Sense of Number

Visual Calculation Policy

Expanded Edition for

Wren's Nest Primary School

October 2014

Graphic Design by Dave Godfrey

Compiled by the Sense of Number Maths Team

For sole use within Wren's Nest Primary School.

'A picture is worth 1000 words!'

www.senseofnumber.co.uk

Calculation Vocabulary

equivalent to

equals

=

same value as

balance

Operations

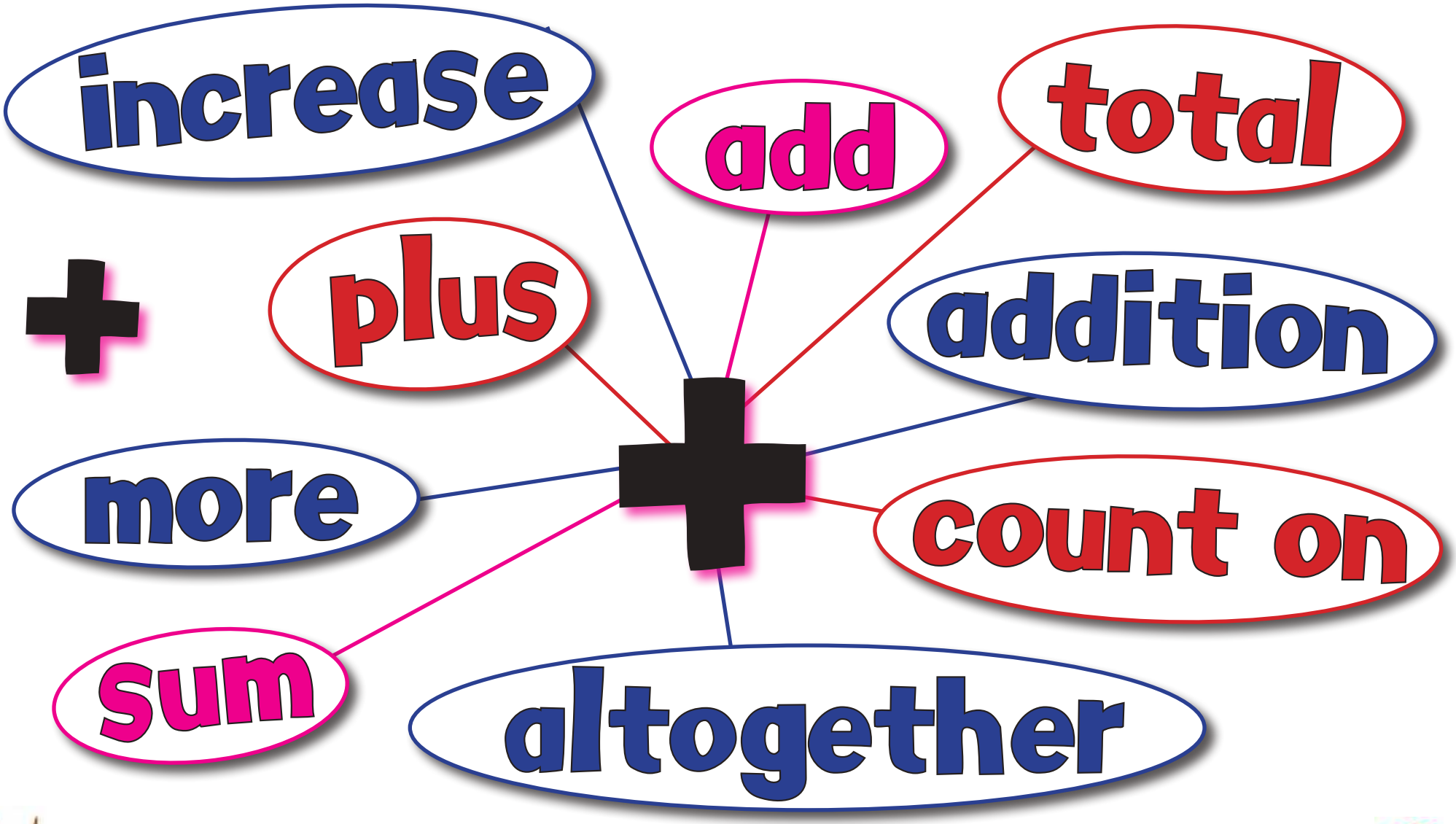
+ Addition

× Multiplication

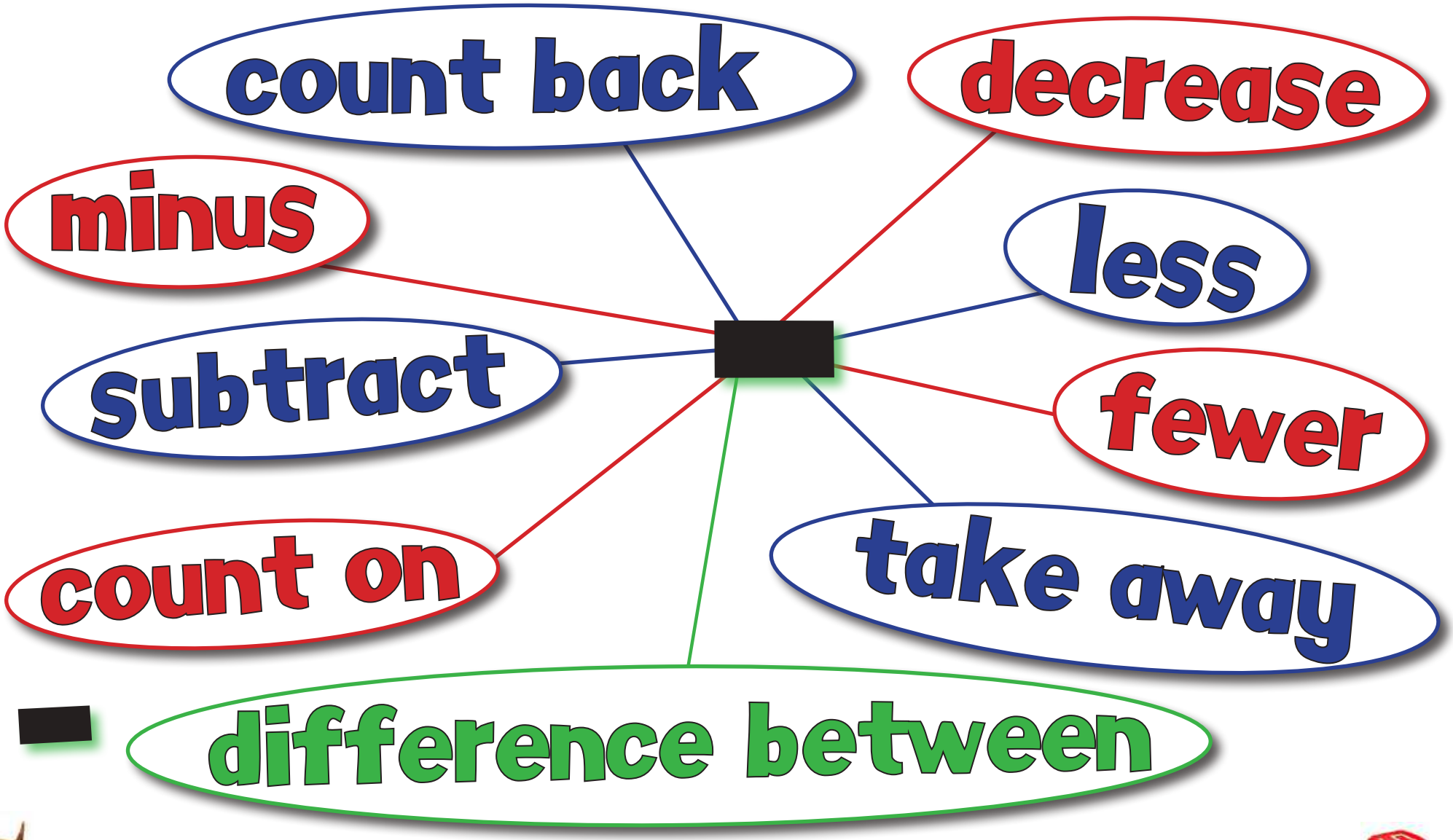
− Subtraction

÷ Division

Addition Vocabulary



Subtraction Vocabulary



Wren's Nest Primary School

Multiplication Vocabulary

groups of

product

times

multiple

double

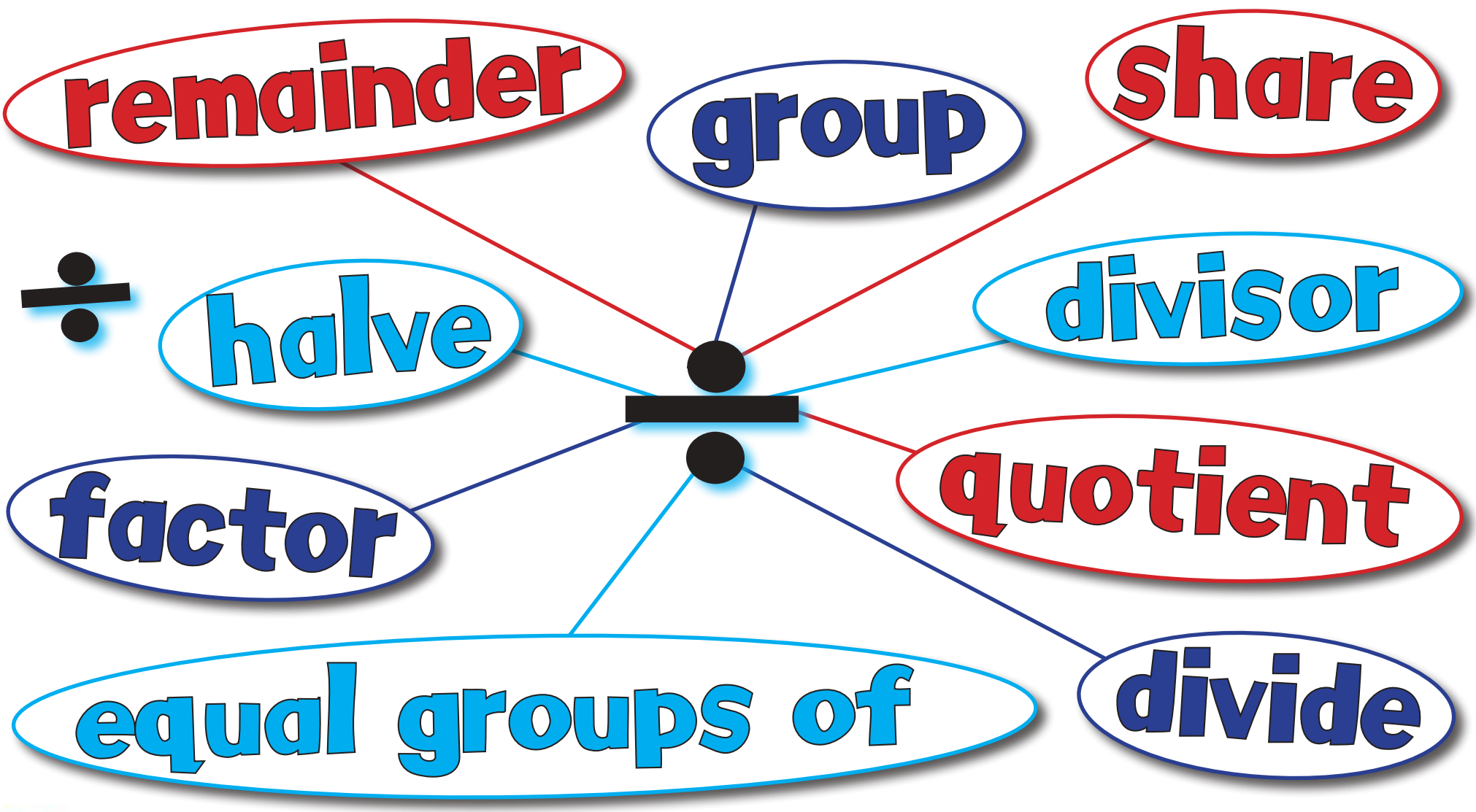
lots of

multiply

repeated addition

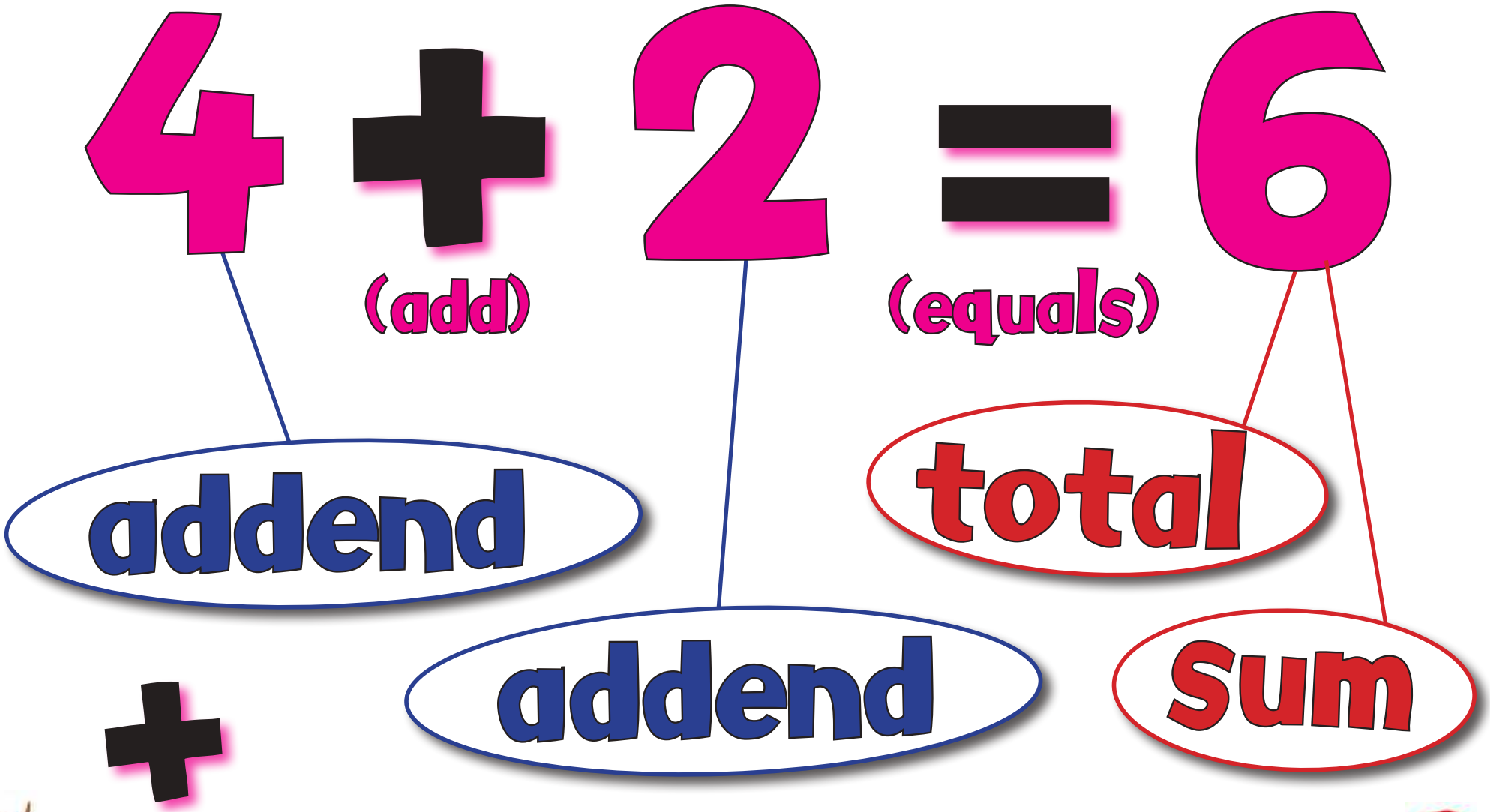
Wren's Nest Primary School

Division Vocabulary



Wren's Nest Primary School

Addition Calculation



Subtraction Calculation

6 − 2 = 4

(subtract) (equals)

minuend

subtrahend

difference

Wren's Nest Primary School

Multiplication Calculation

$4 \times 2 = 8$

(multiplied by) (equals)

multiplicand

product

multiplier

x

Wren's Nest Primary School

Division Calculation

$8 \div 2 = 4$

(divided by) (equals)

dividend

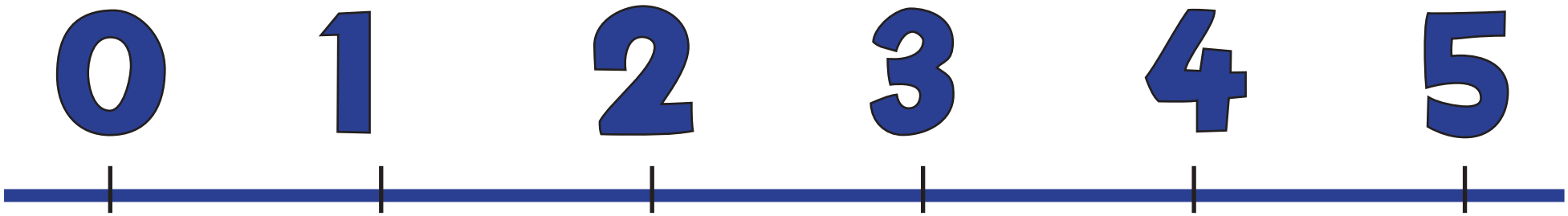
divisor

quotient

÷

Wren's Nest Primary School

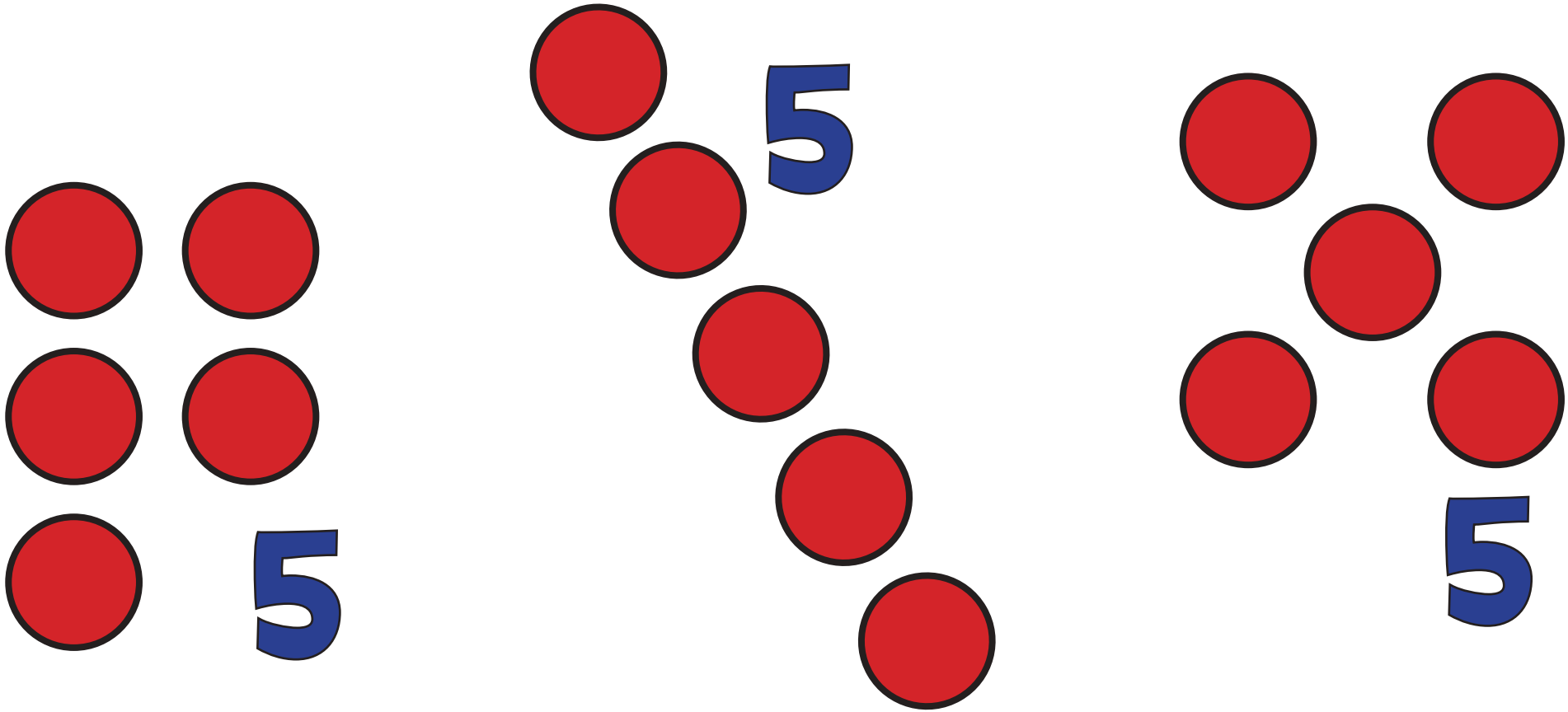
C1a: Number Order



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

C1b: At a Glance

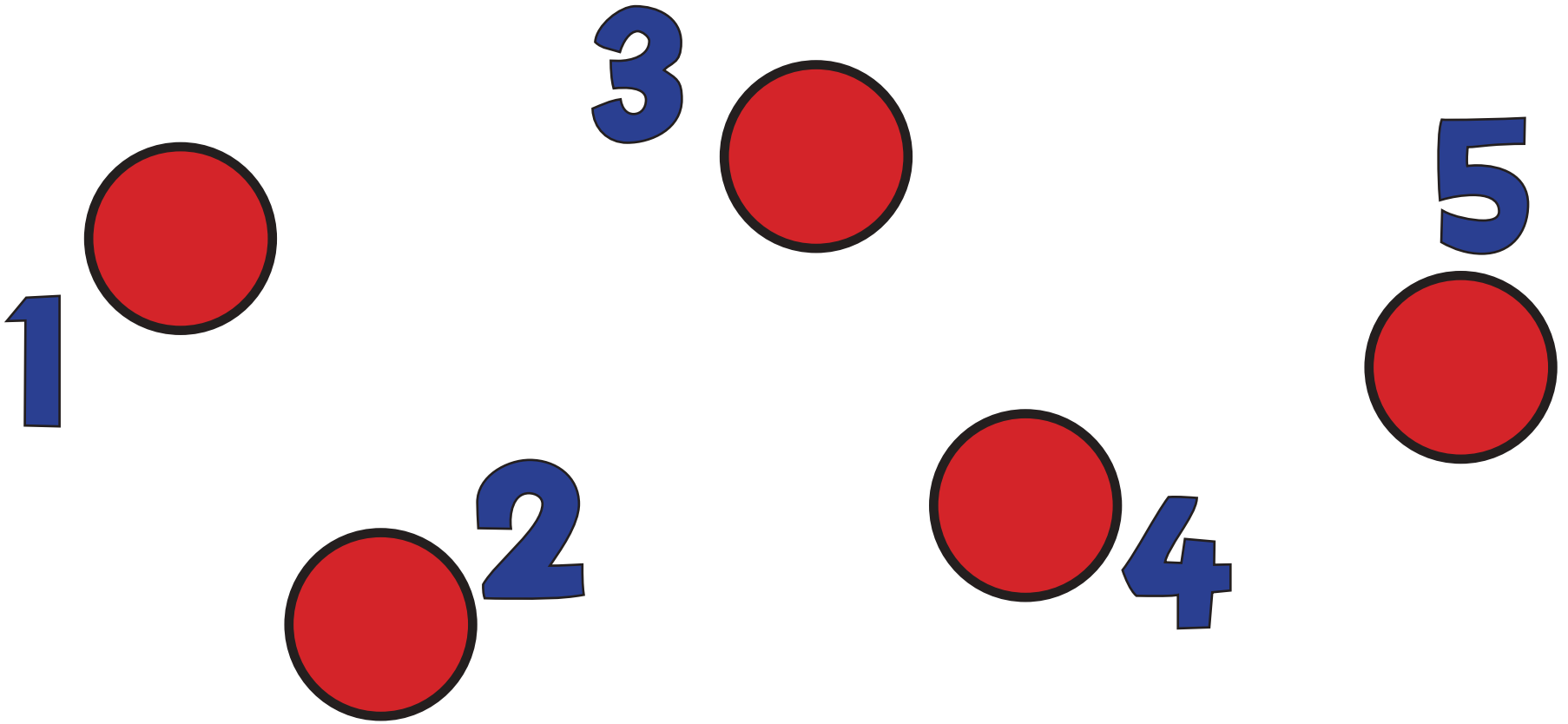
Subitising



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

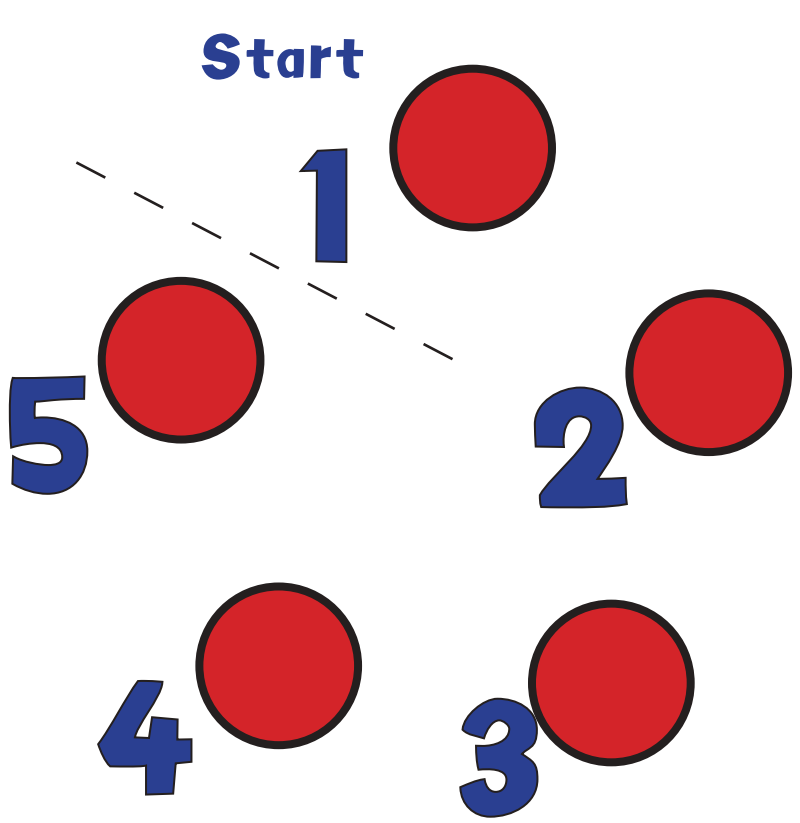


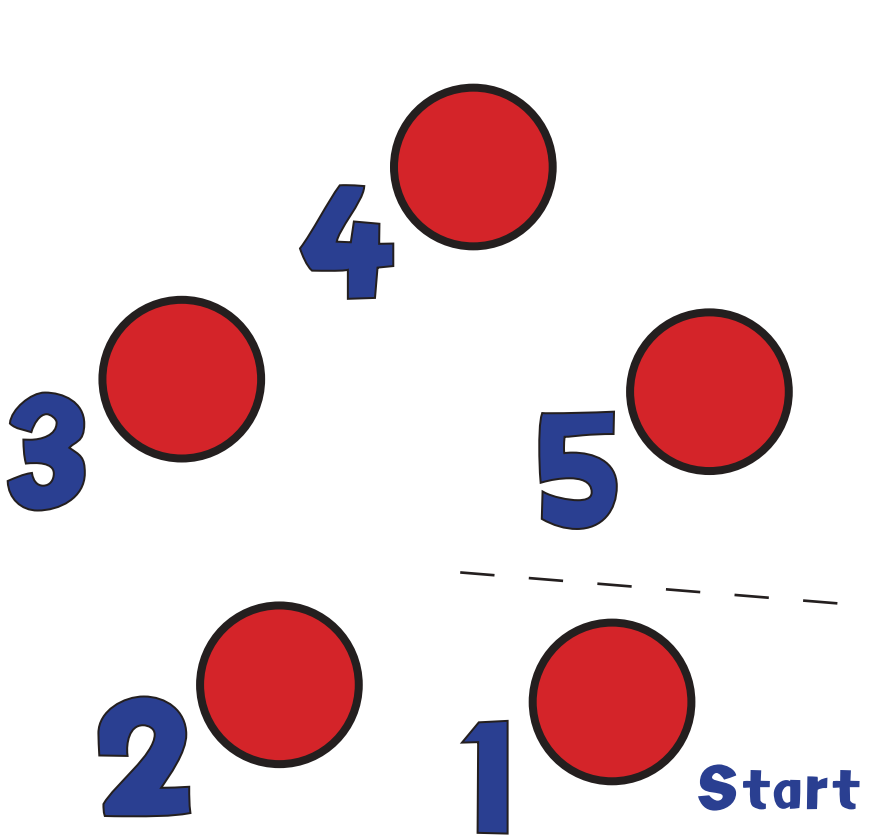
Each object to be counted must be touched or 'included' exactly once as the numbers are said.

Wren's Nest Primary School

C2b: Counting Objects

Starting Point and Order Irrelevance



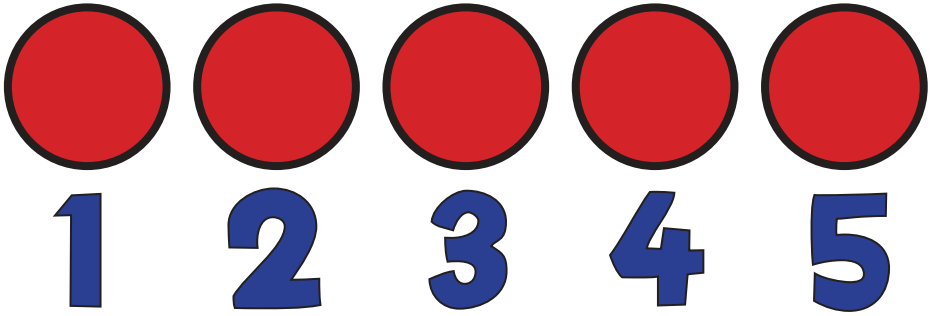


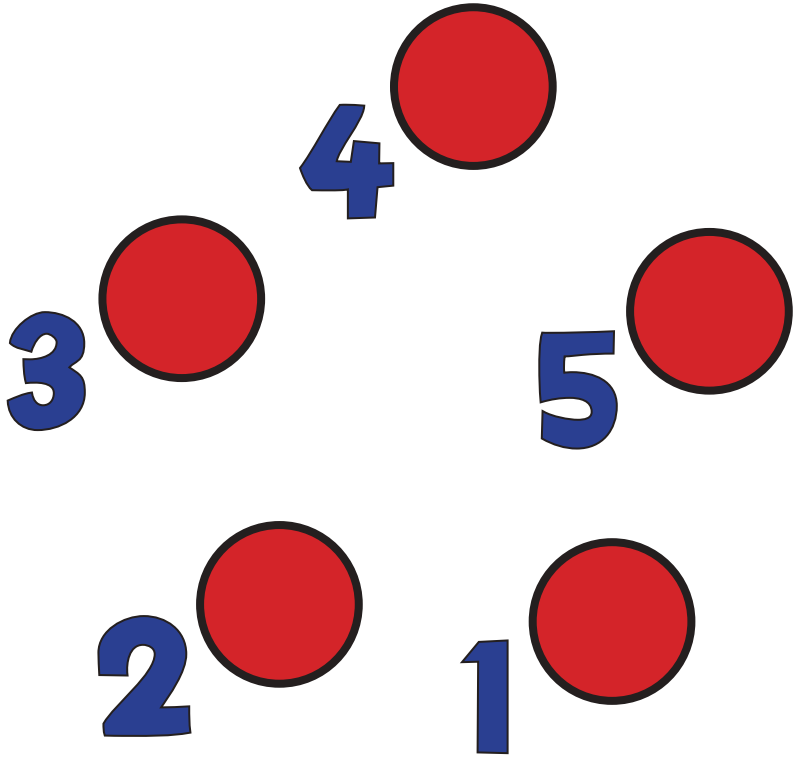
The objects can be touched in any order. The starting point and order in which the objects are counted does not affect how many there are.

Wren's Nest Primary School

C2c: Order Arrangement

Arrangement Irrelevance

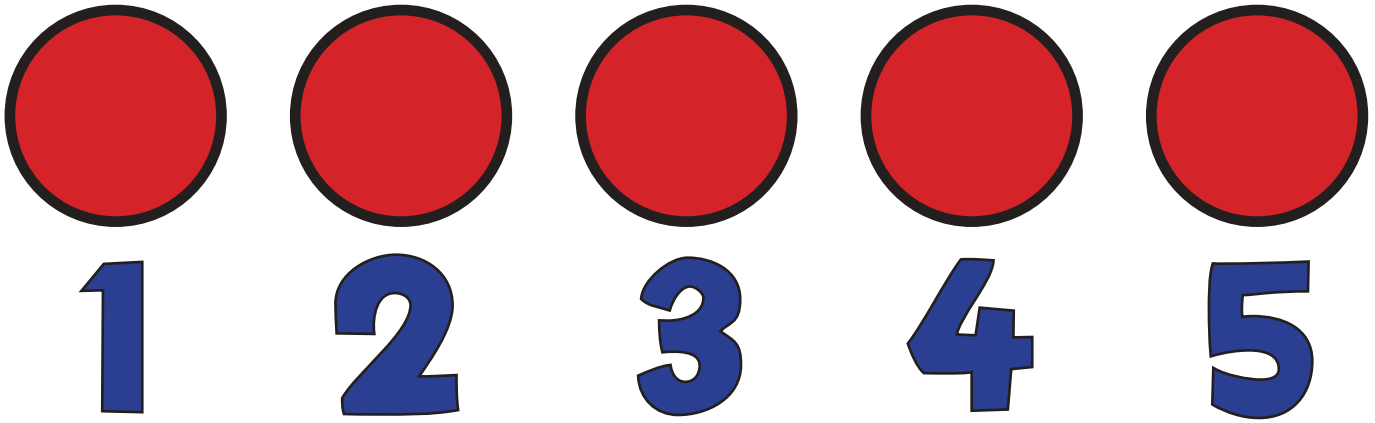




The arrangement of the objects does not affect how many there are.

C3: How Many?

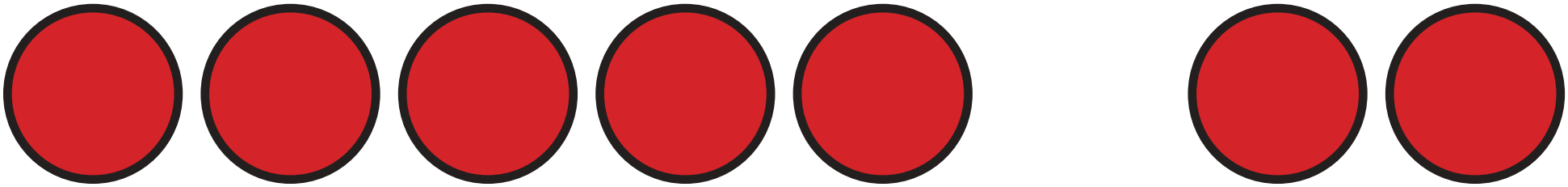
Final number is the total



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

C4: Arranging

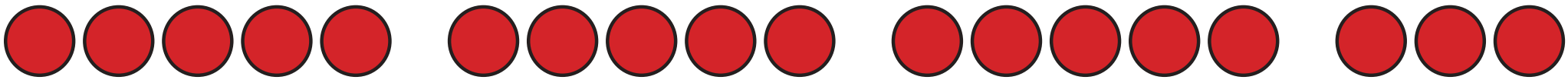
Sets of 5



7

C4a: Arranging

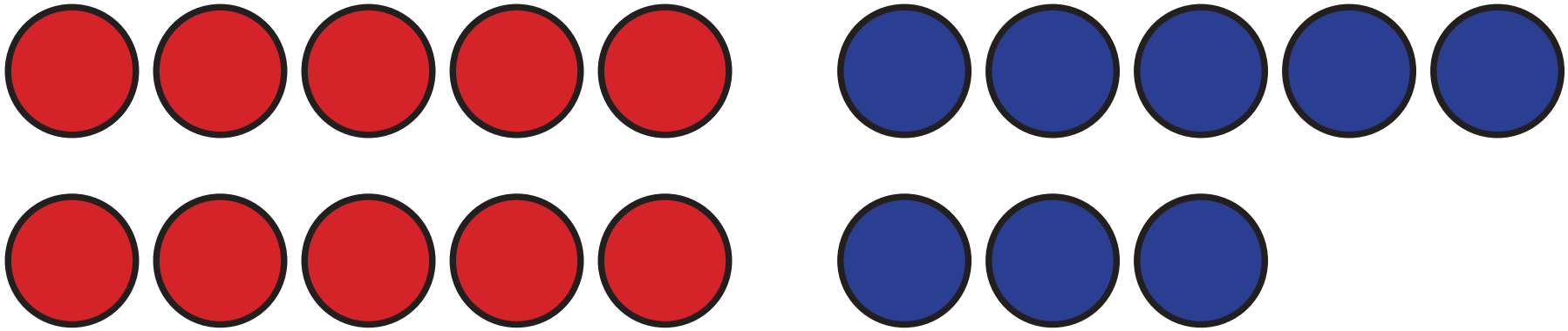
Sets of 5



18

C4b: Arranging

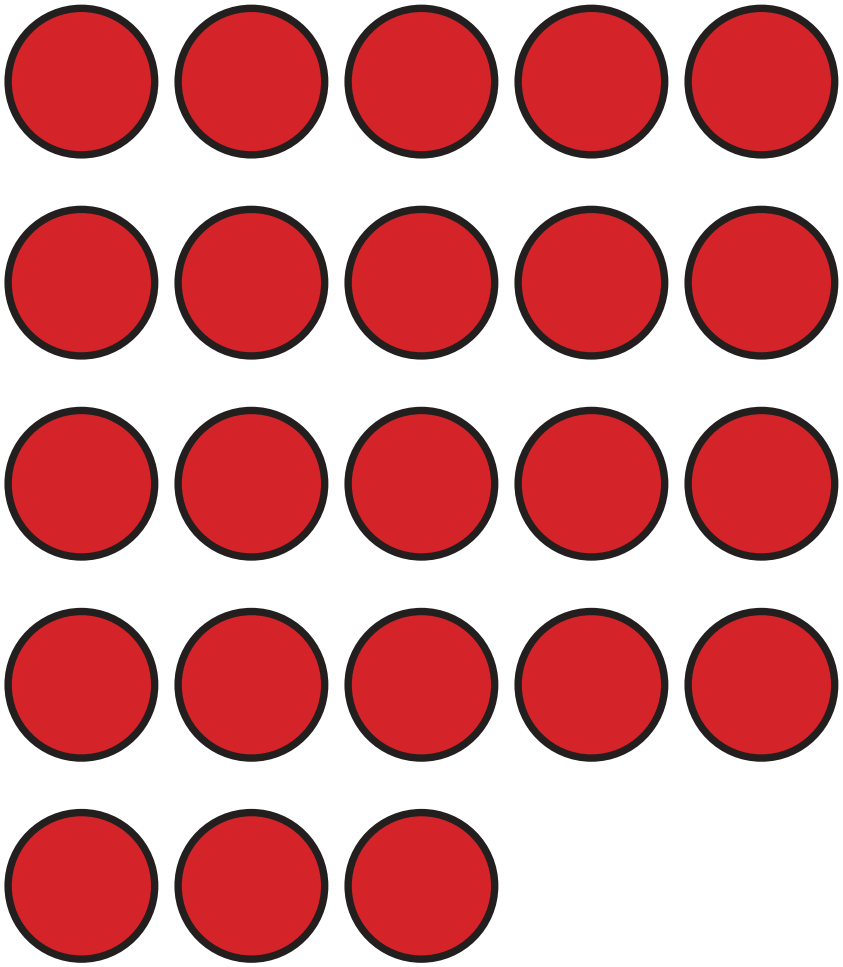
Sets of 5 (Non Linear)



18

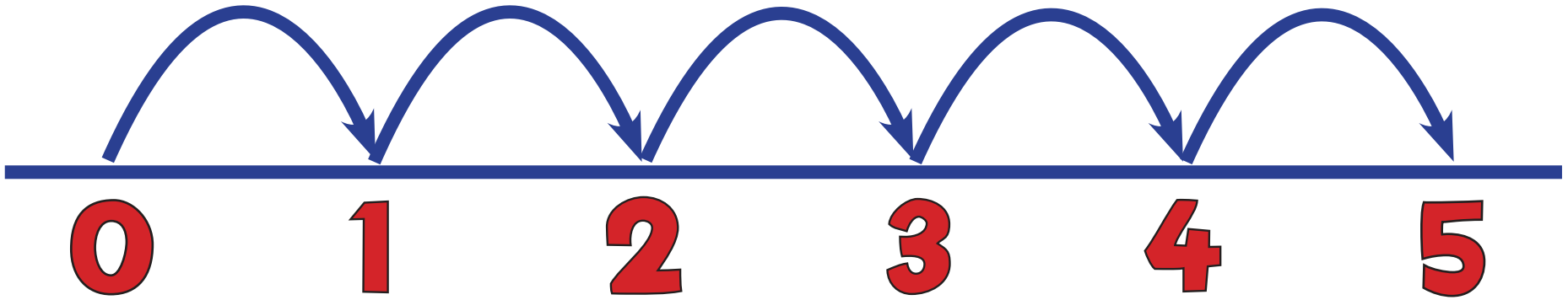
C4c: Arranging

Sets of 5 (Non Linear)

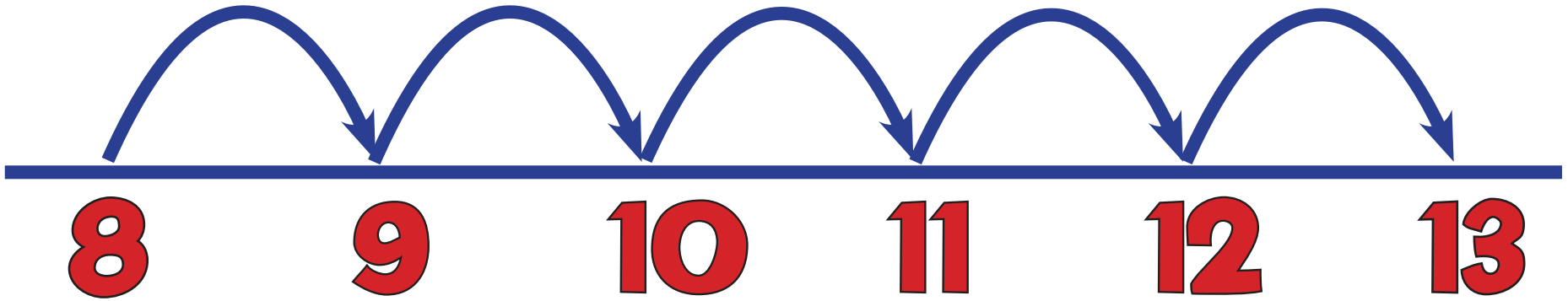


43

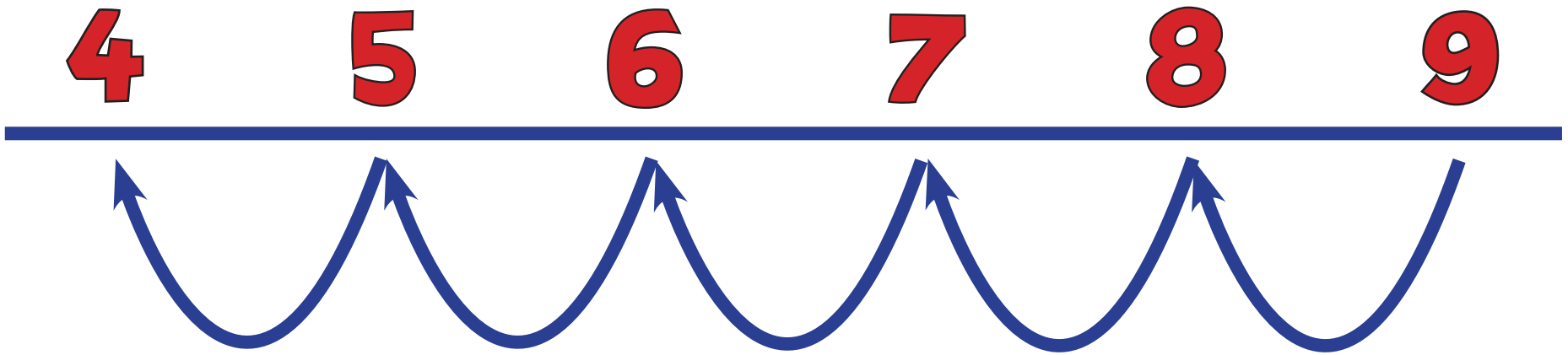
C5: Counting Forwards



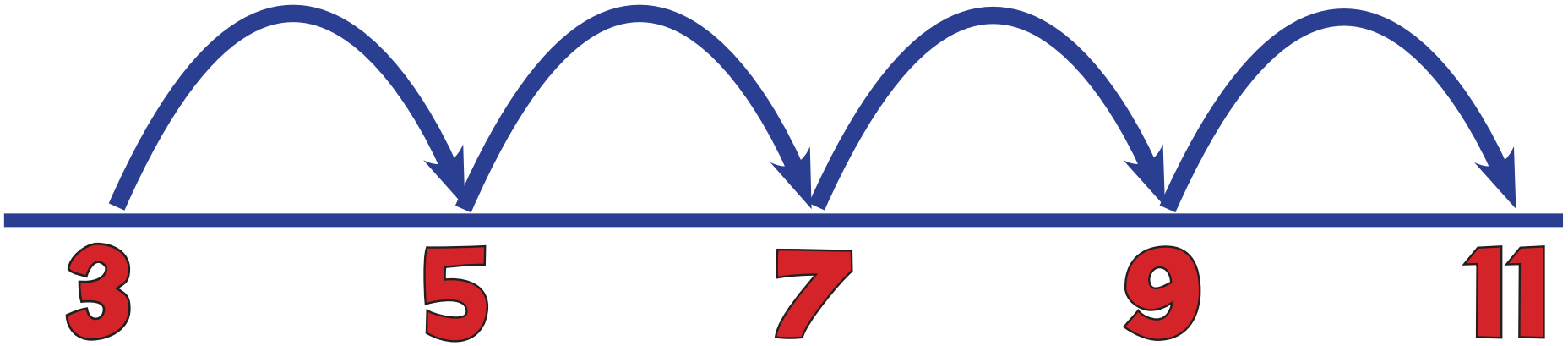
C6: Counting On



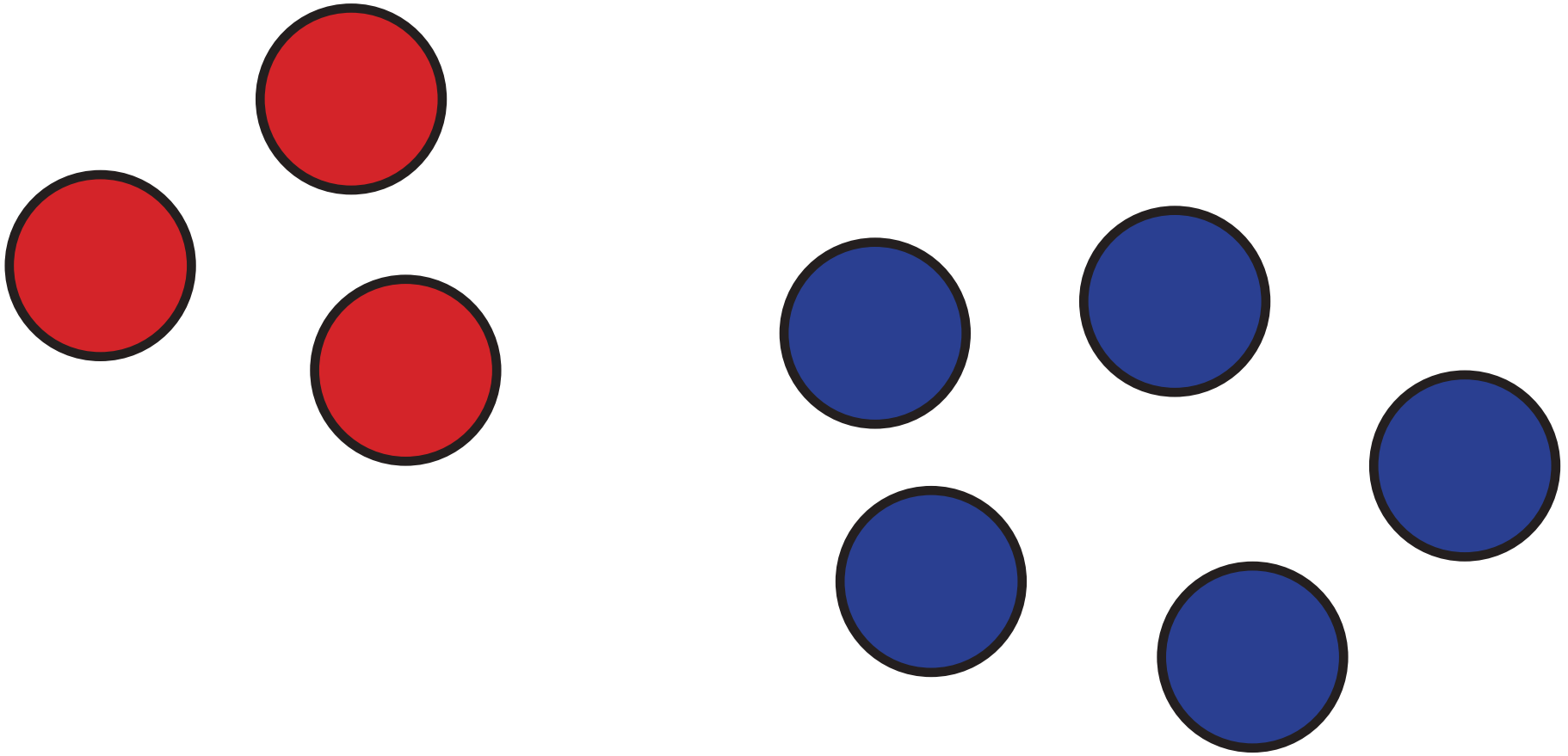
C7: Counting Back



C8: Counting in Steps

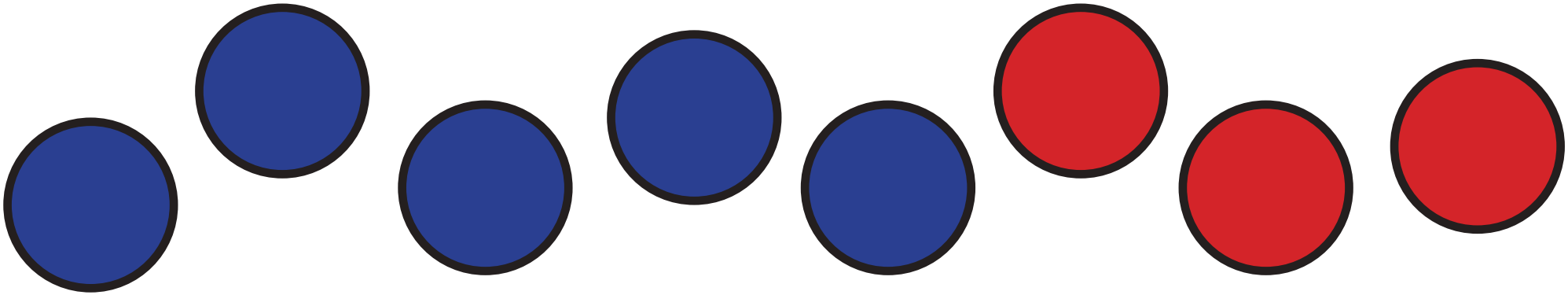


A1: Objects & Pictures



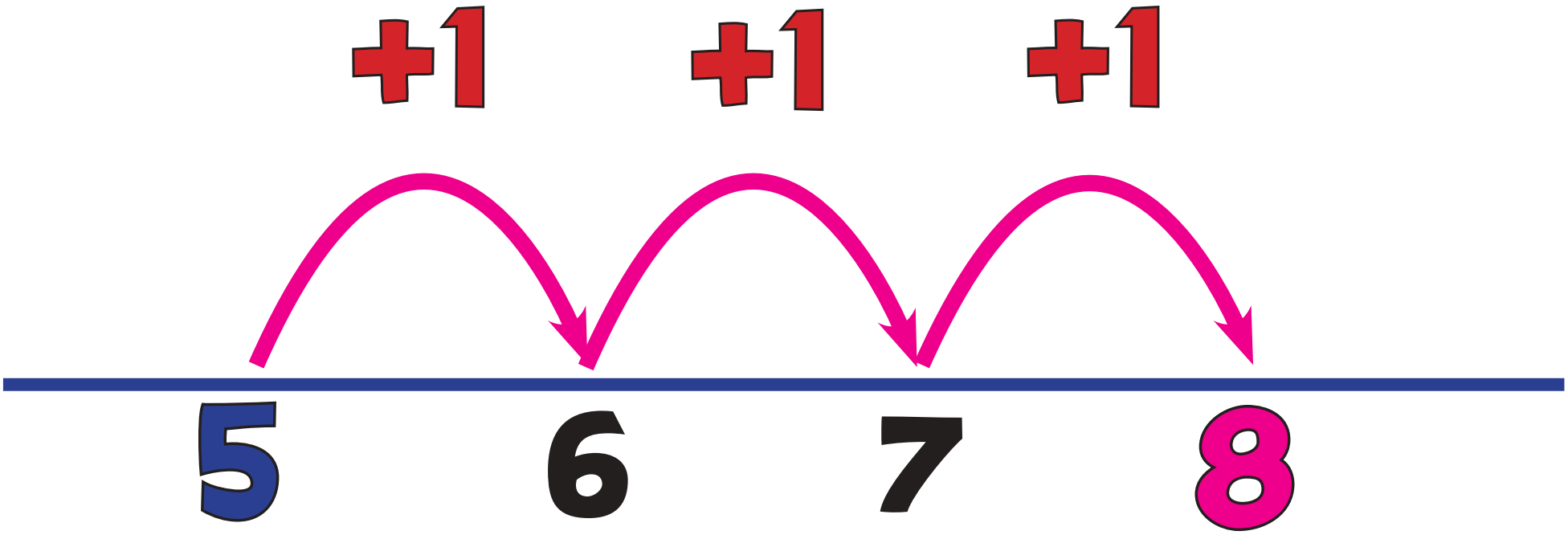
"If I have 3 and then 5 more, how many altogether? Answer: 8"

A1a: Largest Number 1st



5 + 3 = 8

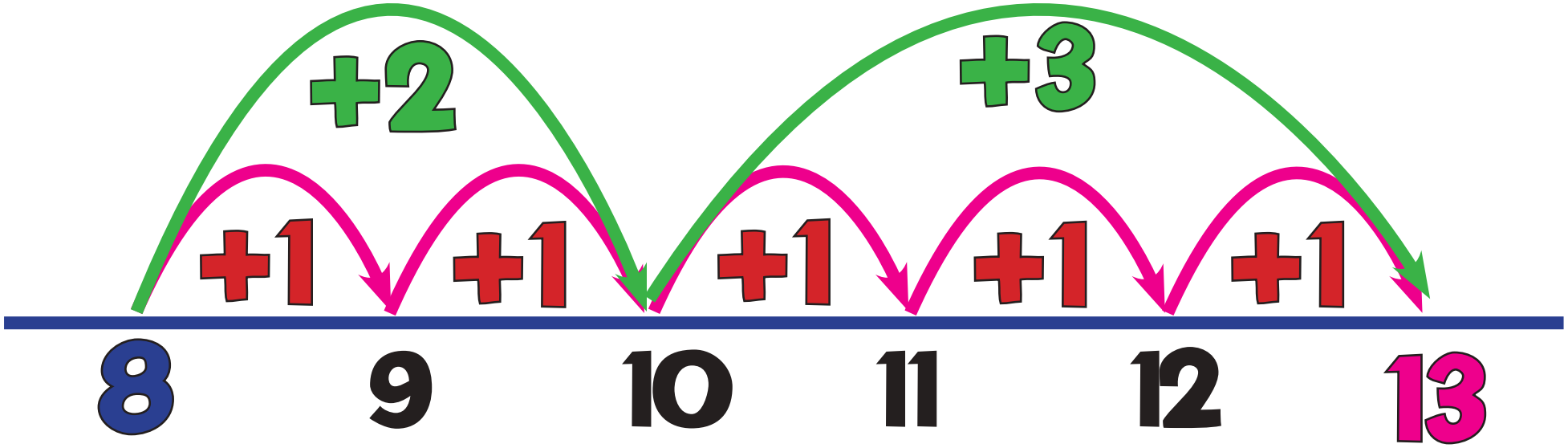
A2: Counting On



$$5 + 3 = 8$$

A2a: Counting On

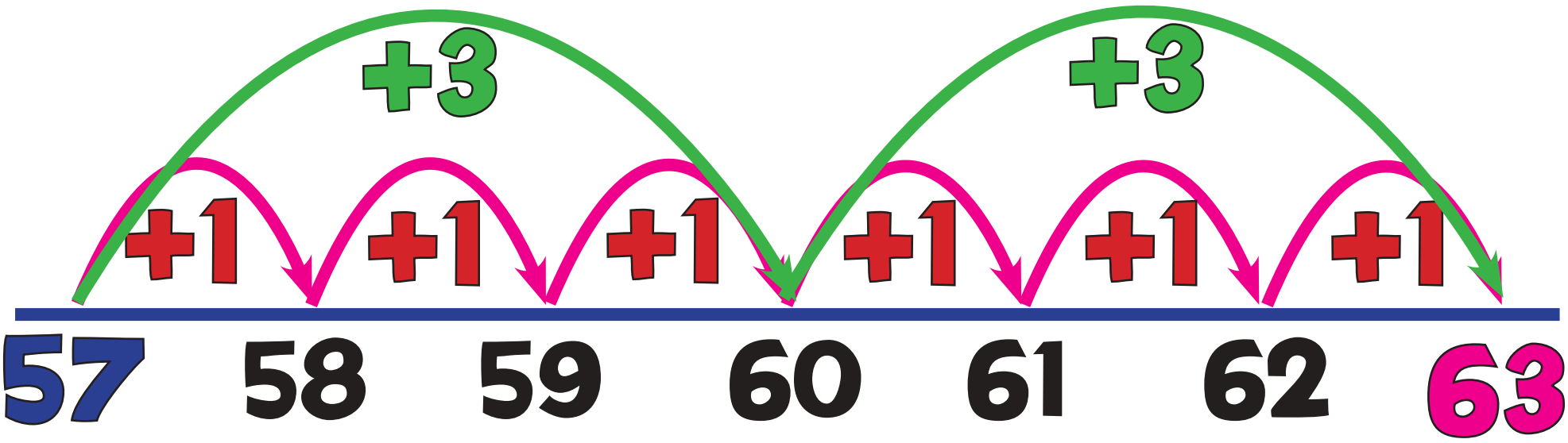
Bridging 10



8 + 5 = 13

A2b: Counting On

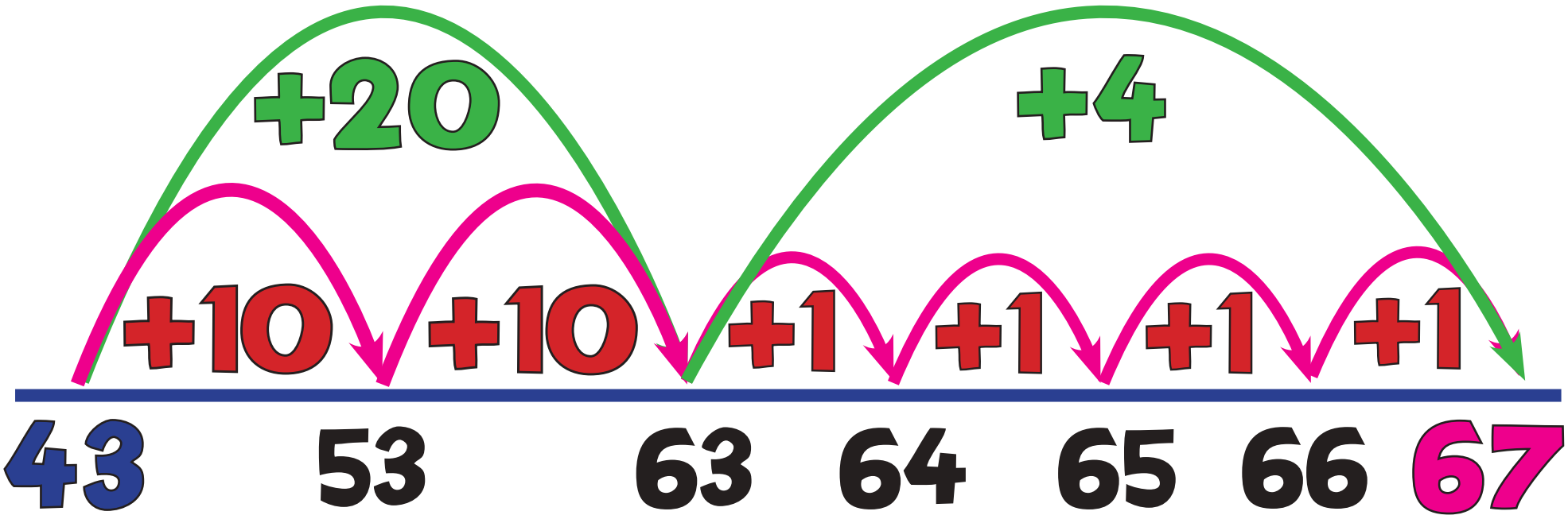
Bridging 10s Number



57 + 6 = 63

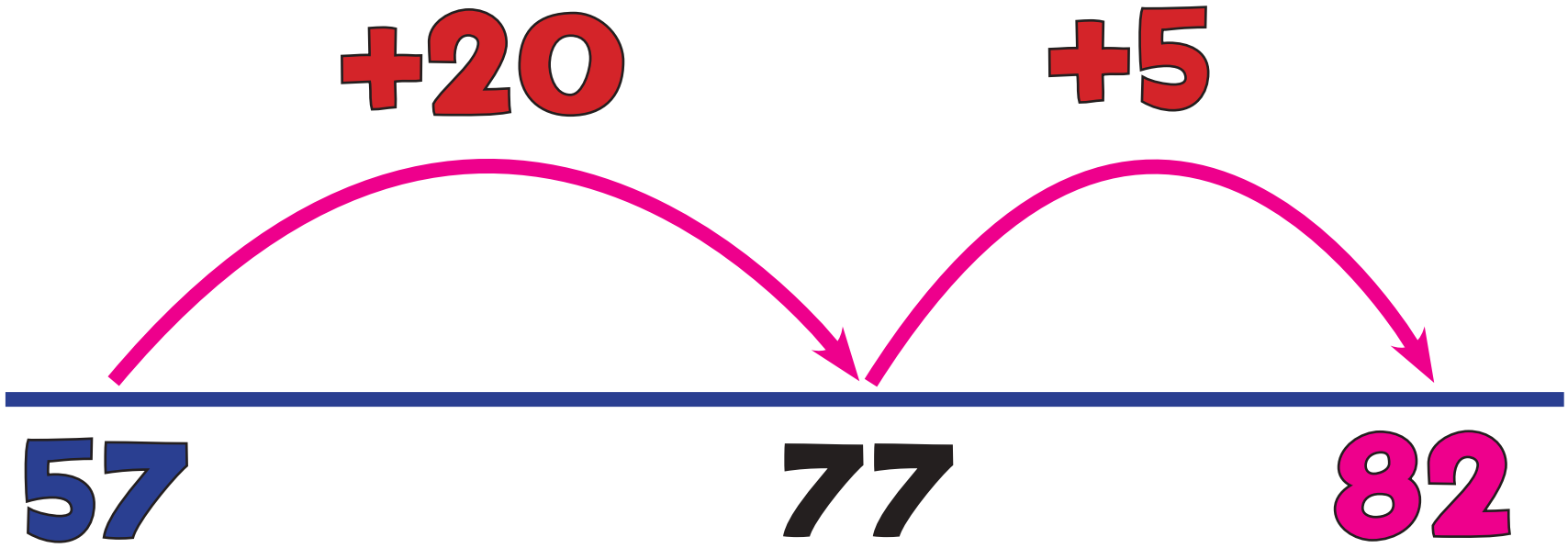
A3: Forwards Jump

43 + 24 = 67



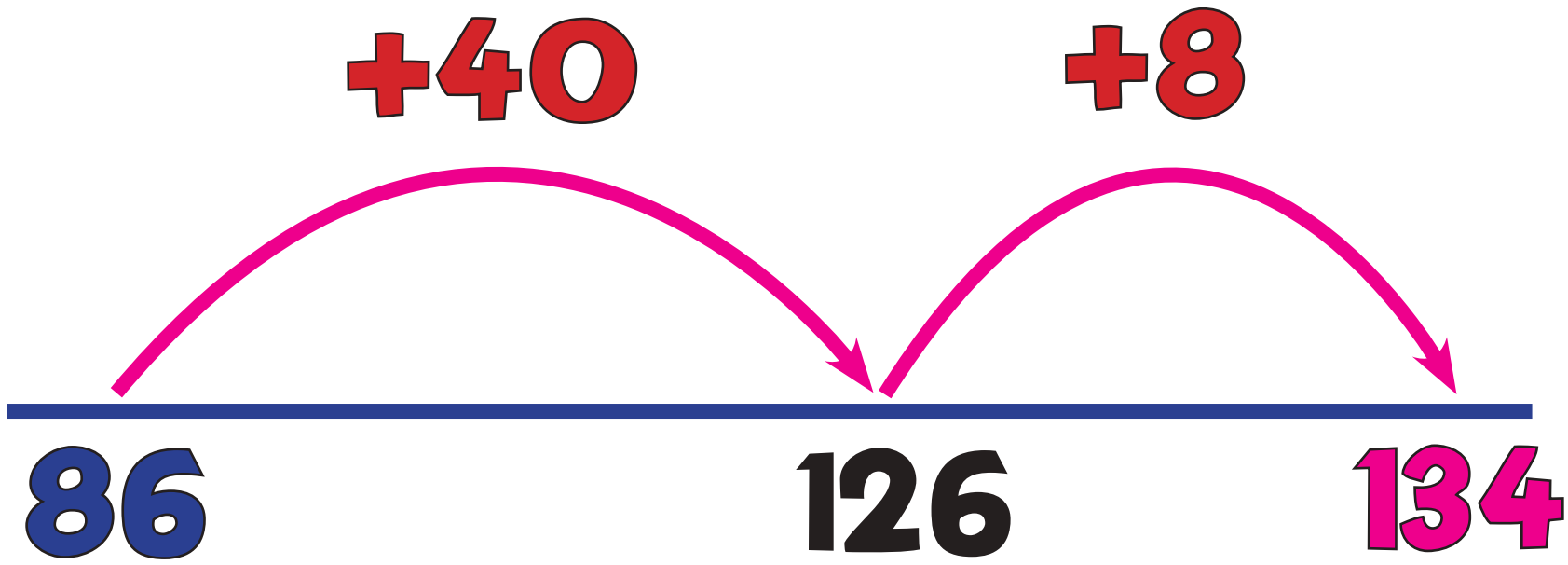
A3a: Forwards Jump

57 + 25 = 82



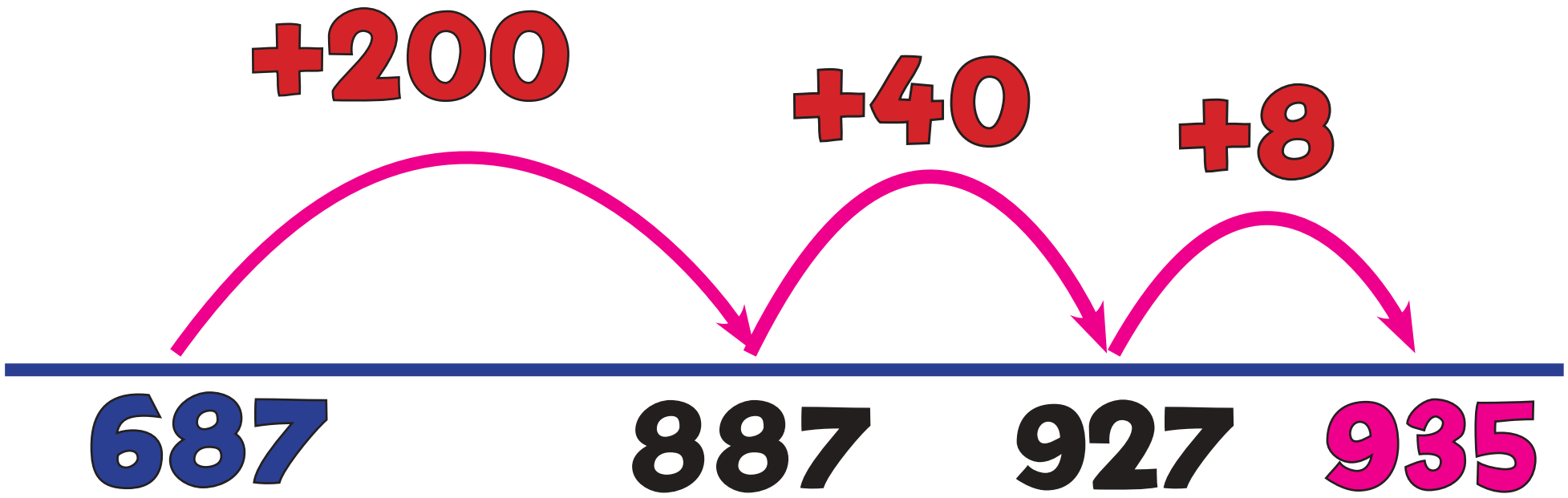
A3b: Forwards Jump

86 + 48 = 134



A3c: Forwards Jump

687 + 248 = 935



A4: Partitioning

$$43 + 24 = 67$$

$$40 + 20 = 60$$

$$3 + 4 = 7$$

$$60 + 7 = 67$$

Wren's Nest Primary School

A4a: Partitioning

$$57 + 25 = 82$$

$$50 + 20 = 70$$

$$7 + 5 = 12$$

$$82$$

Wren's Nest Primary School

A4b: Partitioning

$$86 + 48 = 134$$

$$80 + 40 = 120$$

$$6 + 8 = 14$$

$$134$$

A4c: Partitioning

687 + 248 = 935

600 + 200 = 800

80 + 40 = 120

7 + 8 = 15

935

Wren's Nest Primary School

A4f: Partitioning

$$4.8 + 3.8 = 8.6$$

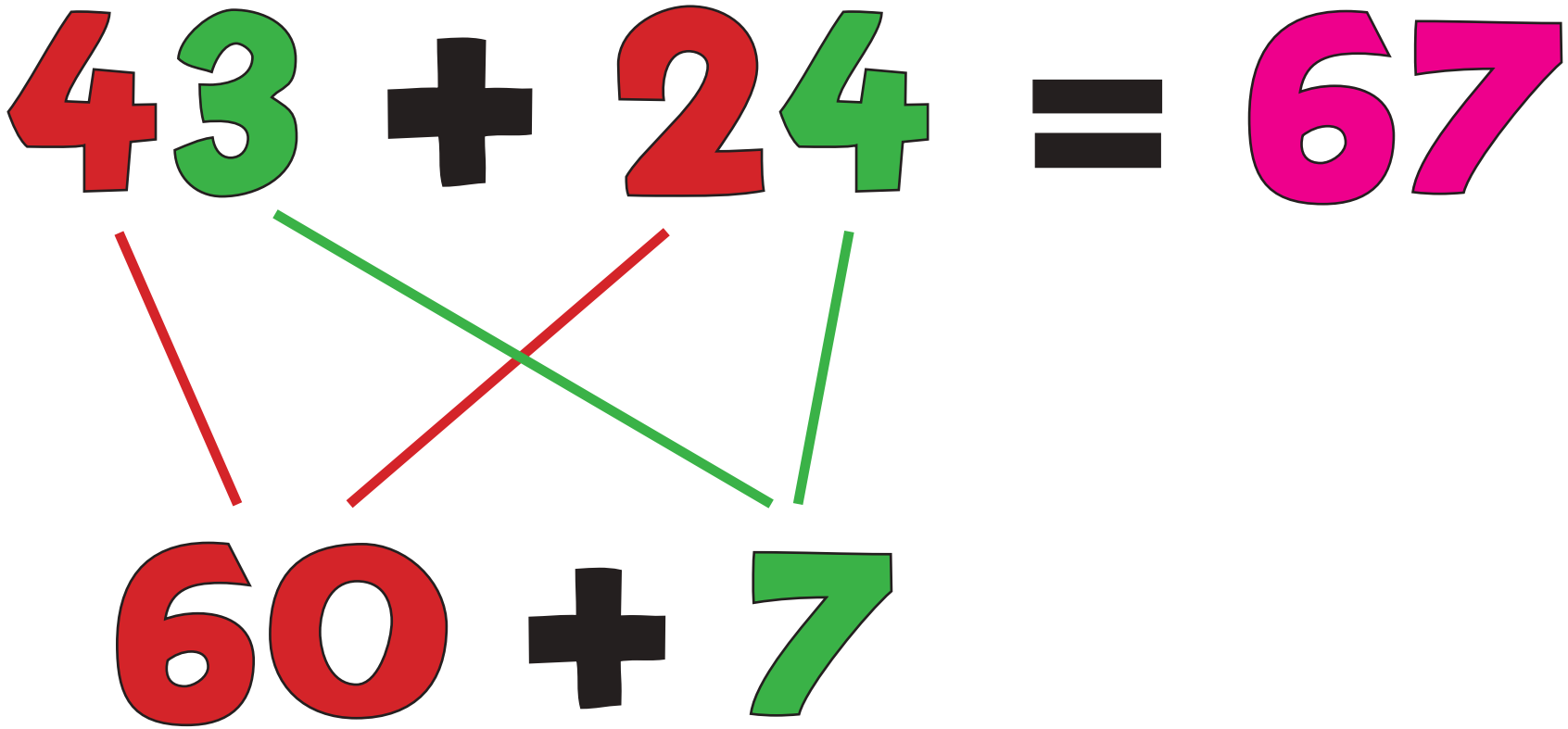
$$4 + 3 = 7$$

$$0.8 + 0.8 = 1.6$$

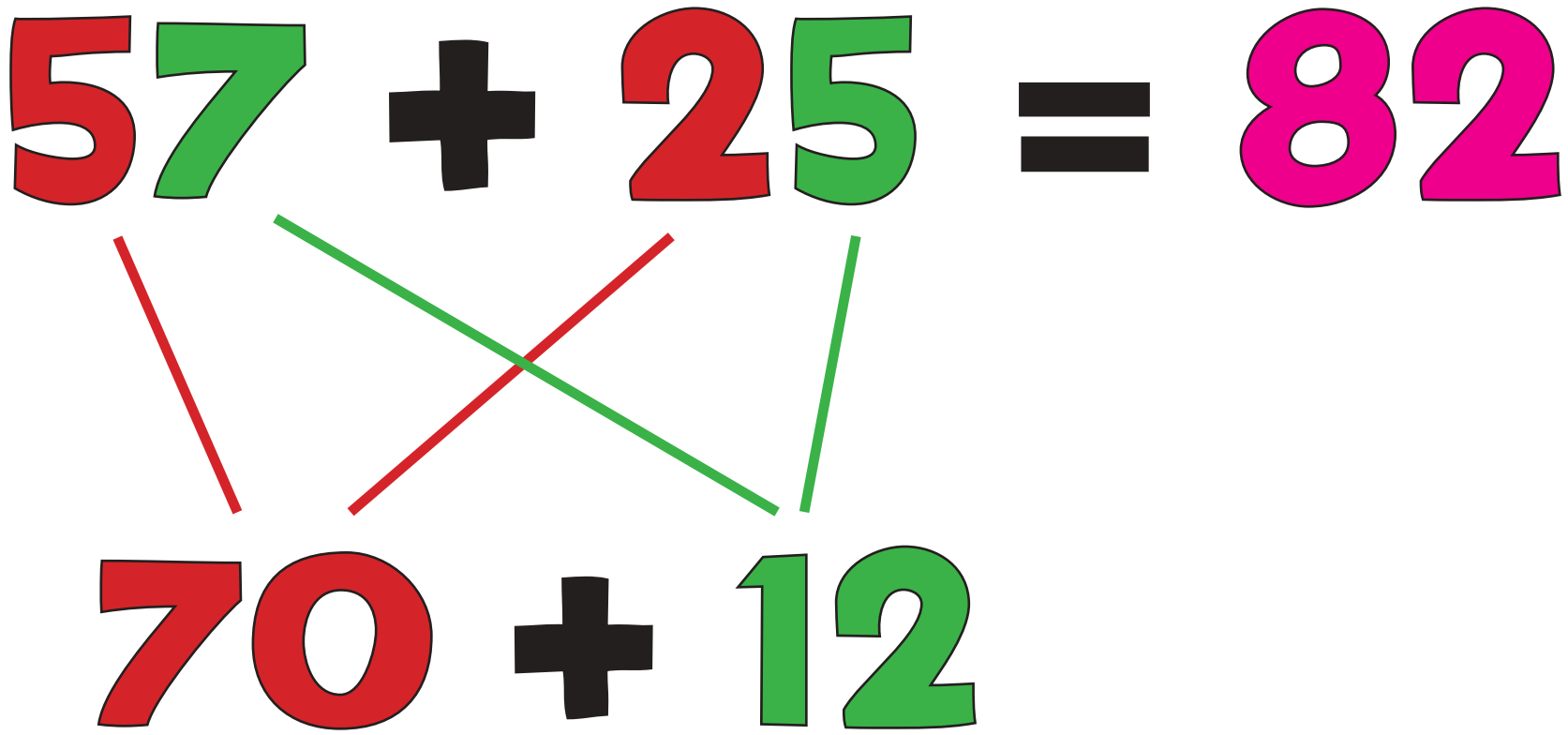
$$8.6$$

Wren's Nest Primary School

A5: Partition Jot

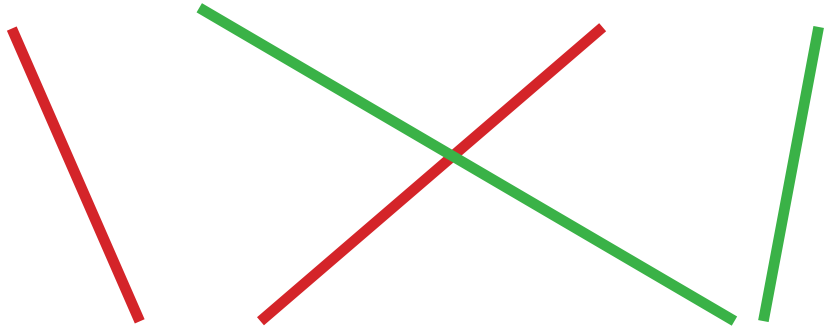


A5a: Partition Jot



A5b: Partition Jot

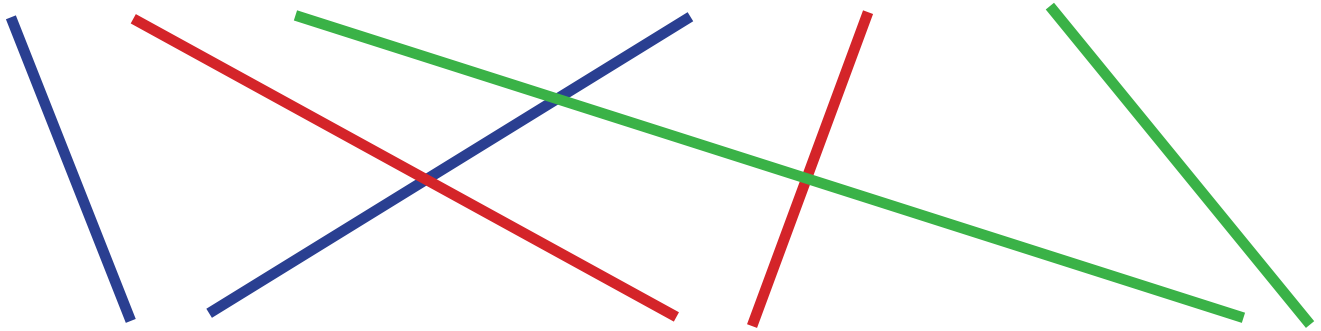
86 + 48 = 134



120 + 14

A5c: Partition Jot

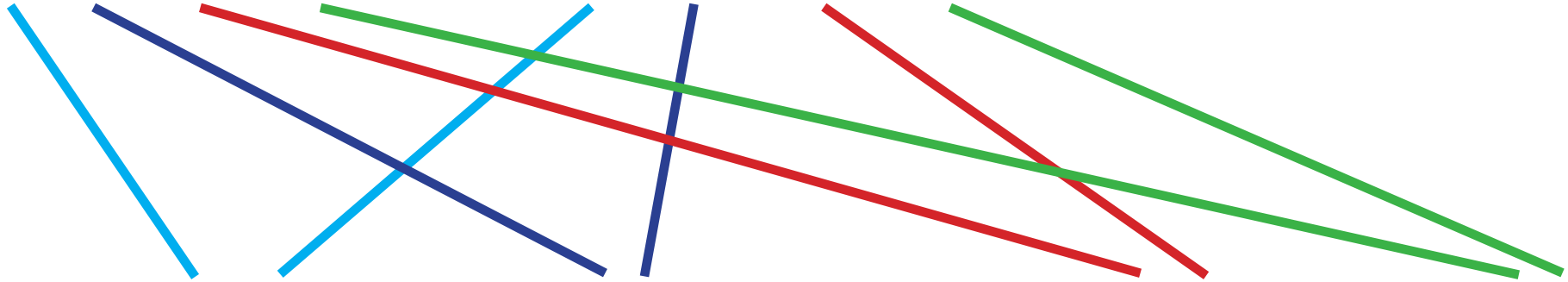
687 + 248 = 935



800 + 120 + 15

A5d: Partition Jot

4873 + 3762 = 8635



7000 + 1500 + 130 + 5

A6: Expanded Column
Addition

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

Wren's Nest Primary School

(A7: Column Addition)

Additional

10	1
4	3
+ 2	4
6	7

(A7: Column Addition)

Additional:a

10	1
5	7
+ 2	5
8	2
	1

(A7: Column Addition)

Additional:b

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

A7: Column Addition

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

A7d: Column Addition

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

A7e: Column Addition

$$
\begin{array}{r}
787567 \\
+\ 446278 \\
\hline
1\,2\,3\,3\,8\,4\,5 \\
\hline
1\ 1\ 1\ \ \ 1\ 1\ 1
\end{array}
$$

A7f: Column Addition

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

Wren's Nest Primary School

A7g: Column Addition

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

A7h: Column Addition

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

Wren's Nest Primary School

A7i: Column Addition

With Money

$$\begin{array}{r} £38.25 \\ +\ £27.46 \\ \hline £65.71 \\ \hline 1 \quad\quad 1 \end{array}$$

A7 j: Column Addition

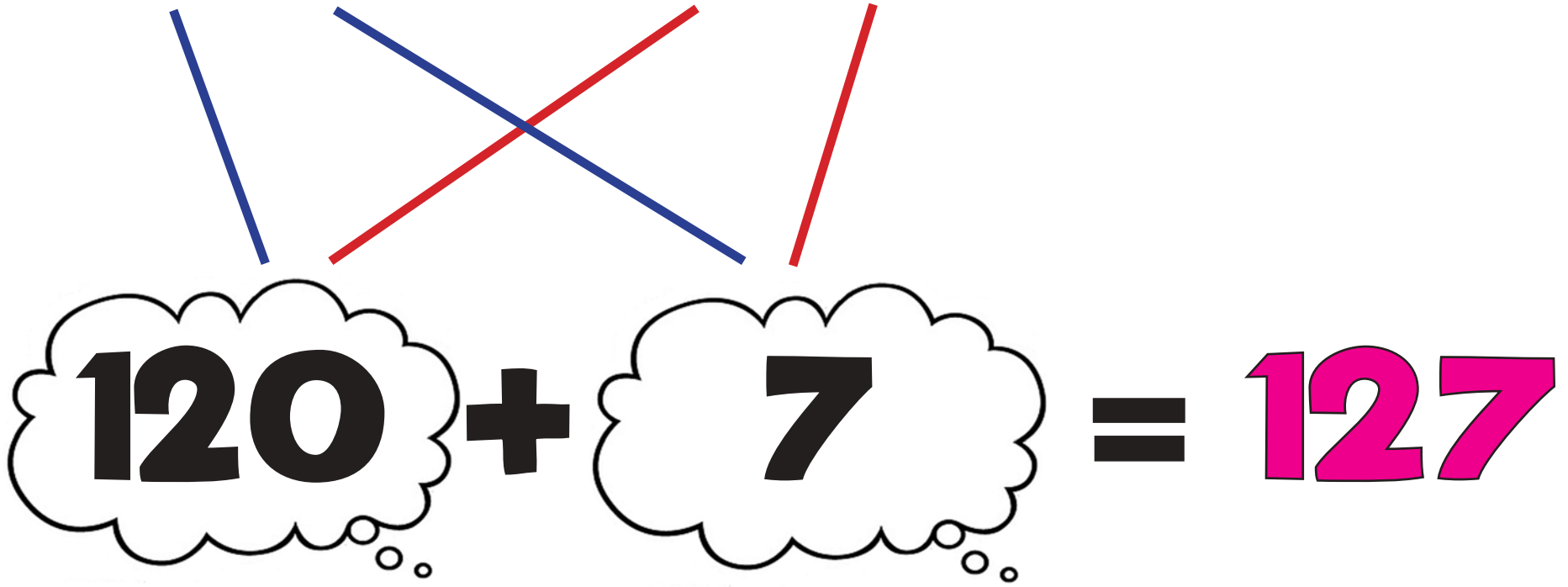
With Decimals

$$73.4 + 5.67 = 79.07$$

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

MA1: Partitioning

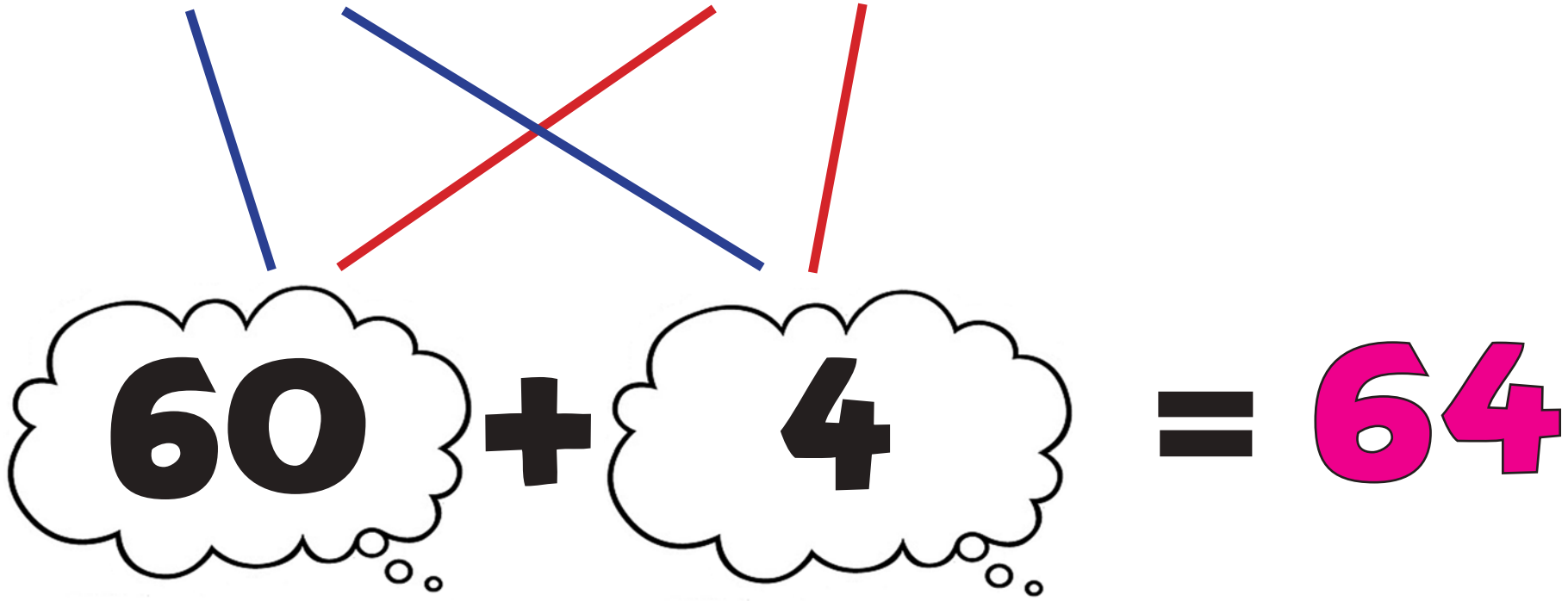
45 + 82 = 127



MA1: Partitioning

2

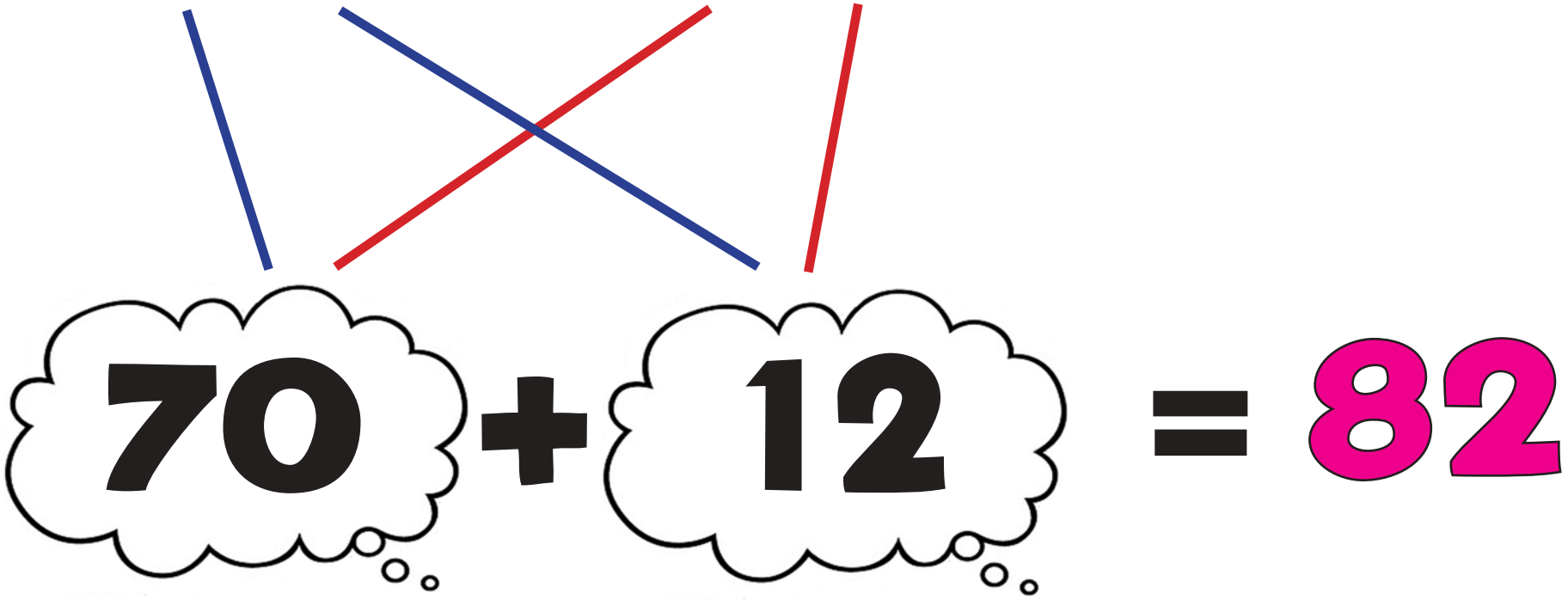
$$43 + 21 = 64$$



MA1: Partitioning

3

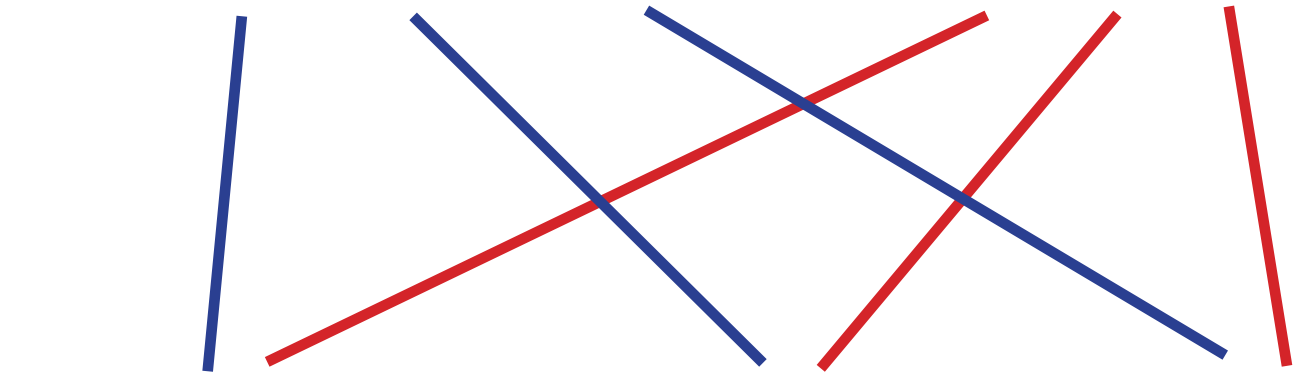
57 + 25 = 82



MA1: Partitioning

4

648 + 231 = 879

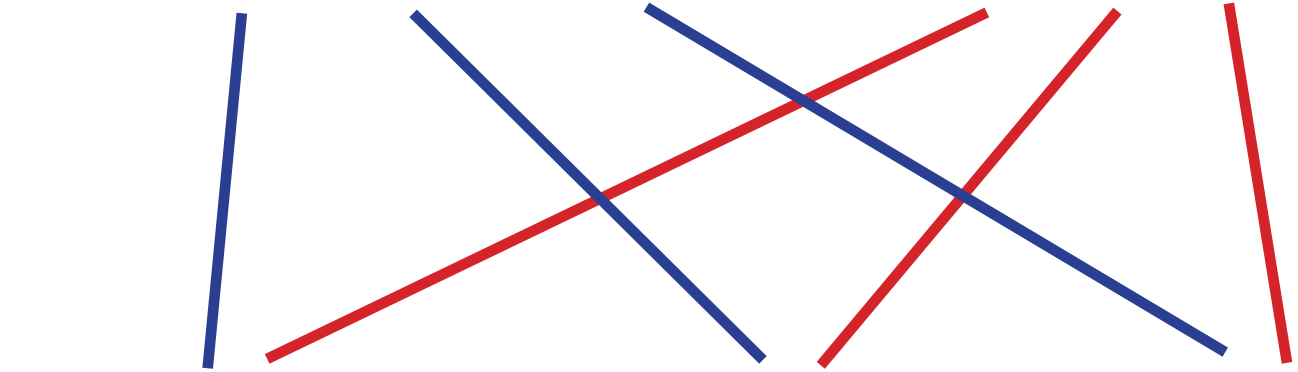


800 + 70 + 9 = 879

MA1: Partitioning

5

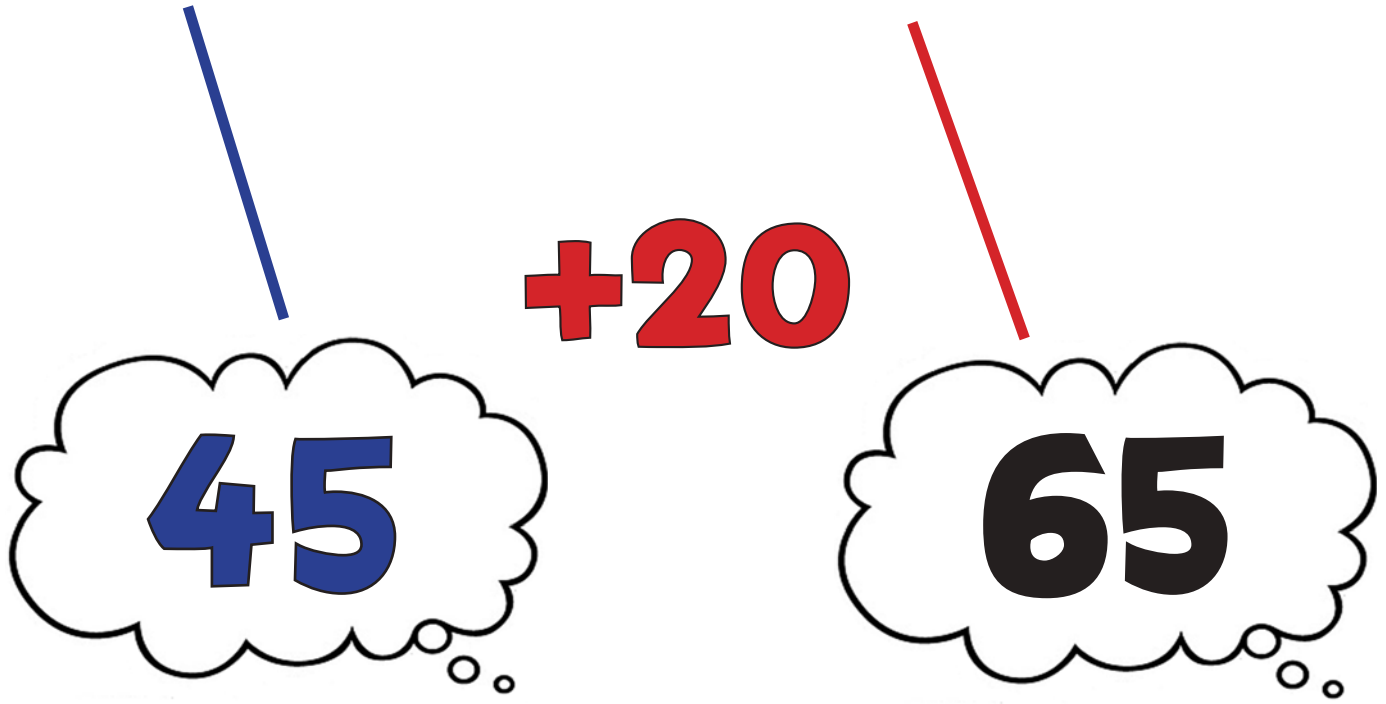
576 + 258 = 834



700 + 120 + 14 = 834

MA2: Counting On

$$45 + 20 = 65$$

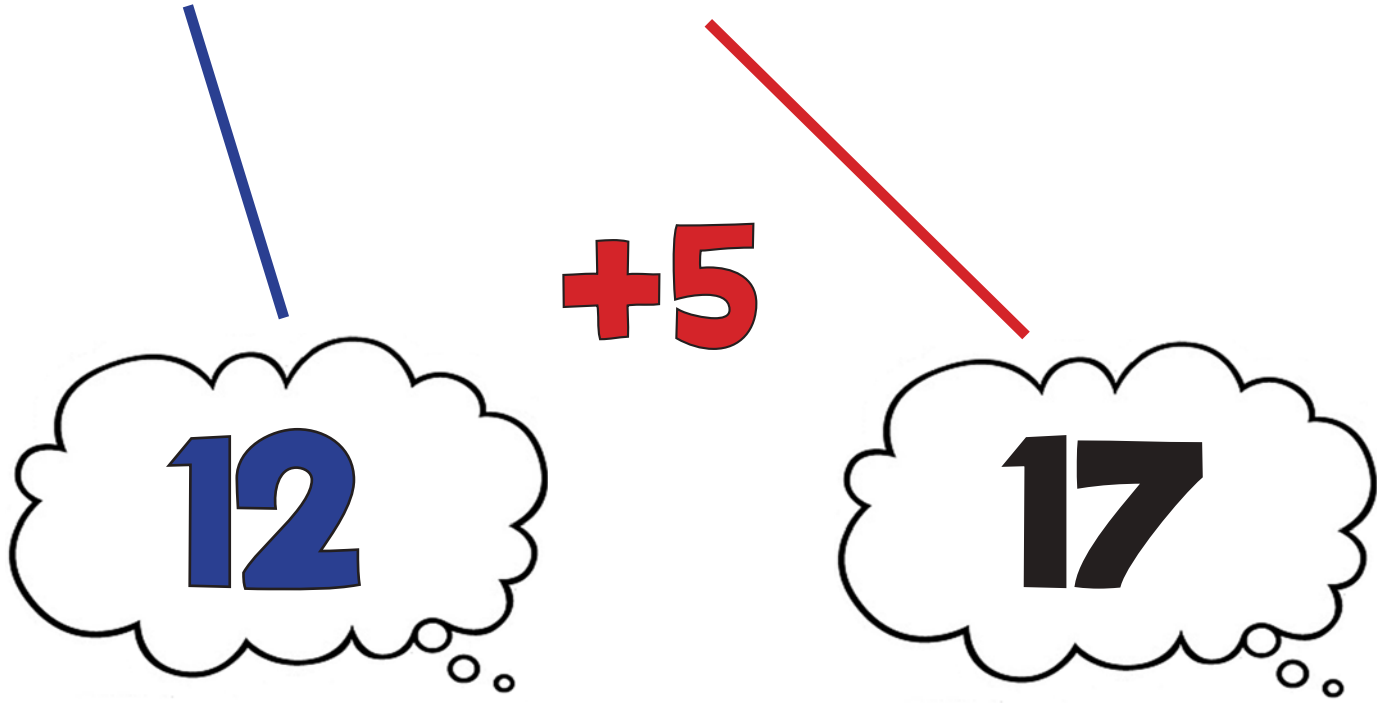


MA2a: Counting On

1

Ones

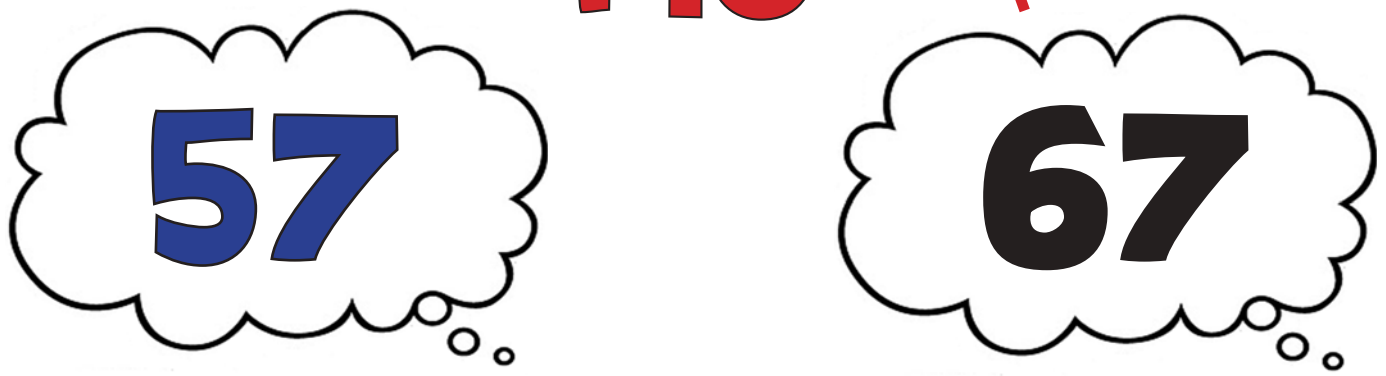
$$12 + 5 = 17$$



MA2b: Counting On

1 Tens

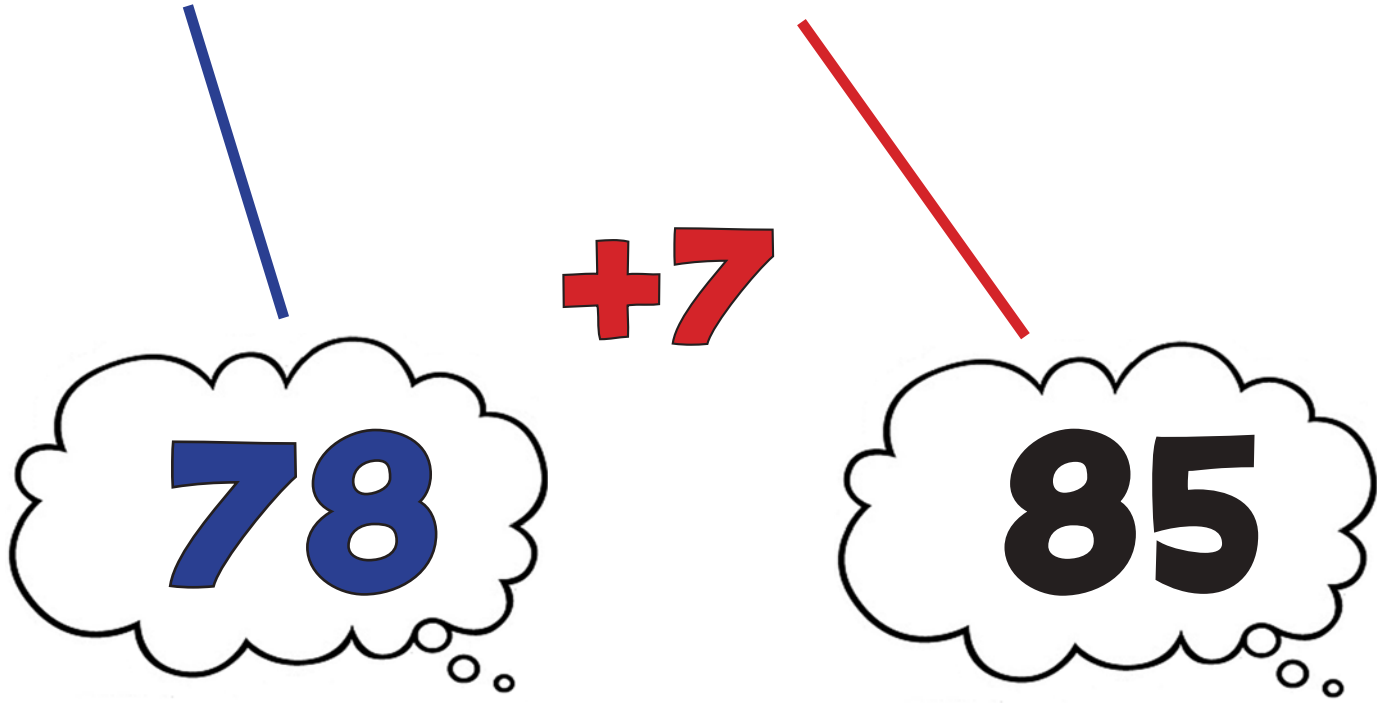
57 + 10 = 67



MA2a: Counting On

2 Ones

$$78 + 7 = 85$$



MA2b: Counting On

2 Tens

58 + 40 = 98

+40

MA2a: Counting On

3 Tens

85 + 50 = 135

+50

85

135

MA2b: Counting On

3

Hundreds

534 + 300 = 834

+300

534

834

MA2a: Counting On

4 Tens

784 + 60 = 844

+60

MA2b: Counting On

4

Hundreds

4837 + 3000 = 8347

+3000

4837

7837

MA2a: Counting On

5

Hundreds

837 + 500 = 1337

+500

837

1337

MA2b: Counting On

5

Thousands

7583 + 5000 = 12583

+5000

MA2a: Counting On

6

Ten Thousands

43,826 + 30,000 = 73,826

+30,000

MA2b: Counting On

6

Millions

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

+4,000,000

MA3: Number Bonds

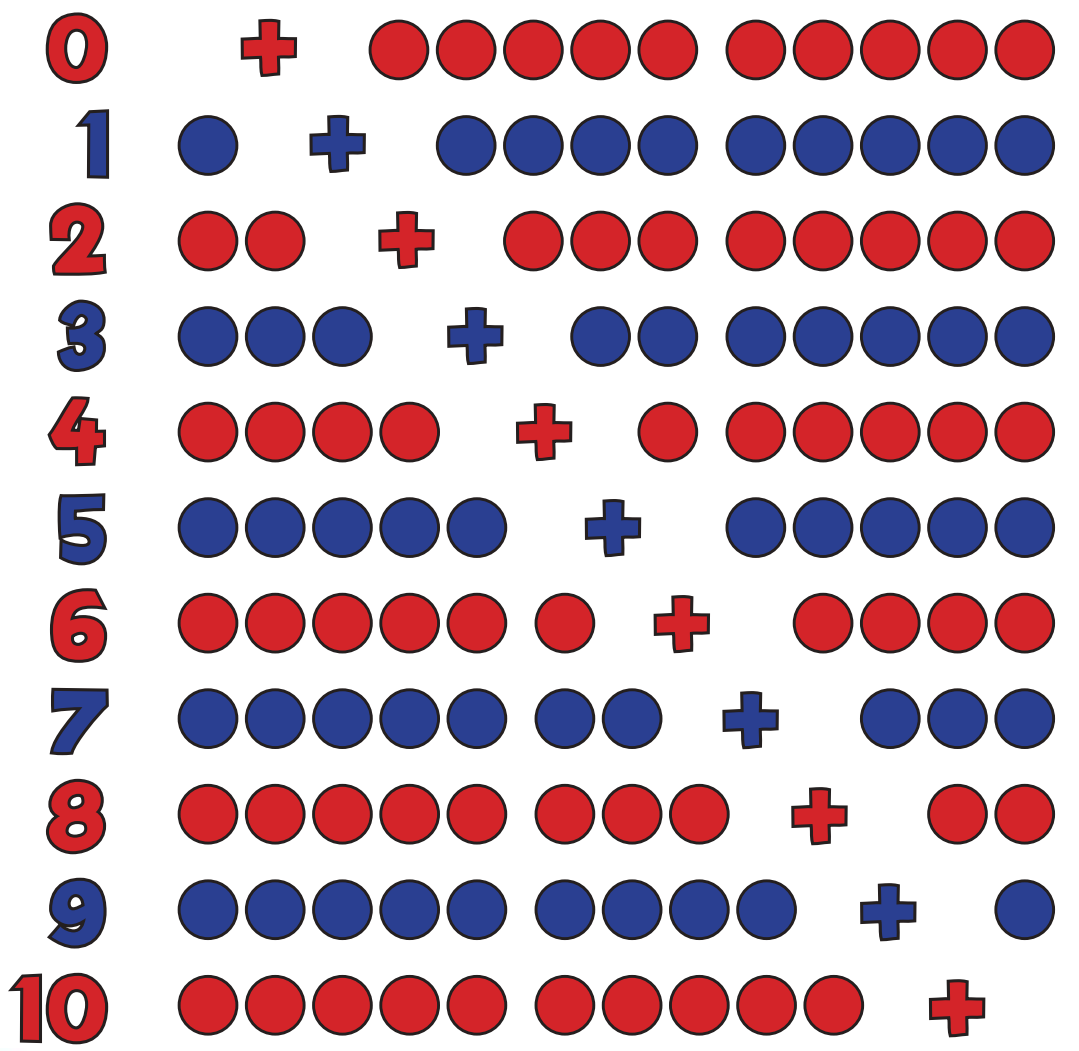
45 + 95 = 140

40 + 100 = 140

MA3: Number Bonds

6

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

MA3: Number Bonds

2

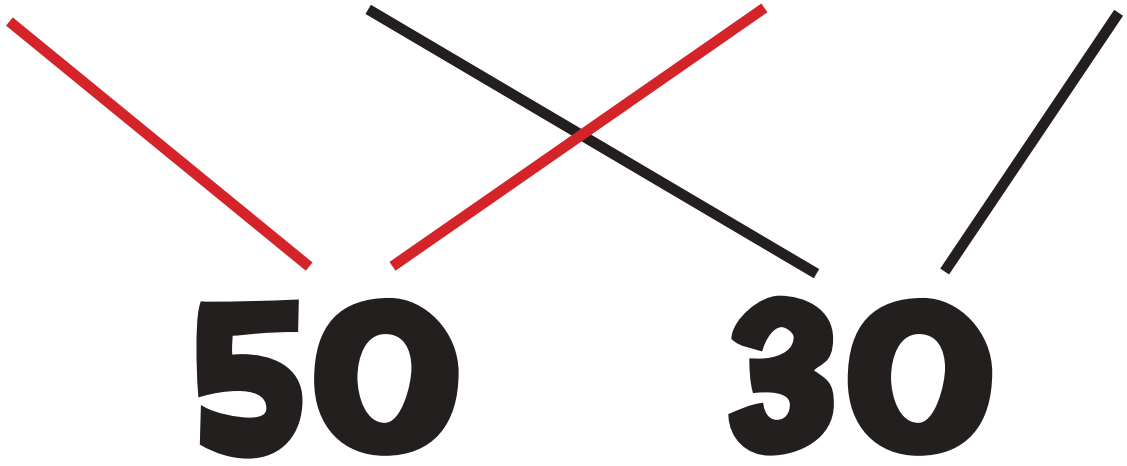
$3 + 4 + 7 = 14$

10 4

MA3: Number Bonds

3

43 + 9 + 7 + 21 = 80



MA3: Number Bonds

4

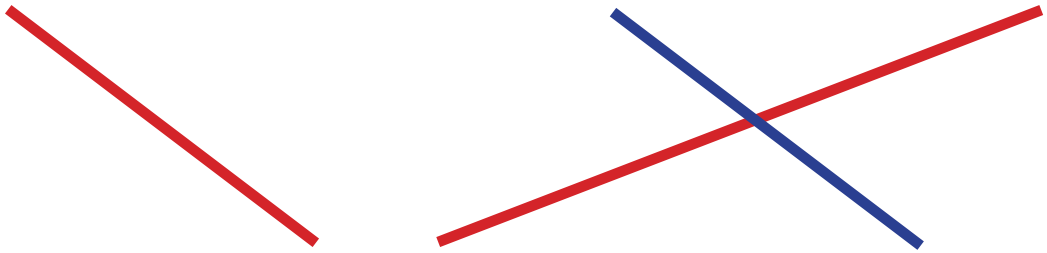
42 + 16 + 28 + 54 = 140

70 70

MA3: Number Bonds

5

£4.56 + £3.27 + £1.44 = £9.27



£6.00 £3.27

MA3: Number Bonds

6

$$24.25 + 31.63 + 21.75 = 77.63$$

46

31.63

MA4: Double & Adjust

45 + 46 = 91

45 + 45 + 1

90 + 1 = 91

Wren's Nest Primary School

MA4: Double & Adjust

1

$$5 + 6 = 11$$

$$5 + 5 + 1$$

$$10 + 1 = 11$$

MA4: Double & Adjust 2

$$7 + 8 = 15$$

$$7 + 7 + 1$$

$$14 + 1 = 15$$

MA4: Double & Adjust

3

16 + 17 = 33

16 + 16 + 1

32 + 1 = 33

MA4: Double & Adjust

4

37 + 38 = 75

37 + 37 + 1

74 + 1 = 75

MA4: Double & Adjust

5

125 + 127 = 252

125 + 125 + 2

250 + 2 = 252

MA4: Double & Adjust

6

$$4.5 + 4.7 = 9.2$$

$$4.5 + 4.5 + 0.2$$

$$9 + 0.2 = 9.2$$

MA5: Round & Adjust

$$45 + 39 = 84$$

$$45 + 40 - 1$$

$$85 - 1 = 84$$

Wren's Nest Primary School

MA5: Round & Adjust

1

$$45 + 9 = 54$$

$$45 + 10 - 1 =$$

$$55 - 1 = 54$$

MA5: Round & Adjust
2

$$45 + 19 = 64$$

$$45 + 20 - 1$$

$$65 - 1 = 64$$

MA5: Round & Adjust

3

$$45 + 97 = 142$$

$$45 + 100 - 3$$

$$145 - 3 = 142$$

MA5: Round & Adjust

4

345 + 298 = 643

345 + 300 - 2

645 - 2 = 643

MA5: Round & Adjust

5

4645 + 1996 = 6641

4645 + 2000 - 4

6645 - 4 = 6641

MA5: Round & Adjust

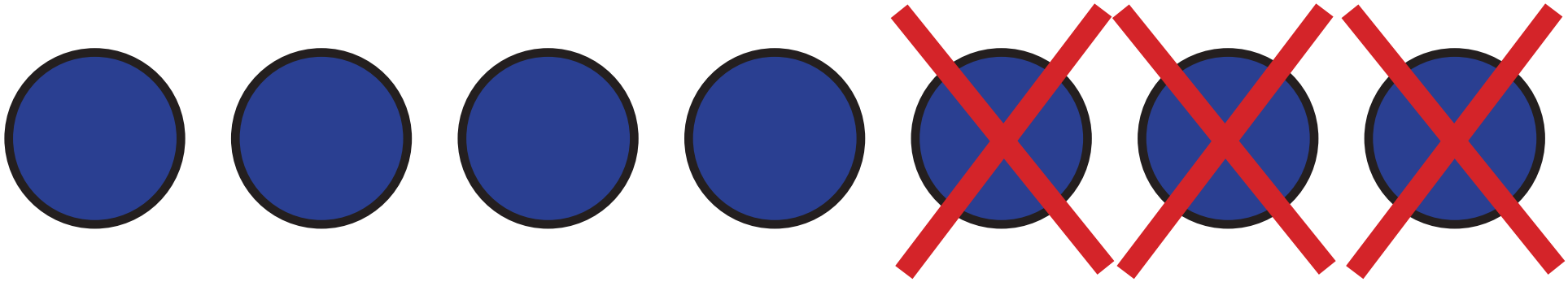
6

45.2 + 49.9 = 95.1

45.2 + 50 - 0.1

95.2 - 0.1 = 95.1

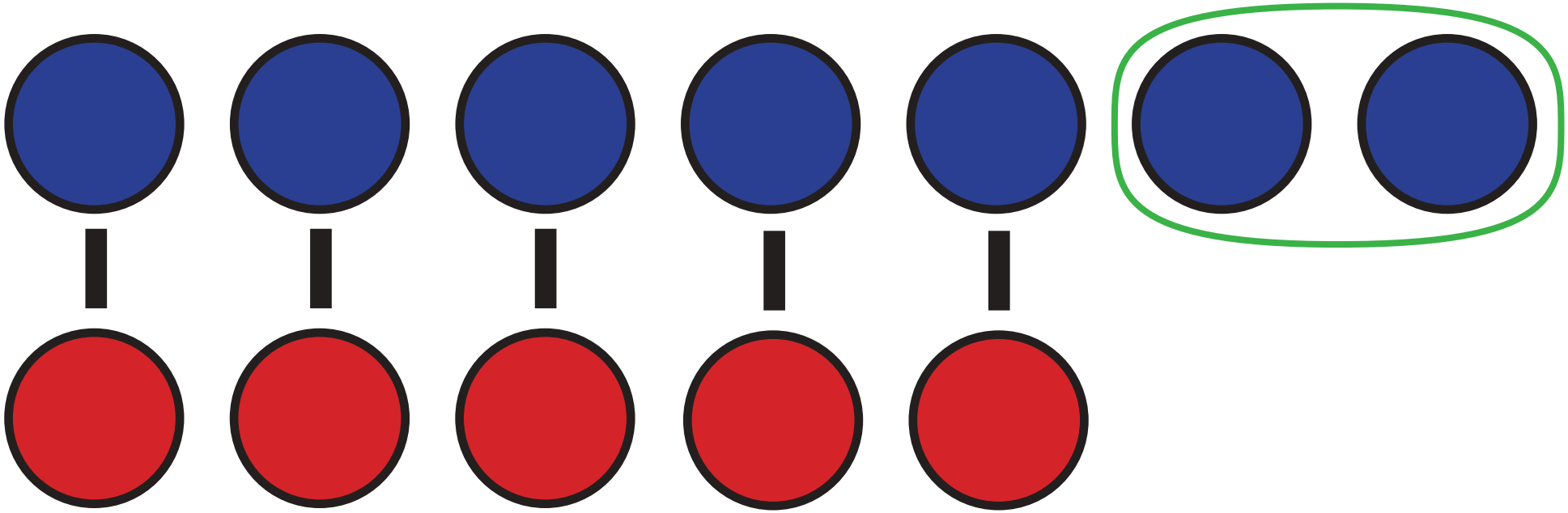
S1: Objects



7 - 3 = 4

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

S2: What's the Difference?

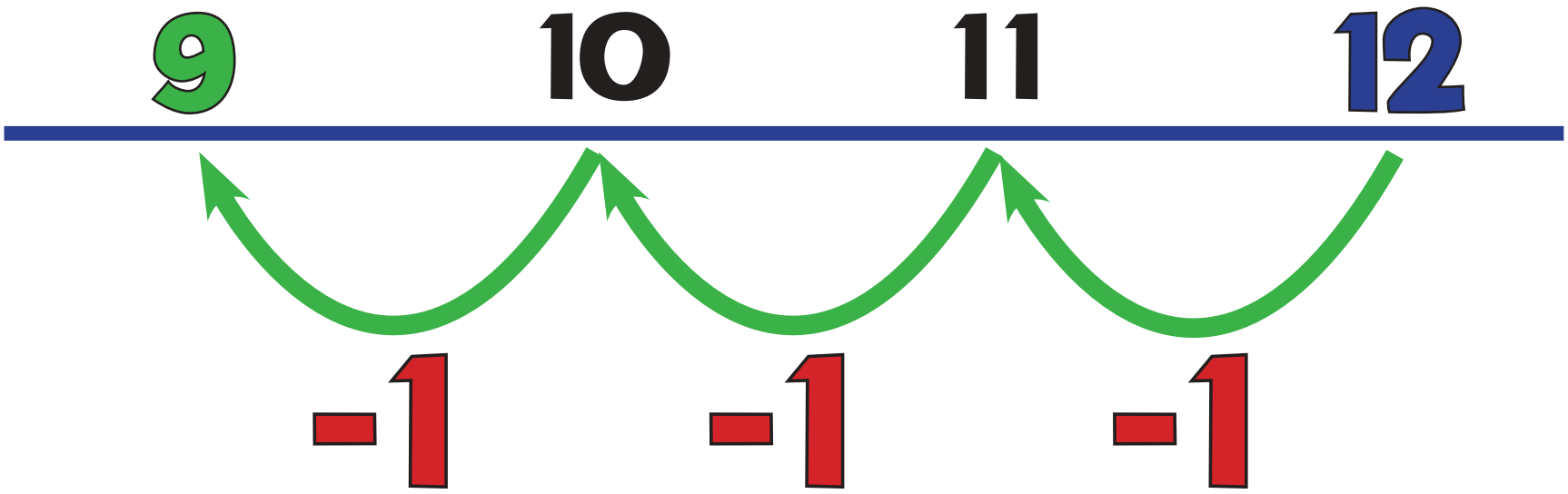


7 - 5 = 2

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

Wren's Nest Primary School

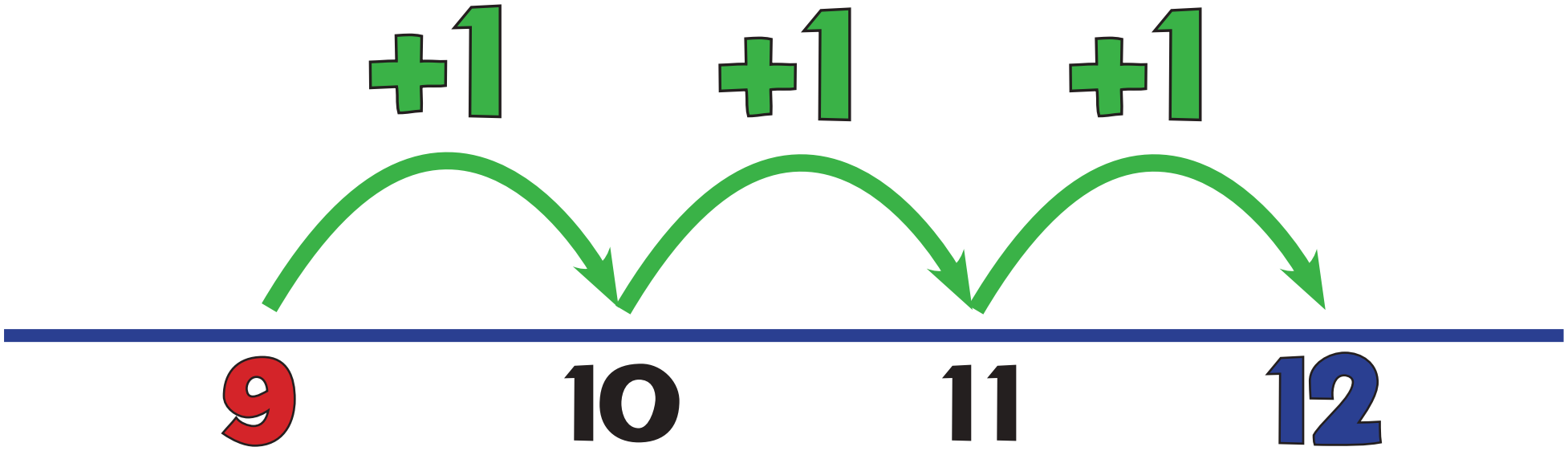
S3: Counting Back



12 - 3 = 9

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

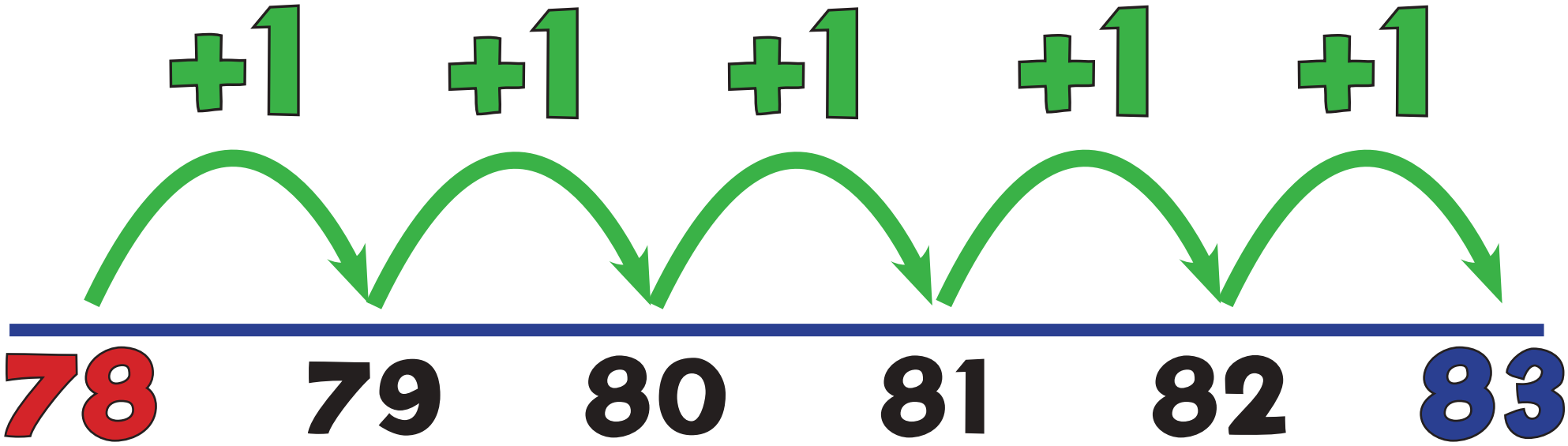
S4: Counting On



12 - 9 = 3

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

S4a: Counting On

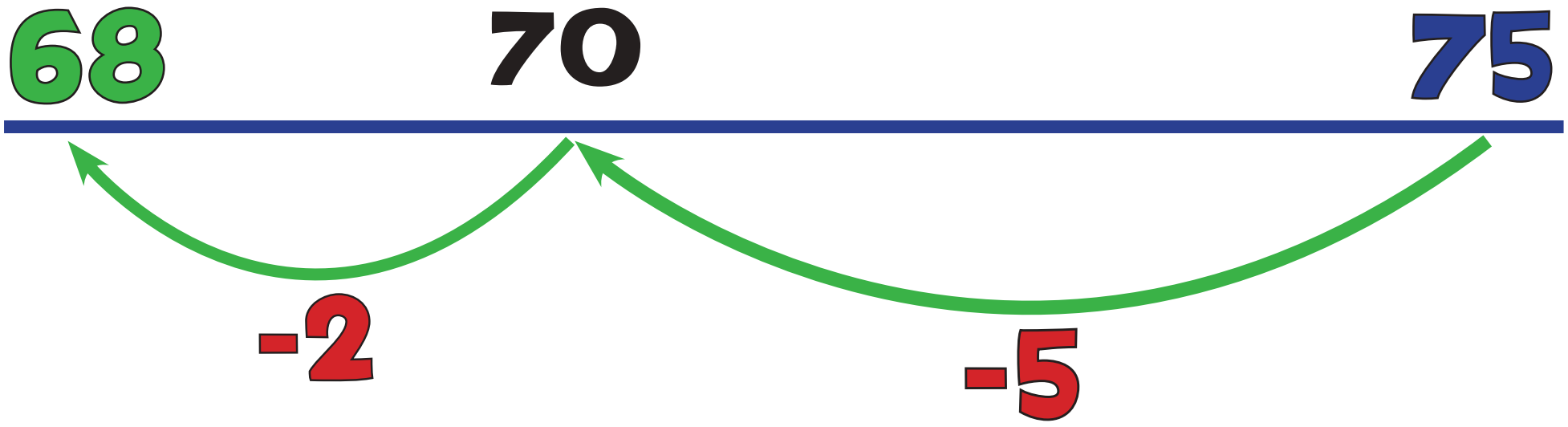


83 - 78 = 5

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

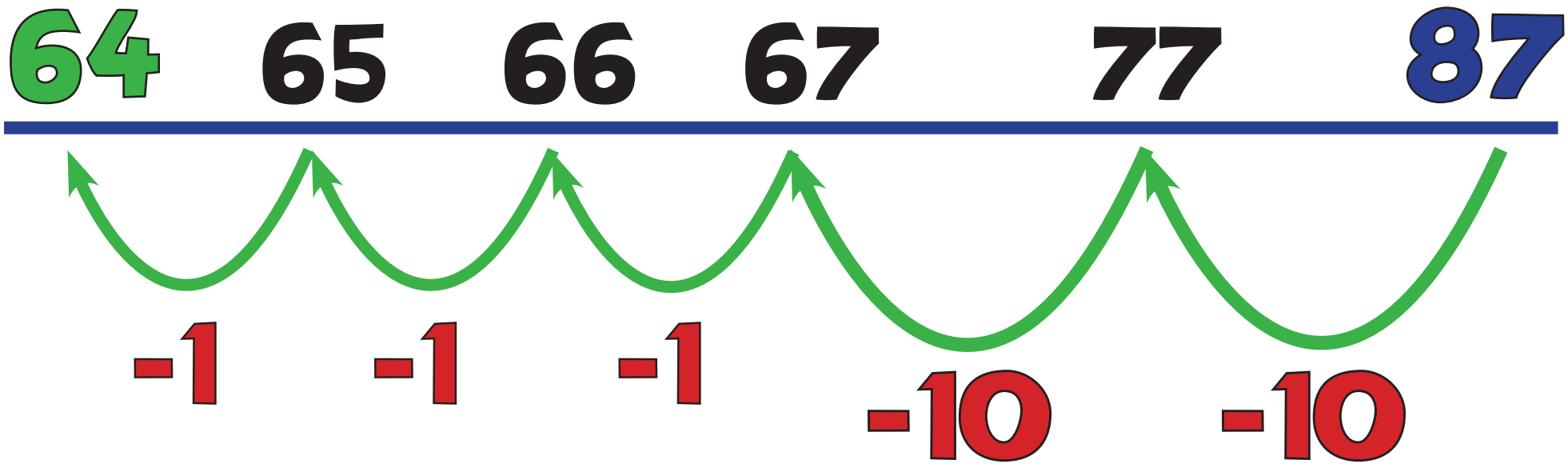
Wren's Nest Primary School

S5: Backwards Boing



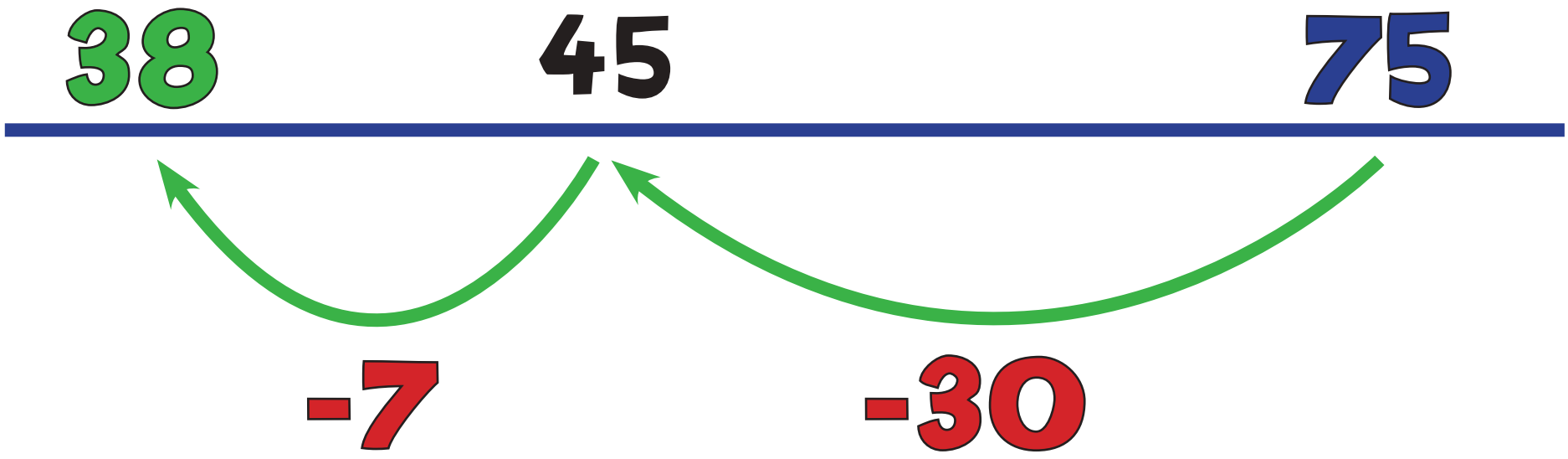
$$75 - 7 = 68$$

S6: Backwards Bounce



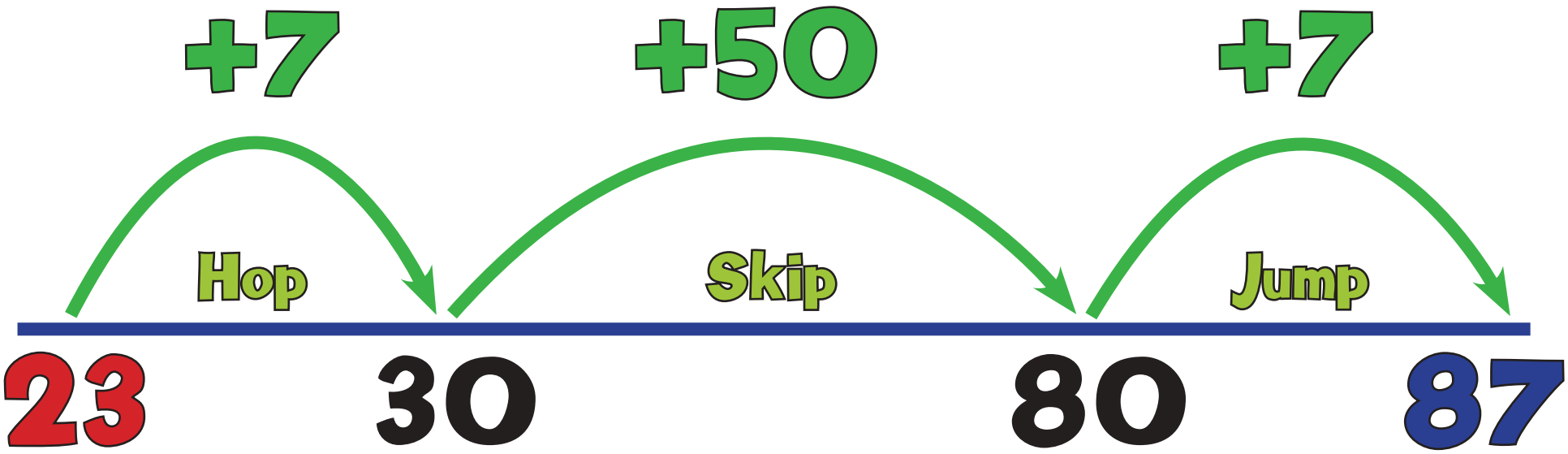
87 - 23 = 64

S7: Backwards Jump



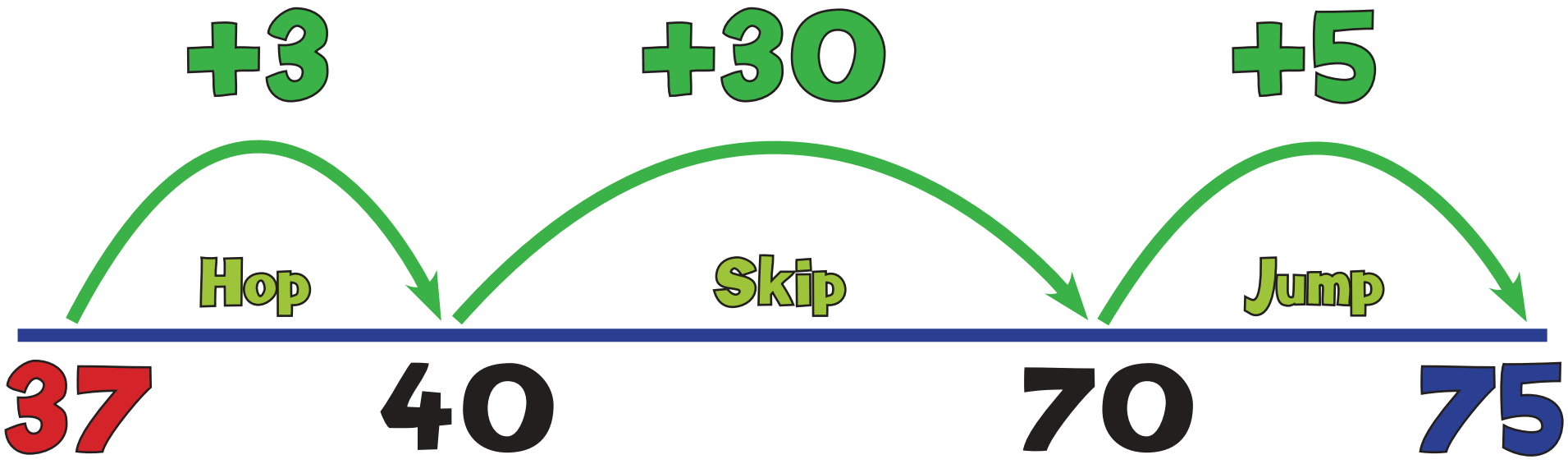
75 - 37 = 38

(S8: Additional Triple Jump!)



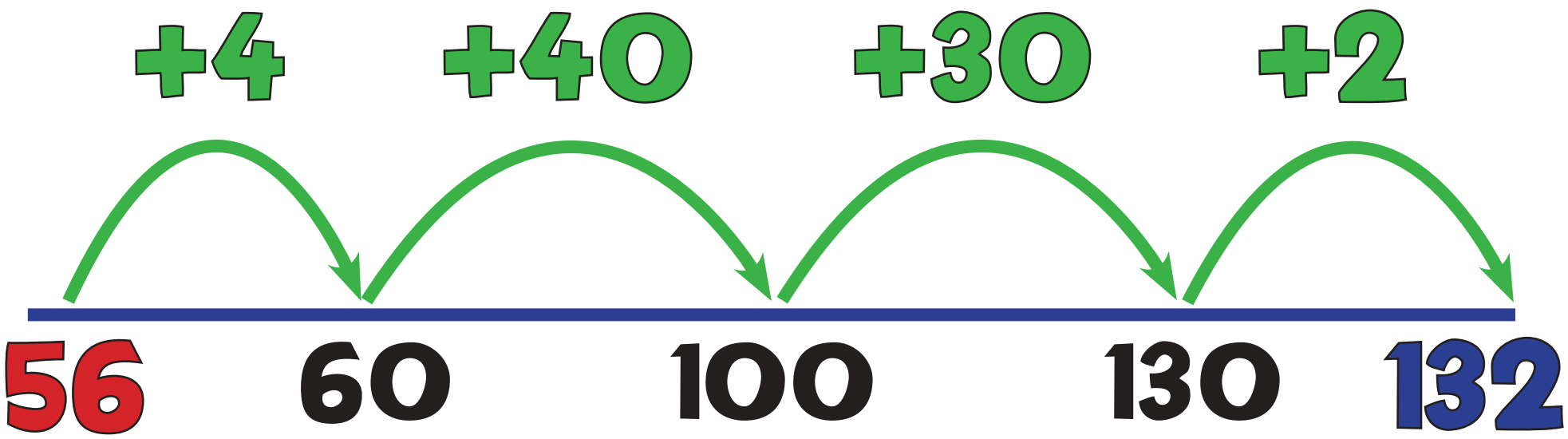
87 - 23 = 64

S8: Triple Jump!



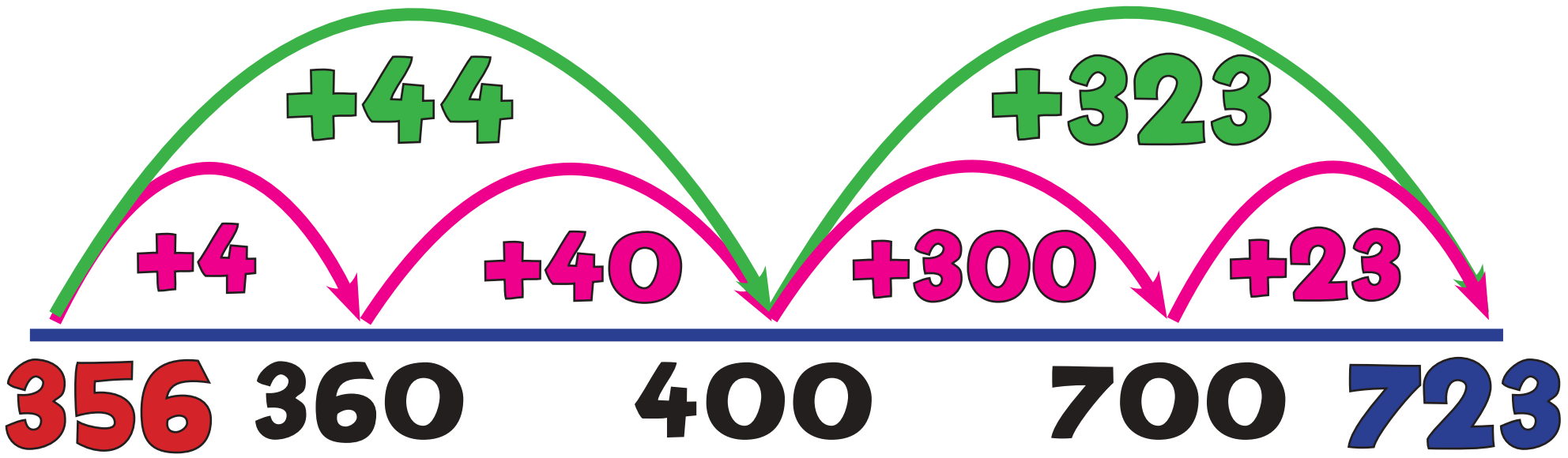
75 - 37 = 38

S8b: Quad Jump!



132 - 56 = 76

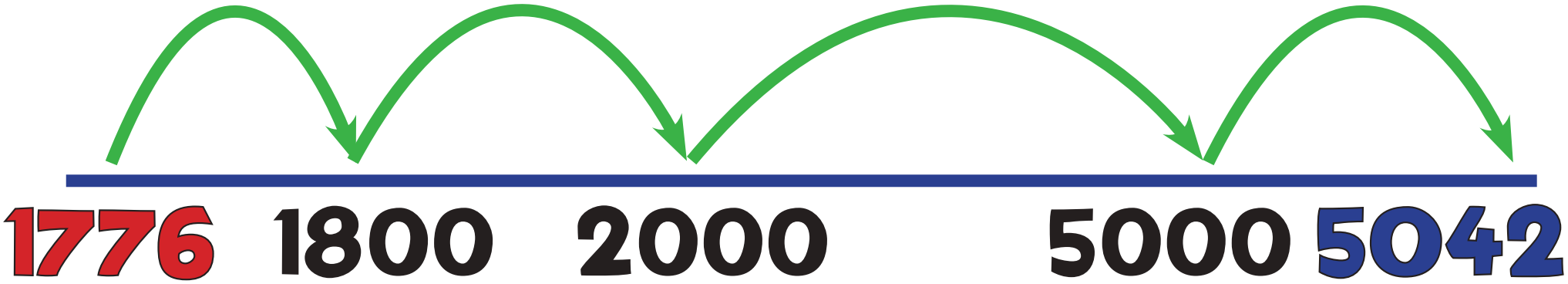
S8c: Big Jump!



723 - 356 = 367

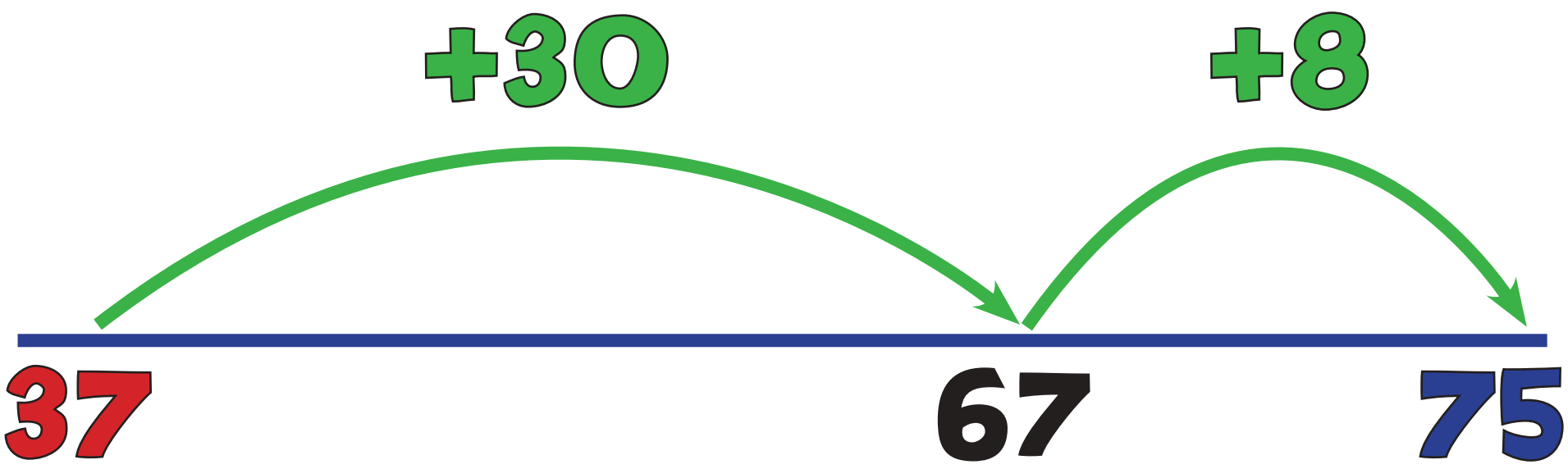
S8d: Quad Jump Extreme

+24 +200 +3000 +42



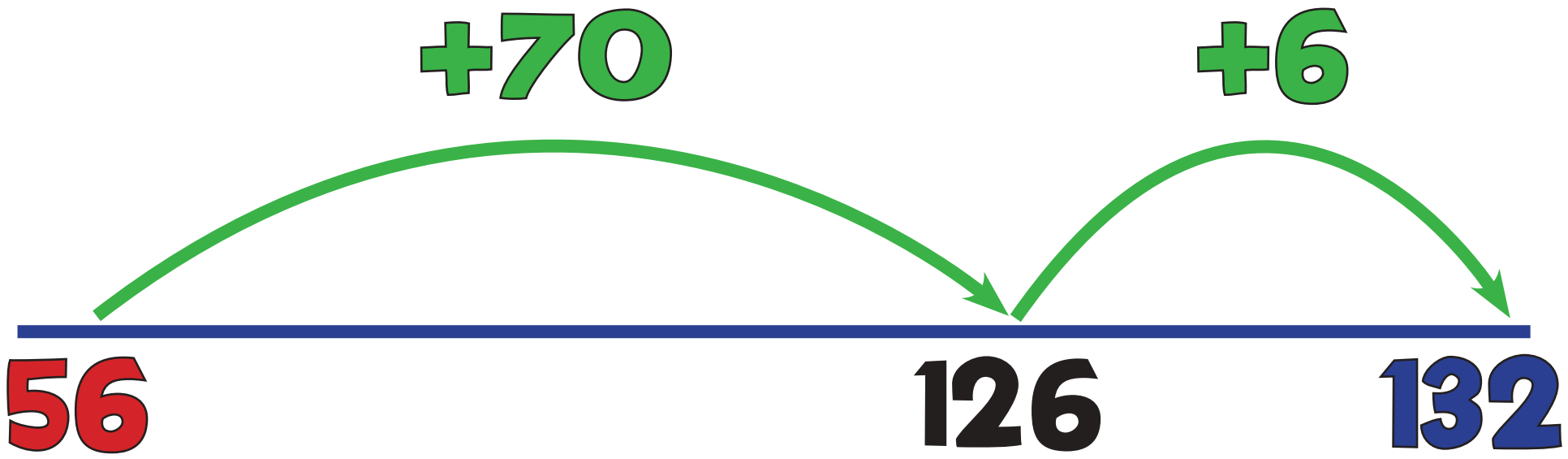
5042 - 1776 = 3266

S9: 10s Jump, 1s Jump!



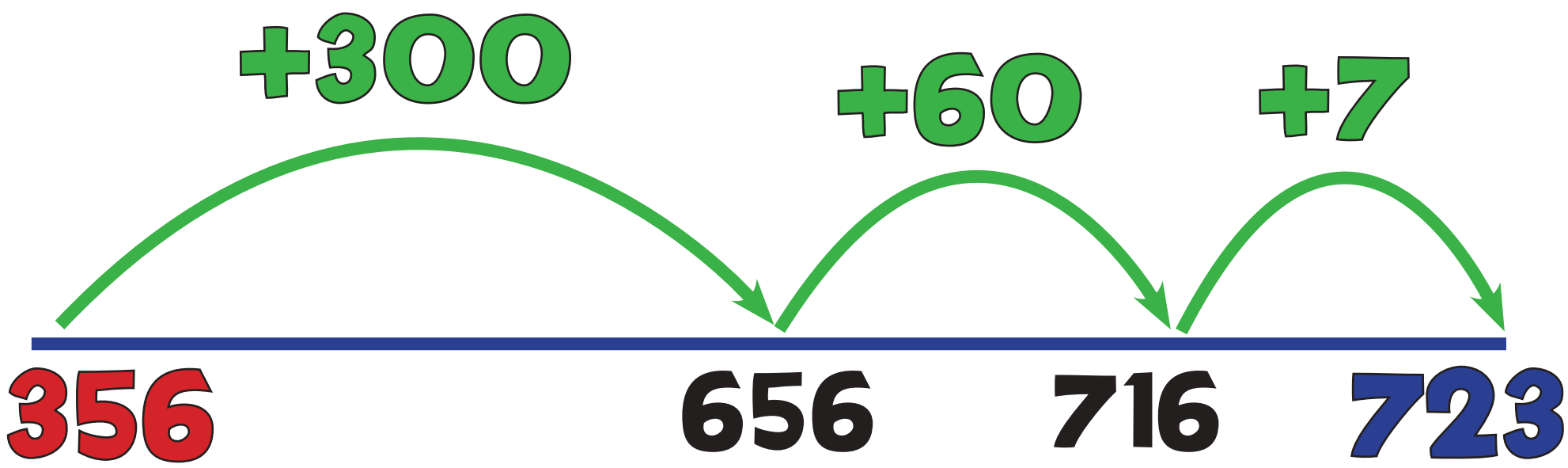
75 - 37 = 38

S9b: 10s Jump, 1s Jump!



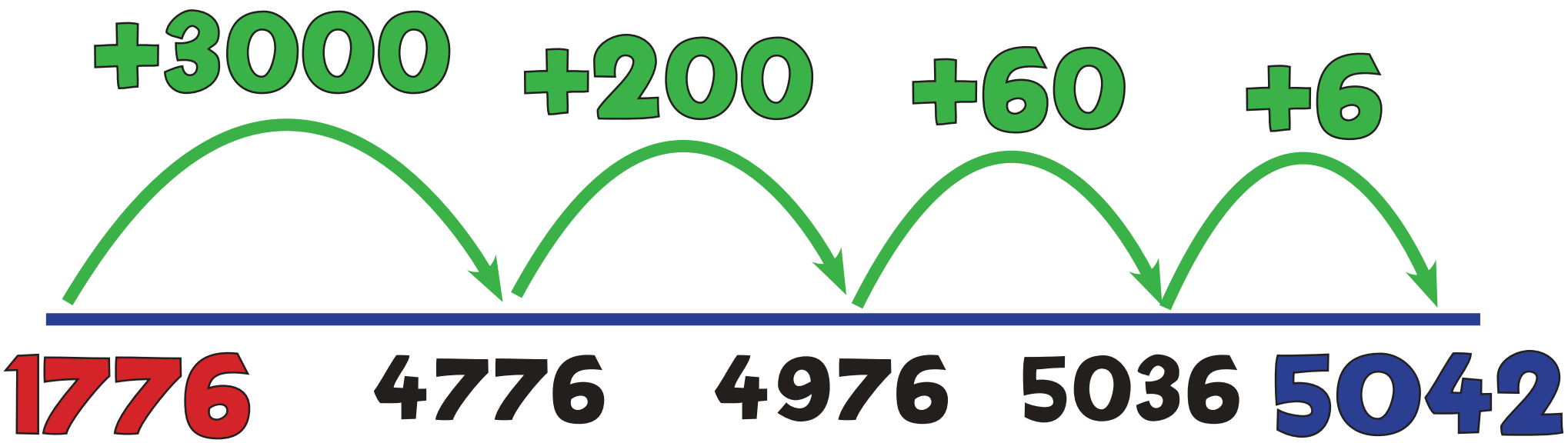
132 - 56 = 76

S9c: 100s, 10s, 1s Jump



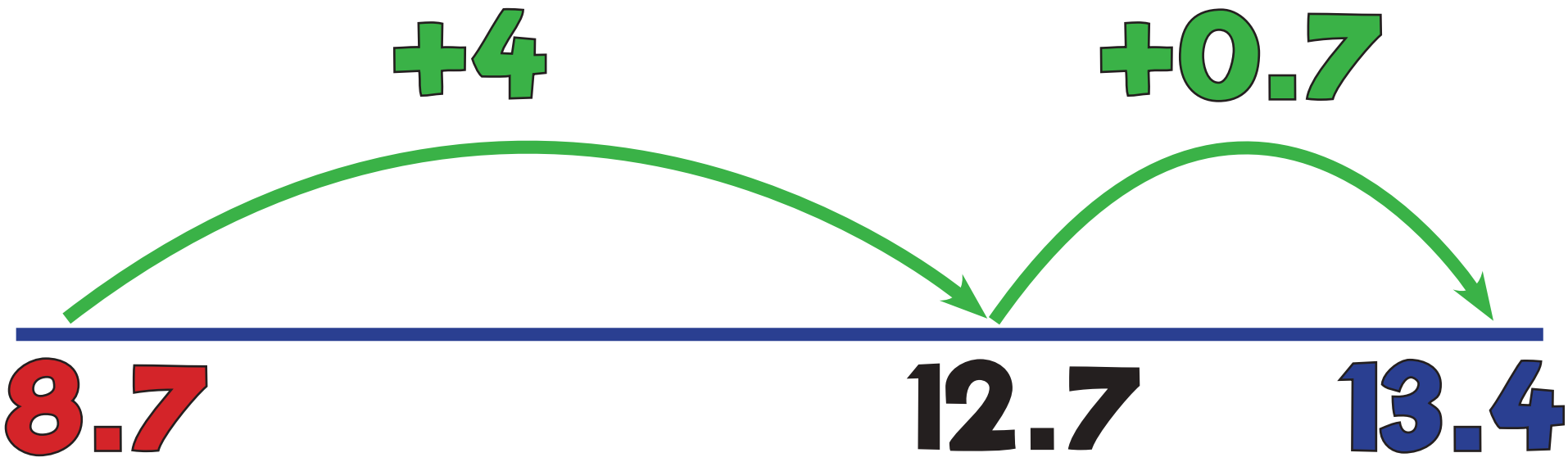
723 - 356 = 367

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



5042 - 1776 = 3266

S9f: 1s Jump, Tenths Jump!



13.4 - 8.7 = 4.7

S10: Expanded Column

Subtraction (100, 10, 1s)

723 - 356 = 367

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

(S11: Column Subtraction)

Additional

	10	1
	8	7
−	2	3
	6	4

(S11: Column Subtraction)

Additional:a

$$\begin{array}{r} \overset{}{10}\quad\overset{}{1} \\ 6\,\not{7}\,{}^{1}5 \\ -\ \square\,3\,7 \\ \hline 3\,8 \end{array}$$

(S11: Column Subtraction)

Additional:b

	100	10	1
	0	12	1
	~~1~~	~~3~~	2
−		5	6
		7	6

S11: Column Subtraction

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

S11d: Column Subtraction

$$\begin{array}{r} {}^{4}\cancel{5}\,{}^{1}0^{9}\,{}^{13}\cancel{4}\,{}^{1}2 \\ -\;1\,7\,7\,6 \\ \hline 3\,2\,6\,6 \end{array}$$

S11e: Column Subtraction

$$\begin{array}{r} {}^{3}\not{7}\ {}^{1}\not{4}\ {}^{7}\not{2}\ {}^{12}\not{8}\ {}^{1}\not{3}\ 1 \\ -\ 4\ 2\ 7\ 3\ 5\ 8 \\ \hline 3\ 1\ 5\ 4\ 7\ 3 \end{array}$$

S11f: Column Subtraction

$$\begin{array}{r} {\scriptstyle 10}\quad {\scriptstyle 1}\quad .\quad {\scriptstyle \frac{1}{10}} \\ {\scriptstyle 0}\ {\scriptstyle 12}\quad {\scriptstyle 1} \\ \not{1}\not{3}.4 \\ -\ 8.7 \\ \hline 4.7 \\ \hline \end{array}$$

S11g: Column Subtraction

10 1 ▪ $\frac{1}{10}$ $\frac{1}{100}$

	6	11		13	1
	~~7~~	~~2~~	.	~~4~~	3
−	4	7	.	8	5
	2	4	.	5	8

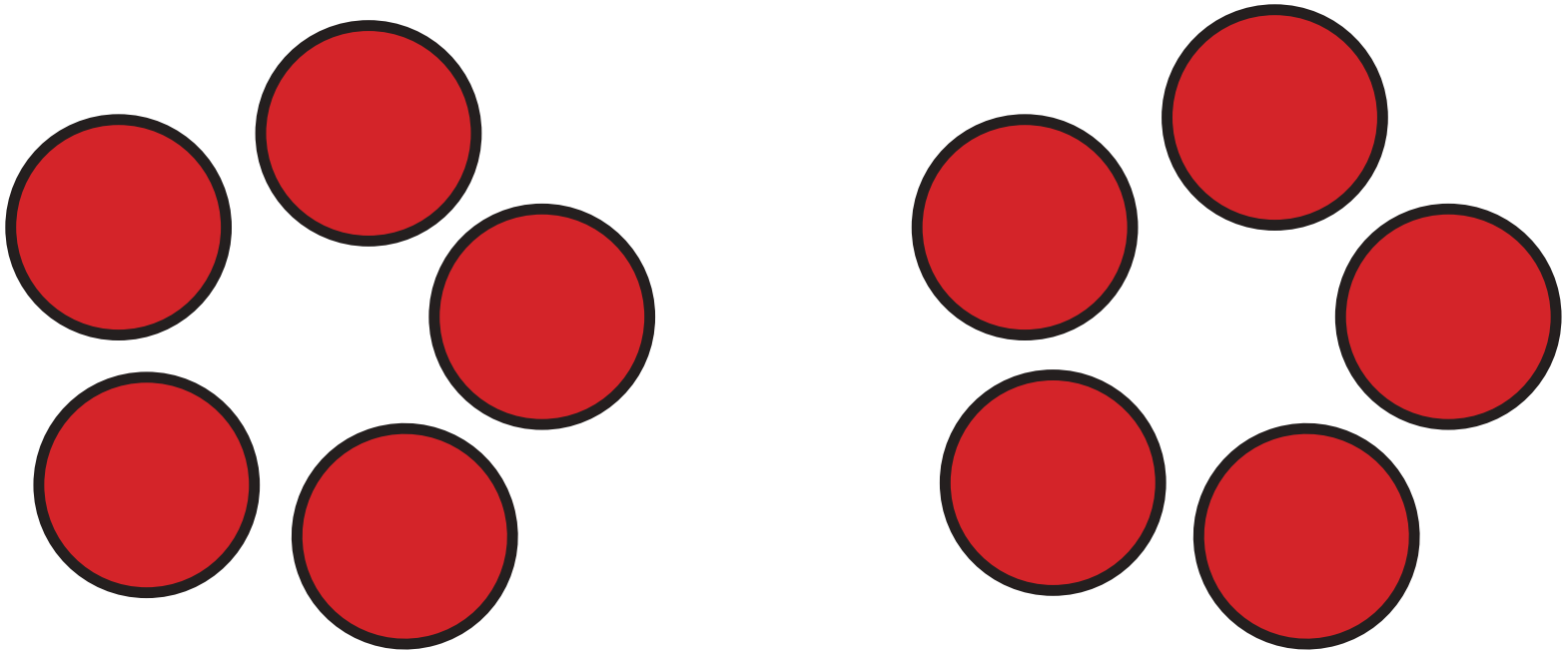
S11h: Column Subtraction

With Decimals

$$12.4 - 5.97 = 6.43$$

10	1	.	$\frac{1}{10}$	$\frac{1}{100}$
0	11		13	1
~~1~~	12	.	~~4~~	0
−	5	.	9	7
	6	.	4	3

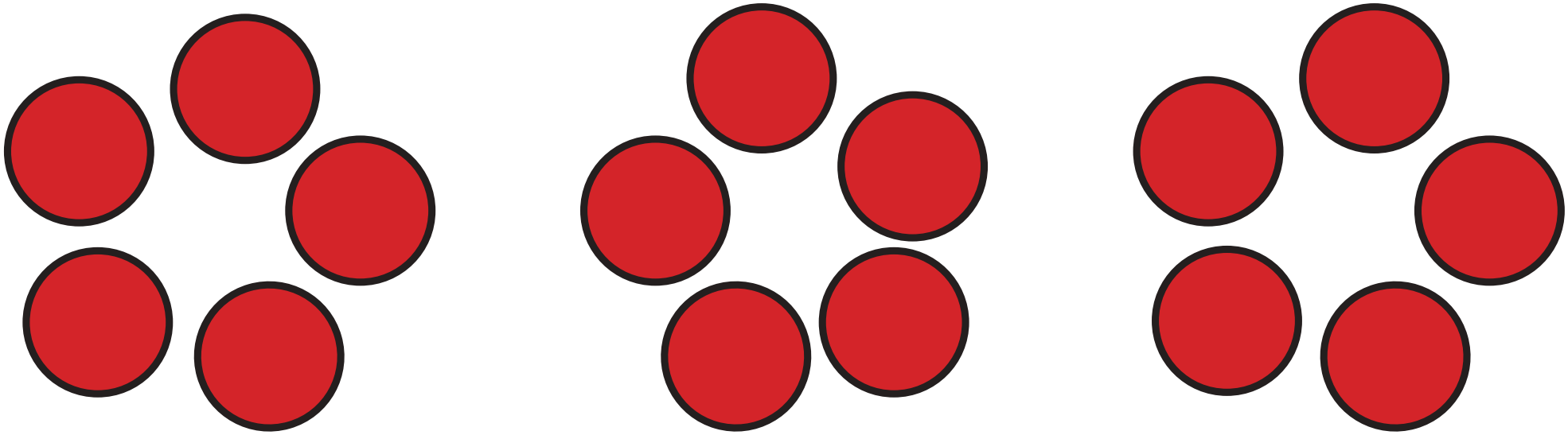
(M1: Groups)



"2 groups of 5 counters makes 10 counters altogether"

M1: Repeated Addition

(Groups)



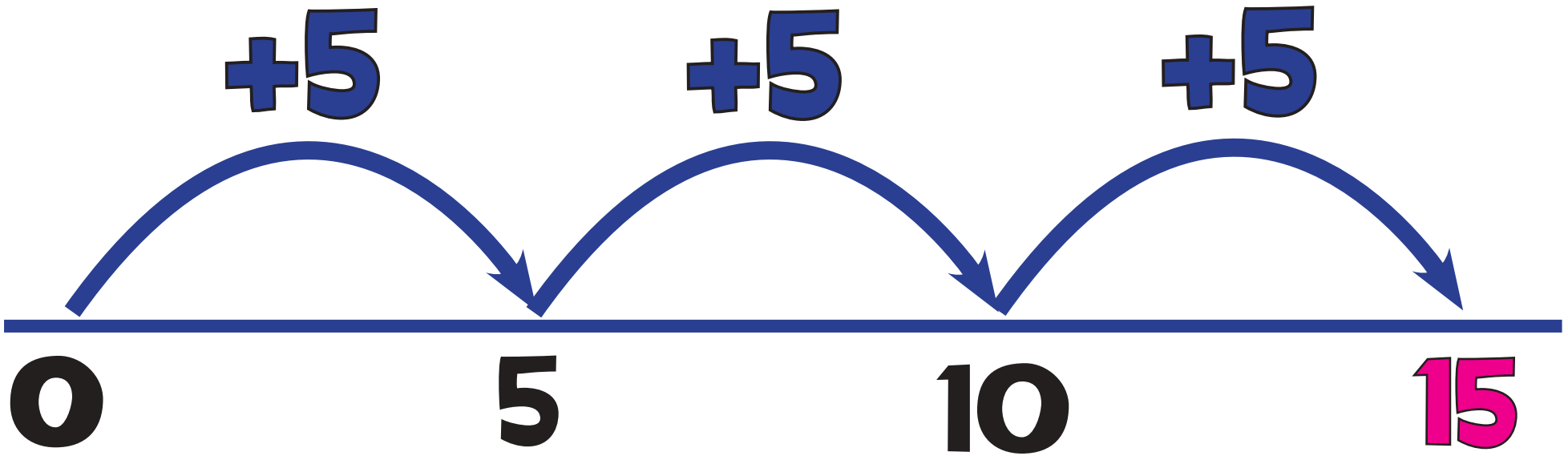
5 x 3 = 5 + 5 + 5 = 15

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

Wren's Nest Primary School

M2: Repeated Addition

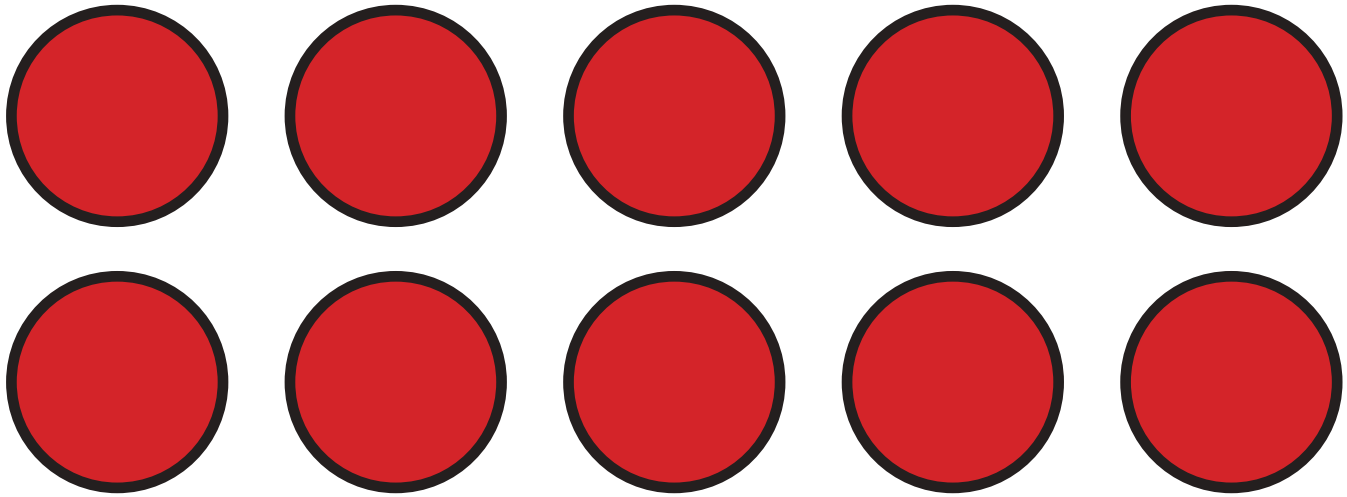
(Number Line)



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

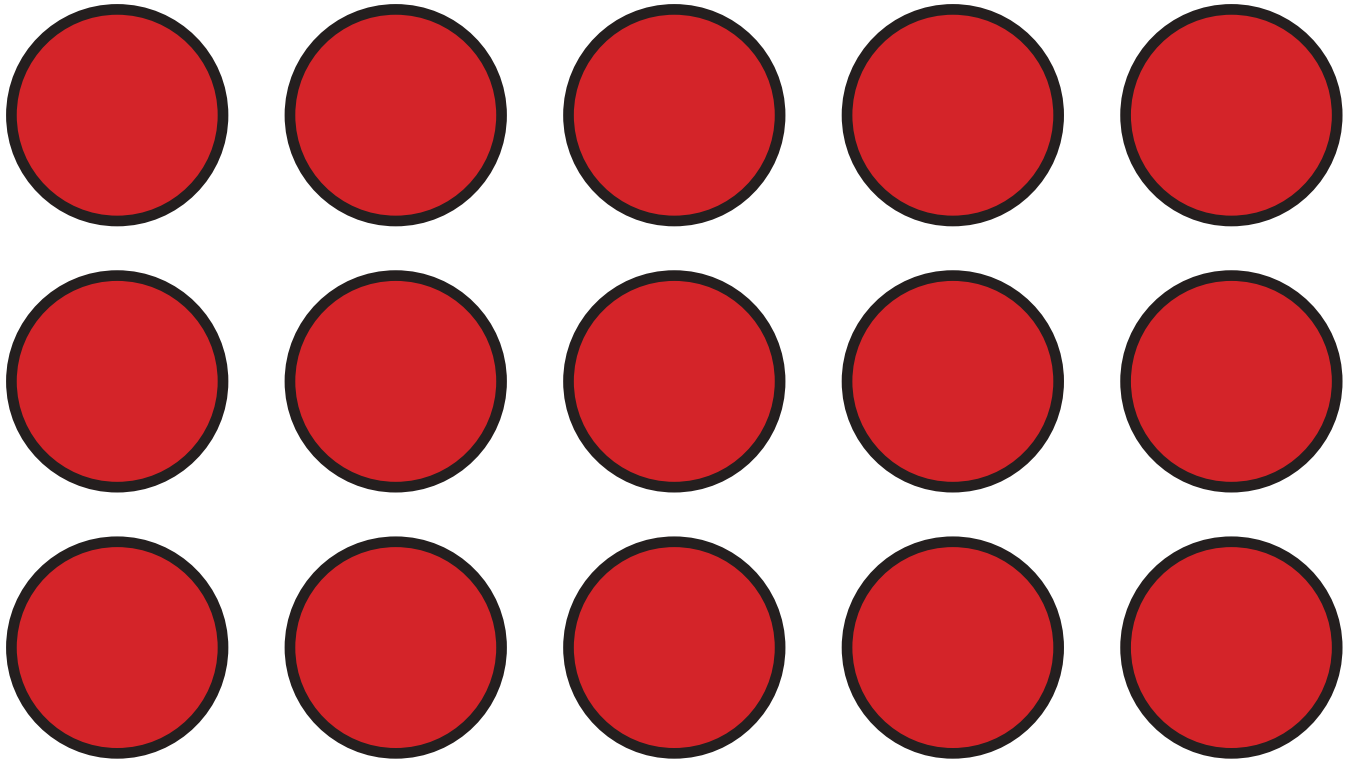
"5 times 3" means "5, 3 times!"

(M3: Arrays)



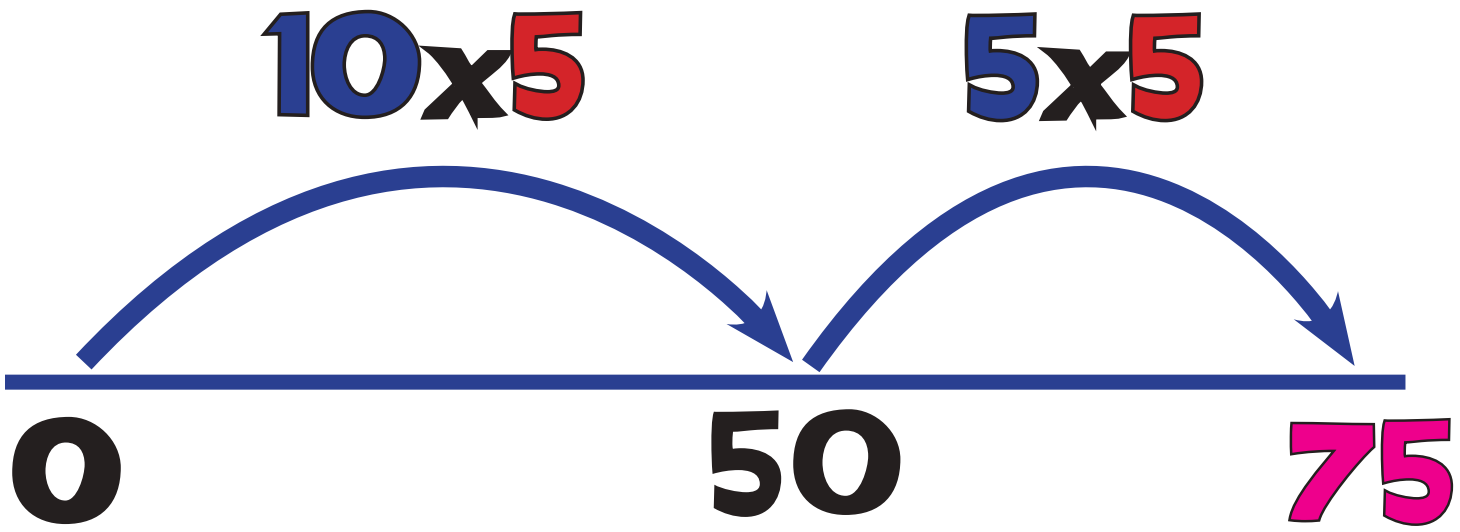
"2 groups of 5 counters" or "5 groups of 2 counters" - "10 counters altogether"

M3: Arrays



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

M4: Multi Boing!



10 x 5 = 50

5 x 5 = 25

75

15 x 5 = 75

M4a: Partitioning

$$15 \times 5 = 75$$

$$10 \times 5 = 50$$

$$5 \times 5 = 25$$

$$50 + 25 = 75$$

M5: Grid Method

Short Multiplication

15 x 5 = 75

x	10	5
5	50	25

50 + 25 = 75

Wren's Nest Primary School

M5a: Grid Method

Short Multiplication

43 x 6 = 258

x	40	3
6	240	18

240 + 18 = 258

M5b: Grid Method

Short Multiplication

147 x 4 = 588

x	100	40	7
4	400	160	28

400 + 160 + 28 = 588

Wren's Nest Primary School

M6: Expanded Column

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	

Wren's Nest Primary School

(M7: Column Multiplication)

Additional

	10	1
	1	5
x		5
	7	5
	2	

(M7: Column Multiplication)

Additional:a

100	10	1
	4	3
x		6
2	5	8
	1	

M7: Column Multiplication

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

M7a: Column Multiplication

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

Wren's Nest Primary School

M8: Grid Method

Long Multiplication

43 x 65 = 2795

x	40	3
60	2400	180
5	200	15

2400 + 180 + 200 + 15 = 2795

M8a: Grid Method

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

Wren's Nest Primary School

M9: Long Multiplication

Column

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

M9a: Long Multiplication
Column

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

Wren's Nest Primary School

M9b: Long Multiplication

Column

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

Wren's Nest Primary School

M9c: Column Multiplication

10 1 ▪ $\frac{1}{10}$

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

Wren's Nest Primary School

M9d: Column Multiplication

100	10	1	·	$\frac{1}{10}$
		47	.	2
×		3		
		141	.	6

2

Wren's Nest Primary School

M9e: Column Multiplication

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

Wren's Nest Primary School

M9f: Long Multiplication

Column Decimals

10	1	.	$\frac{1}{10}$	$\frac{1}{100}$
	2	4	. 3	
x		2	. 5	
	1	2	. 1	5
	1	2	1	
+	4	8	. 6	0
	6	0	. 7	5
	1			

(0.5 x 24.3)

(2 x 24.3)

Wren's Nest Primary School

M9g: Long Multiplication

Column

$$
\begin{array}{rr}
 & 3786 \\
\times & 48 \\
\hline
 & 30288 \\
 & {\scriptstyle 6\ \ 6\ \ 4} \\
+ & 151440 \\
 & {\scriptstyle 1\ \ 3\ \ 3\ \ 2} \\
\hline
 & 181728 \\
\hline
 & {\scriptstyle 1}
\end{array}
$$

(8 x 3786)

(40 x 3786)

MM1: Jump!

1000	100	10	1	■	$\frac{1}{10}$	$\frac{1}{100}$
			3400			
			340			
			34			
			3.4			
			0.34			

×100

×10

÷10

÷100

Wren's Nest Primary School

MM1a: Jump!

x1000	63400
x100	6340
x10	634
	63.4
÷100	6.34
÷100	0.634
÷1000	0.0634

Wren's Nest Primary School

MM2: Re-ordering

$(9 \times 2) \times 5$

$18 \times 5 = 90$

$(9 \times 5) \times 2$

$45 \times 2 = 90$

$(2 \times 5) \times 9$

$10 \times 9 = 90$ *

Wren's Nest Primary School

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

$(9 \times 8) \times 6$

$72 \times 6 = 432$

$(9 \times 6) \times 8$

$54 \times 8 = 432$ *

$(8 \times 6) \times 9$

$48 \times 9 = 432$

Wren's Nest Primary School

MM3: Partitioning

15 x 5 = 75

50 + 25 = 75

(10 x 5) (5 x 5)

Wren's Nest Primary School

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

$$198 \times 4 = 792$$

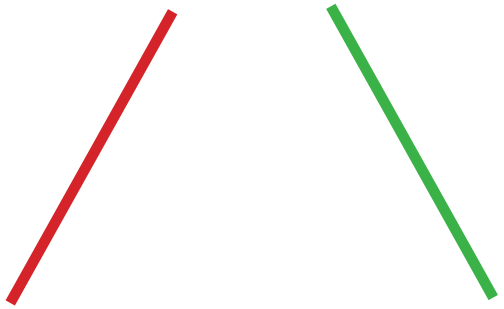
$$(200 \times 4) - (2 \times 4)$$

$$800 - 8 = 792$$

Wren's Nest Primary School

MM5: Doubling

Double 17 = 34



20 + 14 = 34

MM5a: Doubling

Double 37 = 74

60 + 14 = 74

MM5c: Doubling

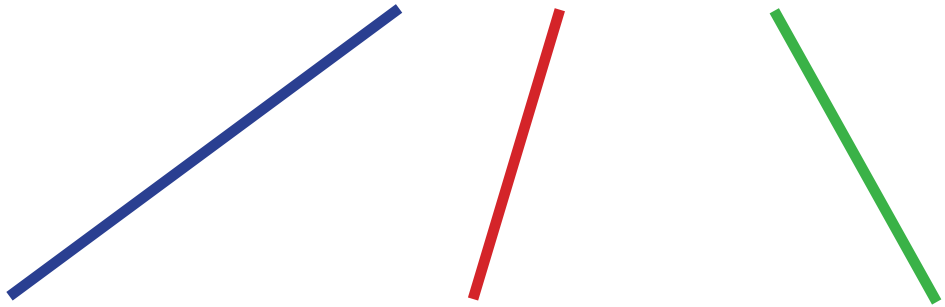
Double 340 = 680

600 + 80 = 680

Wren's Nest Primary School

MM5e: Doubling

Double 278 = 556



400 + 140 + 16 = 556

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.

Wren's Nest Primary School

MM10: Factorising

$$32 \times 15 = 480$$

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

$$160 \times 3 = 480$$

Wren's Nest Primary School

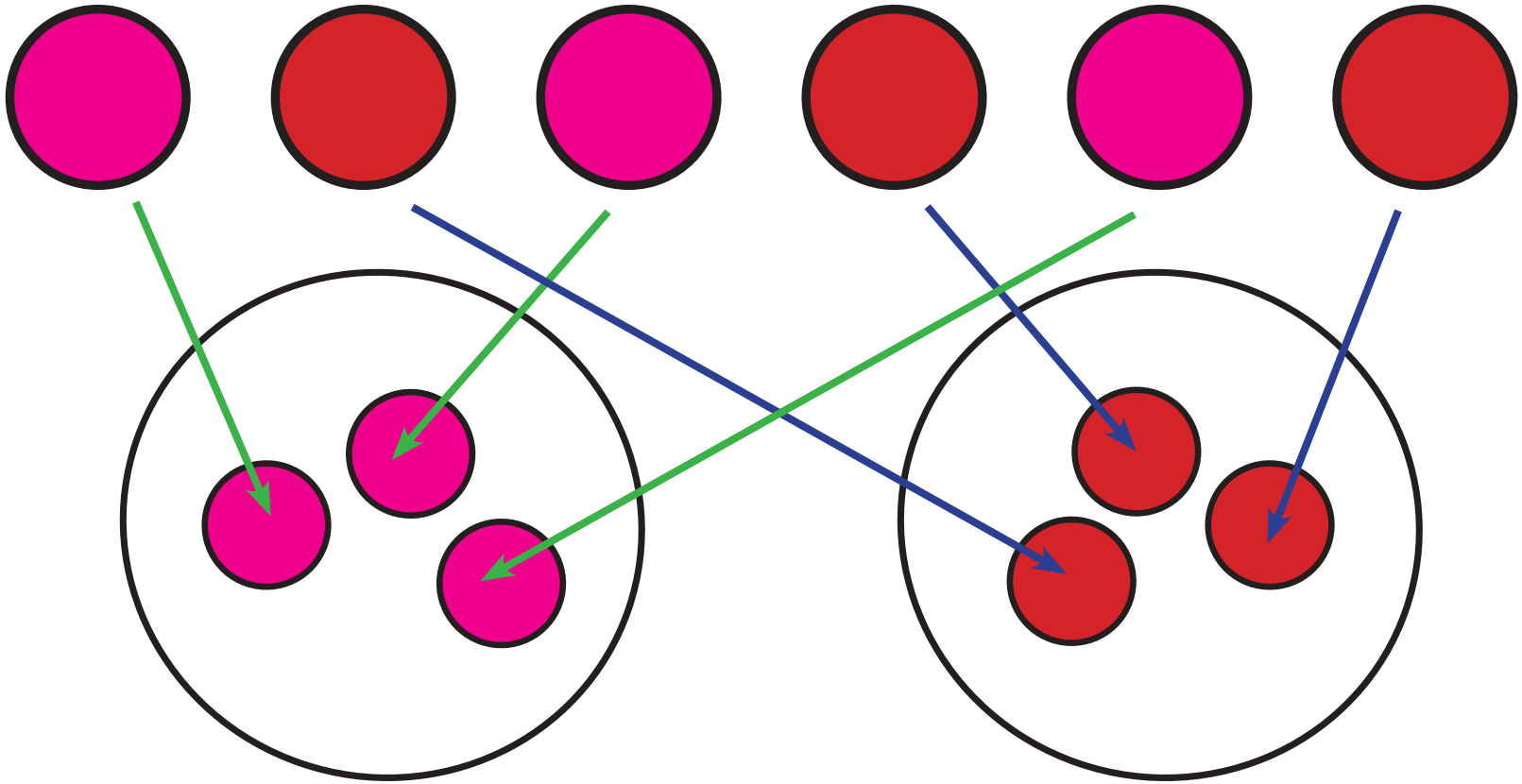
MM10a: Factorising

$52 \times 24 = 1248$

$(52 \times 4 \times 6)$

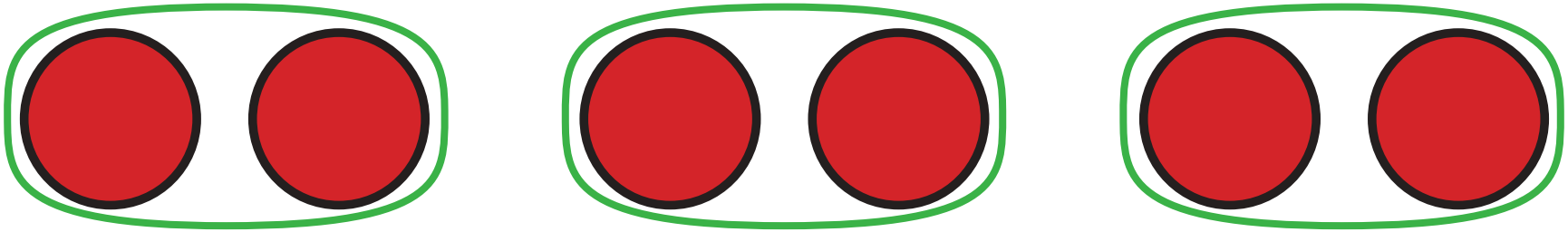
$208 \times 6 = 1248$

D1: Sharing (Concept)



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

D2: Grouping (Concept)

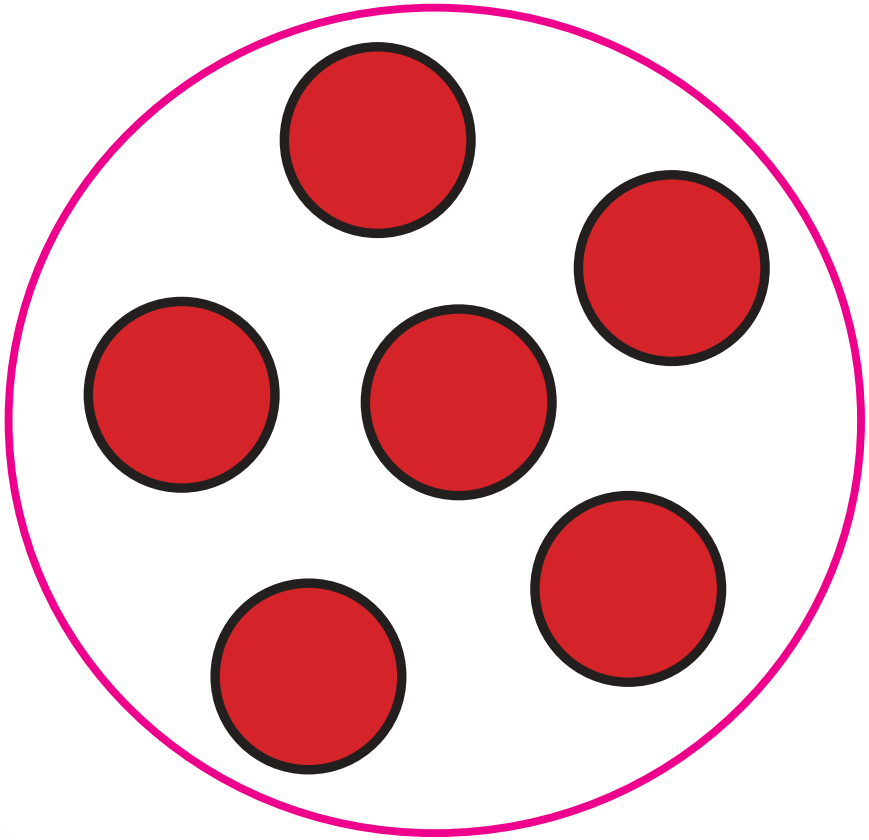


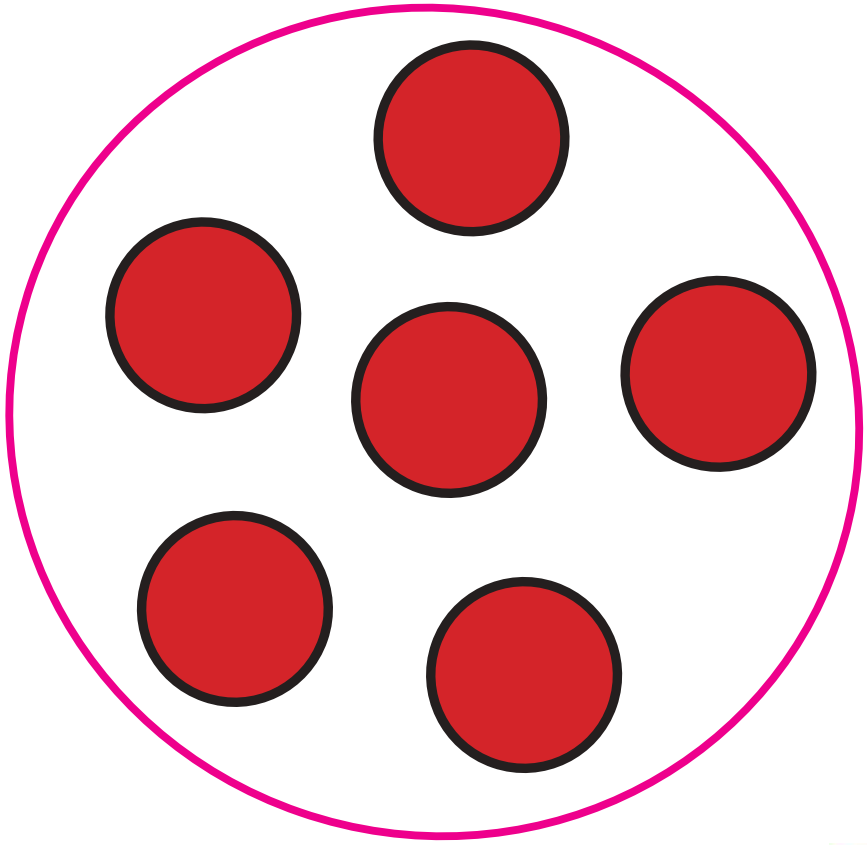
"How many groups of 2 can I make out of 6?
Answer: 3

D3: Division as Sharing

12 ÷ 2 = 6

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

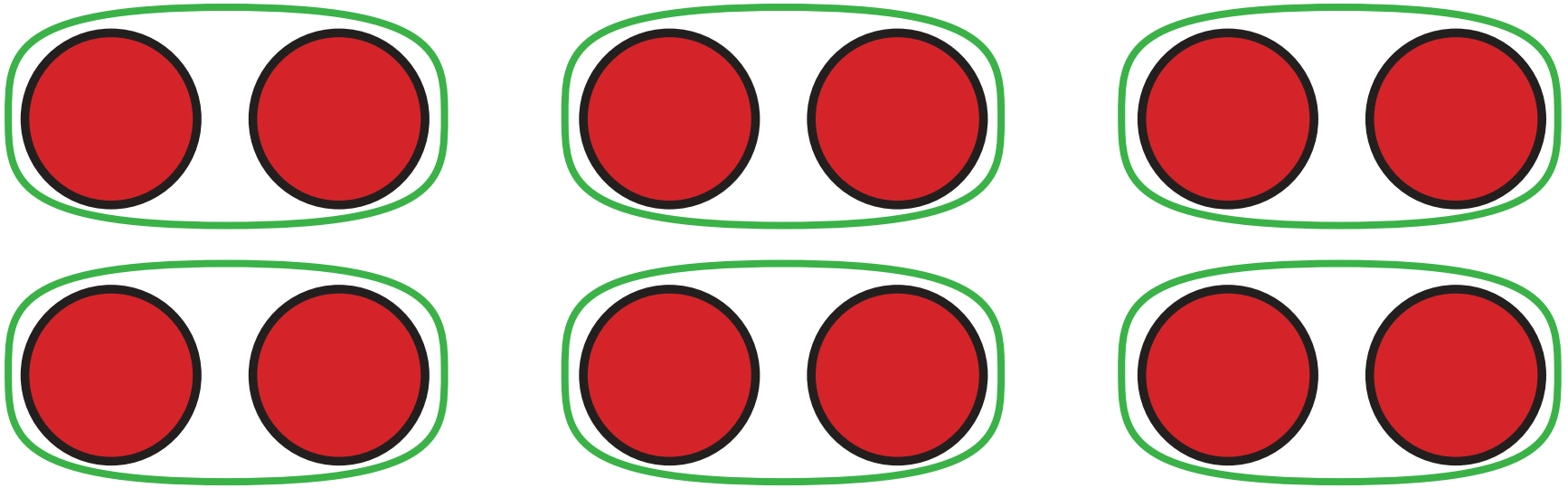




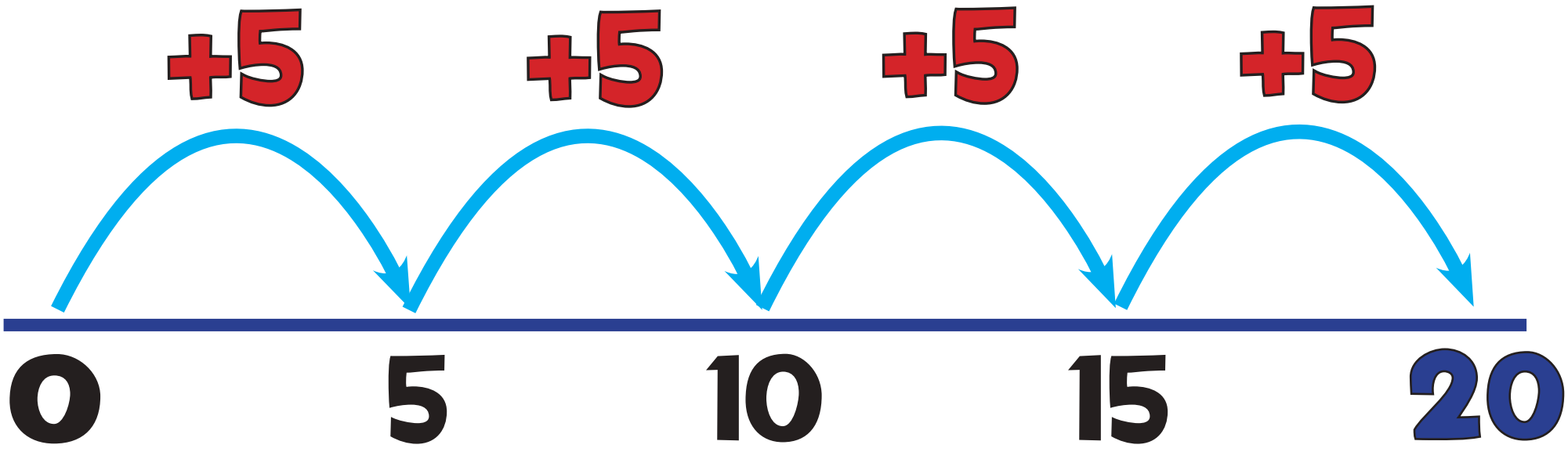
D4: Division as Grouping

12 ÷ 2 = 6

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



D5: Grouping on a Number Line

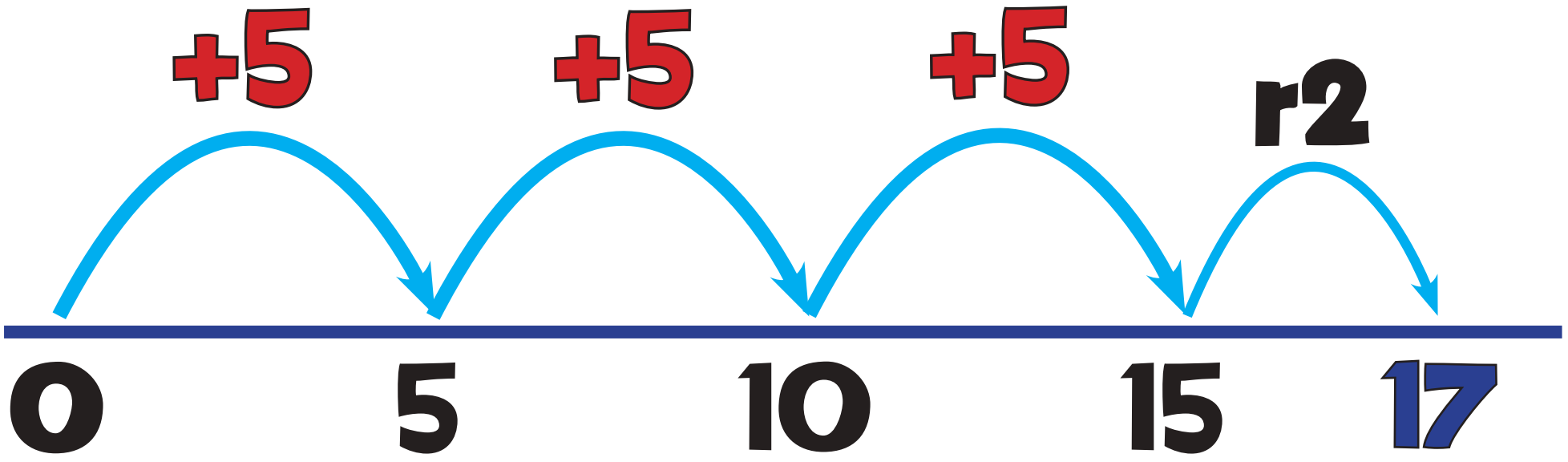


"How many 5s in 20?"
Answer: 4

$$20 \div 5 = 4$$

D6: Grouping on a Number Line

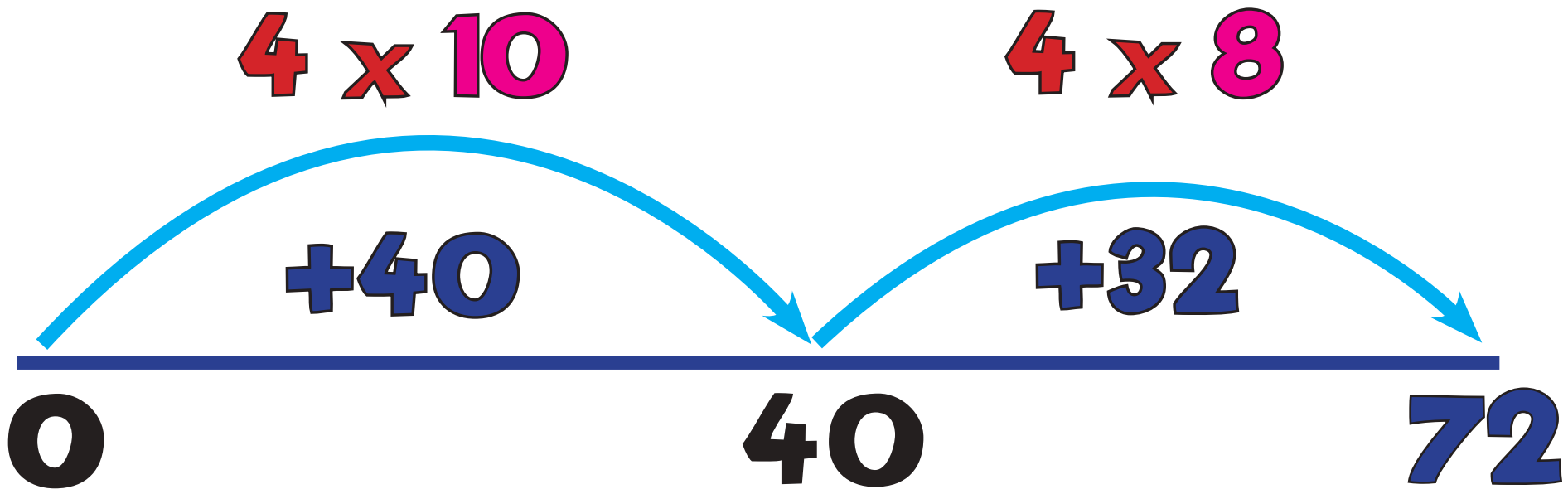
Remainders



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

$$17 \div 5 = 3r2$$

D7: Chunking Jump

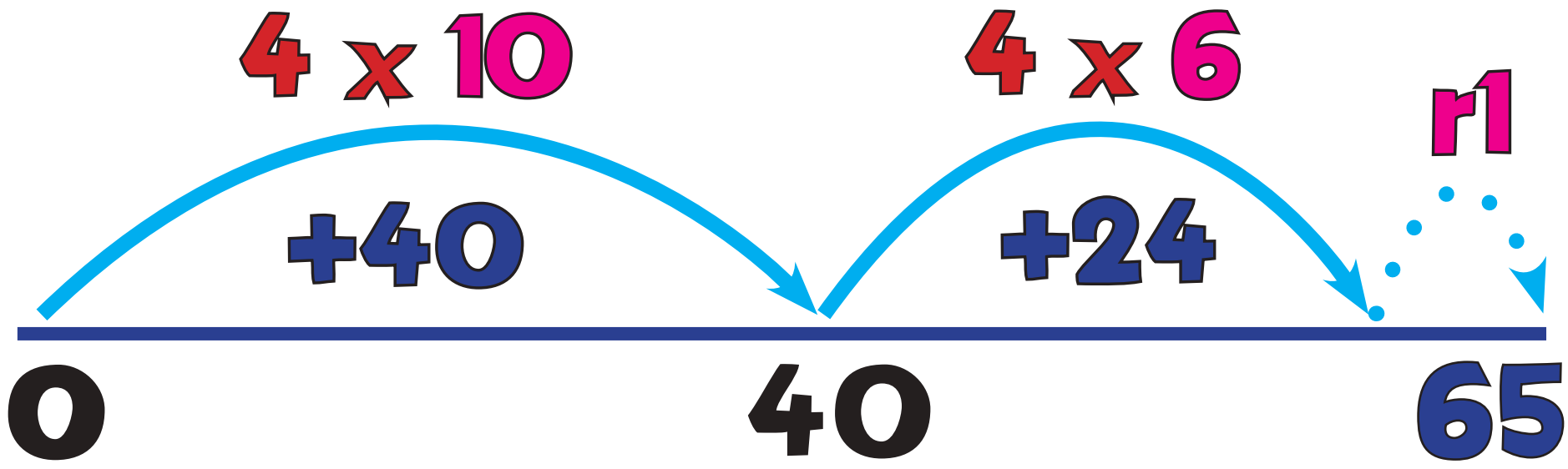


"How many 4s in 72?"
Answer: 18

72 ÷ 4 = 18

D7a: Chunking Jump

Remainders



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

$$65 \div 4 = 16r1$$

D8: Find the Hunk!

$$72 \div 4 = 18$$

The Hunk! | Chunk

$$40 + 32 \quad \div 4$$

$$10 + 8 = 18$$

D9: Mega Hunk!

$$136 \div 4 = 34$$

Mega Hunk!

Chunk

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

$$30 + 4 = 34$$

Wren's Nest Primary School

D9d: Mega Hunk!

591 ÷ 3 = 197

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

Wren's Nest Primary School

D9f: Mega Hunk!

846 ÷ 5 = 169r1

Mega Hunk! Mega Hunk! Chunk

500 + 300 + 46 ÷ 3

↓ ↓ ↓

100 + 60 + 9r1 = 169r1

Wren's Nest Primary School

D9g: Mega Hunk!

Simple Long Division

480 ÷ 15 = 32

Mega Hunk! **Chunk**

450 + 30 ÷ 15

↓ ↓

30 + 2 = 32

Wren's Nest Primary School

D10: Short Division

$$136 \div 4 = 34$$

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

D10c: Short Division

$$394 \div 6 = 65r4$$

$$\begin{array}{r} 65r4 \\ 6\overline{)\,3^{3}9^{3}4} \end{array}$$

D10d: Short Division

591 ÷ 3 = 197

$$3\overline{)5^{2}9^{2}1}\quad 197$$

D10e: Short Division

5978 ÷ 7 = 854

$$
\begin{array}{r}
854 \\
7\overline{)\,5^{5}9^{3}7^{2}8} \\
\end{array}
$$

D10f: Short Division

Different Remainders

$$5\overline{)8^{3}4^{4}6.^{1}0} \quad 1\,6\,9.2$$

$$846 \div 5$$

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

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

Wren's Nest Primary School

D10i: Short Division

$$87.5 \div 7 = 12.5$$

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

D11: Chunking

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

$136 \div 4 = 34$

D11b: Chunking

```
      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

Wren's Nest Primary School

D11c: Chunking

Remainders

$$
\begin{array}{r}
65\text{r}4 \\
6\overline{)394} \\
-\ 360 \quad (6 \times 60) \\
\hline
34 \\
-\ 30 \quad (6 \times 5) \\
\hline
4
\end{array}
$$

$394 \div 6 = 65\text{r}4$

Wren's Nest Primary School

D11d: Chunking

Mega Chunk

```
   197
3 ) 591
  - 300   (3 x 100)
    291
  - 270   (3 x 90)
     21
   - 21   (3 x 7)
      0
```

591 ÷ 3 = 197

Wren's Nest Primary School

D11e: Chunking

Mega Chunk

```
      854
   ┌─────
7  │5978
   - 5600   (7 x 800)
   ──────
     378
   - 270    (7 x 50)
   ──────
      28
   - 28     (7 x 4)
   ──────
       0
```

5978 ÷ 7 = 854

Wren's Nest Primary School

D11f: Chunking

Mega Chunk

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

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

Wren's Nest Primary School

D11g1: Chunking

Long Division

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

$480 \div 15 = 32$

Wren's Nest Primary School

D12: Long Division

Short Division Method

$$37 \overline{)\,983} = 26\text{ r }21$$

9 24

D13: Long Division

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

Chunking Method

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

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

Wren's Nest Primary School

D14: Long Division

Traditional Method

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

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

Wren's Nest Primary School