
Calculation Cards

by Dave Godfrey

dave@senseofnumber.co.uk Tel: 01904 778848

The following slides show the calculation 43 + 24 using a variety of resources and manipulatives.

A: Base 10

43 + 24 = 67

B: Arrow Cards

43 + 24 = 67

40 + 20 = 60
3 + 4 = 7

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: Place Value Counters

43 + 24 = 67

10s	1s
10 10	1 1
10 10	1 1
10 10	1 1 1

60 7 67

F: Money

43 + 24 = 67

G: Abacus

43 + 24 = 67

H: Number Line

43 + 24 = 67

+20 +4

43 63 67

Sense of Number

Standard Alternative Slides

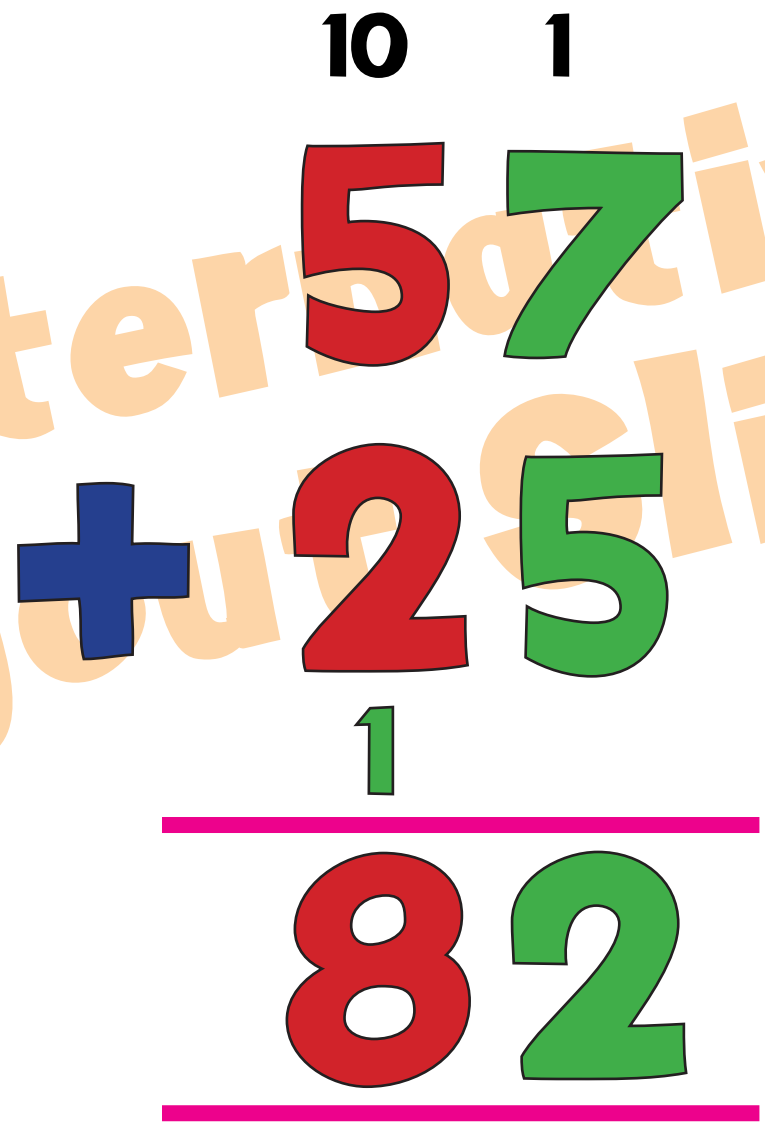
by Dave Godfrey

dave@senseofnumber.co.uk Tel: 01904 778848

The following slides the standard alternative slide configurations to the main set of slides.

(A7: Column Addition)

2 Additional:a



(A7: Column Addition)

2/3 Additional:b

100	10	1
	8	6
+	4	8
1	1	
1	3	4

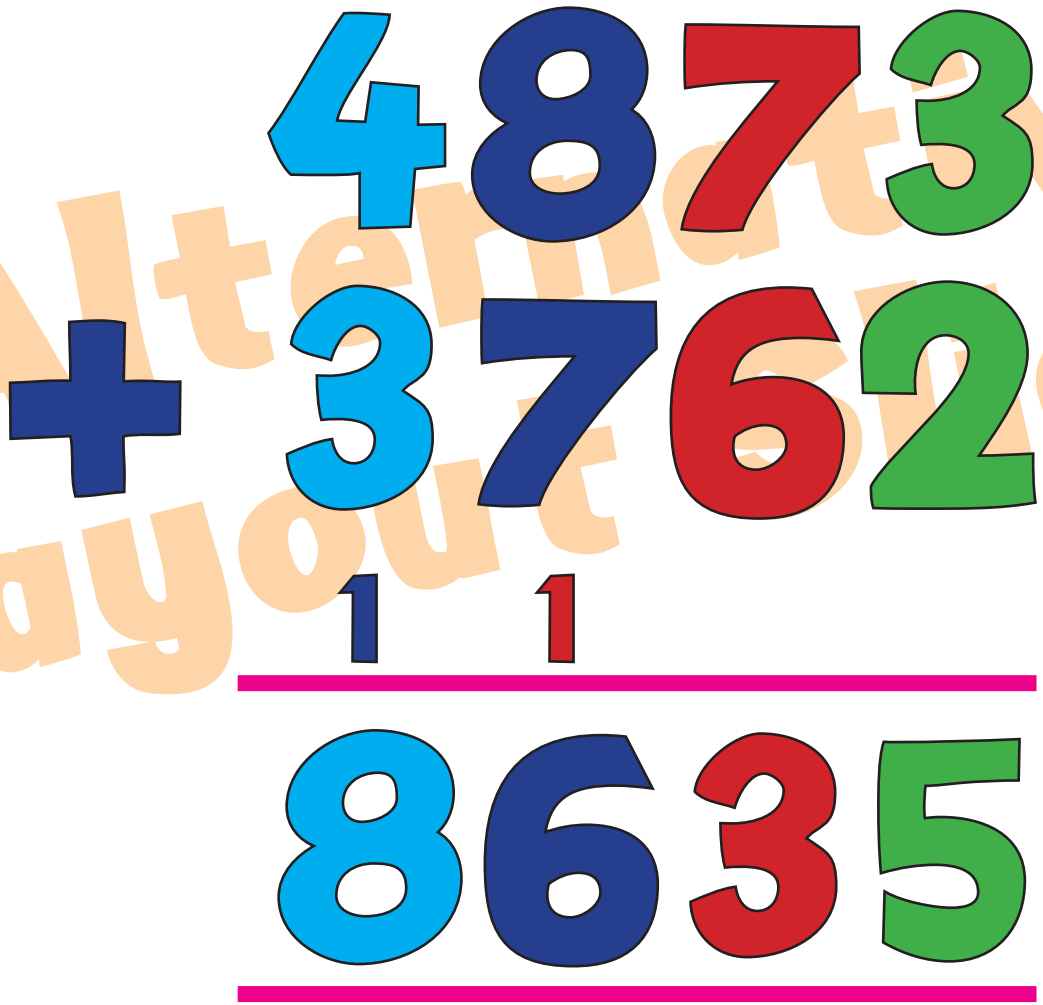
A7: Column Addition

3

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

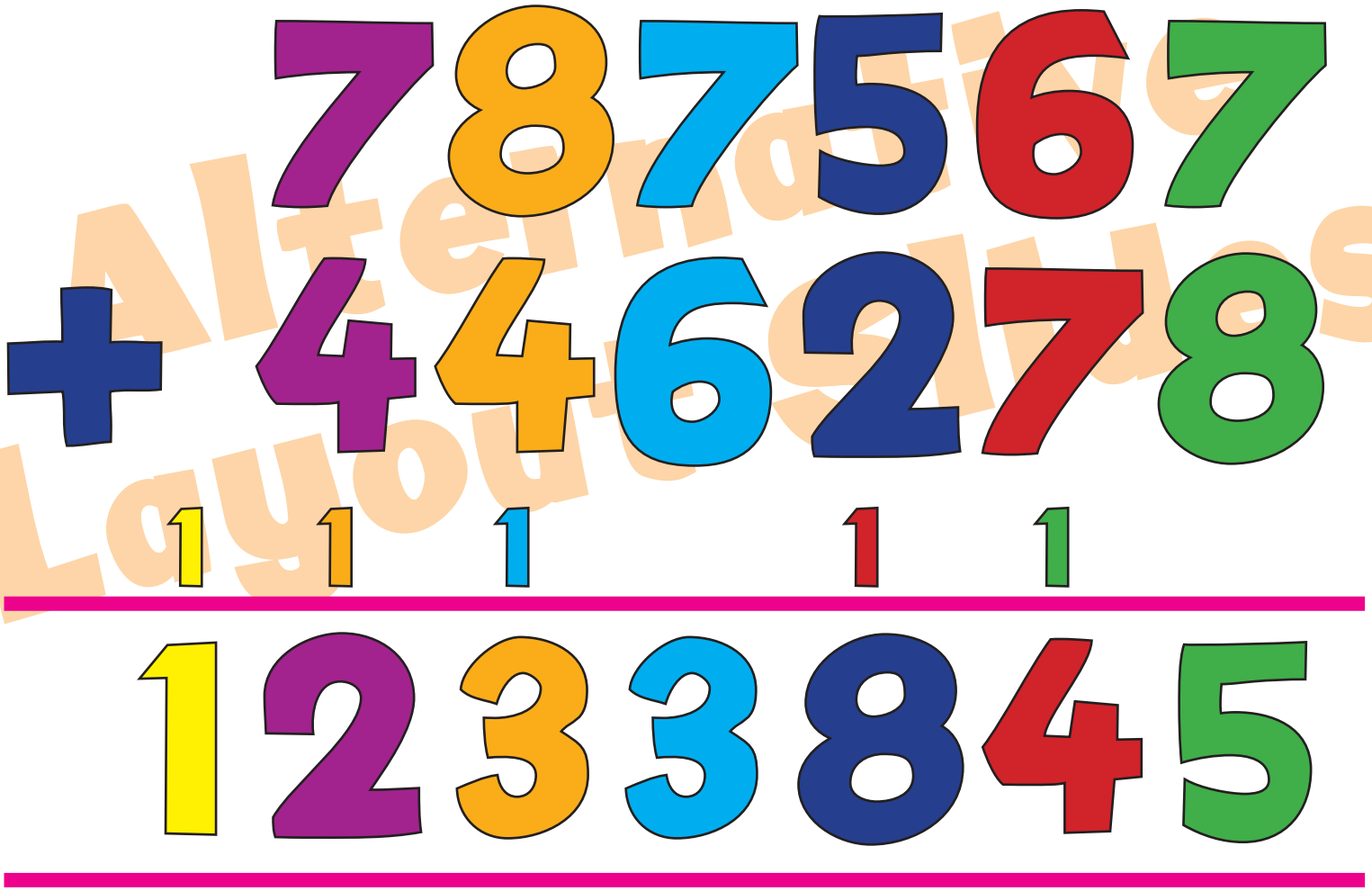
A7d: Column Addition

4



A7e: Column Addition

5



A7f: Column Addition

5

$$\begin{array}{r} 1 \blacksquare \frac{1}{10} \\ 4.8 \\ +\ 3.8 \\ \hline 8.6 \\ \hline \end{array}$$

A7g: Column Addition

5

1	.	$\frac{1}{10}$	$\frac{1}{100}$
5	.	6	5
+ 3	.	2	9
1			
8	.	9	4

A7h: Column Addition

5

10 1 . $\frac{1}{10}$

$$\begin{array}{r} 76.7 \\ +\ 58.5 \\ \hline 135.2 \end{array}$$

1 1 1

A7i: Column Addition

5

With Money

£38.25
+ £27.46
1 1
£65.71

A7 j: Column Addition

5

With Decimals

$73.4 + 5.67 = 79.07$

Alternative Layout Slides

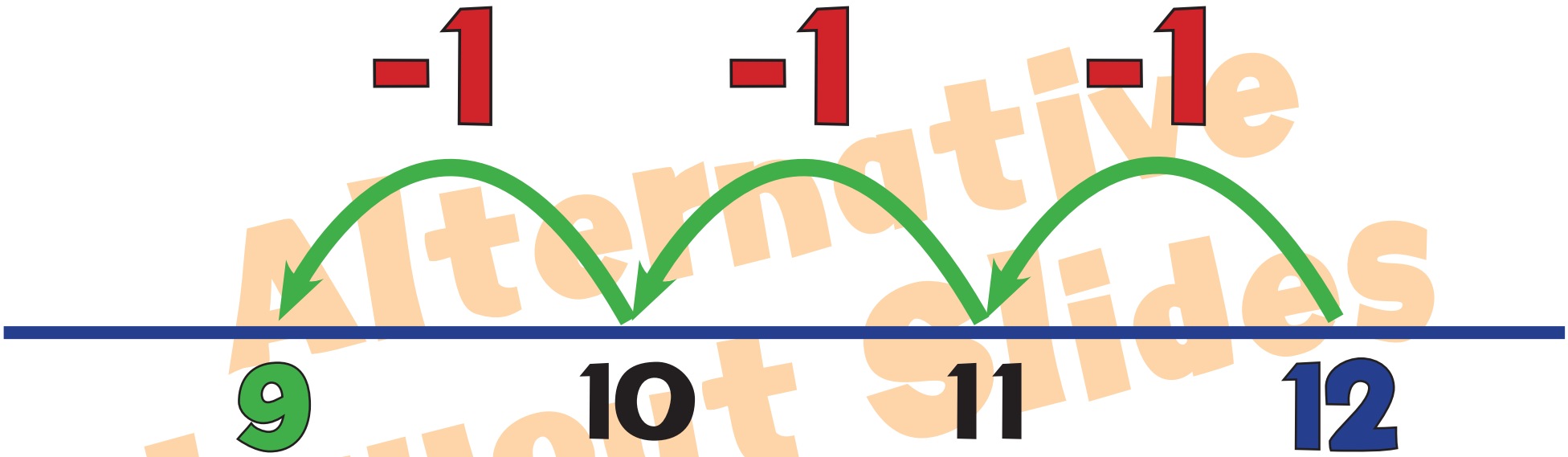
10 1 . $\frac{1}{10}$ $\frac{1}{100}$

$$\begin{array}{r} 73.4 \\ +\ 5.67 \\ \hline 79.07 \end{array}$$

1

S3a: Counting Back

1

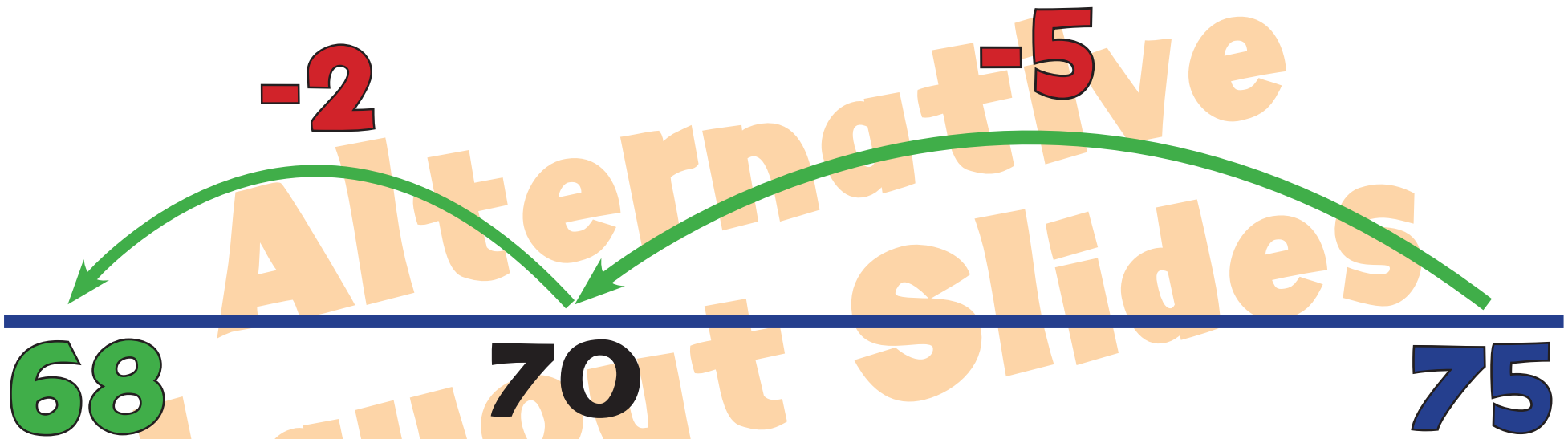


$$12 - 3 = 9$$

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

S5a: Backwards Boing

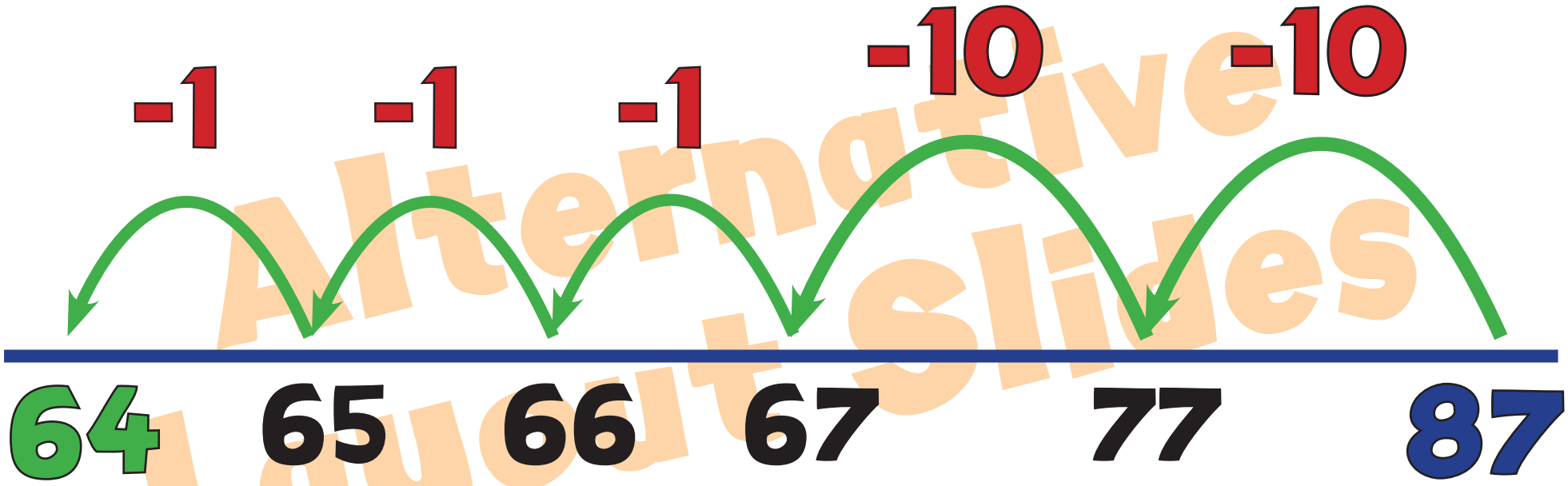
2



$$75 - 7 = 68$$

S6a: Backwards Bounce

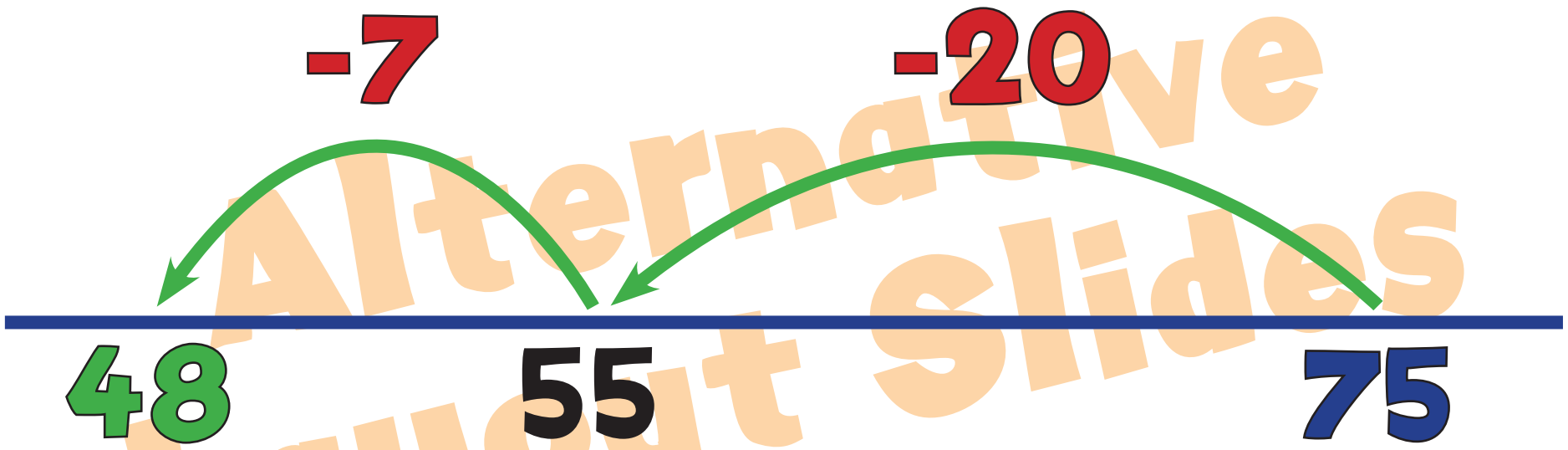
2



$$87 - 23 = 64$$

S7a: Backwards Jump

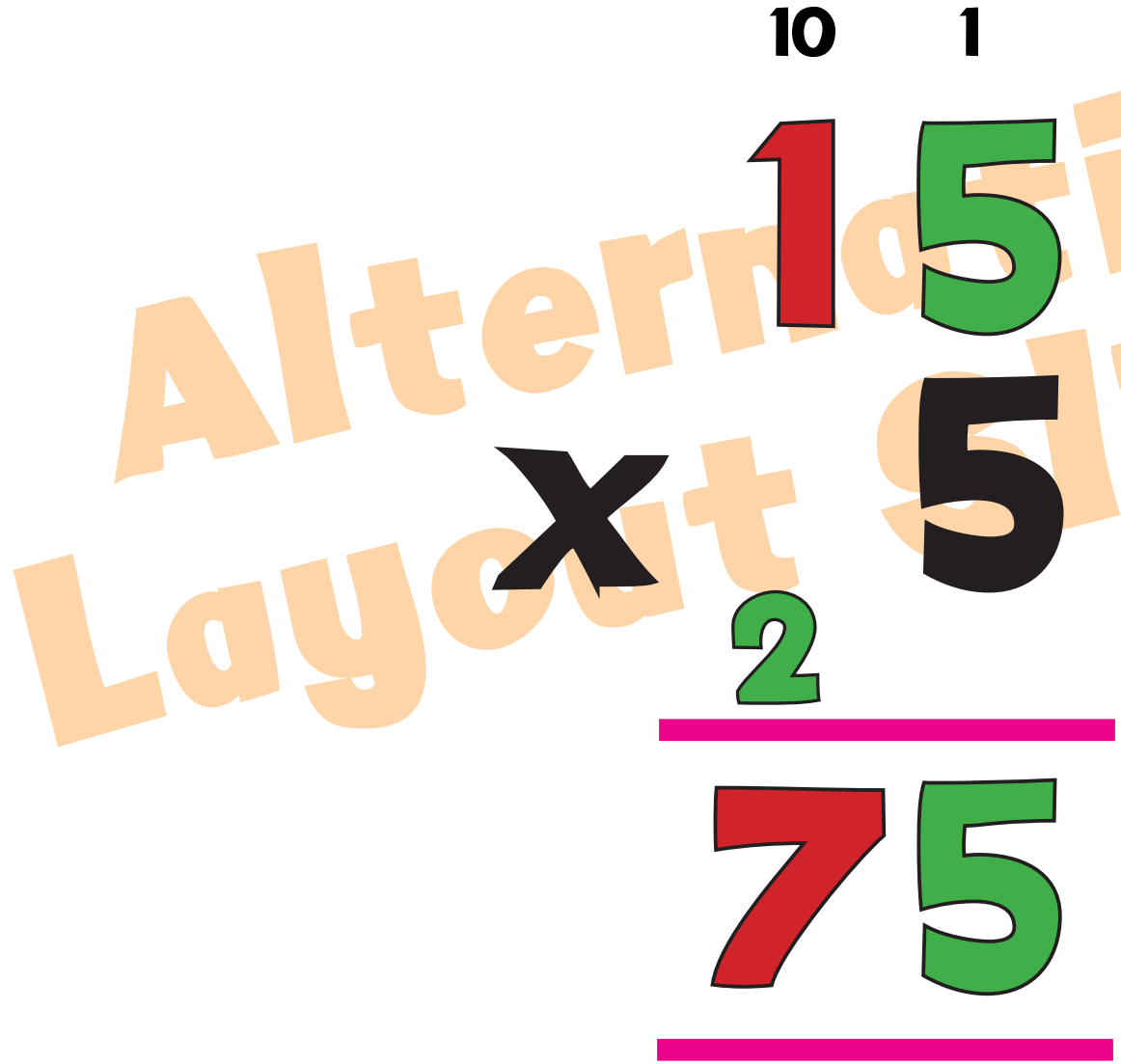
2



75 - 27 = 48

(M7: Column Multiplication)

3 Additional



(M7: Column Multiplication)

4 Additional:a

100	10	1
	4	3
×		6
	24	
	1	
2	5	8

M7: Column Multiplication

4

100	10	1
	147	
×		4
	1 2	
588		

M7a: Column Multiplication

4

$$\begin{array}{r} 3647 \\ \times \quad 4 \\ \hline {}^{2}{}^{1}{}^{2} \\ 14588 \\ \hline \end{array}$$

M9: Long Multiplication

5 Column

$$
\begin{array}{r}
43 \\
\times\ 65 \\
\hline
^{2}\,^{1}215 \quad (5 \times 43) \\
+\ ^{2}\,^{1}2580 \quad (60 \times 43) \\
\hline
2795 \\
\hline
\end{array}
$$

M9a: Long Multiplication

5

Column

$$
\begin{array}{r}
243 \\
\times\ 68 \\
\hline
1944 \quad (8 \times 243) \\
+\ 14580 \quad (60 \times 243) \\
\hline
16524
\end{array}
$$

M9b: Long Multiplication

5

Column

$$
\begin{array}{r}
203 \\
\times\ 68 \\
\hline
^{1}\ \ ^{2}1624 \\
+\ 1^{1}2180 \\
\hline
\ \ ^{1}13804 \\
\hline
\end{array}
$$

(8 x 203)

(60 x 203)

M9c: Column Multiplication

5

10 1 ▪ $\frac{1}{10}$

$$\begin{array}{r} 3.6 \\ \times\ 4 \\ \hline 2 \\ \hline 14.4 \\ \hline \end{array}$$

M9d: Column Multiplication

6

100	10	1	▪	$\frac{1}{10}$
4	7	.	2	
	×		3	
			2	
1	4	1	.	6

M9e: Column Multiplication

6

10	1	.	$\frac{1}{10}$	$\frac{1}{100}$
	7	.	3	8
×			6	
	4		2	4
4	4	.	2	8

M9f: Long Multiplication

Column Decimals

6

10 1 . $\frac{1}{10}$ $\frac{1}{100}$

$$
\begin{array}{rr}
 & 24.3 \\
\times & 2.5 \\
\hline
 & 12.15 \quad (0.5 \times 24.3) \\
+ & 48.60 \quad (2 \times 24.3) \\
\hline
 & 60.75
\end{array}
$$

M9g: Long Multiplication

6 Column

$$
\begin{array}{r}
3786 \\
\times \quad 48 \\
\hline
30288 \quad \text{(8 x 3786)} \\
+\ 151440 \quad \text{(40 x 3786)} \\
\hline
181728 \\
\hline
\end{array}
$$