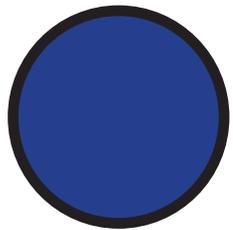


Sense of Number Visual Calculation Policy

Basic Edition for
Belle Vue Primary School
January 2015

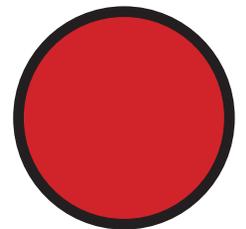


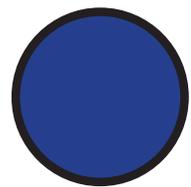
Graphic Design by Dave Godfrey
Compiled by the Sense of Number Maths Team

For sole use within Belle Vue Primary School.

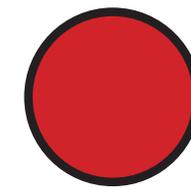
'A picture is worth 1000 words!'

www.senseofnumber.co.uk





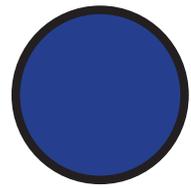
Poster Guide



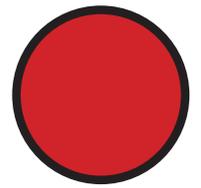
Visual Calculation Policy

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	5	27-31	40	74-113
S	Subtraction	11	32-42	33	114-146
MS	Mental Subtraction	-	-	4	147-150
M	Multiplication	9	43-51	32	151-182
MM	Mental Multiplication	1	52	30	183-212
D	Division	14	53-66	41	213-253
	Calculation Cards	-	-	9	254-262
	Multiplication Tables	-	-	11	263-273
	Expanded Edition Progression (Year groups for New Curriculum)	13	67-79	19	274-291
	Alternative layouts (Column and Subtraction on a Number Line)	11	80-90	29	292-321





Guide to using a



Visual Calculation Policy

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

Typical uses:

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

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

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

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

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



KC1: Key Concepts!

Addition



$$8 + 2 = 10$$

“What is 8 add 2?”
Answer: 10

Subtraction



$$8 - 2 = 6$$

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



KC2: Key Concepts!

Multiplication

x

$$8 \times 2 = 16$$

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

Division

÷

$$8 \div 2 = 4$$

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

(“8 shared into 2 sets is 4”)

MA1: Partitioning

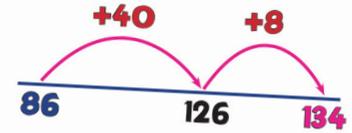
$$45 + 82 = 127$$

$$120 + 7 = 127$$

In my head?

A3b: Forwards Jump

$$86 + 48 = 134$$



Need a Jotting?



Need a calculator?

Formal method?

A7d: Column Addition

	Th	H	T	U
	4	8	7	3
+	3	7	6	2
<hr/>				
	8	6	3	5
	1	1		



1

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



2

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

3

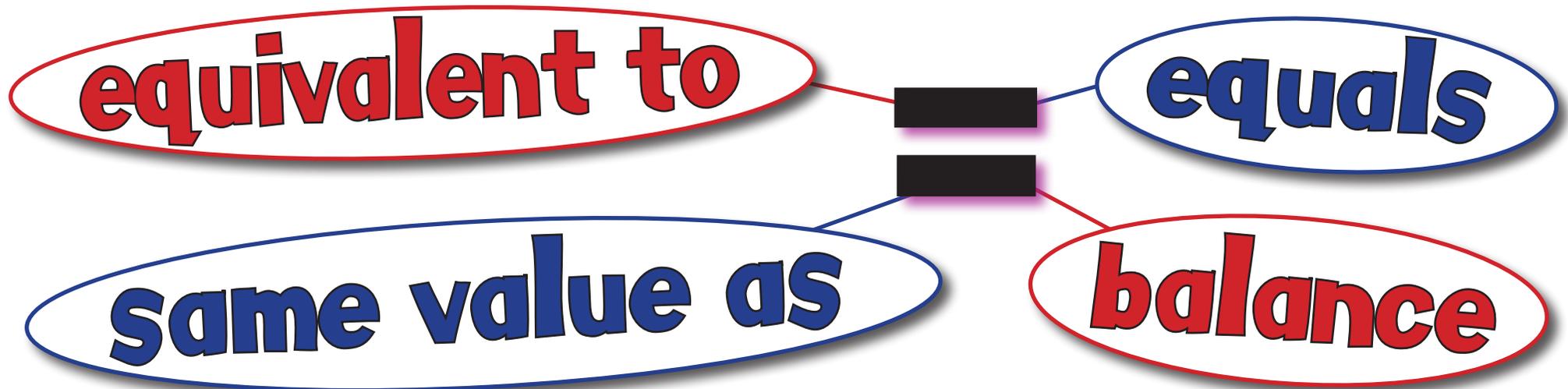
**Do I need an
expanded or a
standard method?**

4

Do I need a
calculator?



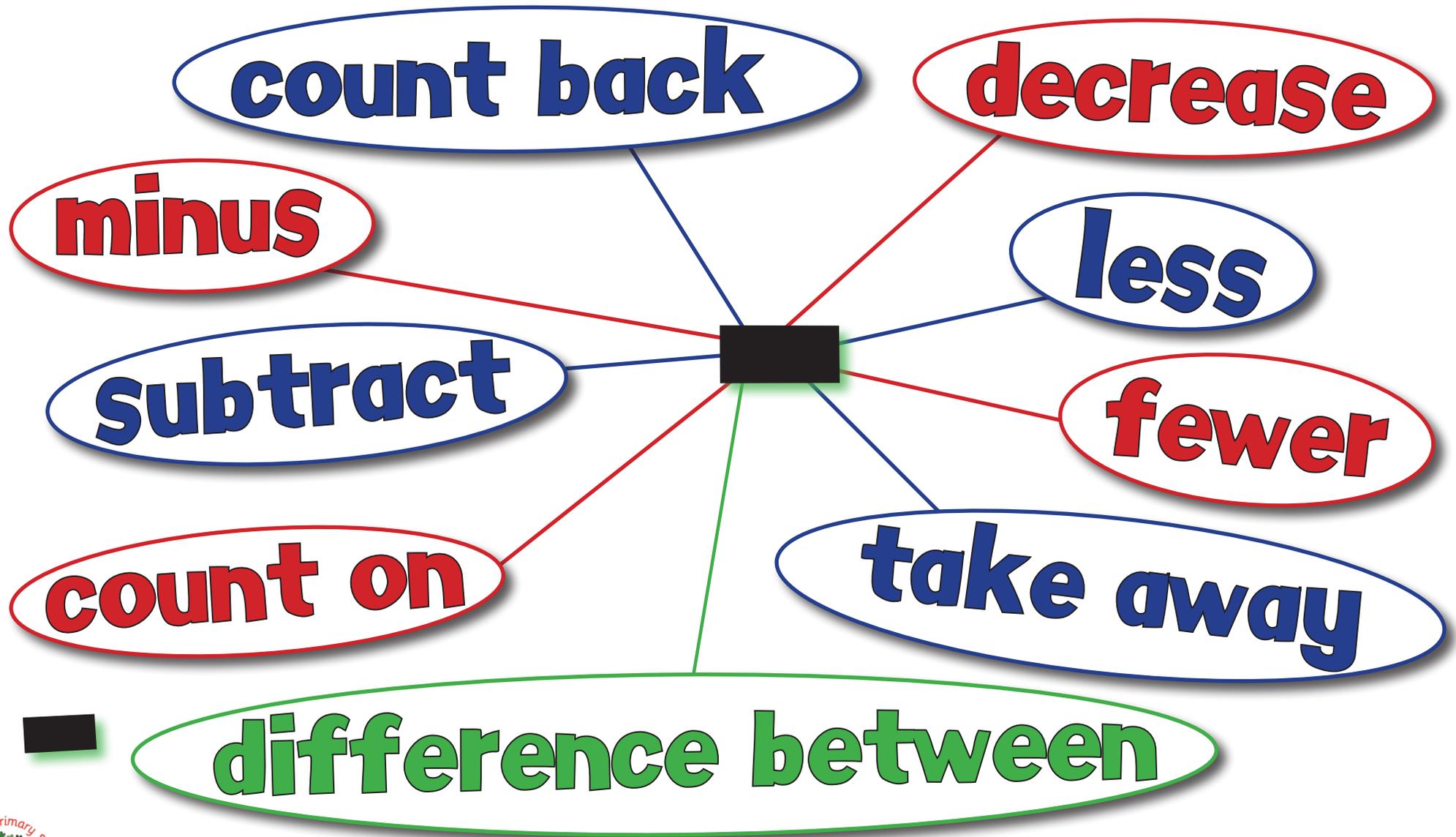
Calculation Vocabulary



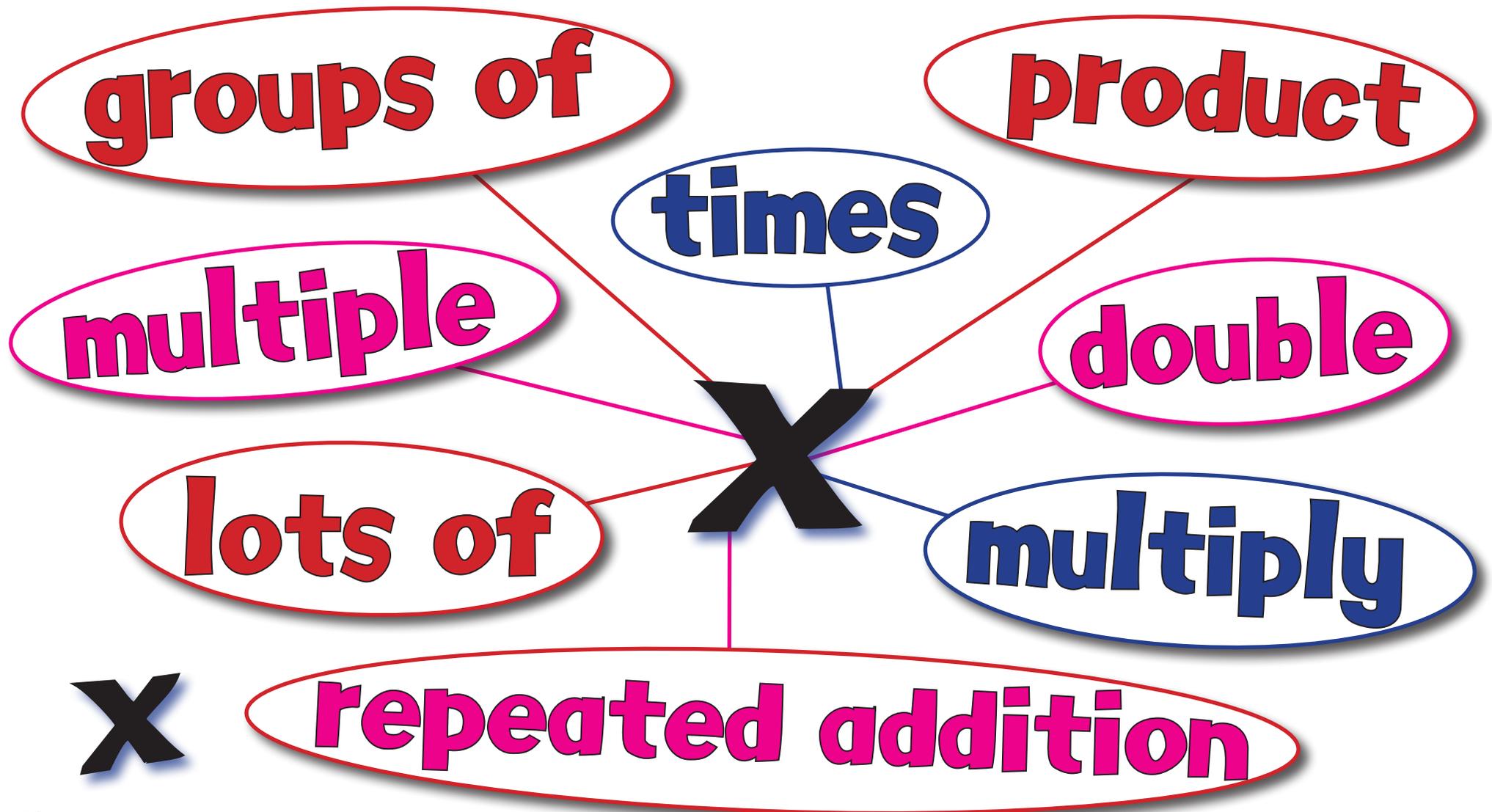
Addition Vocabulary



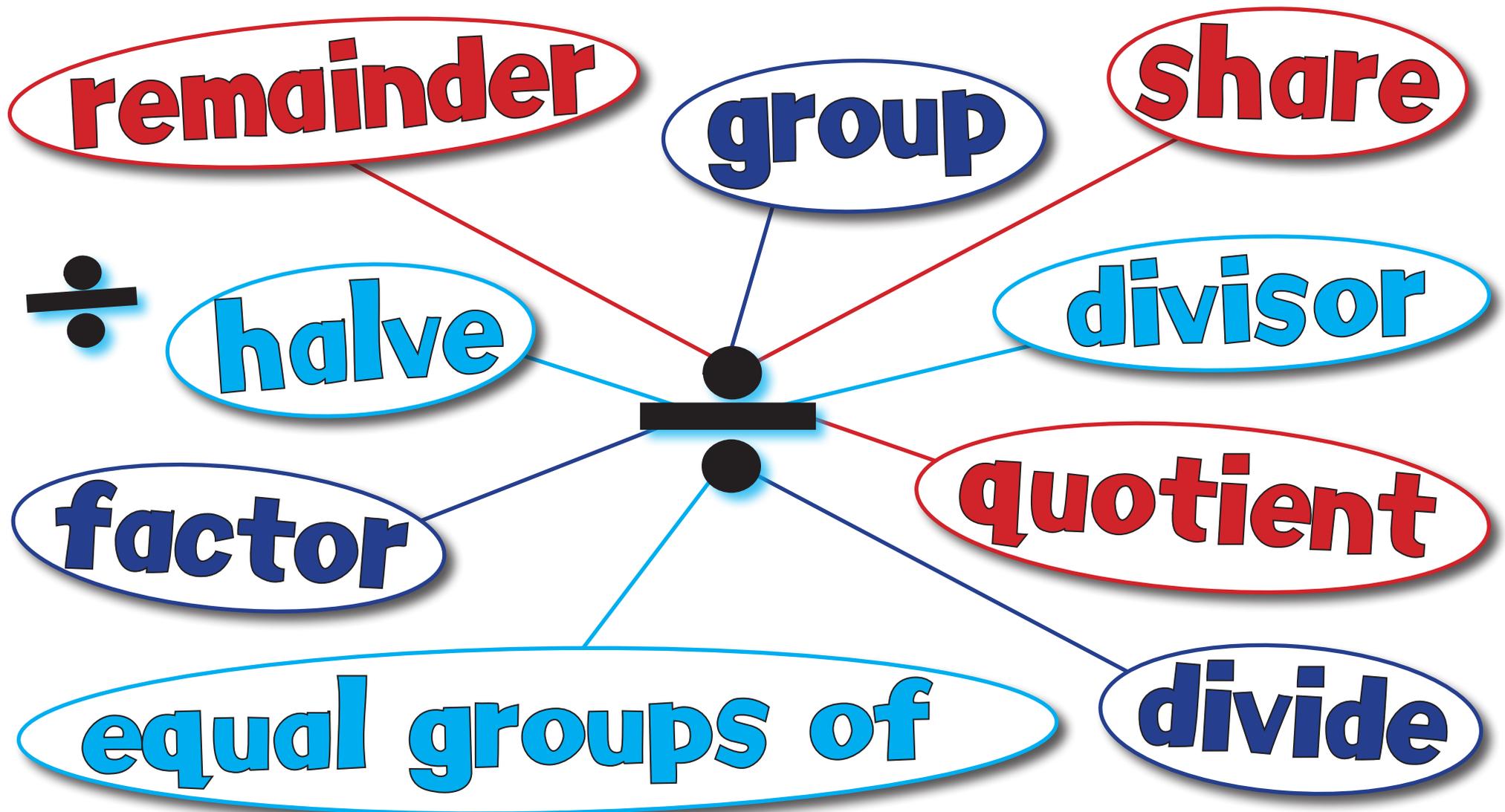
Subtraction Vocabulary



Multiplication Vocabulary



Division Vocabulary



Addition Calculation

$$4 + 2 = 6$$

(add) (equals)

addend

total

addend

sum



Subtraction Calculation

$$6 - 2 = 4$$

(subtract) (equals)

minuend

difference

subtrahend



Multiplication Calculation

$$4 \times 2 = 8$$

(multiplied by)

(equals)

multiplicand

product

multiplier

X

Division Calculation

$$8 \div 2 = 4$$

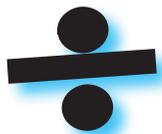
(divided by)

(equals)

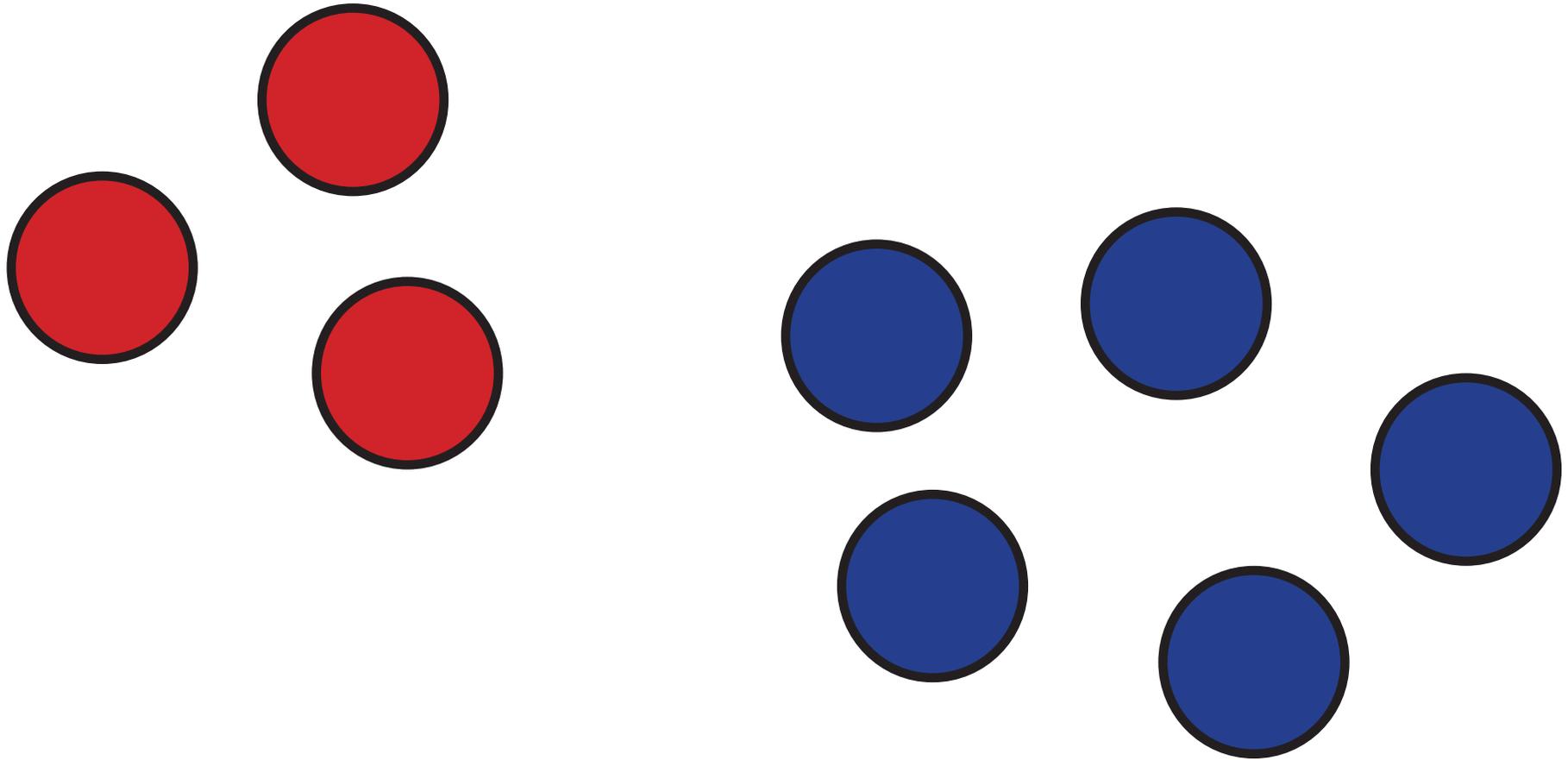
dividend

quotient

divisor



A1: Objects & Pictures



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

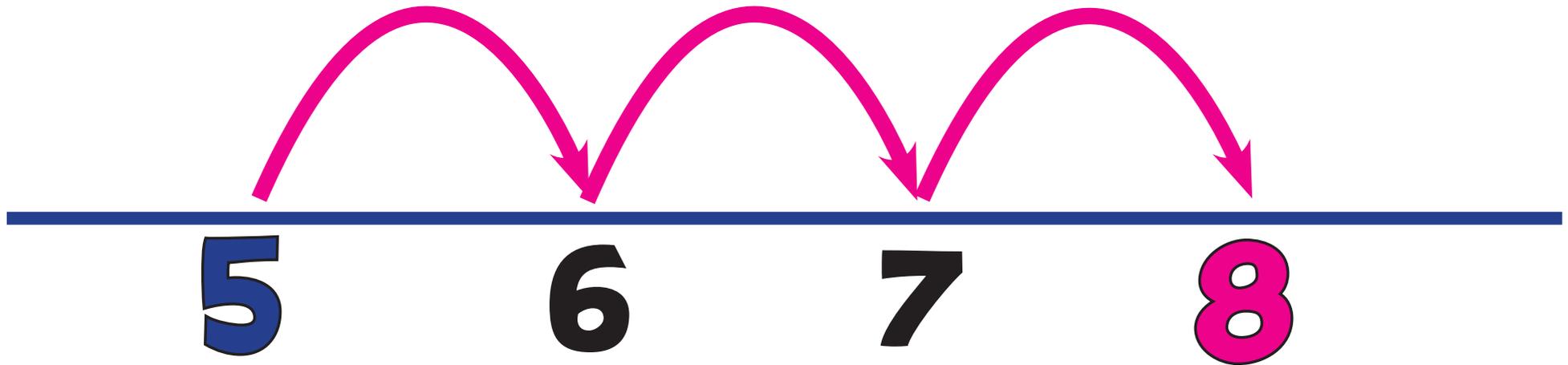


A2: Counting On

+1

+1

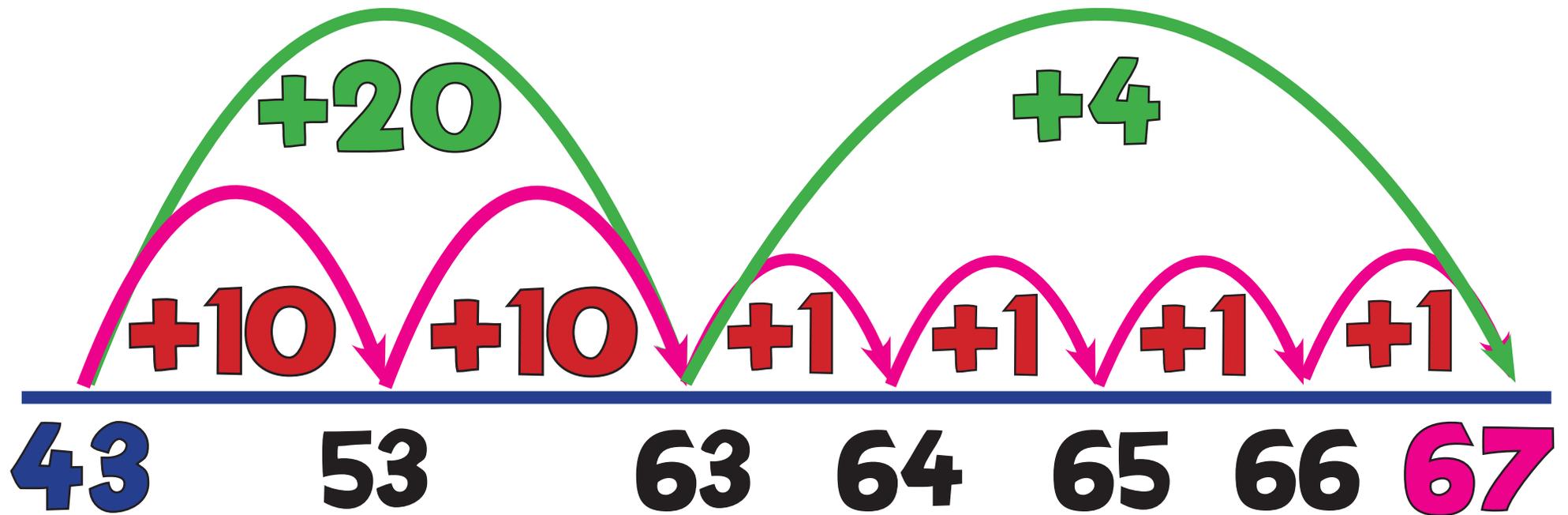
+1



$$5 + 3 = 8$$

A3: Forwards Jump

$$43 + 24 = 67$$



A4: Partitioning

$$43 + 24 = 67$$

$$40 + 20 = 60$$

$$3 + 4 = 7$$

$$67$$

A5: Partition Jot

$$43 + 24 = 67$$

Diagram illustrating the partitioning of the addition $43 + 24 = 67$ into $60 + 7$. The number 43 is split into 40 (red) and 3 (green). The number 24 is split into 20 (red) and 4 (green). The 40 and 20 are combined to form 60 (red). The 3 and 4 are combined to form 7 (green). Lines connect the 40 to 60, the 20 to 60, the 3 to 7, and the 4 to 7.

A6: Expanded Column Addition

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

A7: Column Addition

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

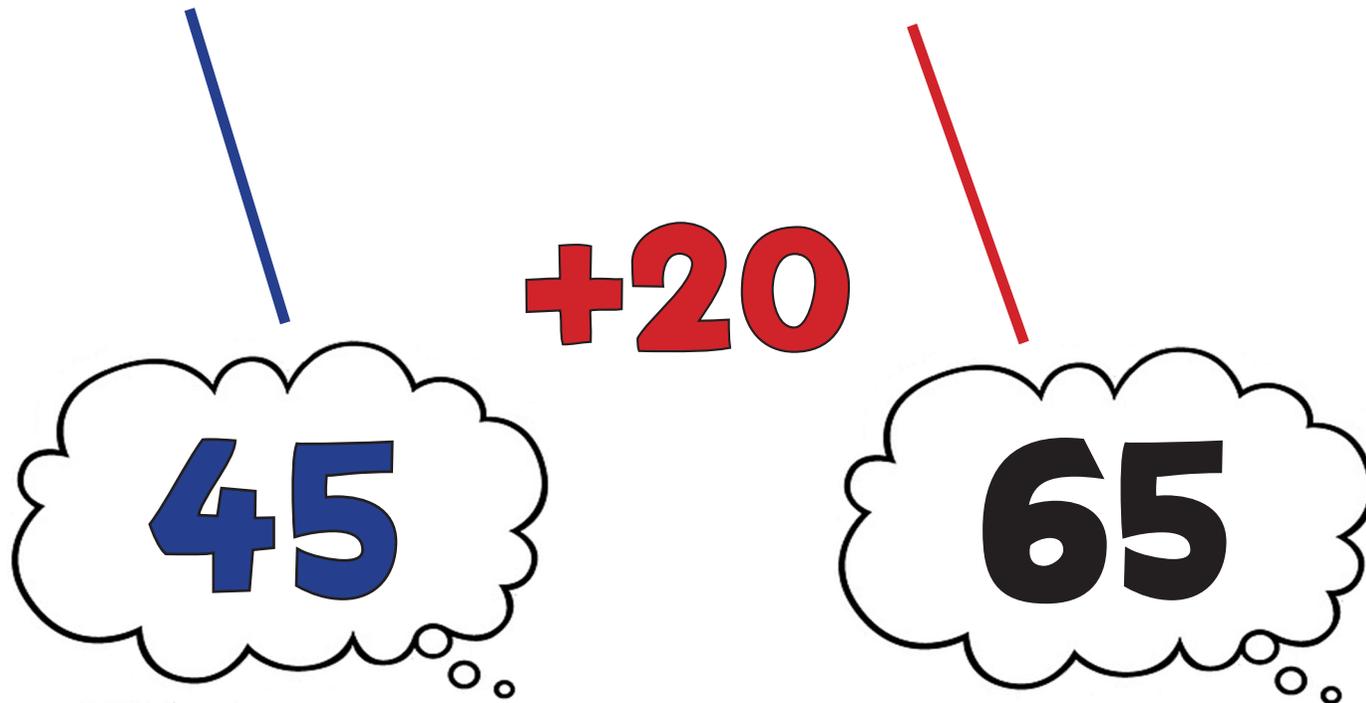
MA1: Partitioning

$$45 + 82 = 127$$

$120 + 7 = 127$

MA2: Counting On

$$45 + 20 = 65$$



MA3: Number Bonds

$$45 + 95 = 140$$

$$40 + 100 = 140$$

MA4: Double & Adjust

$$45 + 46 = 91$$

$$45 + 45 + 1$$

$$90 + 1 = 91$$

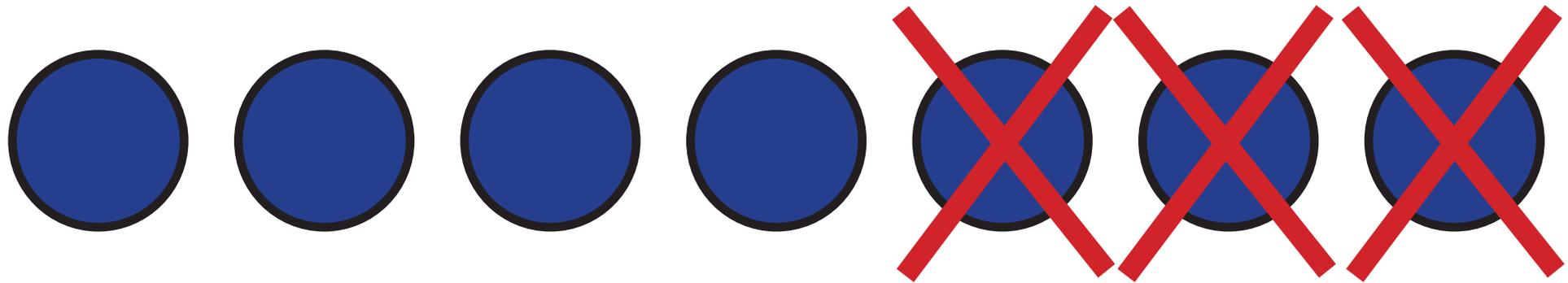
MA5: Round & Adjust

$$45 + 39 = 84$$

$$45 + 40 - 1$$

$$85 - 1 = 84$$

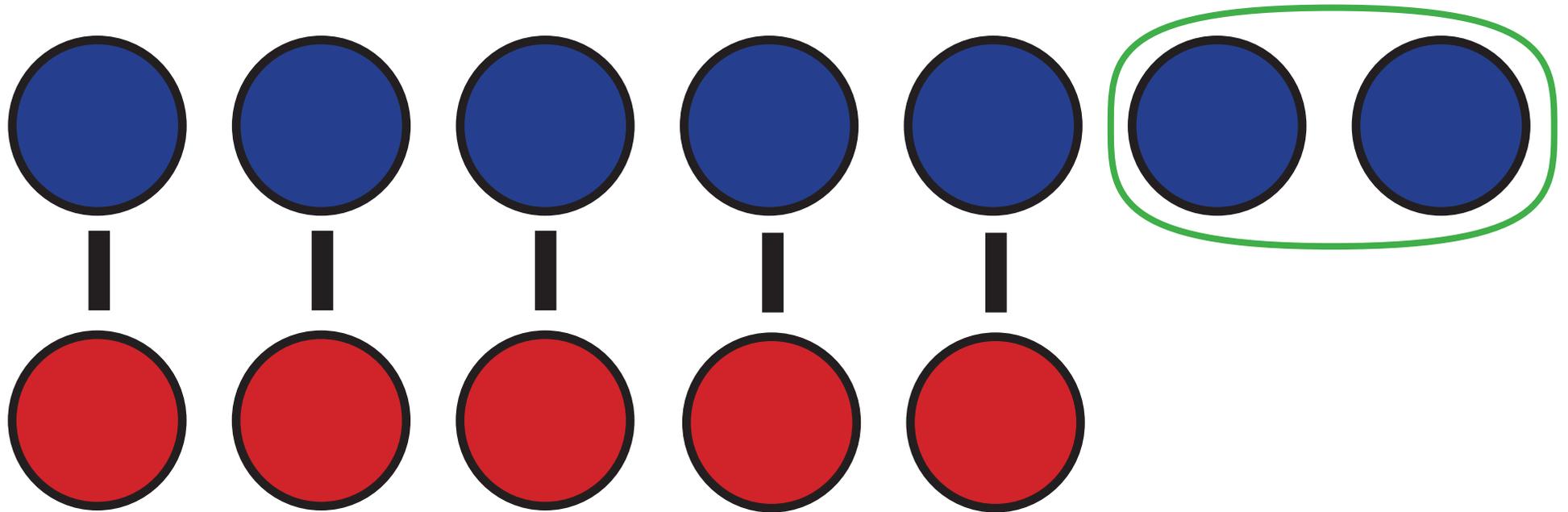
S1: Objects



$$7 - 3 = 4$$

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

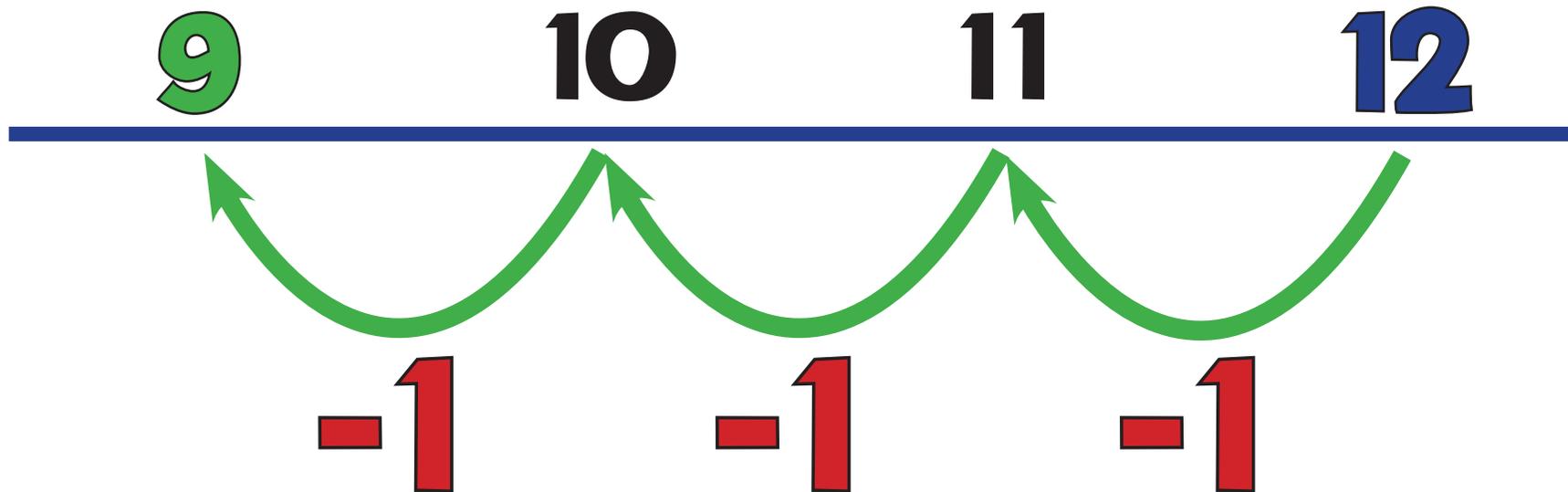
S2: What's the Difference?



$$7 - 5 = 2$$

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

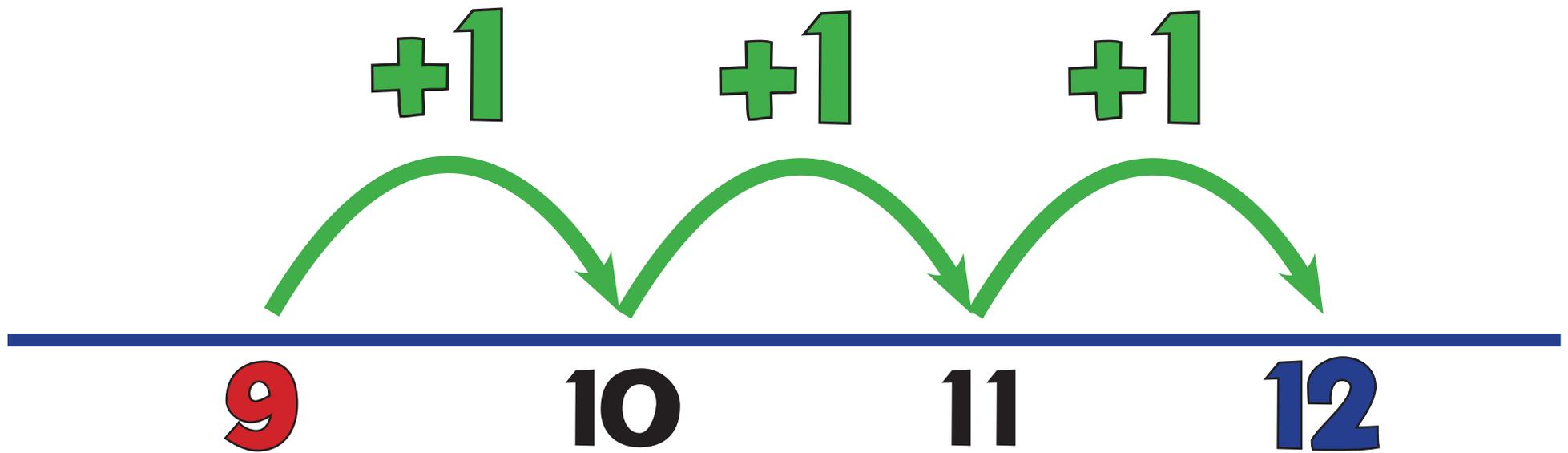
S3: Counting Back



$$12 - 3 = 9$$

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

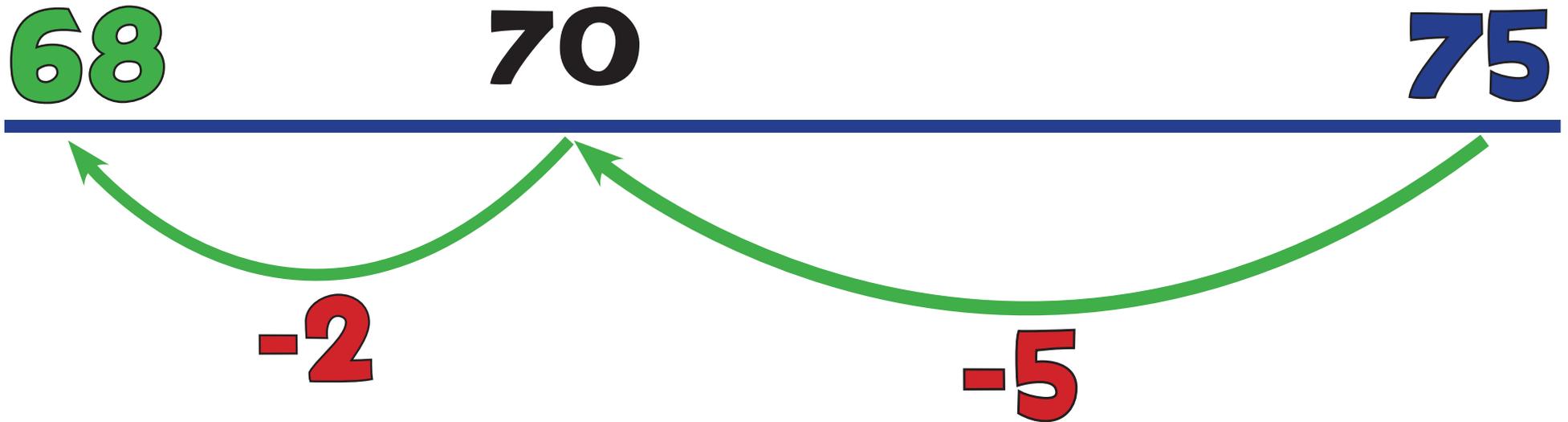
S4: Counting On



$$12 - 9 = 3$$

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

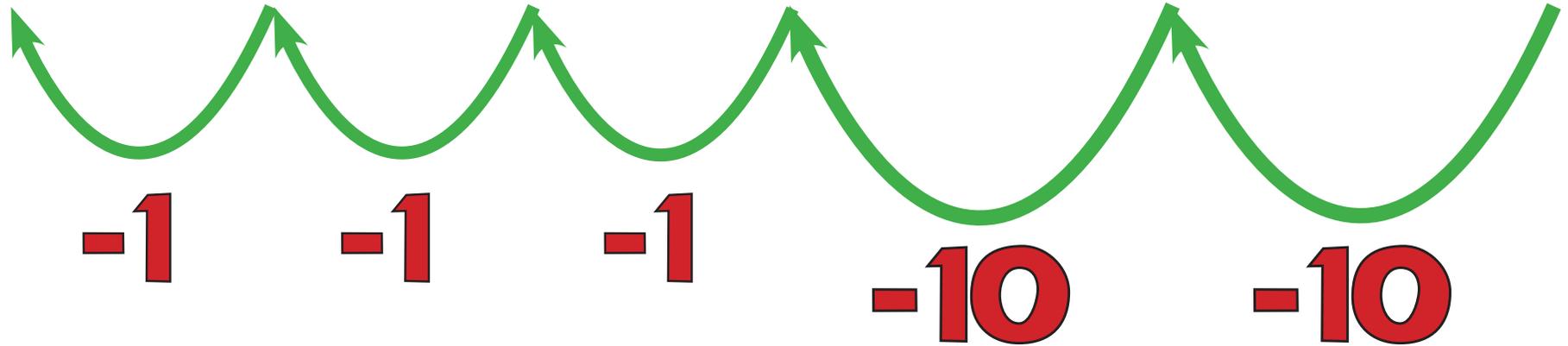
S5: Backwards Boing



$$75 - 7 = 68$$

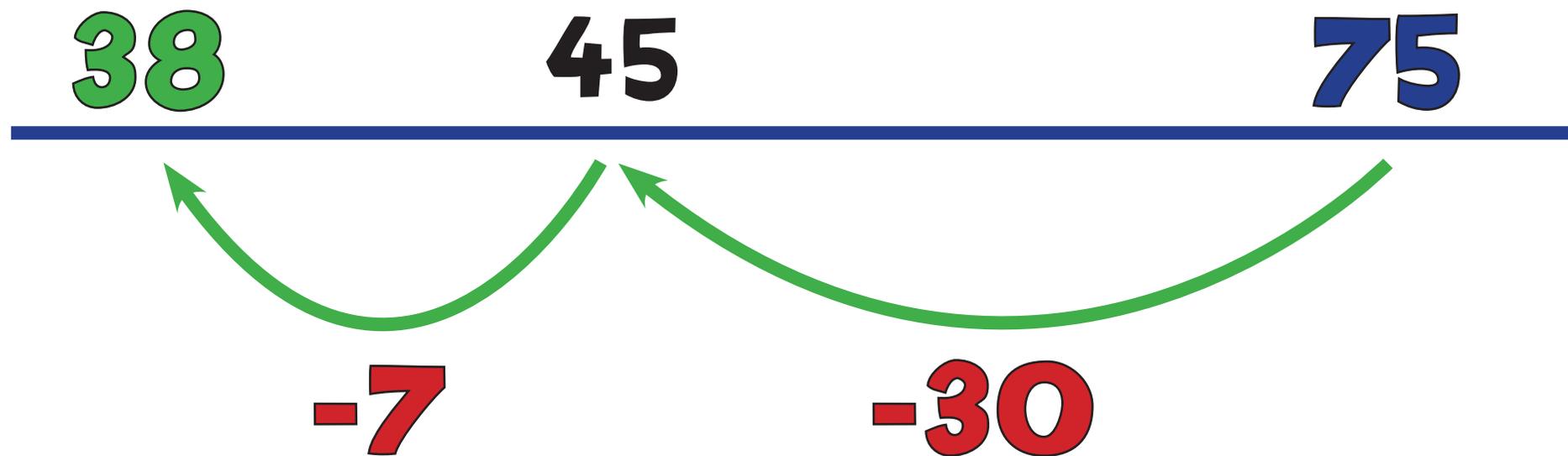
S6: Backwards Bounce

64 65 66 67 77 87



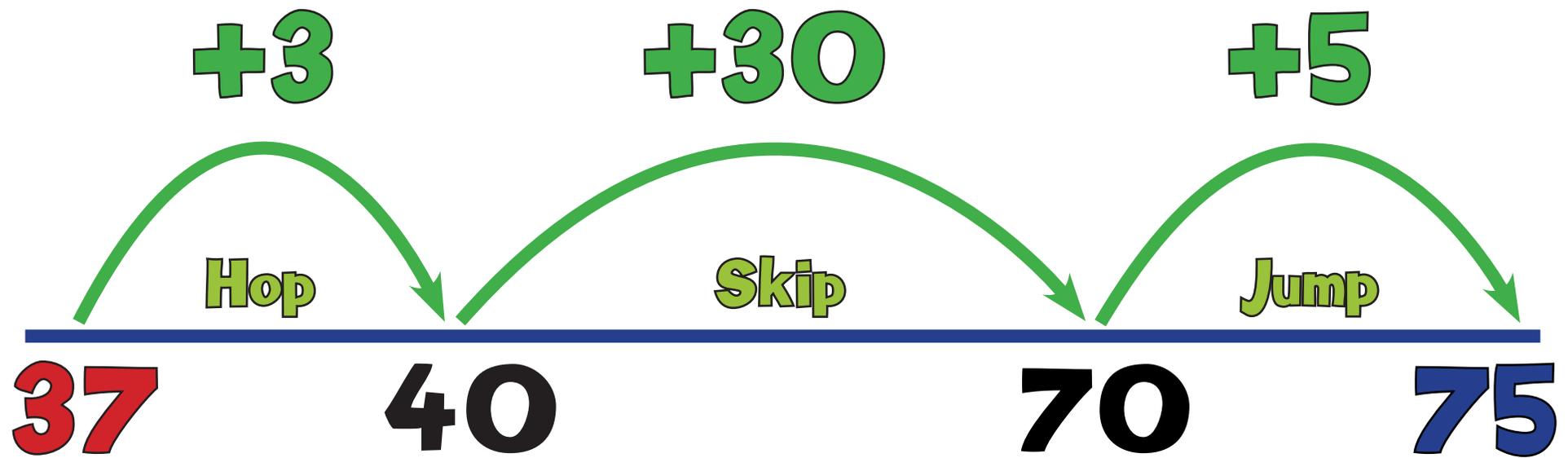
$$87 - 23 = 64$$

S7: Backwards Jump



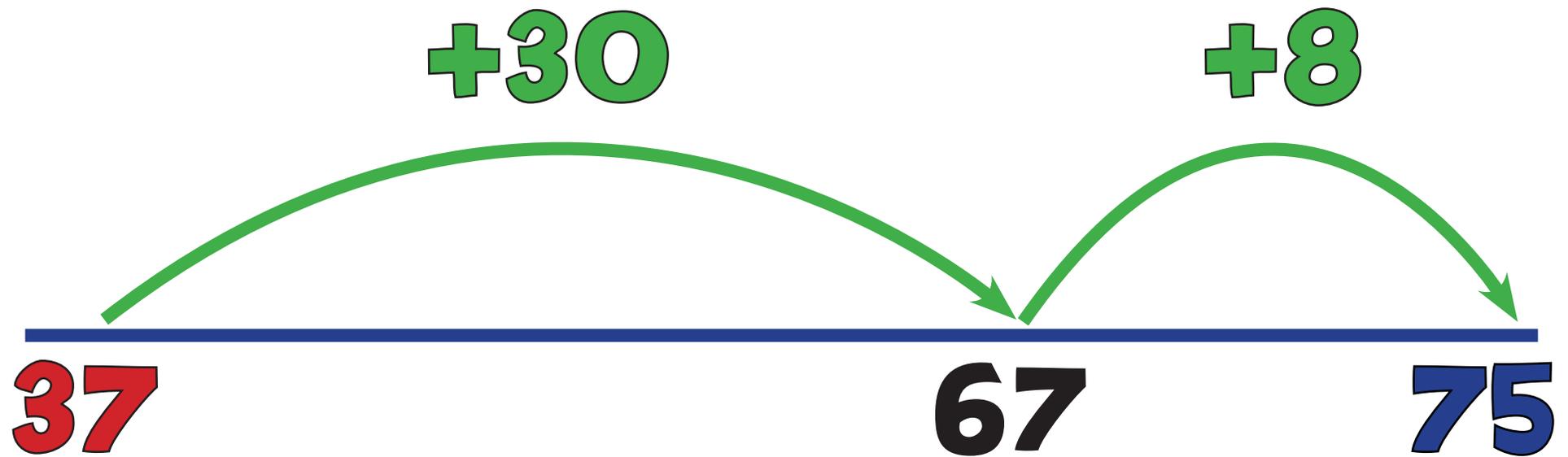
$$75 - 37 = 38$$

S8: Triple Jump!



$$75 - 37 = 38$$

S9: 10s Jump, 1s Jump!



$$75 - 37 = 38$$

S10: Expanded Column

Subtraction (100, 10, 1s)

$$723 - 356 = 367$$

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

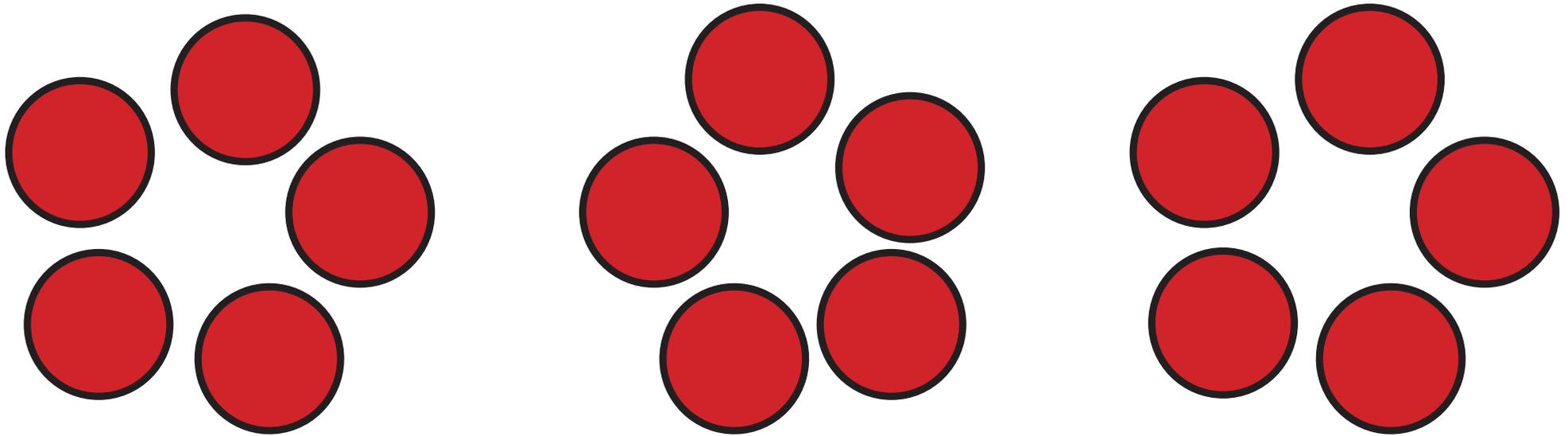
S11: Column Subtraction

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



M1: Repeated Addition

(Groups)



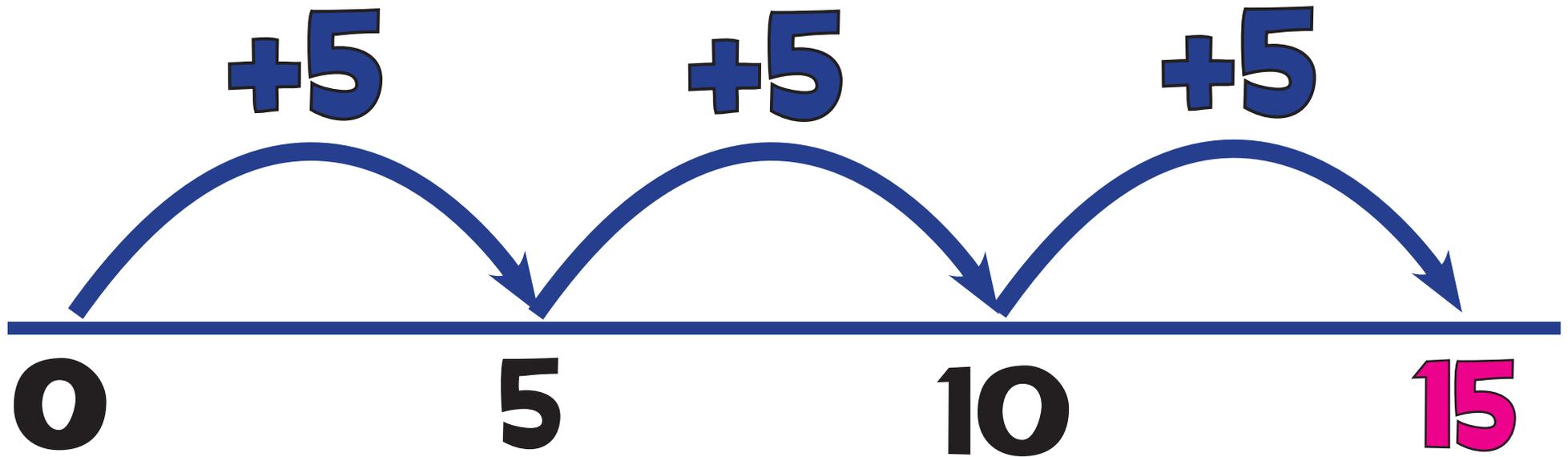
$$5 \times 3 = 5 + 5 + 5 = 15$$

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



M2: Repeated Addition

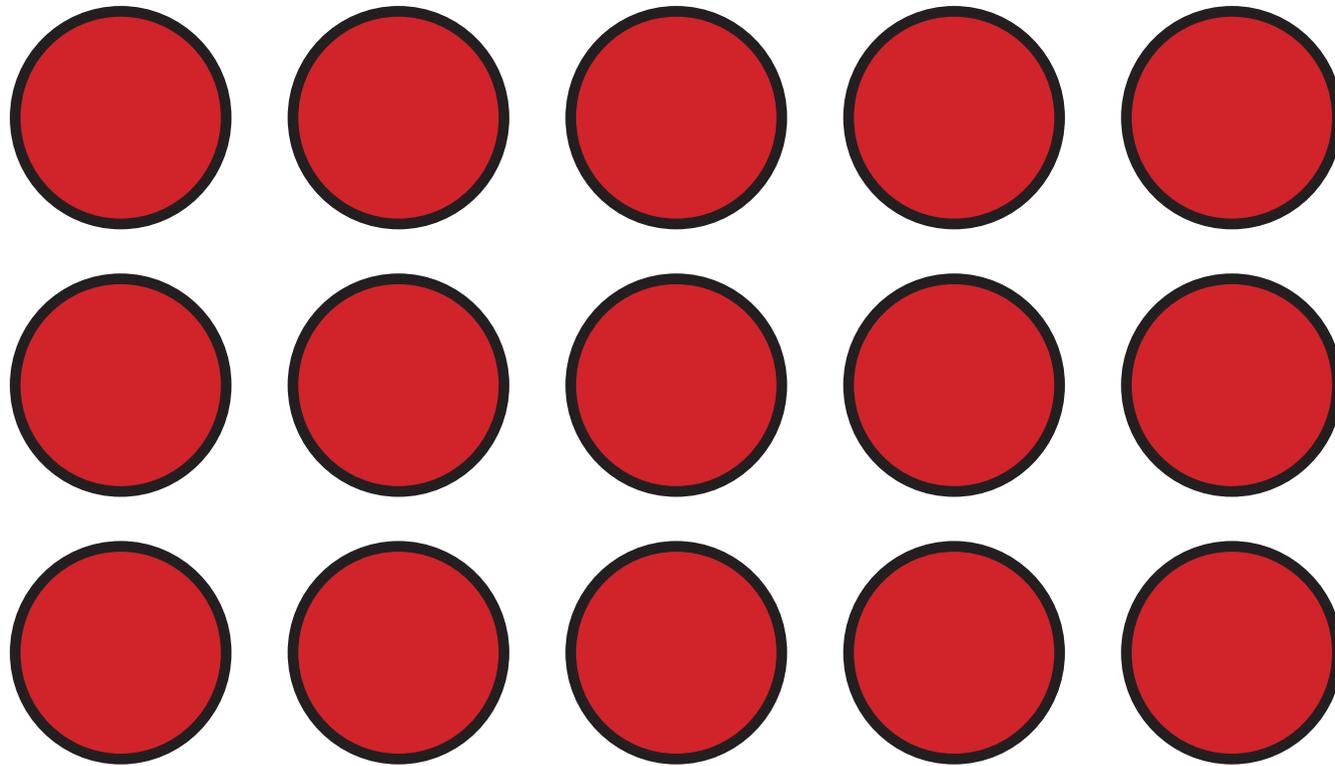
(Number Line)



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

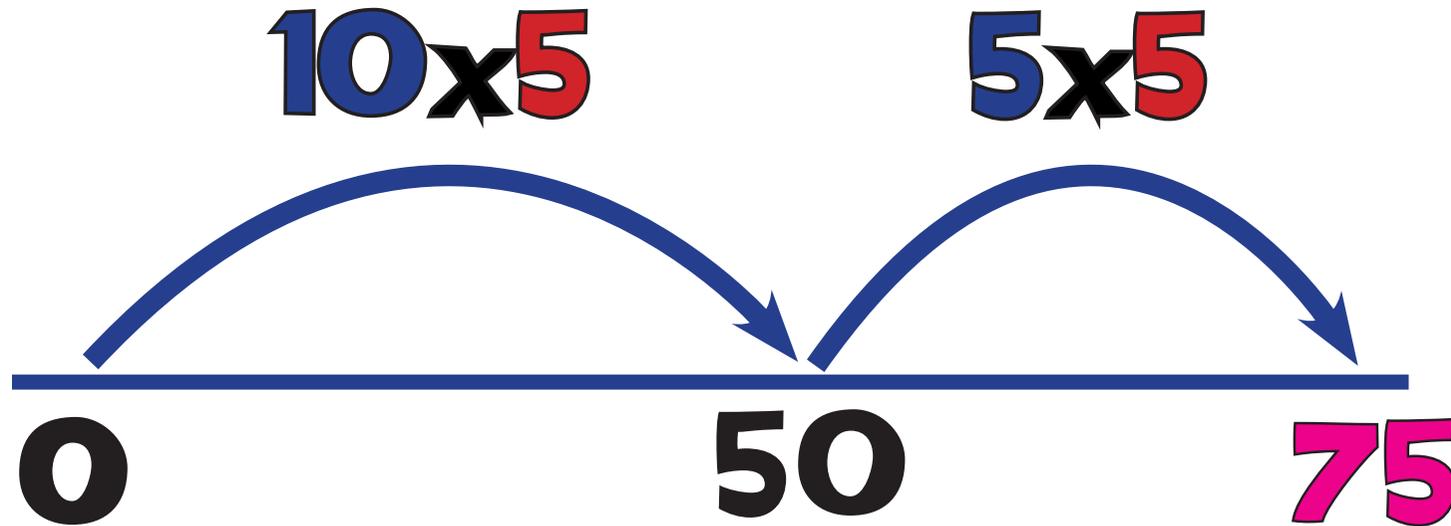
“5 times 3” means “5, 3 times!”

M3: Arrays



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

M4: Multi Boing!



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

$$15 \times 5 = 75$$



M5: Grid Method

Short Multiplication

$$15 \times 5 = 75$$

x	10	5
5	50	25

$$50 + 25 = 75$$

M6: Expanded Column

$$\begin{array}{r} 100 \quad 10 \quad 1 \\ 1 \quad 4 \quad 7 \\ \times \quad \quad 4 \\ \hline \end{array}$$

28

(4 x 7)

160

(4 x 40)

400

(4 x 100)

588

M7: Column Multiplication

	100	10	1
	1	4	7
x			4
<hr/>			
	5	8	8
<hr/>			
	1	2	



M8: Grid Method

Long Multiplication

$$43 \times 65 = 2795$$

x	40	3
60	2400	180
5	200	15

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

MM1: Jump!

x100

x10

÷10

÷100

1000 100 10 1 ■ $\frac{1}{10}$ $\frac{1}{100}$

3400

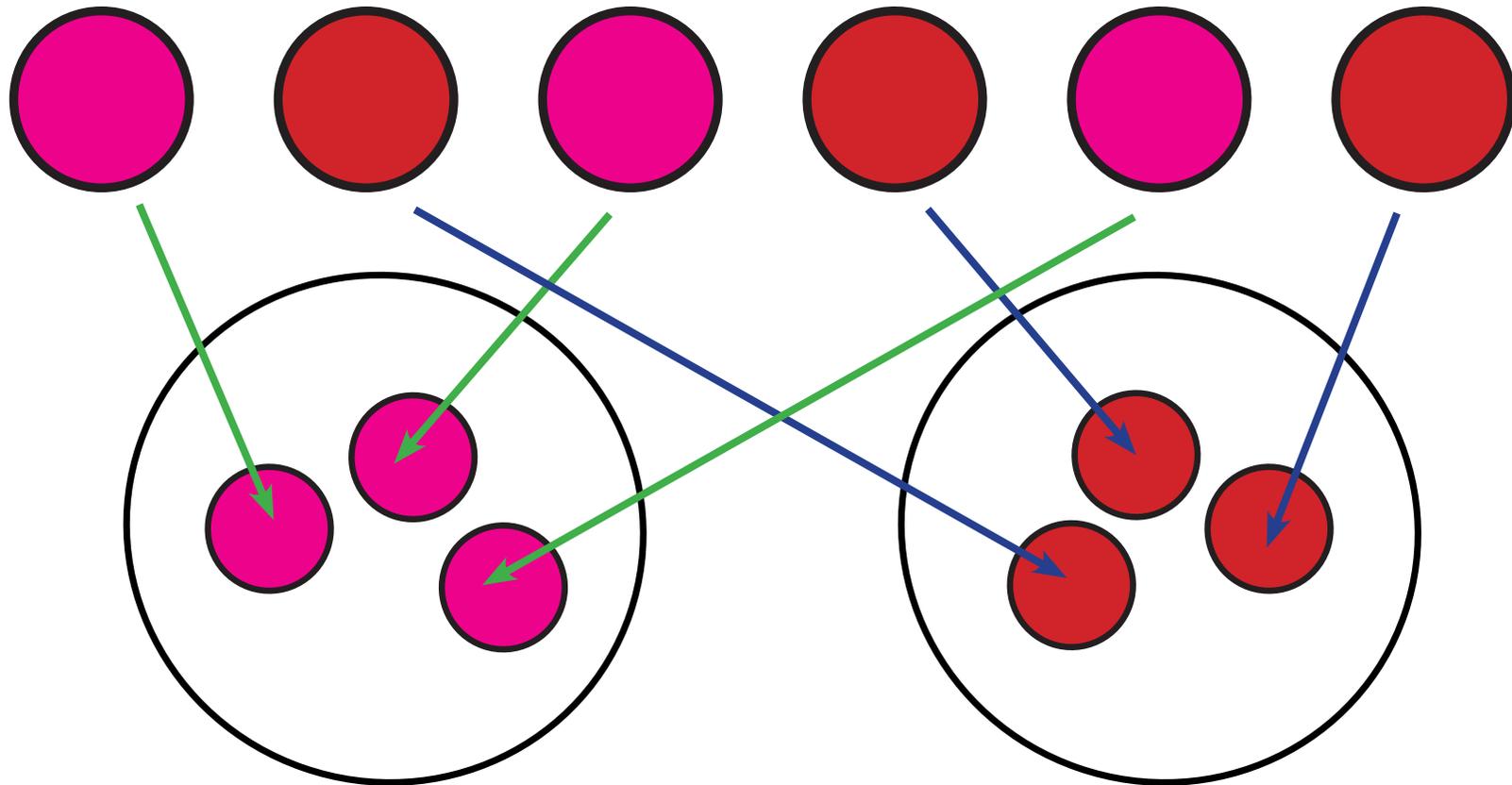
340

34

3.4

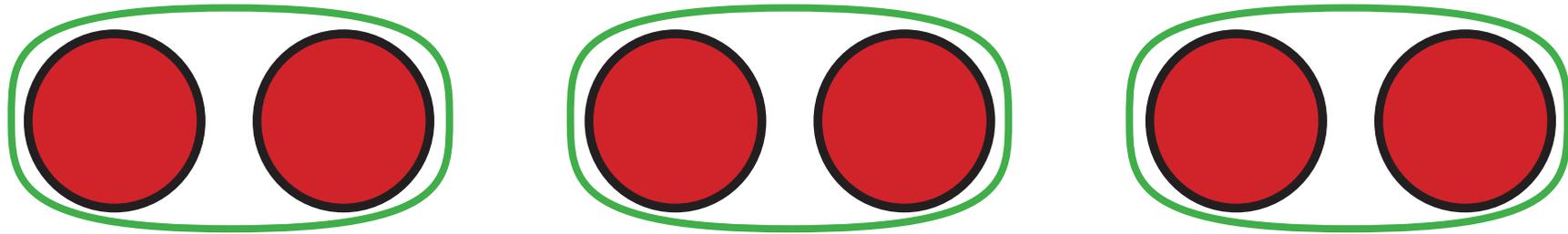
0.34

D1: Sharing (Concept)



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

D2: Grouping (Concept)



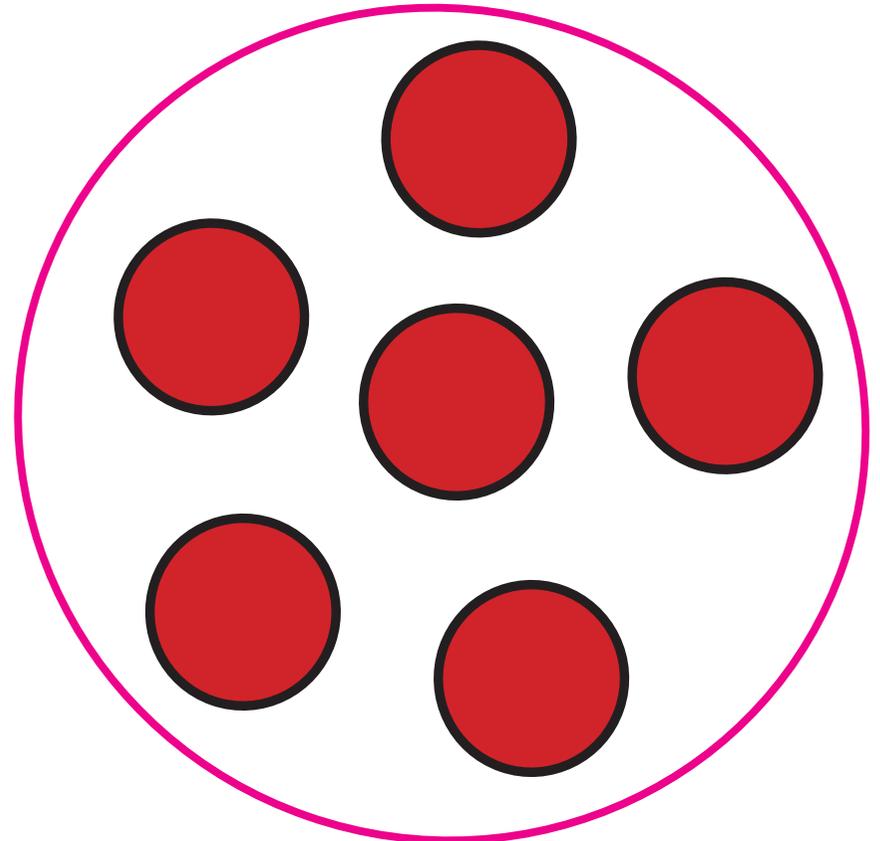
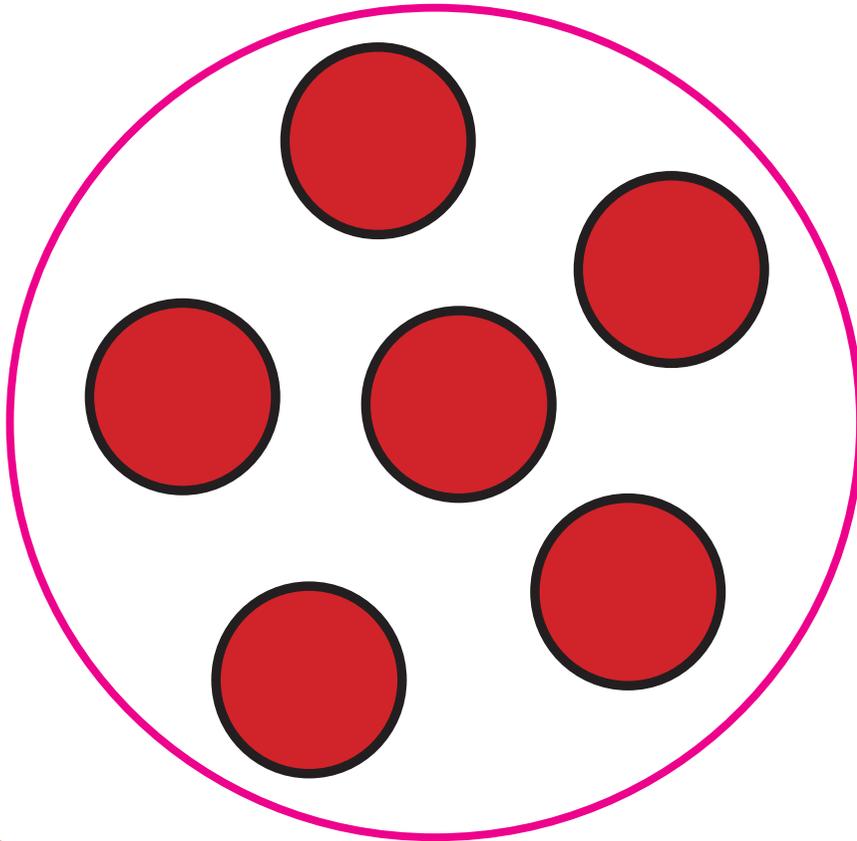
“How many groups of 2 can I make out of 6?”

Answer: 3

D3: Division as Sharing

$$12 \div 2 = 6$$

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

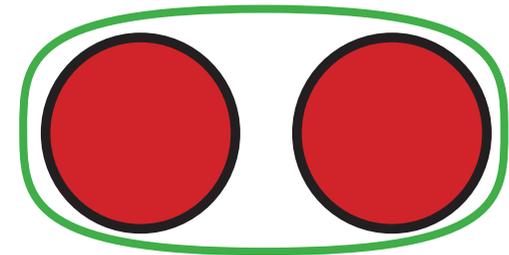
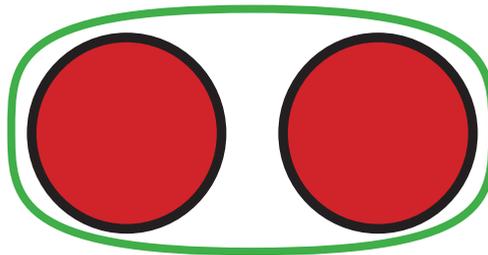
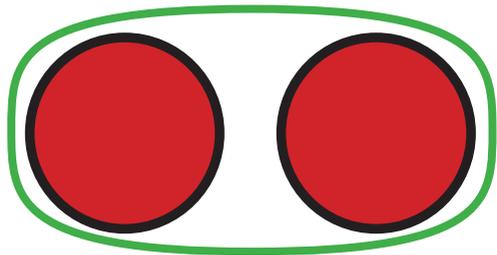
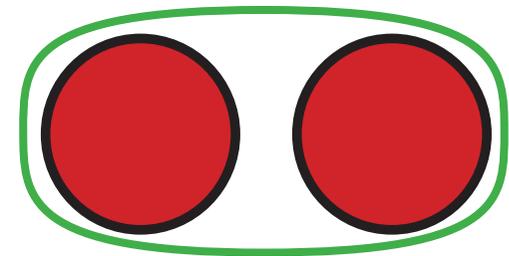
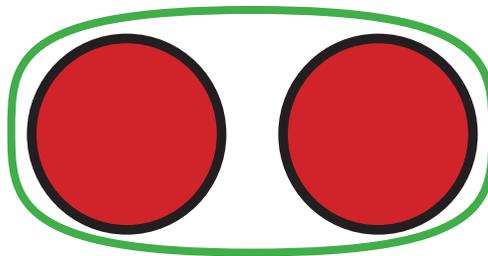
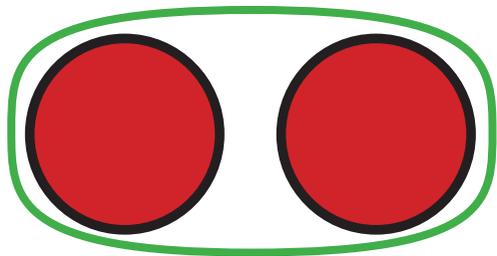


D4: Division as Grouping

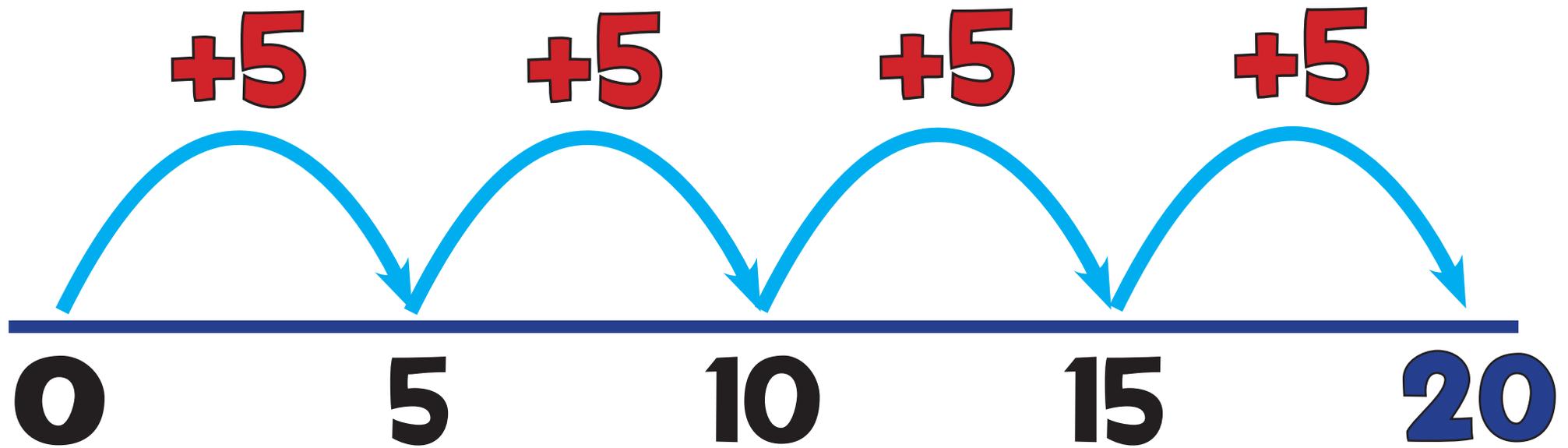
$$12 \div 2 = 6$$

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

Answer: 6



D5: Grouping on a Number Line



“How many 5s in 20?”

Answer: 4

$$20 \div 5 = 4$$



D6: Grouping Grid

4	4	4	4	4
4				3

“How many times can I fit (groups of) 4 into 27?”

Answer: 6r3

$$27 \div 4 = 6r3$$



D8: Find the Hunk!

$$72 \div 4 = 18$$

The
Hunk!

40

+

Chunk

32



10

+



8

÷ 4

= 18

D9: Mega Hunk!

$$136 \div 4 = 34$$

Mega
Hunk!

120

+

Chunk

16



30

+



4

÷ 4

= 34

D10: Short Division

$$136 \div 4 = 34$$

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

D11: Chunking

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

$$136 \div 4 = 34$$

D12: Long Division

Short Division Method

$$\begin{array}{r} 26 \text{ r}21 \\ 37 \overline{) 983} \\ \underline{98} \\ 0 \end{array}$$

The diagram shows a short division problem. The divisor is 37, written in black. The dividend is 983, with the 9 in blue, the 8 in red, and the 3 in green. A pink horizontal line is drawn above the dividend. Above the 9 is a blue '9', and above the 8 is a red '24'. To the right of the pink line, the quotient '26' is written in pink, followed by a remainder 'r21' also in pink.



D13: Long Division

Chunking Method

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

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

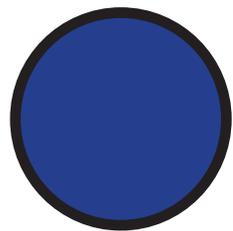
D14: Long Division

Traditional Method

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

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





Sense of Number

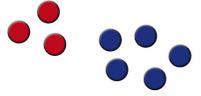
Visual Calculations Policy

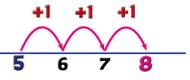
**Expanded Edition 2014 by Dave Godfrey,
Anthony Reddy and Laurence Hicks**

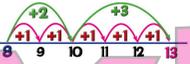


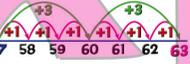
The following pages contain a snapshot of the 235 slide, Sense of Number Expanded Edition of the VCP. It contains a Counting Policy, leveled progression of strategies found in the Basic Edition and additional Subtraction & Multiplication Mental Method slides.

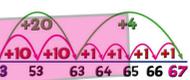
This edition is also available for bespoke preparation at additional cost of £100.

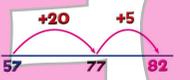
Y1	A1: Objects & Pictures  "If I have 1 and then 1 more, how many altogether? Answer!" <small>Sense of Number VCP Training Edition</small>							Addition Calculation $4 + 2 = 6$ <small>(add) (equals)</small> addend total + addend sum <small>Sense of Number VCP Training Edition</small>	Addition Vocabulary increase add total + plus addition more + count on sum altogether <small>Sense of Number VCP Training Edition</small>
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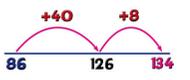
Y1	A1a: Largest Number 1st  $5 + 3 = 8$ <small>Sense of Number VCP Training Edition</small>	A2: Counting On  $5 + 3 = 8$ <small>Sense of Number VCP Training Edition</small>							
-----------	---	---	--	--	--	--	--	--	--

Y1	A2a: Counting On  $8 + 5 = 13$ <small>Sense of Number VCP Training Edition</small>								
-----------	---	--	--	--	--	--	--	--	--

Y2	A2b: Counting On  $57 + 6 = 63$ <small>Sense of Number VCP Training Edition</small>								
-----------	--	--	--	--	--	--	--	--	--

Y2	A3: Forwards Jump  $43 + 24 = 67$ <small>Sense of Number VCP Training Edition</small>	A4: Partitioning $43 + 24 = 67$ $40 + 20 = 60$ $3 + 4 = 7$ $60 + 7 = 67$ <small>Sense of Number VCP Training Edition</small>	A5: Partition Jot $43 + 24 = 67$ $60 + 7$ <small>Sense of Number VCP Training Edition</small>	(A6: Expanded Column) $\begin{array}{r} 43 \\ + 24 \\ \hline 60 \\ + 7 \\ \hline 67 \end{array}$ <small>Sense of Number VCP Training Edition</small>	(A7: Column Addition) $\begin{array}{r} 43 \\ + 24 \\ \hline 67 \end{array}$ <small>Sense of Number VCP Training Edition</small>				
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Y2	A3a: Forwards Jump  $57 + 25 = 82$ <small>Sense of Number VCP Training Edition</small>	A4a: Partitioning $57 + 25 = 82$ $50 + 20 = 70$ $7 + 5 = 12$ $70 + 12 = 82$ <small>Sense of Number VCP Training Edition</small>	A5a: Partition Jot $57 + 25 = 82$ $70 + 12$ <small>Sense of Number VCP Training Edition</small>	(A6: Expanded Column) $\begin{array}{r} 57 \\ + 25 \\ \hline 70 \\ + 12 \\ \hline 82 \end{array}$ <small>Sense of Number VCP Training Edition</small>	(A7: Column Addition) $\begin{array}{r} 57 \\ + 25 \\ \hline 82 \end{array}$ <small>Sense of Number VCP Training Edition</small>				
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Y2/3	A3b: Forwards Jump  $86 + 48 = 134$ <small>Sense of Number VCP Training Edition</small>	A4b: Partitioning $86 + 48 = 134$ $80 + 40 = 120$ $6 + 8 = 14$ $120 + 14 = 134$ <small>Sense of Number VCP Training Edition</small>	A5b: Partition Jot $86 + 48 = 134$ $120 + 14$ <small>Sense of Number VCP Training Edition</small>	(A6: Expanded Column) $\begin{array}{r} 86 \\ + 48 \\ \hline 120 \\ + 14 \\ \hline 134 \end{array}$ <small>Sense of Number VCP Training Edition</small>	(A7: Column Addition) $\begin{array}{r} 86 \\ + 48 \\ \hline 134 \end{array}$ <small>Sense of Number VCP Training Edition</small>				
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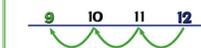
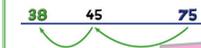
Y3	A3c: Forwards Jump  $687 + 248 = 935$ <small>Sense of Number VCP Training Edition</small>	A4c: Partitioning $687 + 248 = 935$ $600 + 200 = 800$ $80 + 40 = 120$ $7 + 8 = 15$ $800 + 120 + 15 = 935$ <small>Sense of Number VCP Training Edition</small>	A5c: Partition Jot $687 + 248 = 935$ $800 + 120 + 15$ <small>Sense of Number VCP Training Edition</small>	A6: Expanded Column $\begin{array}{r} 687 \\ + 248 \\ \hline 935 \end{array}$ <small>Sense of Number VCP Training Edition</small>	A7: Column Addition $\begin{array}{r} 687 \\ + 248 \\ \hline 935 \end{array}$ <small>Sense of Number VCP Training Edition</small>				
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Expanded



Y4				A5d: Partition Jot $4873 + 3762 = 8635$ $7000 + 1500 + 130 + 5$		A7d: Column Addition $\begin{array}{r} 4873 \\ + 3762 \\ \hline 8635 \\ \hline \end{array}$		
Y5						A7e: Column Addition $\begin{array}{r} 787567 \\ + 446278 \\ \hline 1233845 \\ \hline \end{array}$		
Y5	A3f: Decimal Jump $4.8 + 3.8 = 8.6$ 	A4f: Partitioning $4.8 + 3.8 = 8.6$ $4 + 3 = 7$ $0.8 + 0.8 = 1.6$ $7 + 1.6 = 8.6$	A5f: Partition Jot $4.8 + 3.8 = 8.6$ $7 + 1.6 = 8.6$			A7f: Column Addition $\begin{array}{r} 4.8 \\ + 3.8 \\ \hline 8.6 \\ \hline \end{array}$		
Y5	A3g: Decimal Jump $5.65 + 3.29 = 8.94$ 			A5g: Partition Jot $5.65 + 3.29 = 8.94$ $8 + 0.8 + 0.14 = 8.94$		A7g: Column Addition $\begin{array}{r} 5.65 \\ + 3.29 \\ \hline 8.94 \\ \hline \end{array}$		
Y5				A5h: Partition Jot $76.7 + 58.5 = 135.2$ $120 + 14 + 1.2 = 135.2$		A7h: Column Addition $\begin{array}{r} 76.7 \\ + 58.5 \\ \hline 135.2 \\ \hline \end{array}$		
Y5				A5i: Partition Jot $£38.25 + £27.46 = £65.71$ $£65.00 + £0.71 = £65.71$		A7i: Column Addition <small>With Money</small> $\begin{array}{r} £38.25 \\ + £27.46 \\ \hline £65.71 \\ \hline \end{array}$		
Y5						A7j: Column Addition <small>With Insects</small> $73.4 + 5.67 = 79.07$ $\begin{array}{r} 73.4 \\ + 5.67 \\ \hline 79.07 \\ \hline \end{array}$		



Y1	<p>S1: Objects</p>  $7 - 3 = 4$ <p>"What do I get if I take 3 away from 7? Answer: 4"</p>						<p>S</p>	<p>Subtraction Calculation</p> $6 - 2 = 4$ <p>(subtract) (equals)</p> <p>minuend difference subtrahend</p>	<p>Subtraction Vocabulary</p> <p>count back decrease minus subtract fewer count on take away difference between</p>
Y1	<p>S2: What's the Difference?</p>  $7 - 5 = 2$ <p>"How many more is 7 than 5? What is the difference?"</p>	<p>S3: Counting Back</p>  $12 - 3 = 9$ <p>"What do I get if I take 3 away from 12? Answer: 9"</p>	<p>S4: Counting On</p>  $12 - 9 = 3$ <p>"How many more is 12 than 9? What is the difference?"</p>						
Y2		<p>S5: Backwards Boing</p>  $75 - 7 = 68$ <p>"How many more is 75 than 7? What is the difference?"</p>	<p>S4a: Counting On</p>  $83 - 78 = 5$ <p>"How many more is 83 than 78? What is the difference?"</p>						
Y2		<p>S6: Backwards Bounce</p>  $87 - 23 = 64$ <p>"How many more is 87 than 23? What is the difference?"</p>	<p>(S8: Triple Jump!)</p>  $87 - 23 = 64$ <p>"How many more is 87 than 23? What is the difference?"</p>	<p>(S9: 10s Jump, 1s Jump!)</p>  $87 - 23 = 64$ <p>"How many more is 87 than 23? What is the difference?"</p>	<p>(S10: Expanded Column)</p> $\begin{array}{r} 87 \\ - 23 \\ \hline 64 \end{array}$	<p>(S11: Column Subtraction)</p> $\begin{array}{r} 87 \\ - 23 \\ \hline 64 \end{array}$			
Y2		<p>S7: Backwards Jump</p>  $75 - 37 = 38$ <p>"How many more is 75 than 37? What is the difference?"</p>	<p>S8: Triple Jump!</p>  $75 - 37 = 38$ <p>"How many more is 75 than 37? What is the difference?"</p>	<p>S9: 10s Jump, 1s Jump!</p>  $75 - 37 = 38$ <p>"How many more is 75 than 37? What is the difference?"</p>	<p>(S10: Expanded Column)</p> $\begin{array}{r} 75 \\ - 37 \\ \hline 38 \end{array}$	<p>(S11: Column Subtraction)</p> $\begin{array}{r} 75 \\ - 37 \\ \hline 38 \end{array}$			
Y3			<p>S8b: Quad Jump!</p>  $132 - 56 = 76$ <p>"How many more is 132 than 56? What is the difference?"</p>	<p>S9b: 10s Jump, 1s Jump!</p>  $132 - 56 = 76$ <p>"How many more is 132 than 56? What is the difference?"</p>	<p>(S10: Expanded Column)</p> $\begin{array}{r} 132 \\ - 56 \\ \hline 76 \end{array}$	<p>(S11: Column Subtraction)</p> $\begin{array}{r} 132 \\ - 56 \\ \hline 76 \end{array}$			
Y3			<p>S8c: Big Jump!</p>  $723 - 356 = 367$ <p>"How many more is 723 than 356? What is the difference?"</p>	<p>S9c: 100s, 10s, 1s Jump</p>  $723 - 356 = 367$ <p>"How many more is 723 than 356? What is the difference?"</p>	<p>S10: Expanded Column</p> $\begin{array}{r} 723 \\ - 356 \\ \hline 367 \end{array}$	<p>S11: Column Subtraction</p> $\begin{array}{r} 723 \\ - 356 \\ \hline 367 \end{array}$	<p>M7c: Column Multiplication</p> $\begin{array}{r} 3647 \\ \times 4 \\ \hline 14588 \\ 212 \end{array}$		
Y4			<p>S8d: Quad Jump Extreme</p>  $5042 - 1776 = 3266$ <p>"How many more is 5042 than 1776? What is the difference?"</p>	<p>S9d: 1000s, 100s, 10s, 1s Jump</p>  $5042 - 1776 = 3266$ <p>"How many more is 5042 than 1776? What is the difference?"</p>		<p>S11d: Column Subtraction</p> $\begin{array}{r} 5042 \\ - 1776 \\ \hline 3266 \end{array}$			



Y5							S1e: Column Subtraction $\begin{array}{r} \overset{2}{7} \overset{1}{4} \overset{7}{2} \overset{1}{8} \overset{1}{3} \overset{1}{1} \\ - 427358 \\ \hline 315473 \end{array}$
Y5			S8f: Decimal T-J! $\begin{array}{ccccccc} & +0.3 & & +4 & & +0.4 & \\ \text{Step} & \text{Skip} & & \text{Jump} & & & \\ 8.7 & 9 & & 13 & & 13.4 & \\ \hline 13.4 - 8.7 = 4.7 \end{array}$	S9f: Is Jump, Tenths Jump! $\begin{array}{ccccccc} & +4 & & +0.7 & & & \\ 8.7 & & & 12.7 & & 13.4 & \\ \hline 13.4 - 8.7 = 4.7 \end{array}$	S1f: Column Subtraction $\begin{array}{r} \overset{10}{0} \overset{1}{1} \overset{1}{2} \overset{1}{4} \\ - 8.7 \\ \hline 4.7 \end{array}$		
Y5							S1g: Column Subtraction $\begin{array}{r} \overset{6}{7} \overset{11}{2} \overset{1}{.} \overset{13}{4} \overset{1}{3} \\ - 47.85 \\ \hline 24.58 \end{array}$
Y5							S1h: Column Subtraction $12.4 - 5.97 = 6.43$ $\begin{array}{r} \overset{10}{1} \overset{11}{2} \overset{1}{.} \overset{13}{4} \overset{1}{0} \\ - 5.97 \\ \hline 6.43 \end{array}$

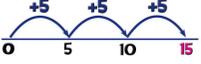
Expanded

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

Partition

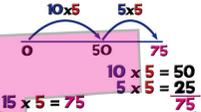


Y1	(M1: Groups)  *2 groups of 5 counters makes 10 counters altogether*	(M3: Arrays)  *2 groups of 5 counters or *5 groups of 2 counters* = 10 counters altogether*			M	Multiplication Calculation $4 \times 2 = 8$ (multiplied by) (equals) multiplicand product multiplier	Multiplication Vocabulary groups of product multiple times double lots of X multiply repeated addition
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Y2	M1: Repeated Addition (Groups)  $5 \times 3 = 5 + 5 + 5 = 15$ *5 multiplied by 3 means *3 times*, which gives *3 lots of 5*	M2: Repeated Addition (Number Line)  $5 \times 3 = 5 + 5 + 5 = 15$ *5 times 3 means *3 times*	M3: Arrays  $3 \times 5 = 15$ or $5 \times 3 = 15$				
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Y2	Mx2: Table Facts 2x table	Mx5: Table Facts 5x table	Mx10: Table Facts 10x table				
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Y3	Mx3: Table Facts 3x table	Mx4: Table Facts 4x table	Mx8: Table Facts 8x table				
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Y3	M4: Multi Boing!  $10 \times 5 = 50$ $5 \times 5 = 25$ $15 \times 5 = 75$	M4a: Partitioning $15 \times 5 = 75$ $10 \times 5 = 50$ $5 \times 5 = 25$ $50 + 25 = 75$	M5: Grid Method (Short Multiplication) $15 \times 5 = 75$ <table border="1" data-bbox="1288 869 1422 949"> <tr><td>x</td><td>10</td><td>5</td></tr> <tr><td>5</td><td>50</td><td>25</td></tr> </table> $50 + 25 = 75$	x	10	5	5	50	25	(M6: Expanded Column) <table border="1" data-bbox="1534 853 1668 965"> <tr><td>10</td><td>1</td></tr> <tr><td>15</td><td></td></tr> <tr><td>x</td><td>5</td></tr> <tr><td>75</td><td>(5 x 5)</td></tr> <tr><td>50</td><td>(5 x 10)</td></tr> <tr><td>75</td><td></td></tr> </table>	10	1	15		x	5	75	(5 x 5)	50	(5 x 10)	75		(M7: Column Multiplication) <table border="1" data-bbox="1758 853 1892 965"> <tr><td>10</td><td>1</td></tr> <tr><td>15</td><td></td></tr> <tr><td>x</td><td>5</td></tr> <tr><td>75</td><td></td></tr> <tr><td>50</td><td></td></tr> <tr><td>75</td><td></td></tr> </table>	10	1	15		x	5	75		50		75	
x	10	5																																	
5	50	25																																	
10	1																																		
15																																			
x	5																																		
75	(5 x 5)																																		
50	(5 x 10)																																		
75																																			
10	1																																		
15																																			
x	5																																		
75																																			
50																																			
75																																			

Y4	Mx6: Table Facts 6x table	Mx7: Table Facts 7x table	Mx9: Table Facts 9x table	M5a: Grid Method (Short Multiplication) $43 \times 6 = 258$ <table border="1" data-bbox="1288 1061 1422 1141"> <tr><td>x</td><td>40</td><td>3</td></tr> <tr><td>6</td><td>240</td><td>18</td></tr> </table> $240 + 18 = 258$	x	40	3	6	240	18	(M6: Expanded Column) <table border="1" data-bbox="1534 1029 1668 1141"> <tr><td>100</td><td>10</td><td>1</td></tr> <tr><td>43</td><td></td><td></td></tr> <tr><td>x</td><td>6</td><td></td></tr> <tr><td>258</td><td>(6 x 3)</td><td></td></tr> <tr><td>240</td><td>(6 x 40)</td><td></td></tr> <tr><td>258</td><td></td><td></td></tr> </table>	100	10	1	43			x	6		258	(6 x 3)		240	(6 x 40)		258			(M7: Column Multiplication) <table border="1" data-bbox="1758 1029 1892 1141"> <tr><td>100</td><td>10</td><td>1</td></tr> <tr><td>43</td><td></td><td></td></tr> <tr><td>x</td><td>6</td><td></td></tr> <tr><td>258</td><td></td><td></td></tr> <tr><td>240</td><td></td><td></td></tr> <tr><td>258</td><td></td><td></td></tr> </table>	100	10	1	43			x	6		258			240			258		
x	40	3																																														
6	240	18																																														
100	10	1																																														
43																																																
x	6																																															
258	(6 x 3)																																															
240	(6 x 40)																																															
258																																																
100	10	1																																														
43																																																
x	6																																															
258																																																
240																																																
258																																																

Y4	Mx11: Table Facts 11x table	Mx12: Table Facts 12x table	M5b: Grid Method (Short Multiplication) $147 \times 4 = 588$ <table border="1" data-bbox="1265 1252 1444 1332"> <tr><td>x</td><td>100</td><td>40</td><td>7</td></tr> <tr><td>4</td><td>400</td><td>160</td><td>28</td></tr> </table> $400 + 160 + 28 = 588$	x	100	40	7	4	400	160	28	M6: Expanded Column <table border="1" data-bbox="1534 1220 1668 1332"> <tr><td>100</td><td>10</td><td>1</td></tr> <tr><td>147</td><td></td><td></td></tr> <tr><td>x</td><td>4</td><td></td></tr> <tr><td>588</td><td>(4 x 7)</td><td></td></tr> <tr><td>160</td><td>(4 x 40)</td><td></td></tr> <tr><td>400</td><td>(4 x 100)</td><td></td></tr> <tr><td>588</td><td></td><td></td></tr> </table>	100	10	1	147			x	4		588	(4 x 7)		160	(4 x 40)		400	(4 x 100)		588			M7: Column Multiplication <table border="1" data-bbox="1758 1220 1892 1332"> <tr><td>100</td><td>10</td><td>1</td></tr> <tr><td>147</td><td></td><td></td></tr> <tr><td>x</td><td>4</td><td></td></tr> <tr><td>588</td><td></td><td></td></tr> <tr><td>160</td><td></td><td></td></tr> <tr><td>400</td><td></td><td></td></tr> </table>	100	10	1	147			x	4		588			160			400			M7c: Column Multiplication <table border="1" data-bbox="1982 1220 2116 1332"> <tr><td>300</td><td>60</td><td>7</td></tr> <tr><td>x</td><td>4</td><td></td></tr> <tr><td>14588</td><td></td><td></td></tr> <tr><td>212</td><td></td><td></td></tr> </table>	300	60	7	x	4		14588			212		
x	100	40	7																																																														
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Y5			M8: Grid Method (Long Multiplication) $43 \times 65 = 2795$ <table border="1" data-bbox="1265 1428 1444 1508"> <tr><td>x</td><td>40</td><td>3</td></tr> <tr><td>60</td><td>2400</td><td>180</td></tr> <tr><td>5</td><td>200</td><td>15</td></tr> </table> $2400 + 180 + 200 + 15 = 2795$	x	40	3	60	2400	180	5	200	15	M9: Long Multiplication (Liam) <table border="1" data-bbox="1736 1396 1915 1508"> <tr><td>40</td><td>3</td></tr> <tr><td>x</td><td>65</td><td></td></tr> <tr><td>215</td><td>(5 x 43)</td><td></td></tr> <tr><td>+ 2580</td><td>(60 x 43)</td><td></td></tr> <tr><td>2795</td><td></td><td></td></tr> </table>	40	3	x	65		215	(5 x 43)		+ 2580	(60 x 43)		2795			
x	40	3																										
60	2400	180																										
5	200	15																										
40	3																											
x	65																											
215	(5 x 43)																											
+ 2580	(60 x 43)																											
2795																												



Y5

M8a: Grid Method
Long Multiplication
 $243 \times 68 = 16,524$

x	200	40	3
60	12000	2400	180
8	1600	320	24

$14580 + 1944 = 16,524$

M9a: Long Multiplication
Column
 $243 \times 68 = 16,524$

$8 \times 243 = 1944$
 $60 \times 243 = 14580$

Y5

M8b: Grid Method
Long Multiplication
 $203 \times 68 = 13,804$

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

$12180 + 1624 = 13,804$

M9b: Long Multiplication
Column
 $203 \times 68 = 13,804$

$8 \times 203 = 1624$
 $60 \times 203 = 12180$

Y5

M8c: Decimal Grid
Short Multiplication
 $3.6 \times 4 = 14.4$

x	3	0.6
4	12	2.4

$12 + 2.4 = 14.4$

M9c: Column Multiplication
 $3.6 \times 4 = 14.4$

Y6

M8d: Decimal Grid
Short Multiplication
 $47.2 \times 3 = 141.6$

x	40	7	0.2
3	120	21	0.6

$120 + 21 + 0.6 = 141.6$

M9d: Column Multiplication
 $47.2 \times 3 = 141.6$

Y6

M8e: Grid Method
Short Multiplication
 $7.38 \times 6 = 44.28$

x	7	0.3	0.08
6	42	1.8	0.48

$42 + 1.8 + 0.48 = 44.28$

M9e: Column Multiplication
 $7.38 \times 6 = 44.28$

Y6

M8f: Grid Method
Long Multiplication
 $24.3 \times 2.5 = 60.75$

x	20	4	0.3
2	40	8	0.6
0.5	10	2	0.15

$48.6 + 12.15 = 60.75$

M9f: Long Multiplication
Column
 $24.3 \times 2.5 = 60.75$

$0.5 \times 24.3 = 12.15$
 $2 \times 24.3 = 48.60$

Y6

M9g: Long Multiplication
Column
 $3786 \times 48 = 181728$

$8 \times 3786 = 30288$
 $40 \times 3786 = 151440$

Expanded Edition



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 $8 \div 2 = 4$ (divided by) (equals) dividend quotient divisor	Division Vocabulary remainder group share + half divisor factor quotient equal groups of divide
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Y2	D3: Division as Sharing $12 \div 2 = 6$ "If I share 12 into 2 equal amounts, how many in each group?" Answer: 6	D4: Division as Grouping $12 \div 2 = 6$ "How many groups of 2 are there?" Answer: 6	D5: Grouping on a Number Line $20 \div 5 = 4$ "How many 5s in 20?" Answer: 4					
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Y2		D5a: Grouping on a Number Line $17 \div 5 = 3r2$ "How many 5s in 17?" Answer: 3 remainder 2						
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Y3		D6: Grouping Grid $27 \div 4 = 6r3$ "How many items can I fit into 6 groups of 4?" Answer: 24						
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Y3		D7: Chunking Jump $72 \div 4 = 18$ "How many 4s in 72?" Answer: 18	D8: Find the Hunk! $72 \div 4 = 18$ The Hunk! 40 + 32 = 72 Chunk 10 + 8 = 18	(D10: Short Division) Answer: $72 \div 4 = 18$ 	(D11: Chunking) Answer: $72 \div 4 = 18$ 			
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Y3		D7a: Chunking Jump $65 \div 4 = 16r1$ "How many 4s in 65?" Answer: 16 remainder 1	D8a: Find the Hunk! $65 \div 4 = 16r1$ The Hunk! 40 + 25 = 65 Chunk 10 + 6r1 = 16r1	(D10: Short Division) Answer: $65 \div 4 = 16r1$ 	(D11: Chunking) Answer: $65 \div 4 = 16r1$ 			
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Y4			D9: Mega Hunk! $136 \div 4 = 34$ Mega Hunk! 120 + 16 = 136 Chunk 30 + 4 = 34	D10: Short Division $136 \div 4 = 34$ 	D11: Chunking $136 \div 4 = 34$ 	D11b: Chunking $136 \div 4 = 34$ 		
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Y5			D9c: Mega Hunk! $394 \div 6 = 65r4$ Mega Hunk! 360 + 34 = 394 Chunk 60 + 5r4 = 65r4	D10c: Short Division $394 \div 6 = 65r4$ 	D11c: Chunking $394 \div 6 = 65r4$ 			
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Expanded Edition



Y5				D9d: Mega Hunk! $591 + 3 = 197$ Mega Hunk! Mega Hunk! Chunk $300 + 270 + 21$ $100 + 90 + 7 = 197$	D10d: Short Division $591 + 3 = 197$ $3 \overline{)591}$	D11d: Chunking $591 + 3 = 197$ $3 \overline{)591}$ $- 300$ (3 x 100) 291 $- 270$ (3 x 90) 21 $- 21$ (3 x 7) 0		
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Y5				D9e: Mega Hunk! $5978 + 7 = 854$ Mega Hunk! Mega Hunk! Chunk $5600 + 350 + 28$ $800 + 50 + 4 = 854$	D10e: Short Division $5978 + 7 = 854$ $7 \overline{)5978}$	D11e: Chunking $5978 + 7 = 854$ $7 \overline{)5978}$ $- 5600$ (7 x 800) 378 $- 270$ (7 x 50) 28 $- 28$ (7 x 4) 0		
-----------	--	--	--	--	---	---	--	--

Y5				D9f: Mega Hunk! $846 + 5 = 169r1$ Mega Hunk! Mega Hunk! Chunk $500 + 300 + 46$ $100 + 60 + 9r1 = 169r1$	D10f: Short Division $846 + 5$ $5 \overline{)846.0}$	D11f: Chunking $846 + 5 = 169r1$ $5 \overline{)846}$ $- 500$ (5 x 100) 346 $- 300$ (5 x 60) 46 $- 45$ (5 x 9) 1		
-----------	--	--	--	--	---	--	--	--

Y6				D9g: Mega Hunk! $480 + 15 = 32$ Mega Hunk! Chunk $450 + 30$ $30 + 2 = 32$		D11g: Chunking $480 + 15 = 32$ $15 \overline{)480}$ $- 450$ (15 x 30) 30 $- 30$ (15 x 2) 0	D11g2: Chunking $480 + 15 = 32$ $15 \overline{)480}$ $- 150$ (15 x 10) 330 $- 150$ (15 x 10) 180 $- 150$ (15 x 10) 30 $- 30$ (15 x 2) 0		
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Y6				D9h: Decimal Hunk! $18 + 1.5 = 12$ The Hunk! Chunk $15 + 3$ $10 + 2 = 12$					
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Y6				D9i: Decimal Hunk! $87.5 + 7 = 12.5$ Mega Hunk! Chunk Chunk $70 + 14 + 3.5$ $10 + 2 + 0.5 = 12.5$	D10i: Short Division $87.5 + 7 = 12.5$ $7 \overline{)87.5}$			
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Y6					D12: Long Division $983 + 37 = 26r21$ $37 \overline{)983}$	D13: Long Division $983 + 37 = 26r21$ $37 \overline{)983}$ $- 740$ (37 x 20) 243 $- 222$ (37 x 6) 21	D14: Long Division $983 + 37 = 26r21$ $37 \overline{)983}$ $- 74$ 243 $- 222$ 21		
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Y6					D13j: Long Division $983 + 37 = 26r21$ $37 \overline{)983}$ $- 370$ (37 x 10) 613 $- 370$ (37 x 10) 243 $- 222$ (37 x 6) 21			
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MA	MA1: Partitioning $45 + 82 = 127$ $120 + 7 = 127$	MA2: Counting On $45 + 20 = 65$ $45 + 20 = 65$	MA3: Number Bonds $45 + 95 = 140$ $40 + 100 = 140$	MA4: Double & Adjust $45 + 46 = 91$ $45 + 45 + 1 = 91$ $90 + 1 = 91$	MA5: Round & Adjust $45 + 39 = 84$ $45 + 40 - 1 = 84$ $85 - 1 = 84$		
Y1		MA2a: Counting On $12 + 5 = 17$ $12 + 5 = 17$	MA2b: Counting On $57 + 10 = 67$ $57 + 10 = 67$	MA3: Number Bonds 	MA4: Double & Adjust $5 + 6 = 11$ $5 + 5 + 1 = 11$ $10 + 1 = 11$	MA5: Round & Adjust $45 + 9 = 54$ $45 + 10 - 1 = 54$ $55 - 1 = 54$	
Y2	MA1: Partitioning $43 + 21 = 64$ $60 + 4 = 64$	MA2a: Counting On $78 + 7 = 85$ $78 + 7 = 85$	MA2b: Counting On $58 + 40 = 98$ $58 + 40 = 98$	MA3: Number Bonds $3 + 4 + 7 = 14$ $10 + 4 = 14$	MA4: Double & Adjust $7 + 8 = 15$ $7 + 7 + 1 = 15$ $14 + 1 = 15$	MA5: Round & Adjust $45 + 19 = 64$ $45 + 20 - 1 = 64$ $65 - 1 = 64$	
Y3	MA1: Partitioning $57 + 25 = 82$ $70 + 12 = 82$	MA2a: Counting On $85 + 50 = 135$ $85 + 50 = 135$	MA2b: Counting On $534 + 300 = 834$ $534 + 300 = 834$	MA3: Number Bonds $43 + 9 + 7 + 21 = 80$ $50 + 30 = 80$	MA4: Double & Adjust $16 + 17 = 33$ $16 + 16 + 1 = 33$ $32 + 1 = 33$	MA5: Round & Adjust $45 + 97 = 142$ $45 + 100 - 3 = 142$ $145 - 3 = 142$	
Y4	MA1: Partitioning $648 + 231 = 879$ $800 + 70 + 9 = 879$	MA2a: Counting On $784 + 60 = 844$ $784 + 60 = 844$	MA2b: Counting On $4837 + 3000 = 8347$ $4837 + 3000 = 8347$	MA3: Number Bonds $42 + 16 + 28 + 54 = 140$ $70 + 70 = 140$	MA4: Double & Adjust $37 + 38 = 75$ $37 + 37 + 1 = 75$ $74 + 1 = 75$	MA5: Round & Adjust $345 + 298 = 643$ $345 + 300 - 2 = 643$ $645 - 2 = 643$	
Y5	MA1: Partitioning $576 + 258 = 834$ $700 + 120 + 14 = 834$	MA2a: Counting On $837 + 500 = 1337$ $837 + 500 = 1337$	MA2b: Counting On $7583 + 5000 = 12583$ $7583 + 5000 = 12583$	MA3: Number Bonds $£4.56 + £3.27 + £1.44 = £9.27$ $£6.00 + £3.27 = £9.27$	MA4: Double & Adjust $125 + 127 = 252$ $125 + 125 + 2 = 252$ $250 + 2 = 252$	MA5: Round & Adjust $4645 + 1996 = 6641$ $4645 + 2000 - 4 = 6641$ $6645 - 4 = 6641$	
Y6	MA1: Partitioning $4.73 + 2.21 = 6.94$ $6 + 0.9 + 0.04 = 6.94$	MA2a: Counting On $43,826 + 30,000 = 73,826$ $43,826 + 30,000 = 73,826$	MA2b: Counting On $5,763,947 + 4,000,000 = 9,763,947$ $5,763,947 + 4,000,000 = 9,763,947$	MA3: Number Bonds $24.25 + 31.63 + 21.75 = 77.63$ $46 + 31.63 = 77.63$	MA4: Double & Adjust $4.5 + 4.7 = 9.2$ $4.5 + 4.5 + 0.2 = 9.2$ $9 + 0.2 = 9.2$	MA5: Round & Adjust $45.2 + 49.9 = 95.1$ $45.2 + 50 - 0.1 = 95.1$ $95.2 - 0.1 = 95.1$	



MM

MM1: Jump!

$\times 100$ 3400
 $\times 10$ 340
 $\times 1$ 34
 $\times 0.1$ 3.4
 $\times 0.01$ 0.34

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MM2: Re-ordering

$(9 \times 2) \times 5$
 $18 \times 5 = 90$

$(9 \times 5) \times 2$
 $45 \times 2 = 90$

$(2 \times 5) \times 9$
 $10 \times 9 = 90$ *

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MM3: Partitioning

$15 \times 5 = 75$

$(50 \div 5) + (25 \div 5) = 75$
 $(10 \times 5) + (5 \times 5)$

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MM4: Round & Adjust

$49 \times 3 = 147$

$(50 \times 3) - (1 \times 3)$
 $150 - 3 = 147$

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MM5: Doubling

Double 17 = 34

$20 + 14 = 34$

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MM1a: Jump!

$\times 1000$ 63400
 $\times 100$ 6340
 $\times 10$ 634
 $\times 1$ 63.4
 $\times 0.1$ 6.34
 $\times 0.01$ 0.634
 $\times 0.001$ 0.0634

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MM2a: Re-ordering

$(7 \times 4) \times 5$
 $28 \times 5 = 140$

$(7 \times 5) \times 4$
 $35 \times 4 = 140$

$(4 \times 5) \times 7$
 $20 \times 7 = 140$ *

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MM3a: Partitioning

$37 \times 4 = 148$

$(120 \div 4) + (28 \div 4) = 148$
 $(30 \times 4) + (7 \times 4)$

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MM4a: Round & Adjust

$198 \times 4 = 792$

$(200 \times 4) - (2 \times 4)$
 $800 - 8 = 792$

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MM5a: Doubling

Double 37 = 74

$60 + 14 = 74$

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MM2b: Re-ordering

$(9 \times 8) \times 6$
 $72 \times 6 = 432$

$(9 \times 6) \times 8$
 $54 \times 8 = 432$ *

$(8 \times 6) \times 9$
 $48 \times 9 = 432$

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MM4b: Round & Adjust

$3.9 \times 5 = 19.5$

$(4 \times 5) - (0.1 \times 5)$
 $20 - 0.5 = 19.5$

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MM5b: Doubling

Double 78 = 156

$140 + 16 = 156$

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MM4c: Round & Adjust

$\pounds 5.99 \times 6 = \pounds 35.94$

$(\pounds 6 \times 6) - (1\text{p} \times 6)$
 $\pounds 36 - 6\text{p} = \pounds 35.94$

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MM5c: Doubling

Double 340 = 680

$600 + 80 = 680$

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M4a: Partitioning

$15 \times 5 = 75$

$10 \times 5 = 50$
 $5 \times 5 = 25$
 $50 + 25 = 75$

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MM5d: Doubling

Double 480 = 960

$800 + 160 = 960$

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MM5e: Doubling

Double 278 = 556

$400 + 140 + 16 = 556$

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MM5f: Doubling

Double 768 = 1536

$1400 + 120 + 16 = 1536$

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MM5g: Doubling

Double 3.7 = 7.4

$6 + 1.4 = 7.4$

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Exposition



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

Expanded Edition

Edition



<p>Sense of Number Visual Calculation Policy Full Training Edition for Sample Edition Primary School October 2014 Graphic Design by Dave Godfrey Compiled by the Sense of Number Maths Team For sale within Sample Edition Primary School. 'A picture is worth 1000 words'</p>	<p>Poster Guide Visual Calculation Policy</p> <table border="1"> <thead> <tr> <th>Year Group</th> <th>Key Concepts</th> <th>Visualisation</th> </tr> </thead> <tbody> <tr> <td>KS1</td> <td>8 + 2 = 10</td> <td>8 + 2 = 10</td> </tr> <tr> <td>KS2</td> <td>8 - 2 = 6</td> <td>8 - 2 = 6</td> </tr> <tr> <td>KS3</td> <td>8 x 2 = 16</td> <td>8 x 2 = 16</td> </tr> <tr> <td>KS4</td> <td>8 ÷ 2 = 4</td> <td>8 ÷ 2 = 4</td> </tr> </tbody> </table>	Year Group	Key Concepts	Visualisation	KS1	8 + 2 = 10	8 + 2 = 10	KS2	8 - 2 = 6	8 - 2 = 6	KS3	8 x 2 = 16	8 x 2 = 16	KS4	8 ÷ 2 = 4	8 ÷ 2 = 4	<p>Guide to using a Visual Calculation Policy The Sense of Number Visual Calculation Policy provides an visual representation of 14 written and mental calculation policy. Typical use: Children: The slides are printed out (e.g. A4) and the appropriate slides are displayed within each classroom for continual reference or on a corkboard. Teacher Reference: The slides are printed out (e.g. A4) and are placed on the teacher's planning table. Warning: The slides are used to communicate to parents the school's calculation policy and are not intended to be used as a teaching resource. Please note: The VCP should not be used as a teaching resource.</p>	<p>KC1: Key Concepts! Addition $8 + 2 = 10$</p> <p>Subtraction $8 - 2 = 6$</p> <p>Multiplication $8 \times 2 = 16$</p> <p>Division $8 \div 2 = 4$</p>	<p>KC2: Key Concepts! Addition $8 + 2 = 10$</p> <p>Subtraction $8 - 2 = 6$</p> <p>Multiplication $8 \times 2 = 16$</p> <p>Division $8 \div 2 = 4$</p>	<p>Calculation Vocabulary equivalent to = equals is the same as = balance + Addition x Multiplication - Subtraction ÷ Division</p>			
Year Group	Key Concepts	Visualisation																					
KS1	8 + 2 = 10	8 + 2 = 10																					
KS2	8 - 2 = 6	8 - 2 = 6																					
KS3	8 x 2 = 16	8 x 2 = 16																					
KS4	8 ÷ 2 = 4	8 ÷ 2 = 4																					

				<p>What is 8 + 2? In my head? What is 8 - 2? In my head? What is 8 x 2? In my head? What is 8 ÷ 2? In my head?</p>	<p>1 Can I do this in my head?</p>	<p>2 Do I need to use a drawing or a jotting?</p>	<p>3 Do I need an expanded or a standard method?</p>	<p>4 Do I need a calculator?</p>
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Expanded

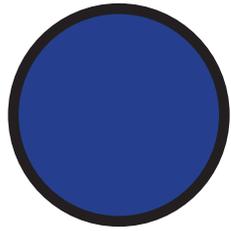
<p>C1a: Number Order</p> <p>0 1 2 3 4 5</p> <p>The numbers must be said once and placed in the conventional order.</p>	<p>C1b: At a Glance</p> <p>5 5 5 5 5</p> <p>See at a glance how many are in small collections and check correct number names for each collection.</p>	<p>C2a: Number Match</p> <p>1 2 3 4 5</p> <p>Each object to be counted must be touched or 'clicked' exactly once by the fingers on a pad.</p>	<p>C2b: Counting Objects</p> <p>Start 1 2 3 4 5</p> <p>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.</p>	<p>C2c: Order Arrangement</p> <p>1 2 3 4 5</p> <p>The arrangement of the objects does not affect how many there are.</p>			<p>C3: How Many?</p> <p>1 2 3 4 5</p> <p>The last number said tells how many in the whole collection. It does not mean the last object touched.</p>	
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<p>C4: Arranging</p> <p>Sets of 5</p> <p>7</p>	<p>C4a: Arranging</p> <p>Sets of 5</p> <p>18</p>	<p>C4b: Arranging</p> <p>Sets of 5 (Non Linear)</p> <p>18</p>	<p>C4c: Arranging</p> <p>Sets of 5 (Non Linear)</p> <p>43</p>	<p>C5: Counting Forwards</p> <p>0 1 2 3 4 5</p>	<p>C6: Counting On</p> <p>8 9 10 11 12 13</p>	<p>C7: Counting Back</p> <p>4 5 6 7 8 9</p>	<p>C8: Counting in Steps</p> <p>3 5 7 9 11</p>	
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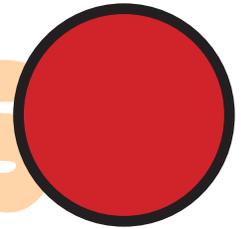
Edition

<p>Sense of Number Calculation Cards by Dave Godfrey www.senseofnumber.co.uk Tel: 0124 7758148 The following slides show the calculation $43 + 24$ using a variety of resources and manipulatives.</p>	<p>A: Base 10 $43 + 24 = 67$</p>	<p>B: Arrow Cards $43 + 24 = 67$</p>	<p>C: Hundred Square $43 + 24 = 67$</p> <table border="1"> <tr><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td><td>49</td><td>50</td></tr> <tr><td>51</td><td>52</td><td>53</td><td>54</td><td>55</td><td>56</td><td>57</td><td>58</td><td>59</td><td>60</td></tr> <tr><td>61</td><td>62</td><td>63</td><td>64</td><td>65</td><td>66</td><td>67</td><td>68</td><td>69</td><td>70</td></tr> </table>	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	<p>D: Numicon $43 + 24 = 67$</p>	<p>E: Place Value Counters $43 + 24 = 67$</p>	<p>F: Money $43 + 24 = 67$</p>	<p>G: Abacus $43 + 24 = 67$</p>	<p>H: Number Line $43 + 24 = 67$</p>
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																													

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Sense of Number Standard Alternative Slides



by Dave Godfrey

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



A7: Column Addition

100 10 1

687

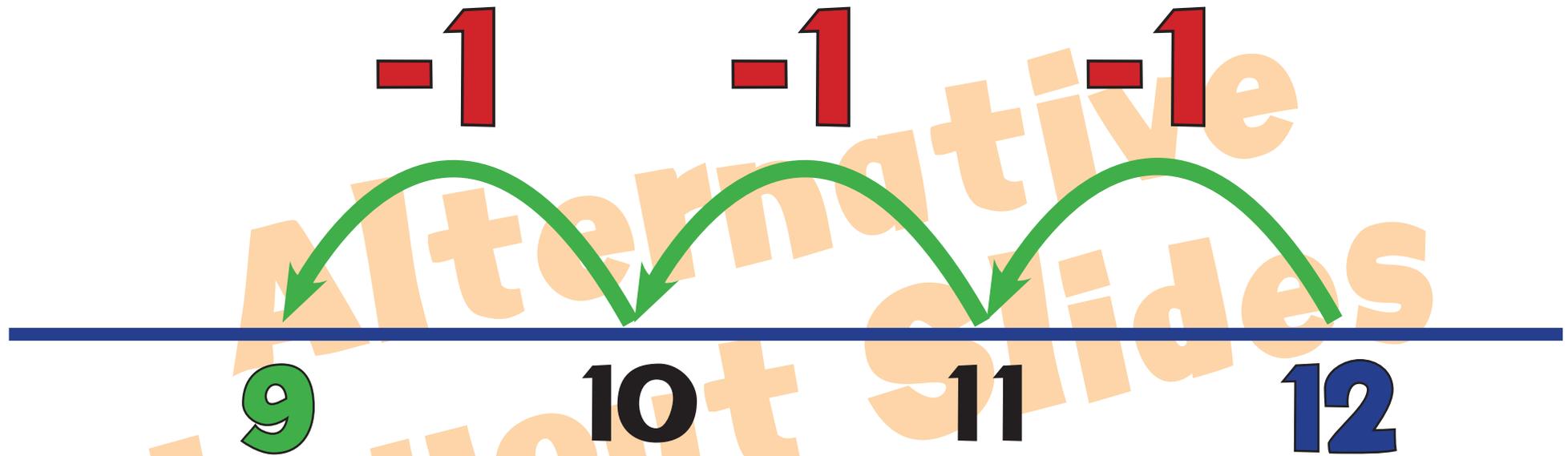
+ 248

1 1

935



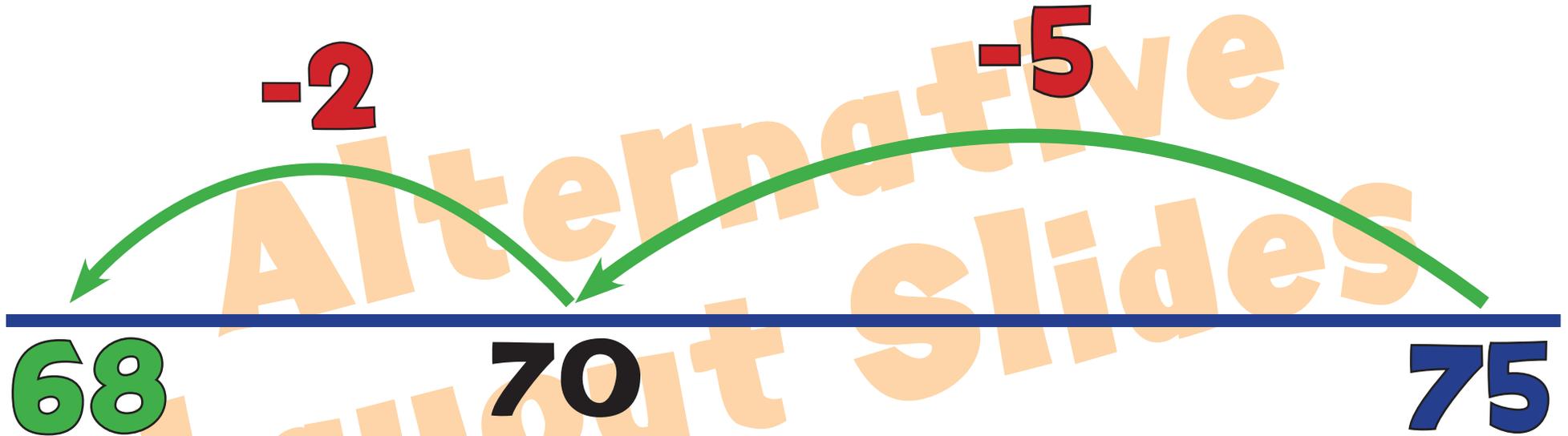
S3: Counting Back



$$12 - 3 = 9$$

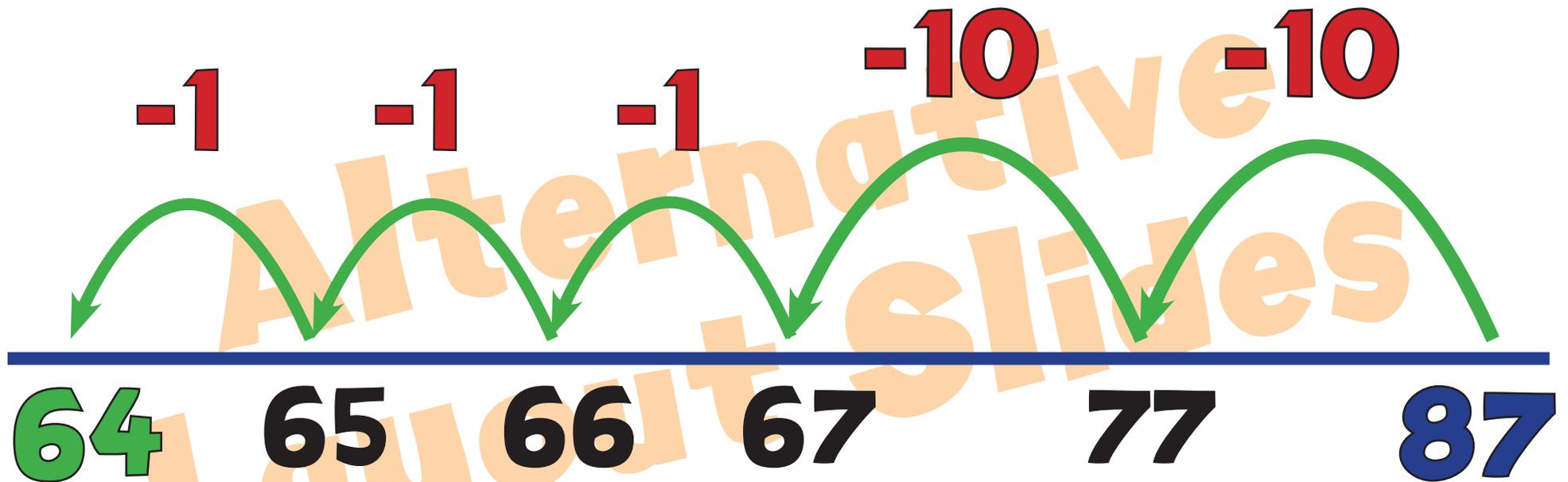
“What do I get if I take 3 away from 12? Answer: 9”

S5: Backwards Boing



$$75 - 7 = 68$$

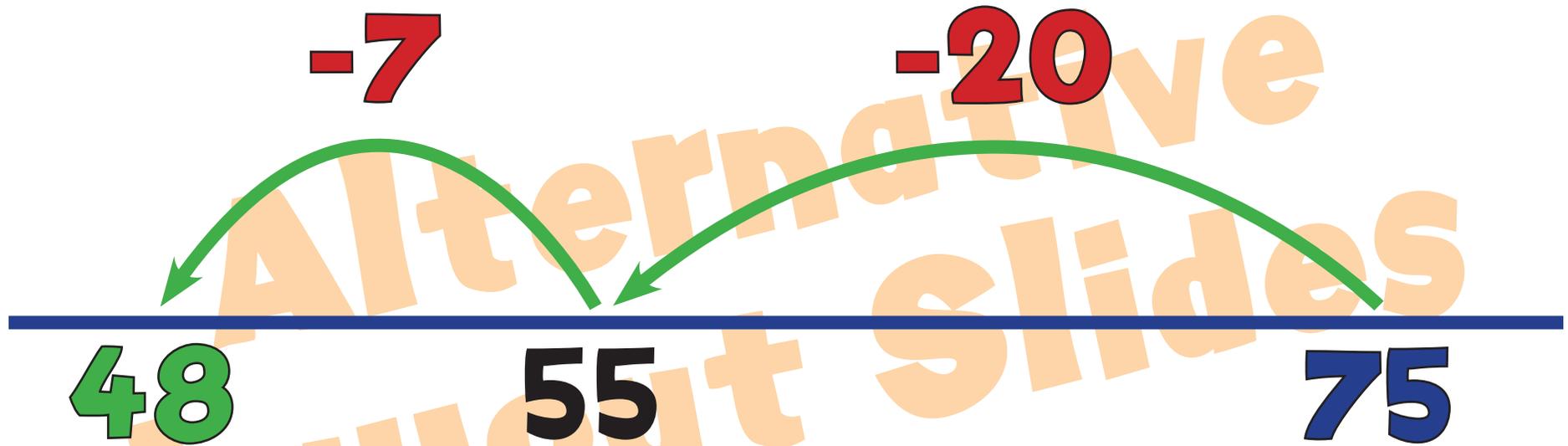
S6: Backwards Bounce



$$87 - 23 = 64$$



S7: Backwards Jump



$$75 - 27 = 48$$

M7: Column Multiplication

$$\begin{array}{r} \text{100} \quad \text{10} \quad \text{1} \\ 147 \\ \times \quad 4 \\ \hline 588 \end{array}$$

Alternative Layout slides



M9: Long Multiplication

Column

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

(5 x 43)

(60 x 43)