Sense of Number

Visual Calculation Policy

Expanded Edition for
St. Luke's C. of E. Primary School
October 2015

Graphic Design by Dave Godfrey

Compiled by the Sense of Number Maths Team

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

'A picture is worth 1000 words!'

www.senseofnumber.co.uk

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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 Addtion	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	12	274-285
	Alternative layouts (Column and Subtraction on a Number Line)	11	86-96	29	285-315

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Guide to using a
Visual Calculation Policy

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

Typical uses:

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

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

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

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

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

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KC1: Key Concepts!

Addition

+

8 + 2 = 10

"What is 8 add 2?"
Answer: 10

Subtraction

-

8 - 2 = 6

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

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KC2: Key Concepts!

Multiplication

×

$$8 \times 2 = 16$$

"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")

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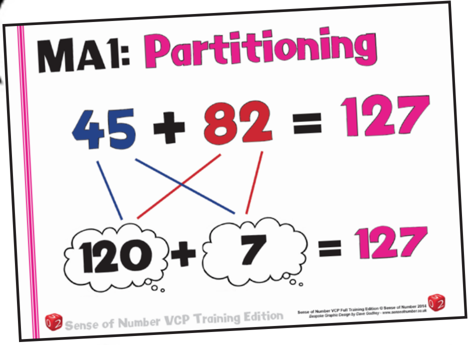

MA1: Partitioning

45 + 82 = 127

120 + 7 = 127

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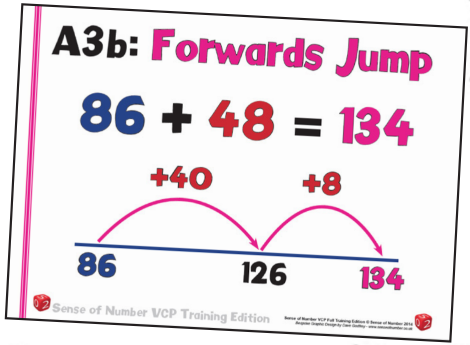
In my head?

→

Need a Jotting?



A3b: Forwards Jump

86 + 48 = 134

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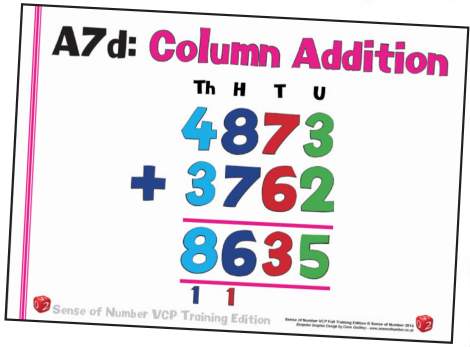
↓



A7d: Column Addition

Th H T U

4873

+ 3762

8635

1 1

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Formal method?

←

Need a calculator?

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1

Can I do this in my head?

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2

Do I need to use a drawing or a jotting?

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3

Do I need an expanded or a standard method?

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4

Do I need a calculator?

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Calculation Vocabulary

=

equivalent to

equals

same value as

balance

Operations

+ Addition

x Multiplication

- Subtraction

÷ Division

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Addition Vocabulary

+

increase

add

total

plus

addition

more

count on

sum

altogether

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Subtraction Vocabulary

−

count back

decrease

minus

less

subtract

fewer

count on

take away

difference between

−

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Multiplication Vocabulary

groups of

product

times

multiple

double

×

lots of

multiply

×

repeated addition

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Division Vocabulary

÷

remainder

group

share

halve

divisor

factor

quotient

equal groups of

divide

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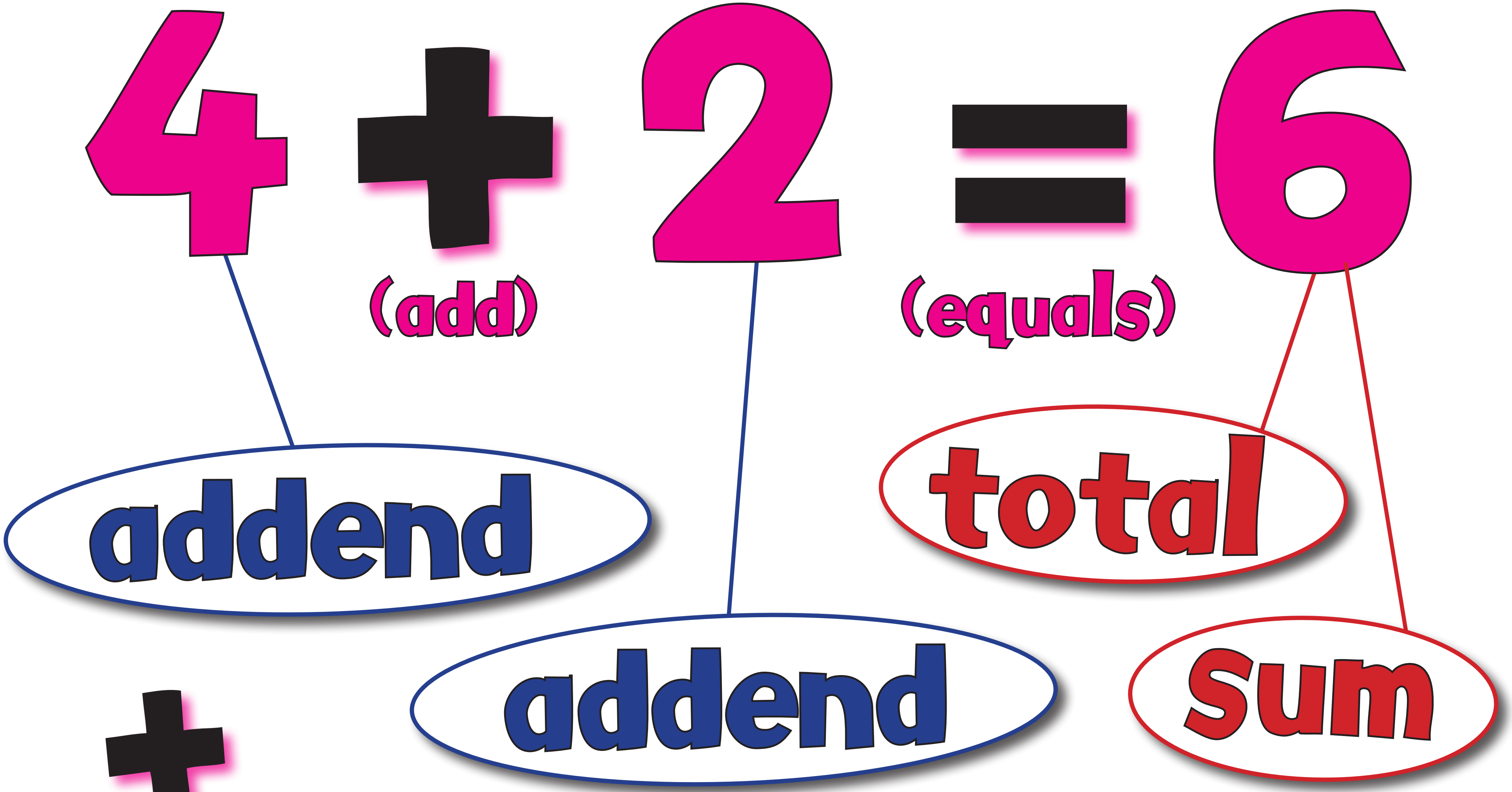
Addition Calculation



4 + 2 = 6

(add)

(equals)

addend

addend

total

sum

+

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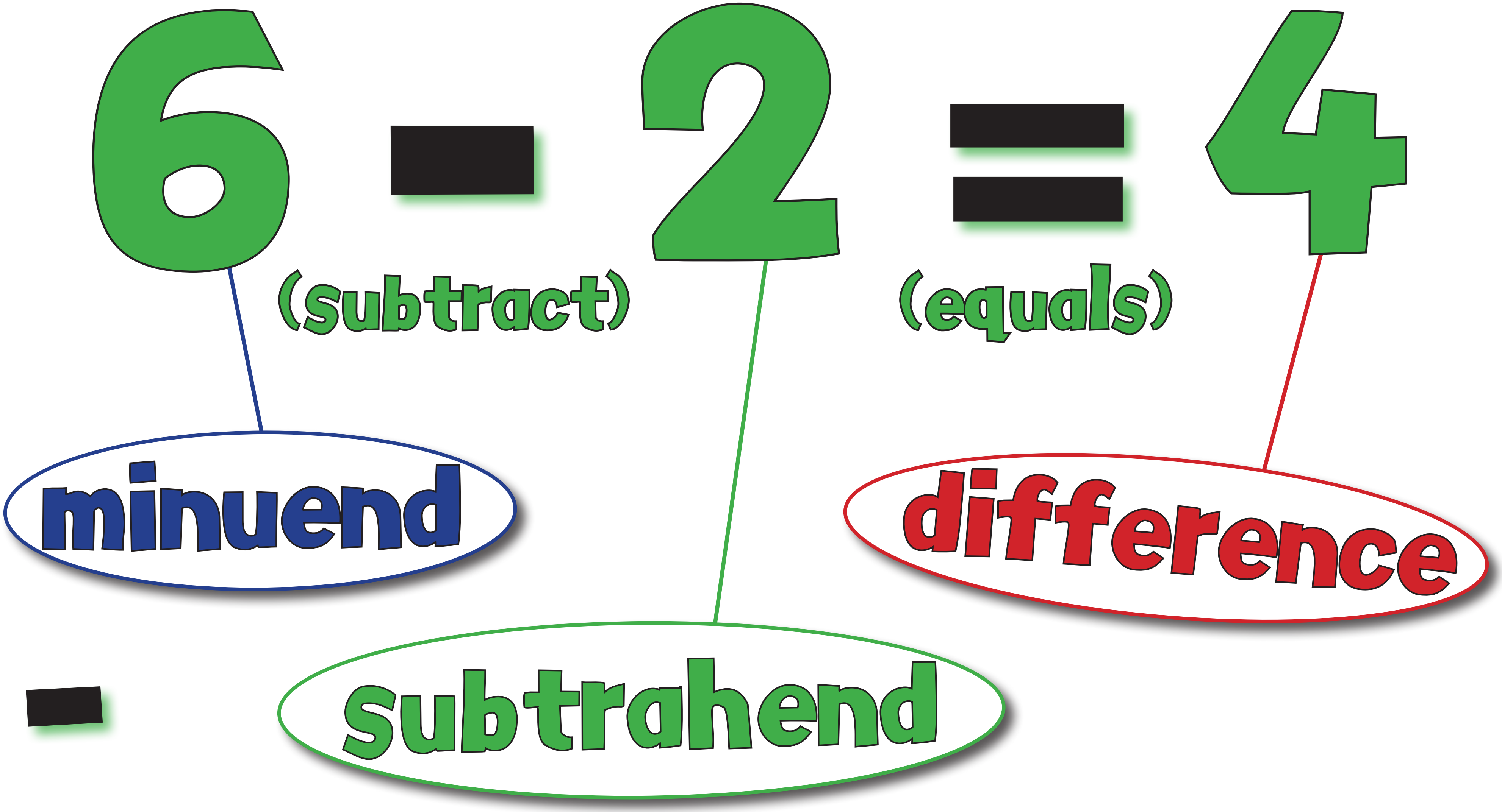
Subtraction Calculation



6 - 2 = 4

(subtract)

(equals)

minuend

subtrahend

difference

-

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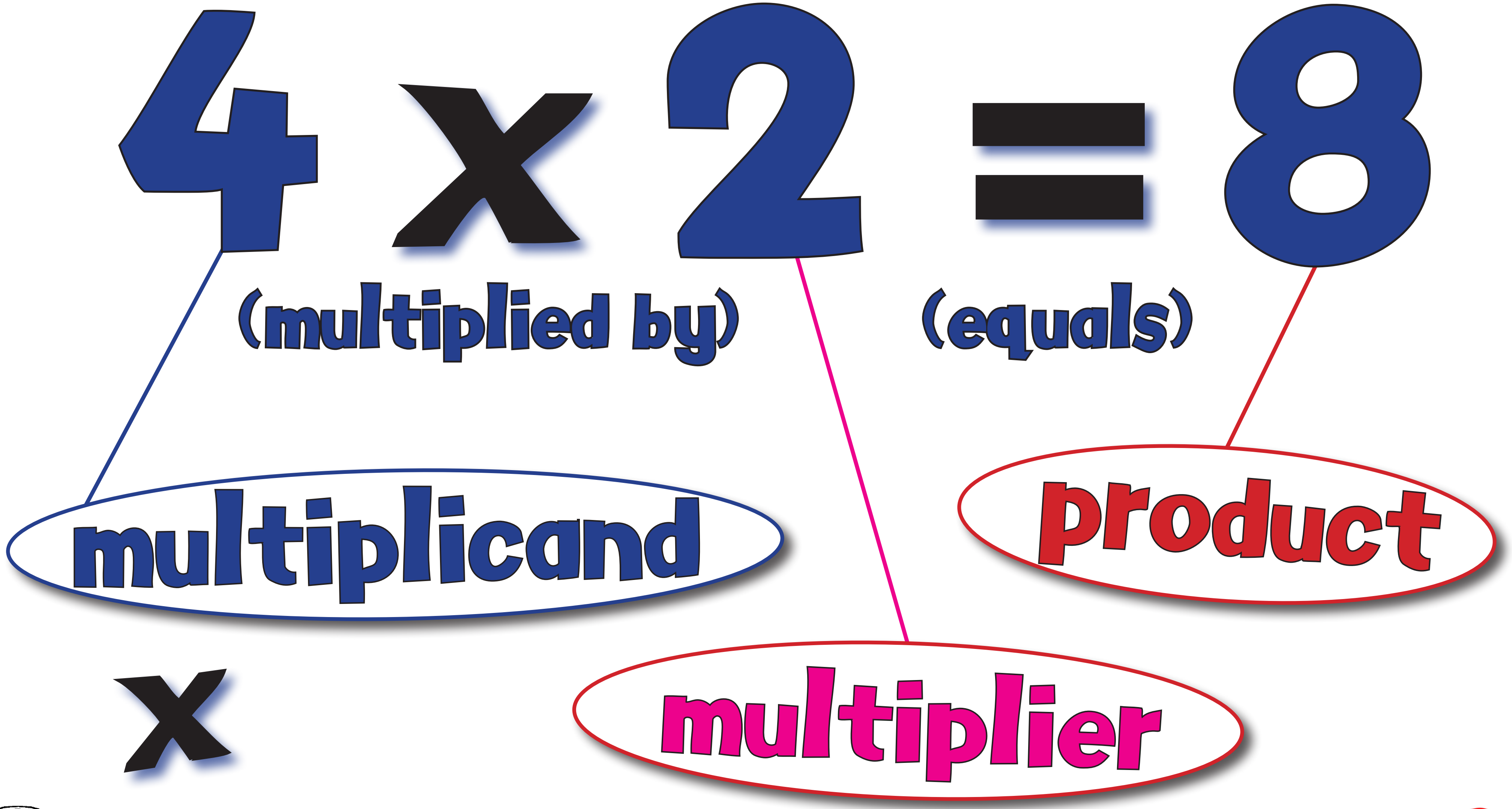
Multiplication Calculation



4 x 2 = 8

(multiplied by)

(equals)

multiplicand

multiplier

product

x

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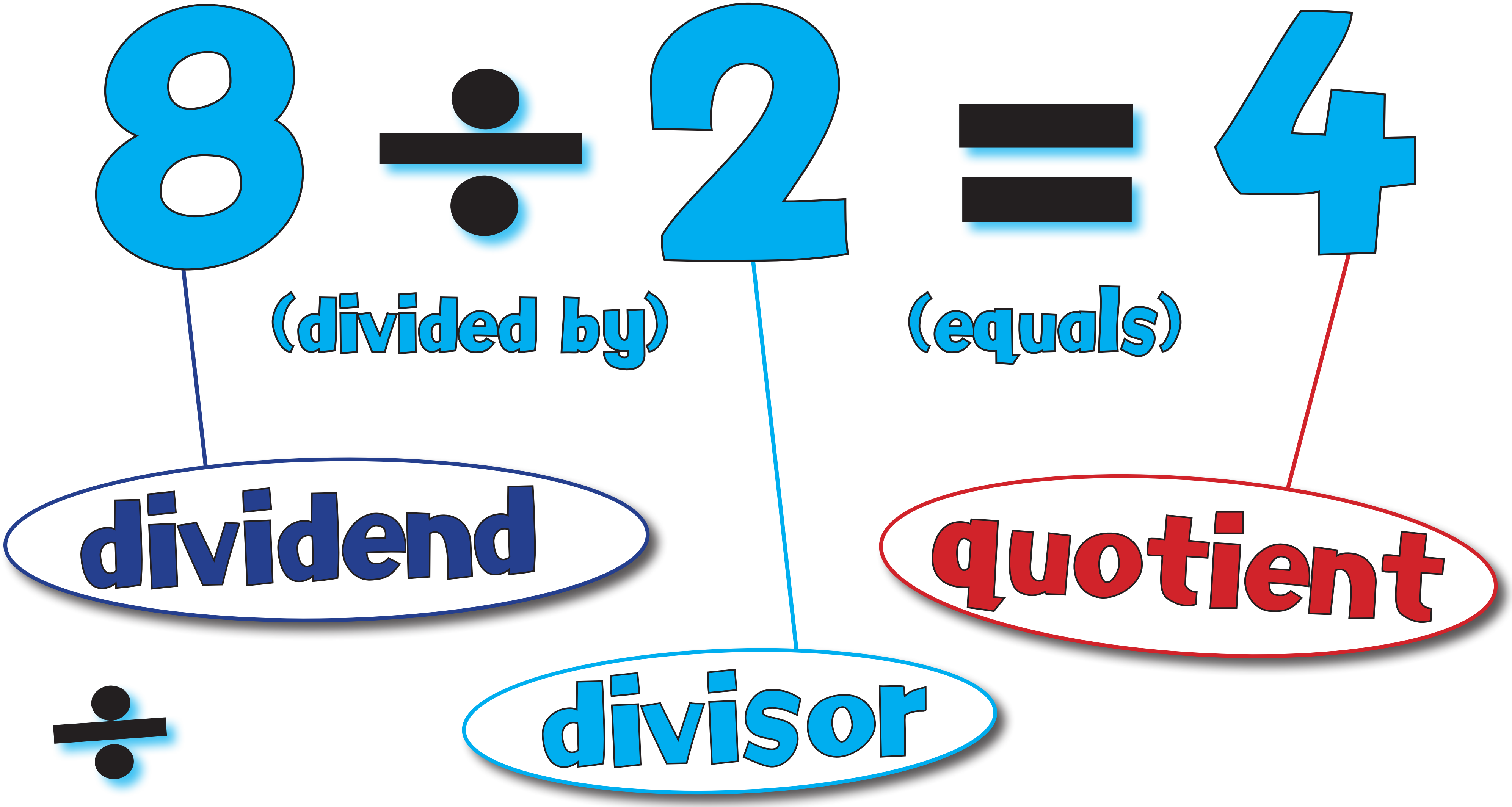
Division Calculation



8 ÷ 2 = 4

(divided by)

(equals)

dividend

divisor

quotient

÷

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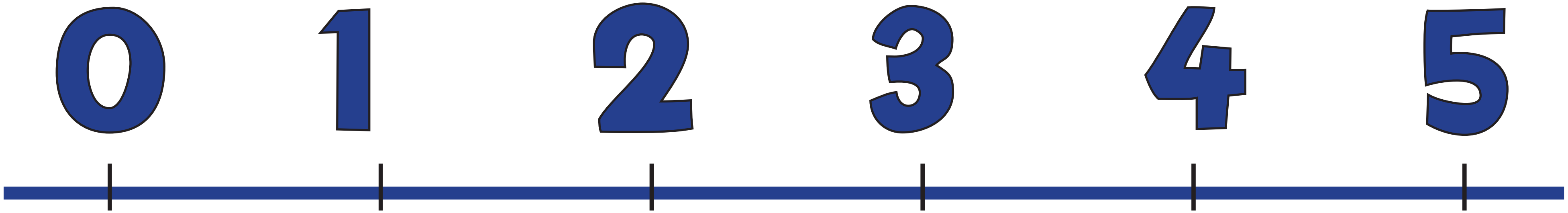
C1a: Number Order



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

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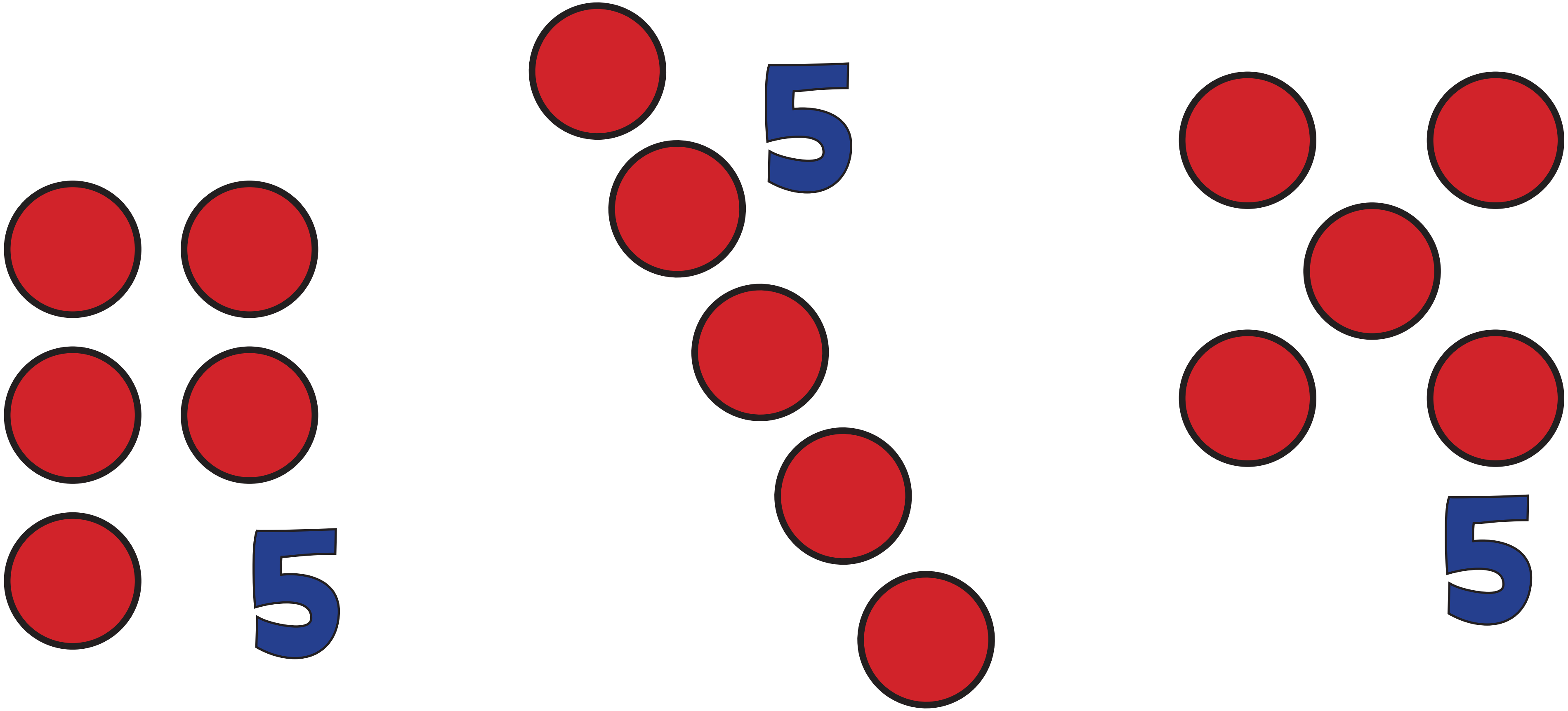
C1b: At a Glance

Subitising



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

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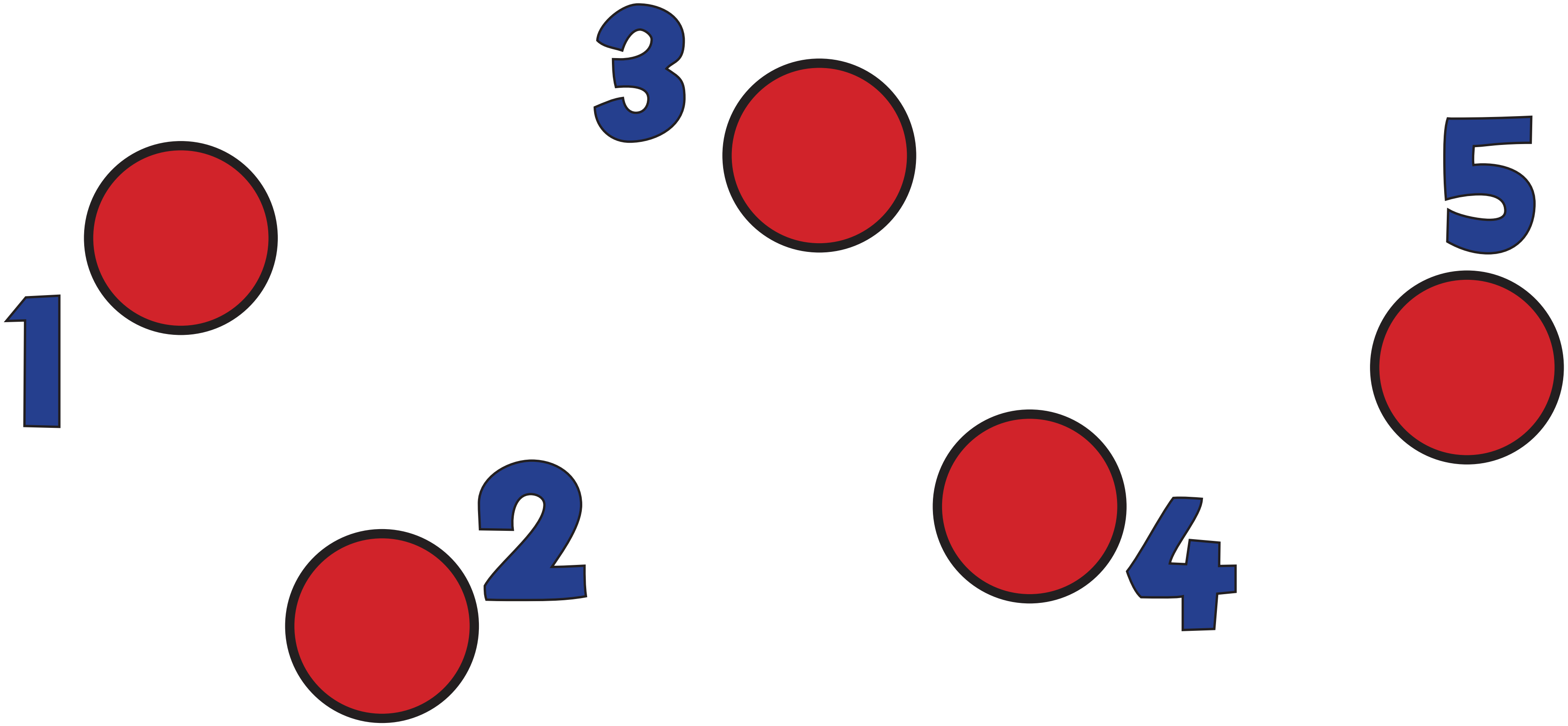
C2a: Number Match

One to One Correspondence



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

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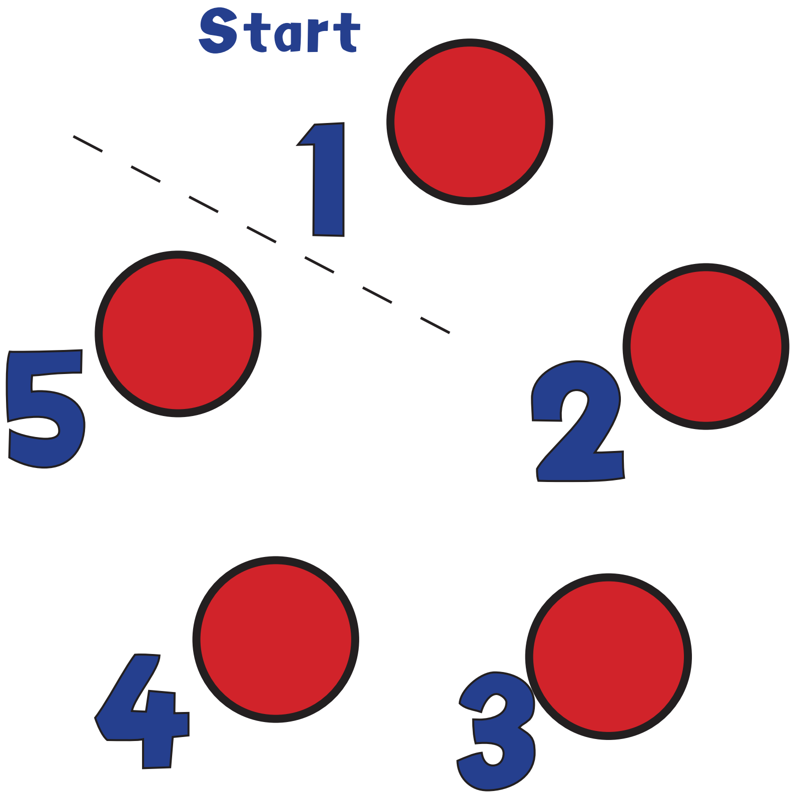
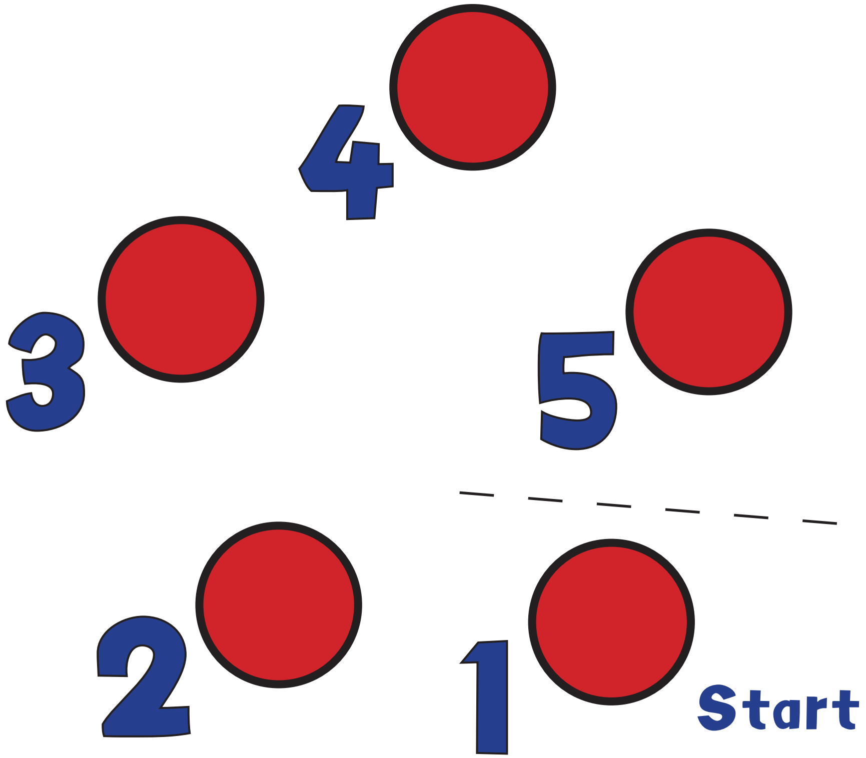
C2b: Counting Objects

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.

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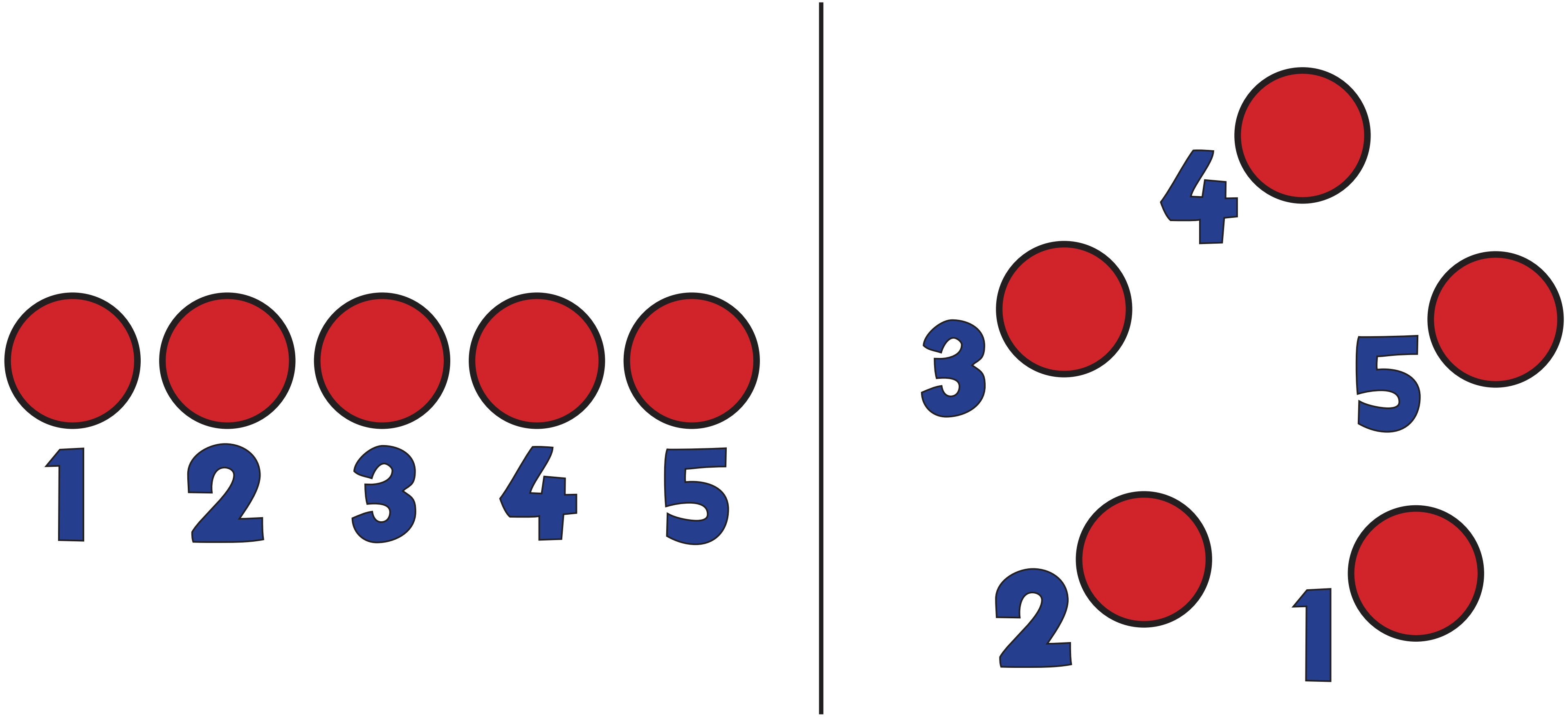
C2c: Order Arrangement

Arrangement Irrelevance



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

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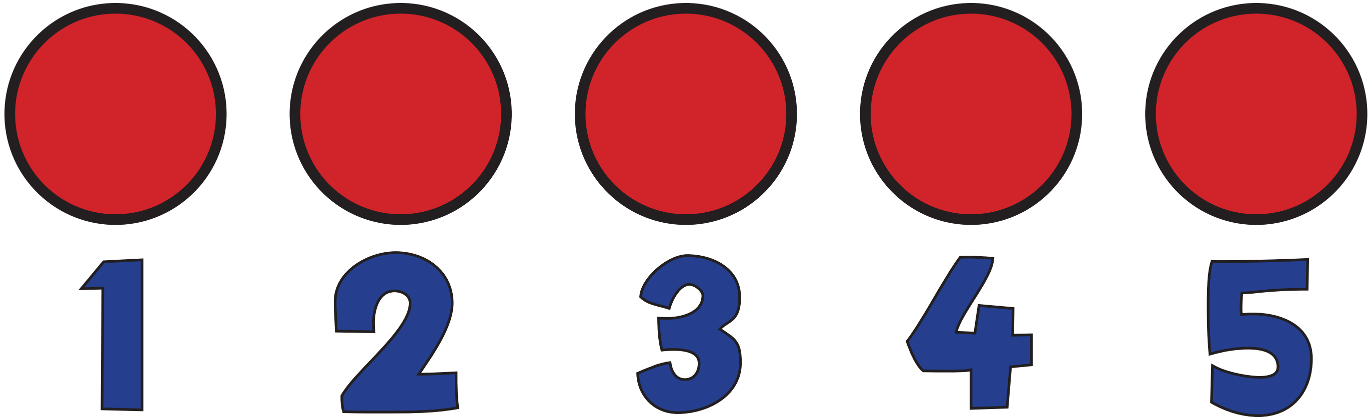
C3: How Many?

Final number is the total



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

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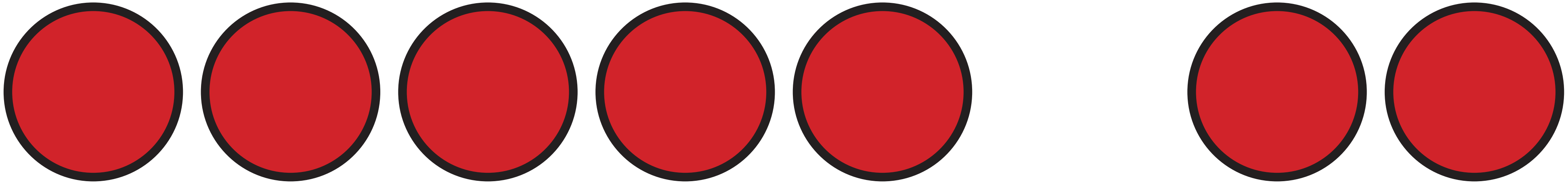
C4: Arranging

Sets of 5



7

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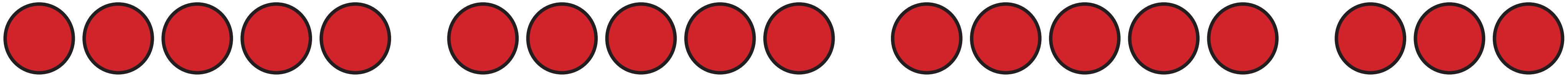
C4a: Arranging

Sets of 5



18

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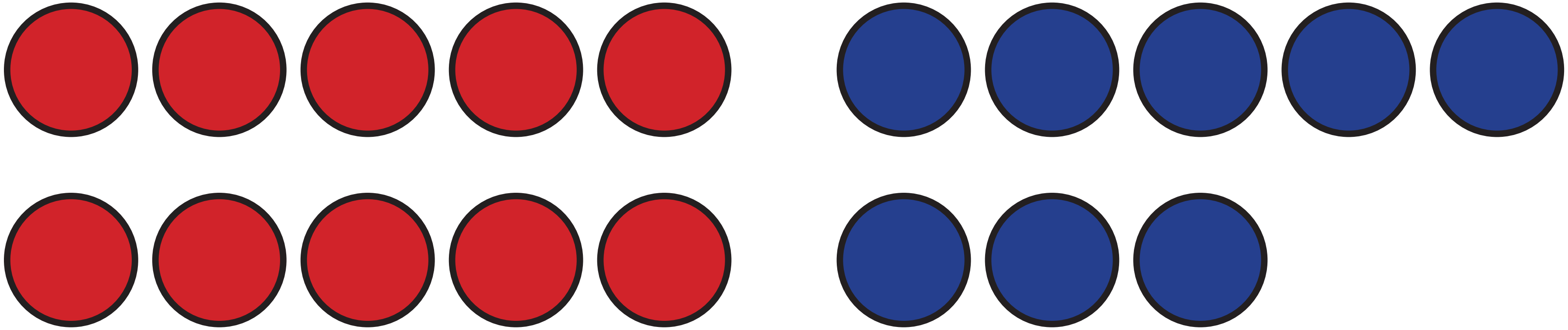
C4b: Arranging

Sets of 5 (Non Linear)



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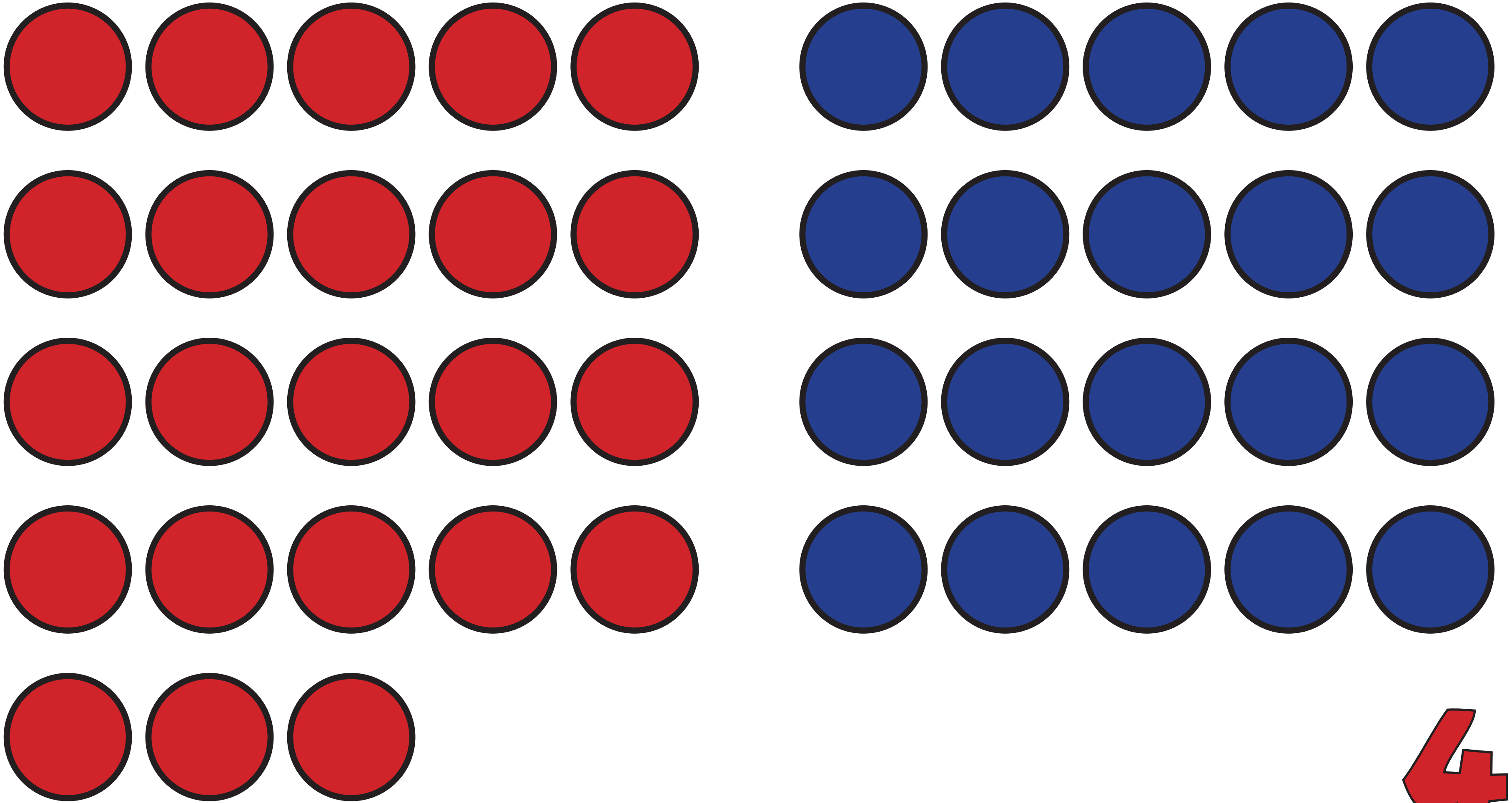
C4c: Arranging

Sets of 5 (Non Linear)



43

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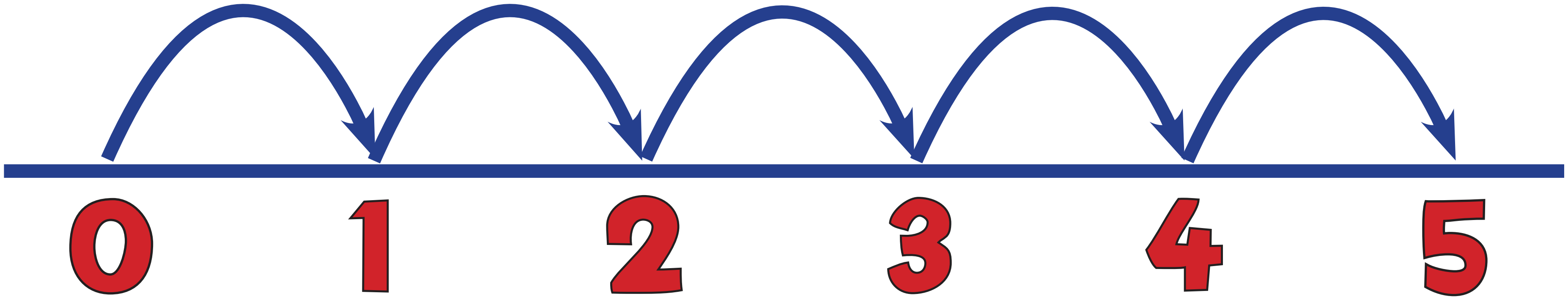
C5: Counting Forwards



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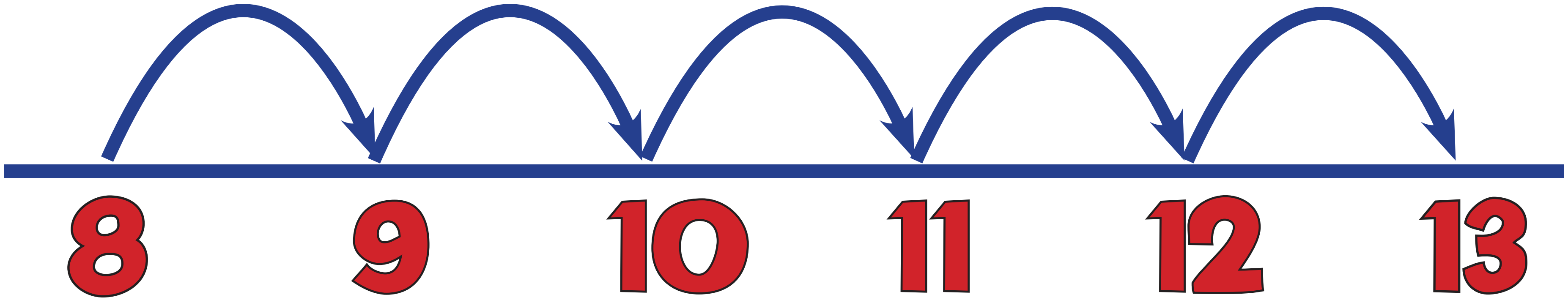
C6: Counting On



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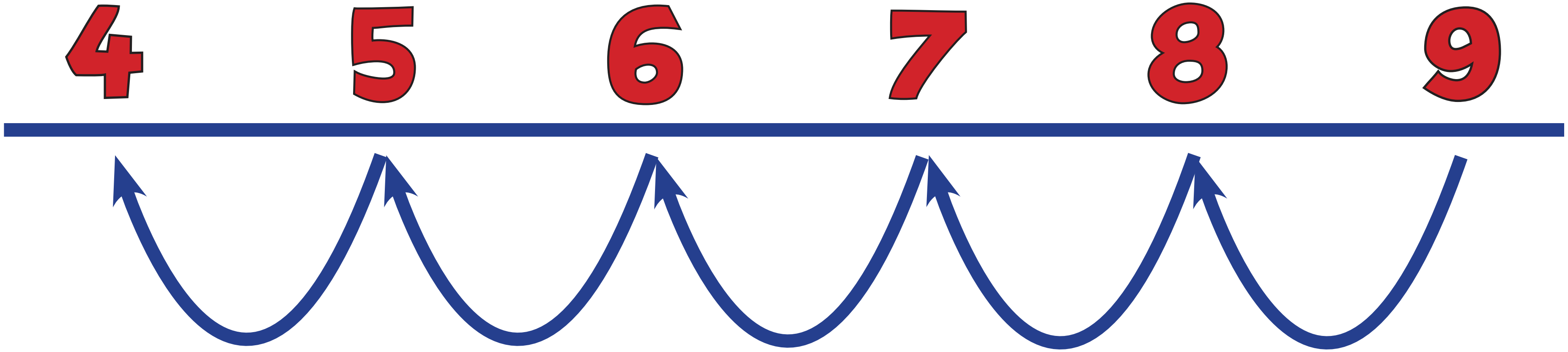
C7: Counting Back



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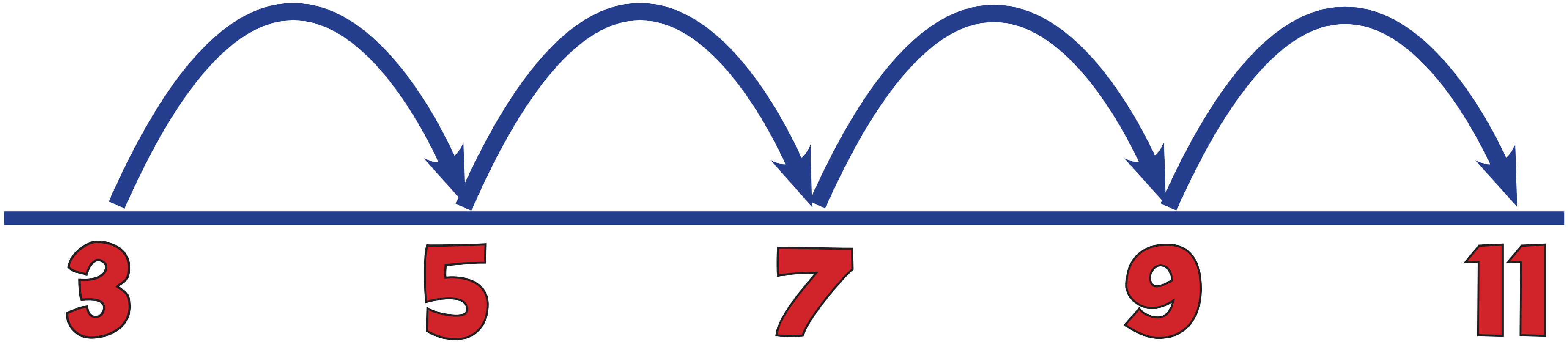
C8: Counting in Steps



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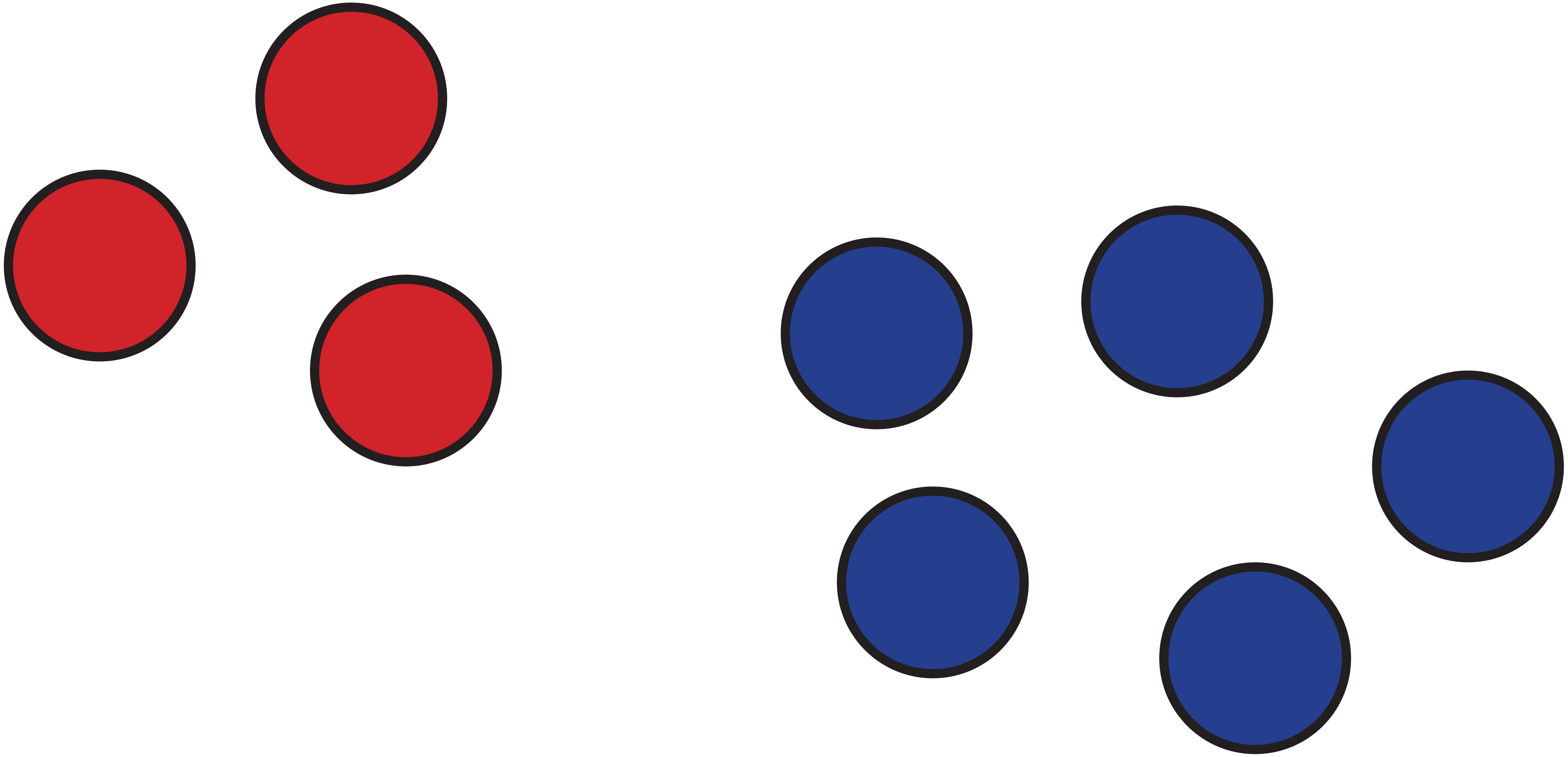
A1: Objects & Pictures



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

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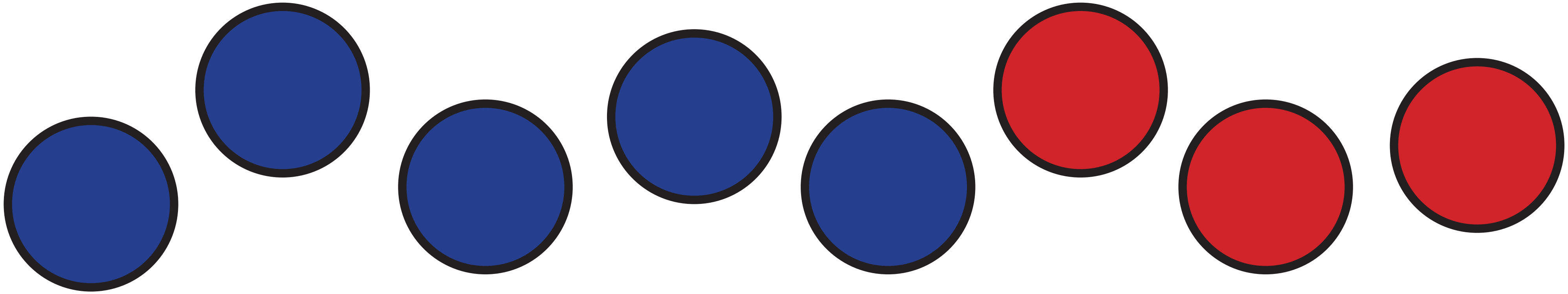
A1a: Largest Number 1st

1



$$5 + 3 = 8$$

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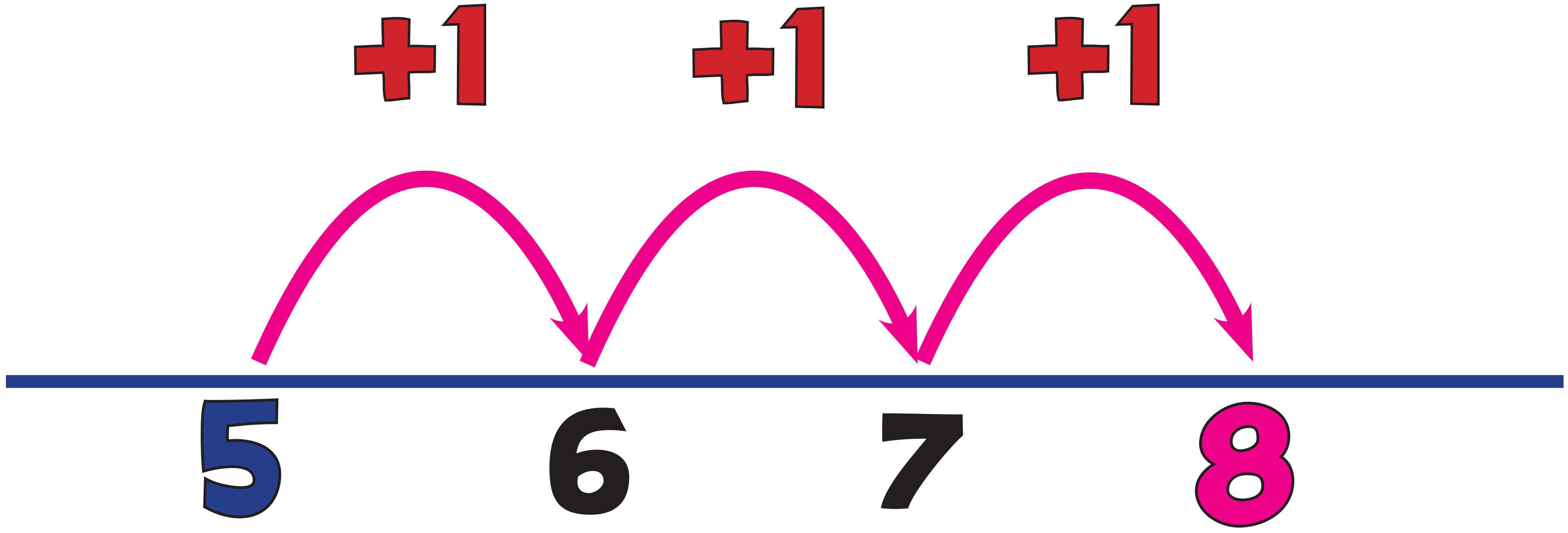
A2: Counting On

1



+1 +1 +1

5 6 7 8

5 + 3 = 8

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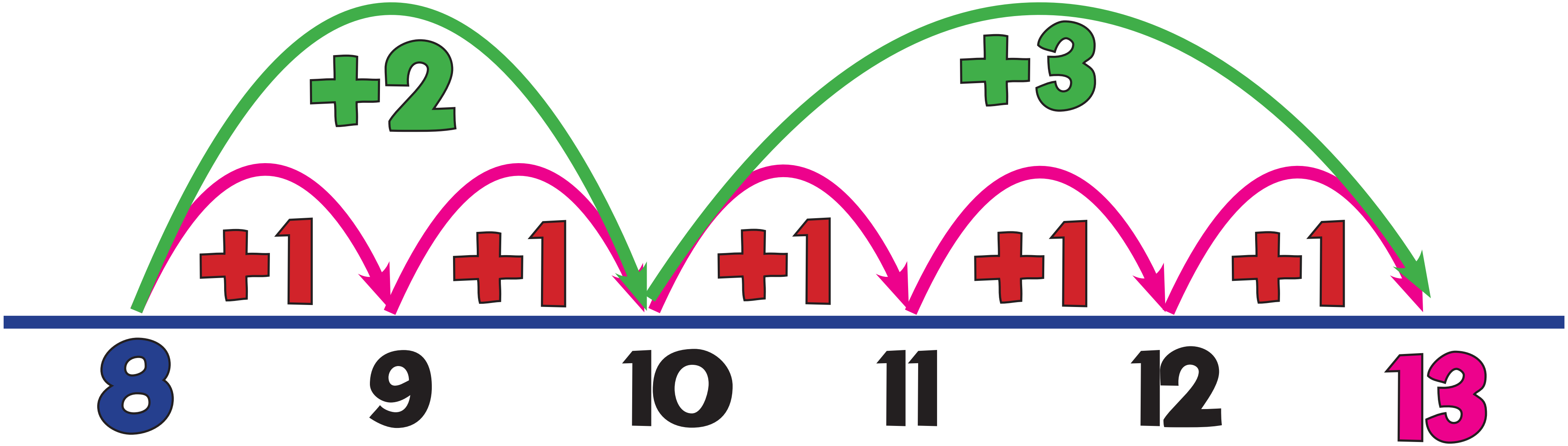
A2a: Counting On

1

Bridging 10



8 + 5 = 13

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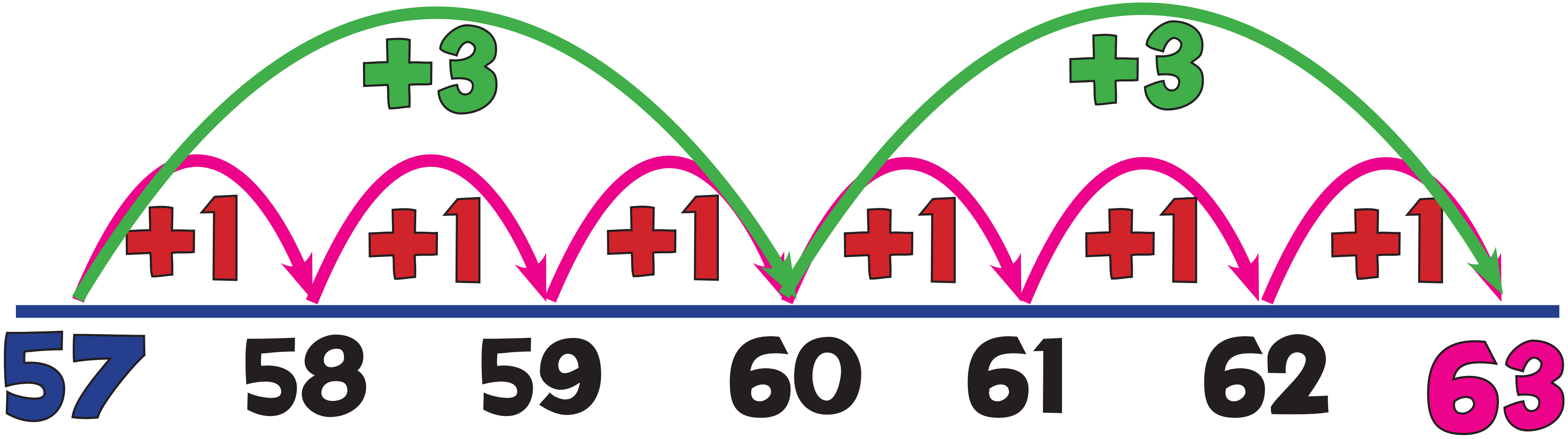
A2b: Counting On

2

Bridging 10s Number



$$57 + 6 = 63$$

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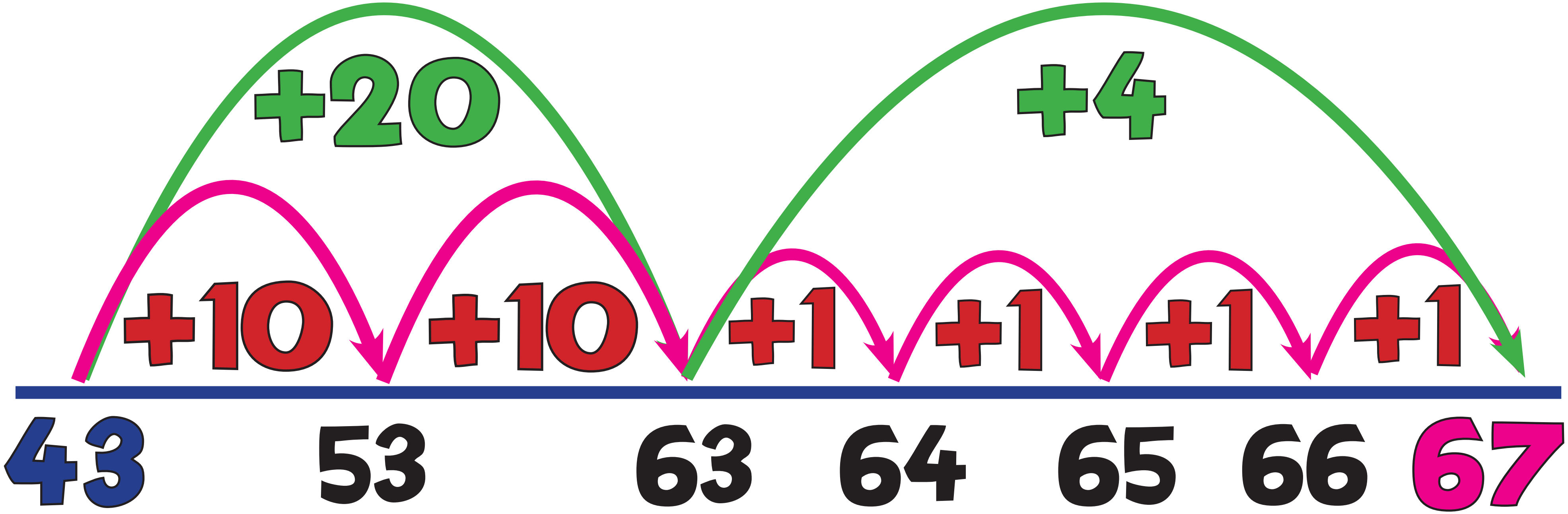
A3: Forwards Jump

2

43 + 24 = 67



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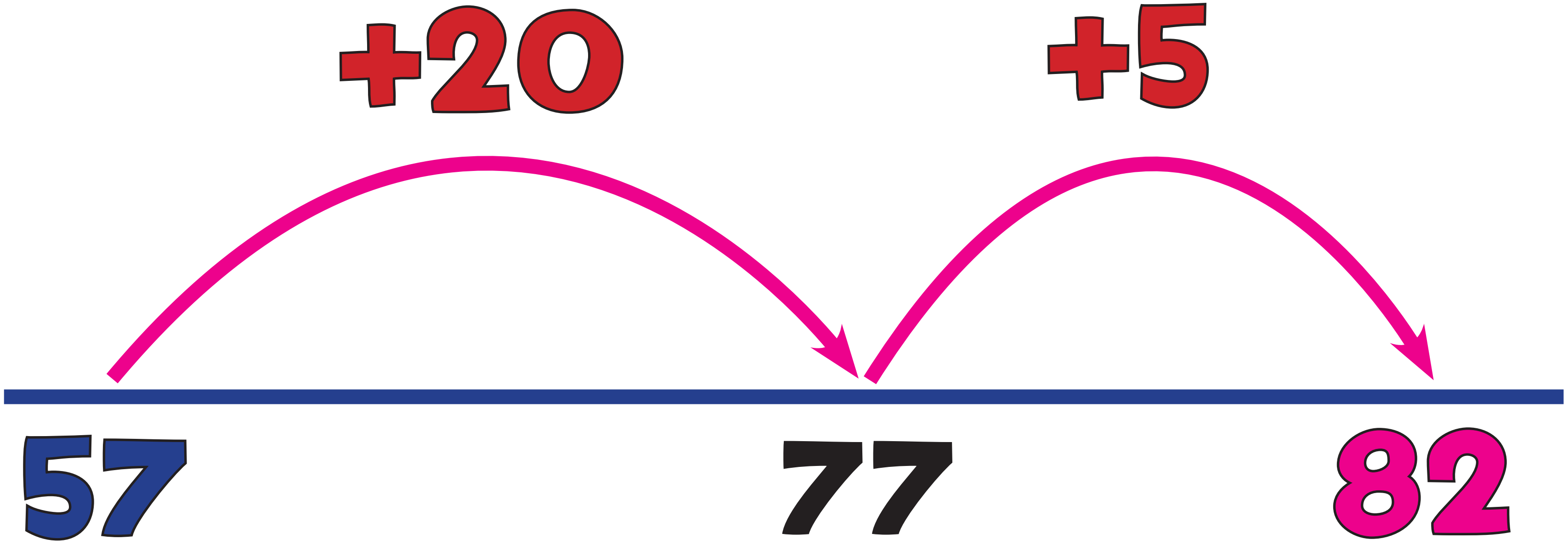
A3a: Forwards Jump

2

57 + 25 = 82



+20

+5

57

77

82

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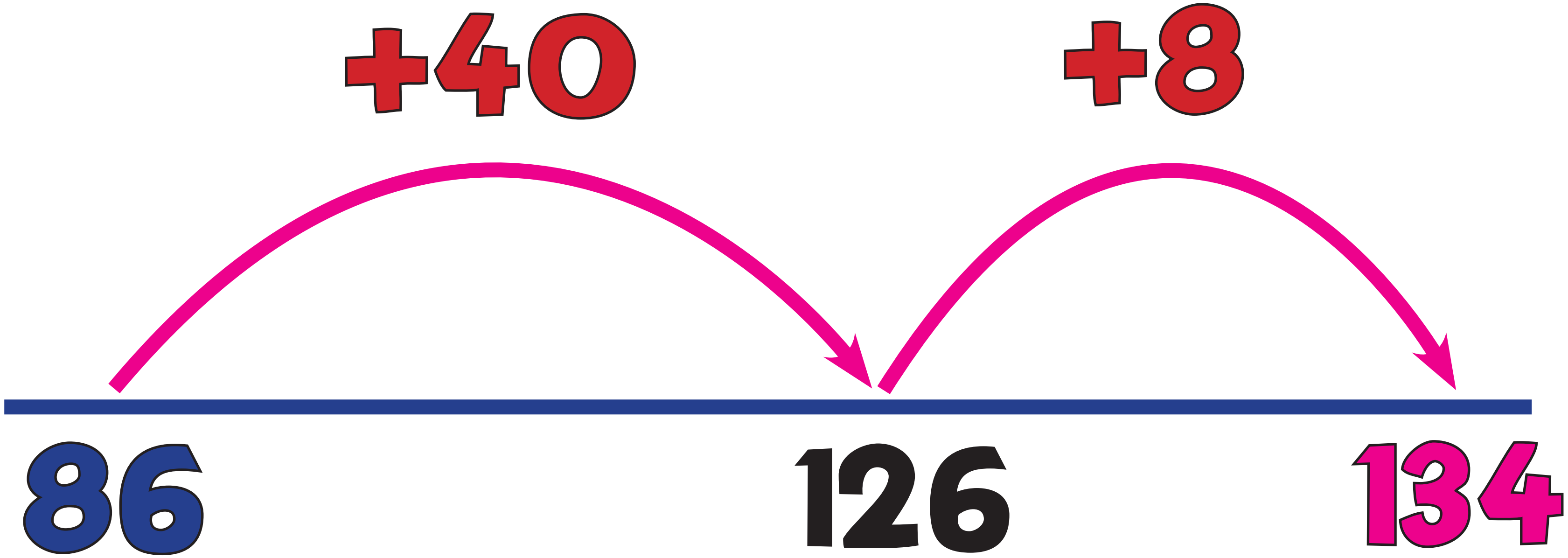
A3b: Forwards Jump

2/3

86 + 48 = 134



+40

+8

86

126

134

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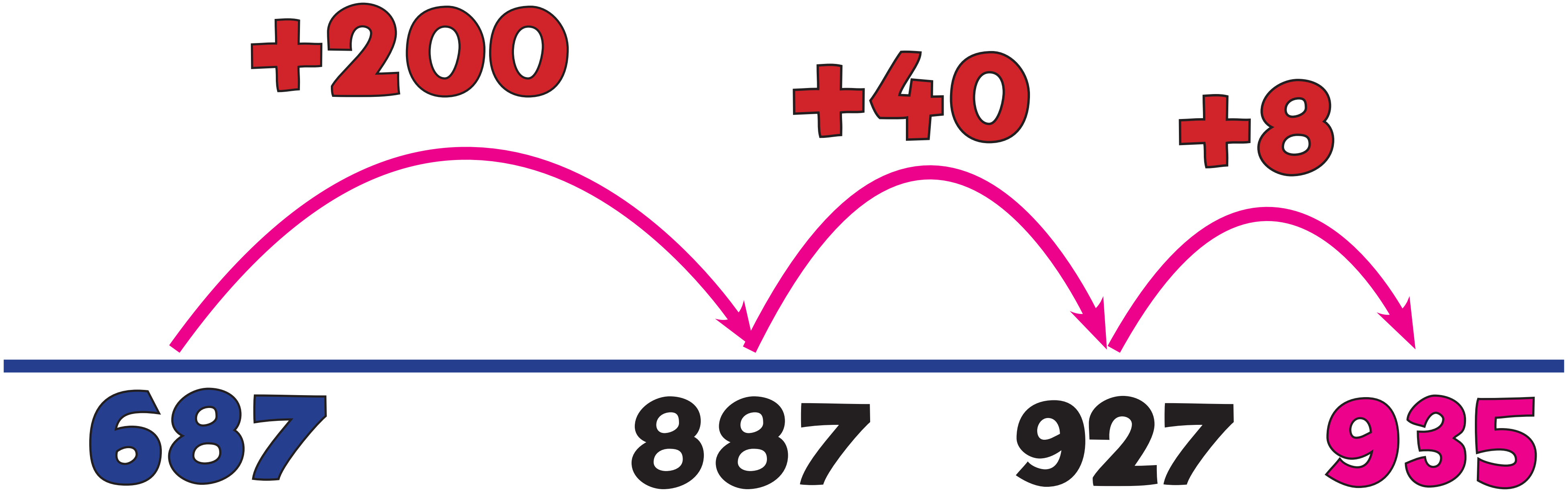
A3c: Forwards Jump

3

687 + 248 = 935



+200

+40

+8

687

887

927

935

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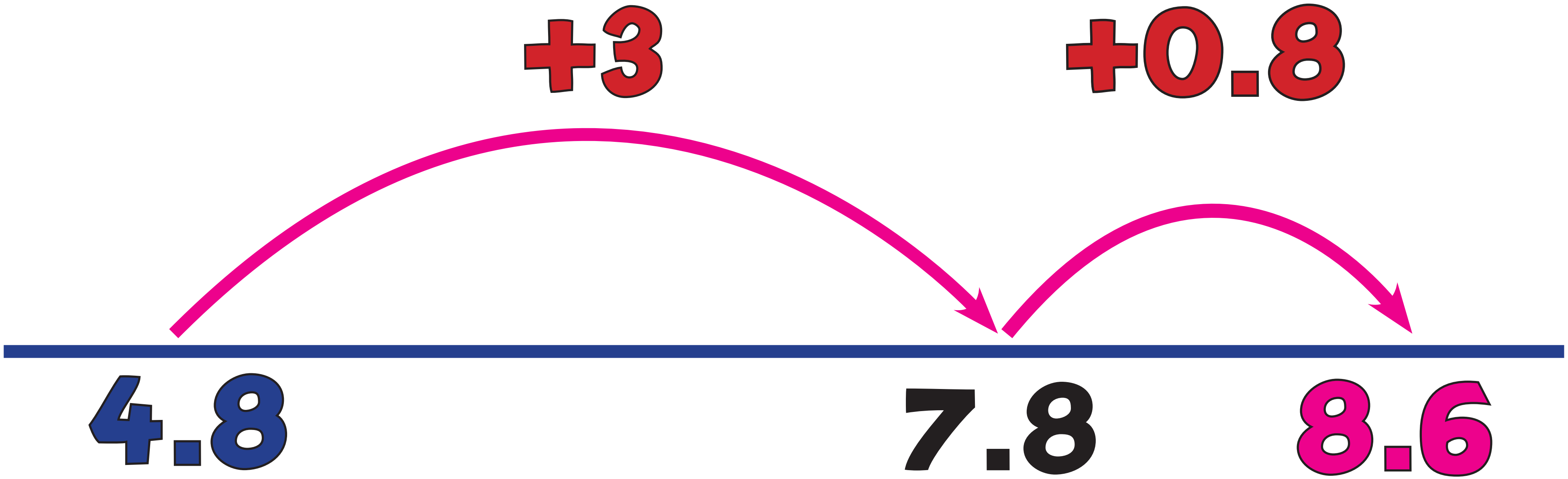
A3f: Decimal Jump

5

4.8 + 3.8 = 8.6



+3

+0.8

4.8

7.8

8.6

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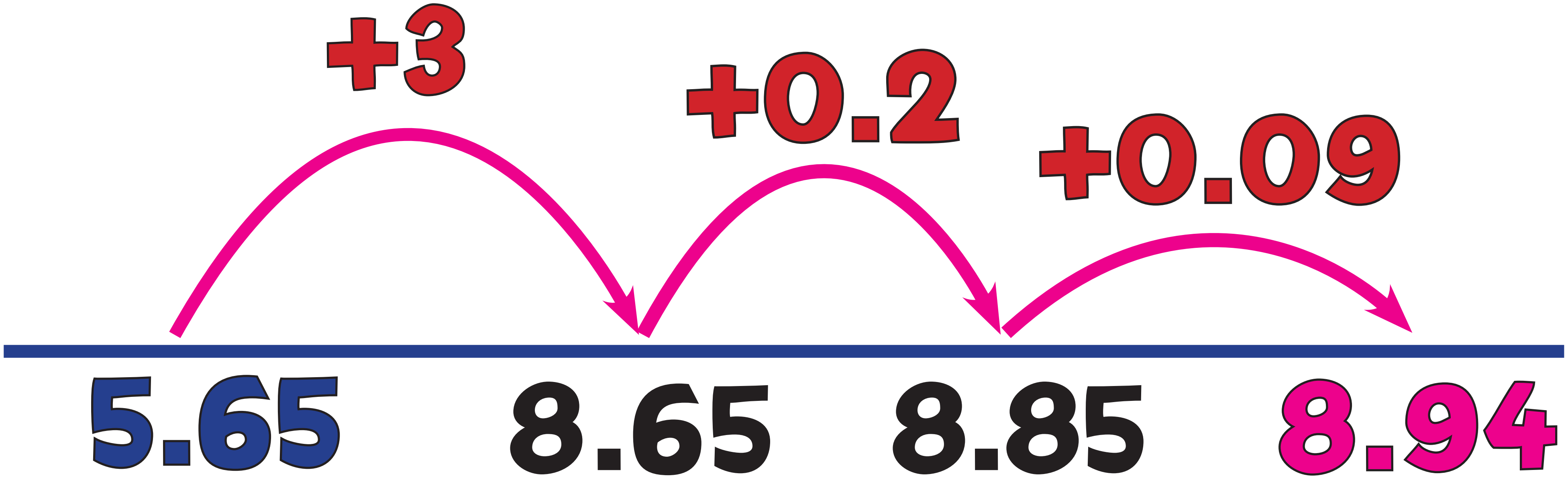
A3g: Decimal Jump

5

5.65 + 3.29 = 8.94


+3

+0.2

+0.09

5.65 8.65 8.85 8.94

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A4: Partitioning

2

43 + 24 = 67

40 + 20 = 60

3 + 4 = 7

67

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A4a: Partitioning

2

57 + 25 = 82

50 + 20 = 70
7 + 5 = 12

82

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A4b: Partitioning

2/3

86 + 48 = 134

80 + 40 = 120

6 + 8 = 14

134

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A4c: Partitioning

3

$$687 + 248 = 935$$

$$\begin{array}{rcrcr}
600 & + & 200 & = & 800 \\
80 & + & 40 & = & 120 \\
7 & + & 8 & = & 15 \\
\cline{5-5}
 & & & & 935
\end{array}$$

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A4f: Partitioning

5

4.8 + 3.8 = 8.6

$$\begin{array}{rcrcr} 4 & + & 3 & = & 7 \\ 0.8 & + & 0.8 & = & 1.6 \\ \hline & & & & 8.6 \end{array}$$

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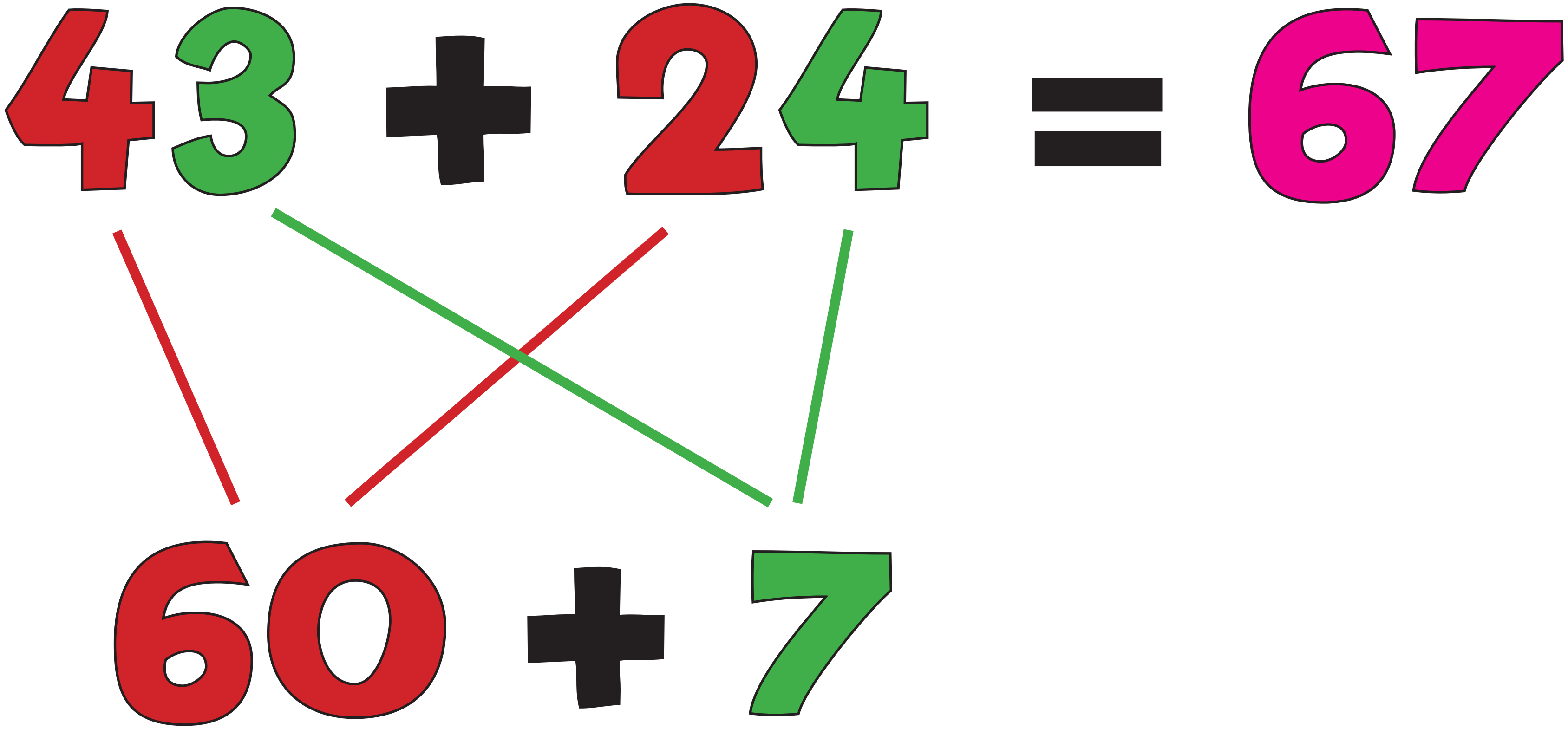
A5: Partition Jot

2



43 + 24 = 67

60 + 7

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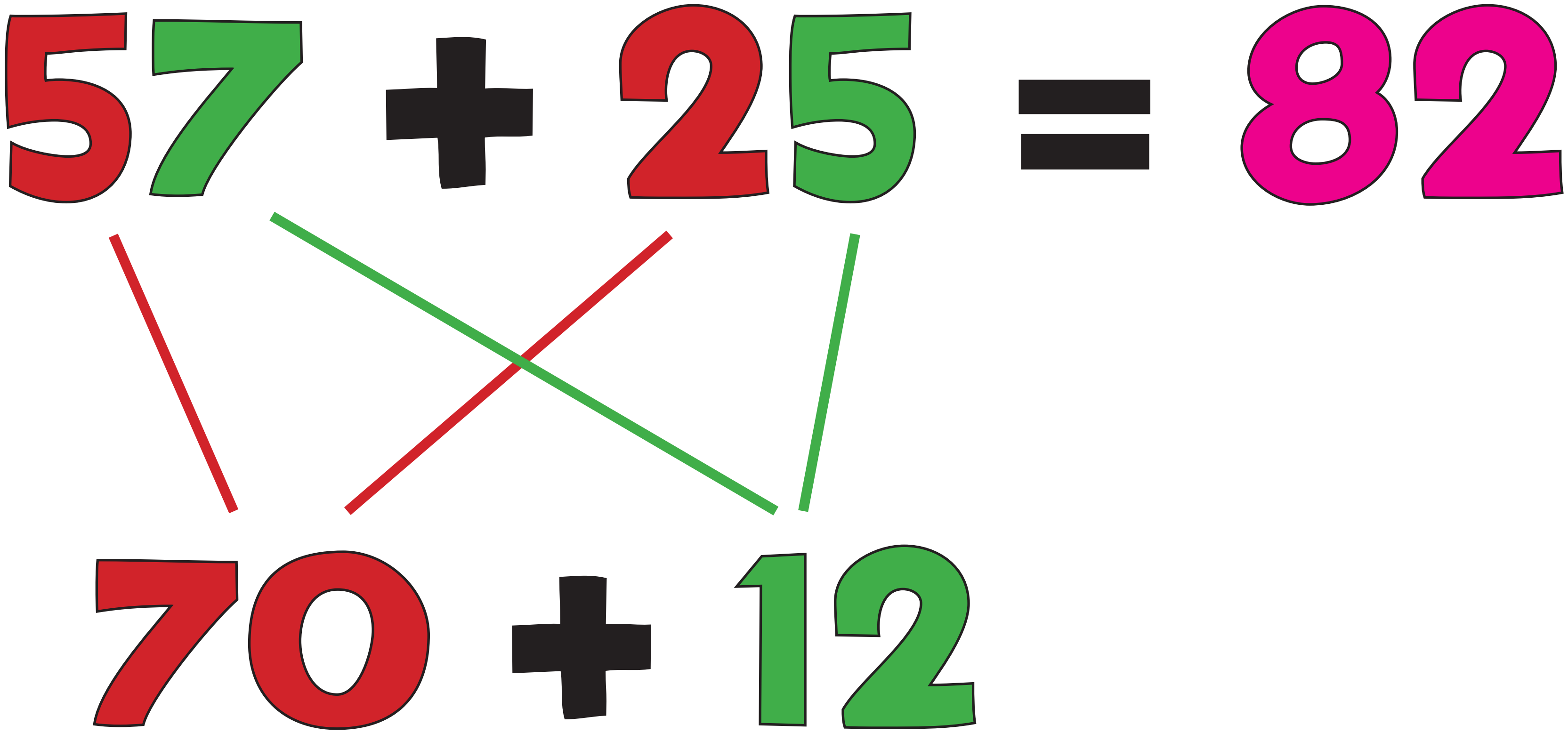
A5a: Partition Jot

2



57 + 25 = 82

70 + 12

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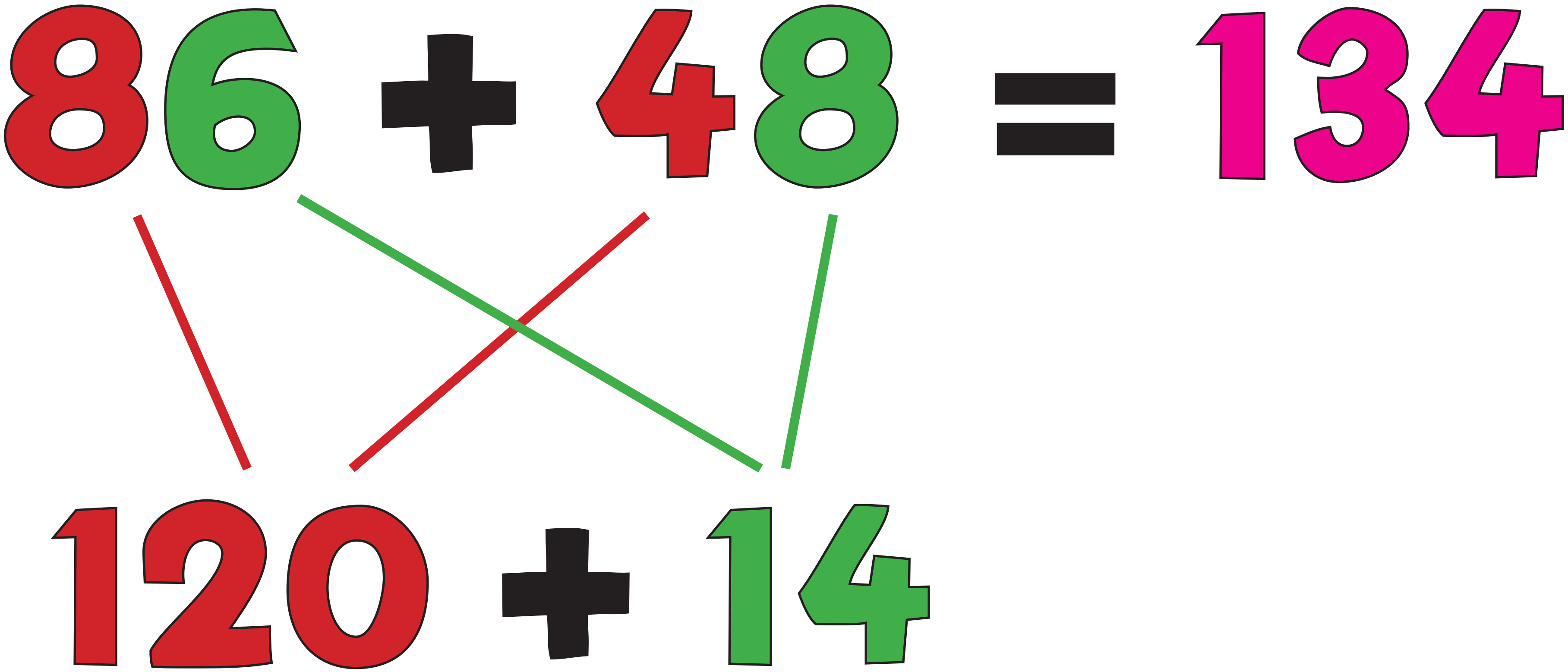
A5b: Partition Jot

2/3



86 + 48 = 134

120 + 14

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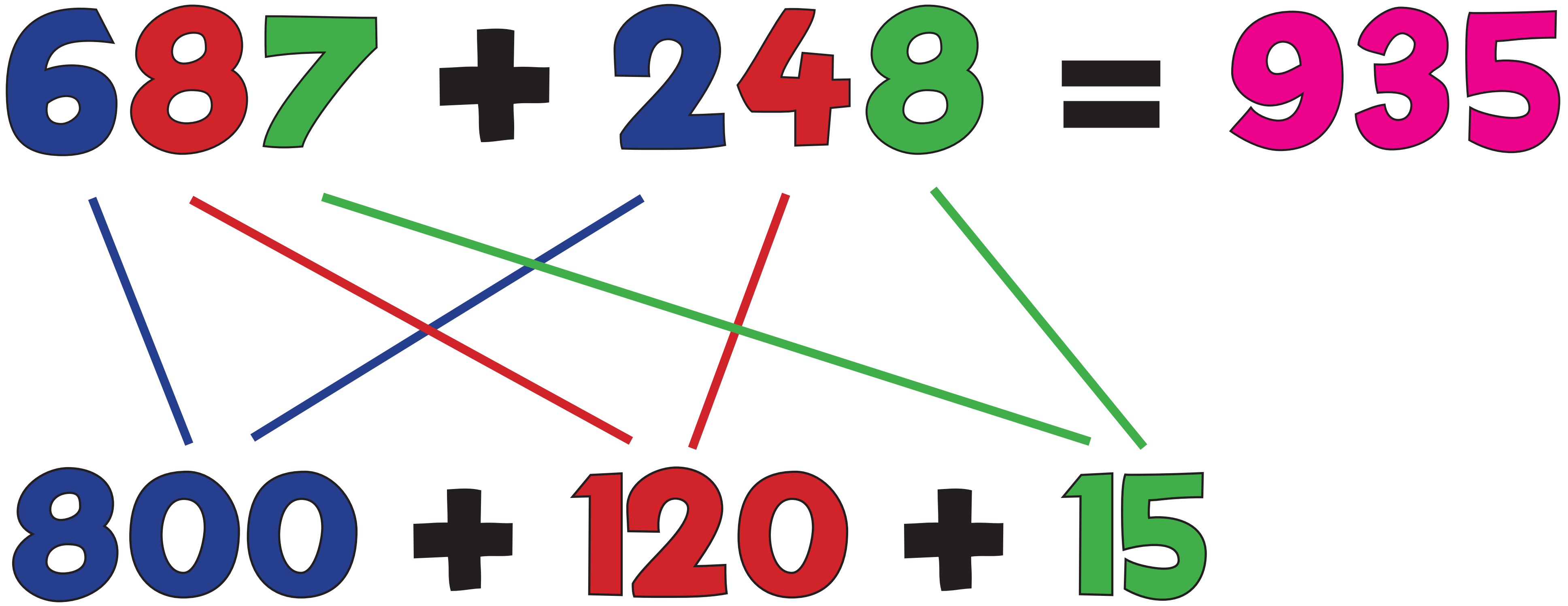
A5c: Partition Jot

3



687 + 248 = 935

800 + 120 + 15

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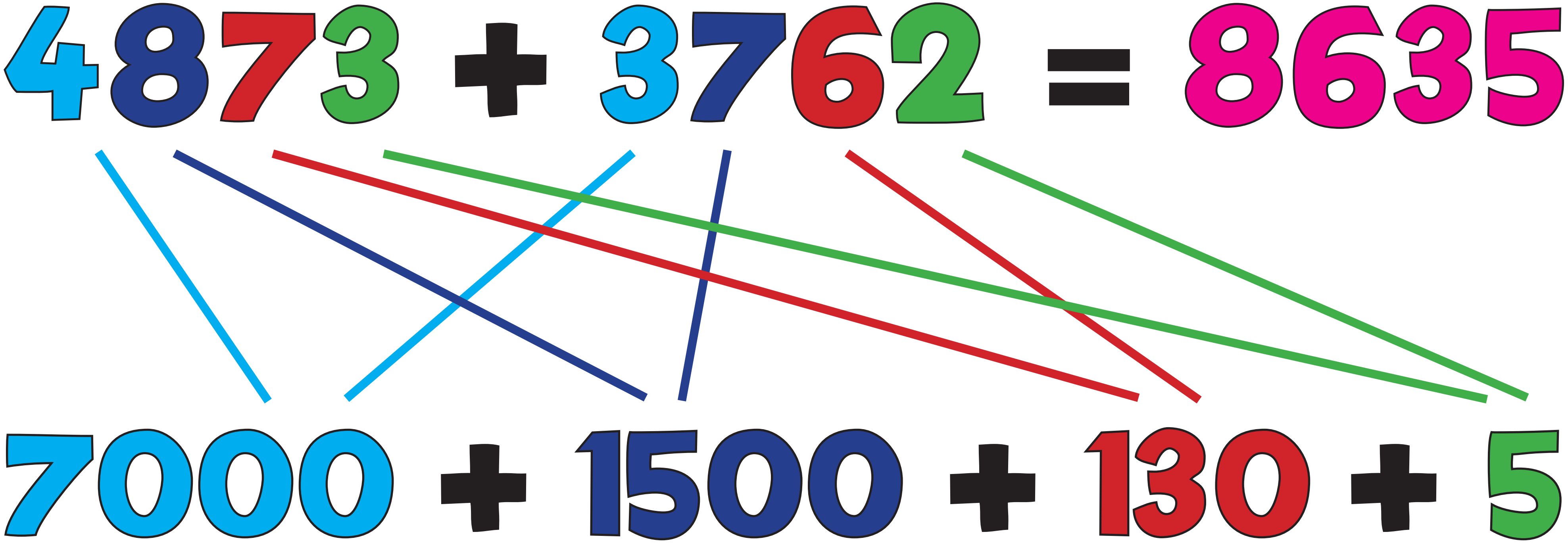
A5d: Partition Jot

4



4873 + 3762 = 8635

7000 + 1500 + 130 + 5

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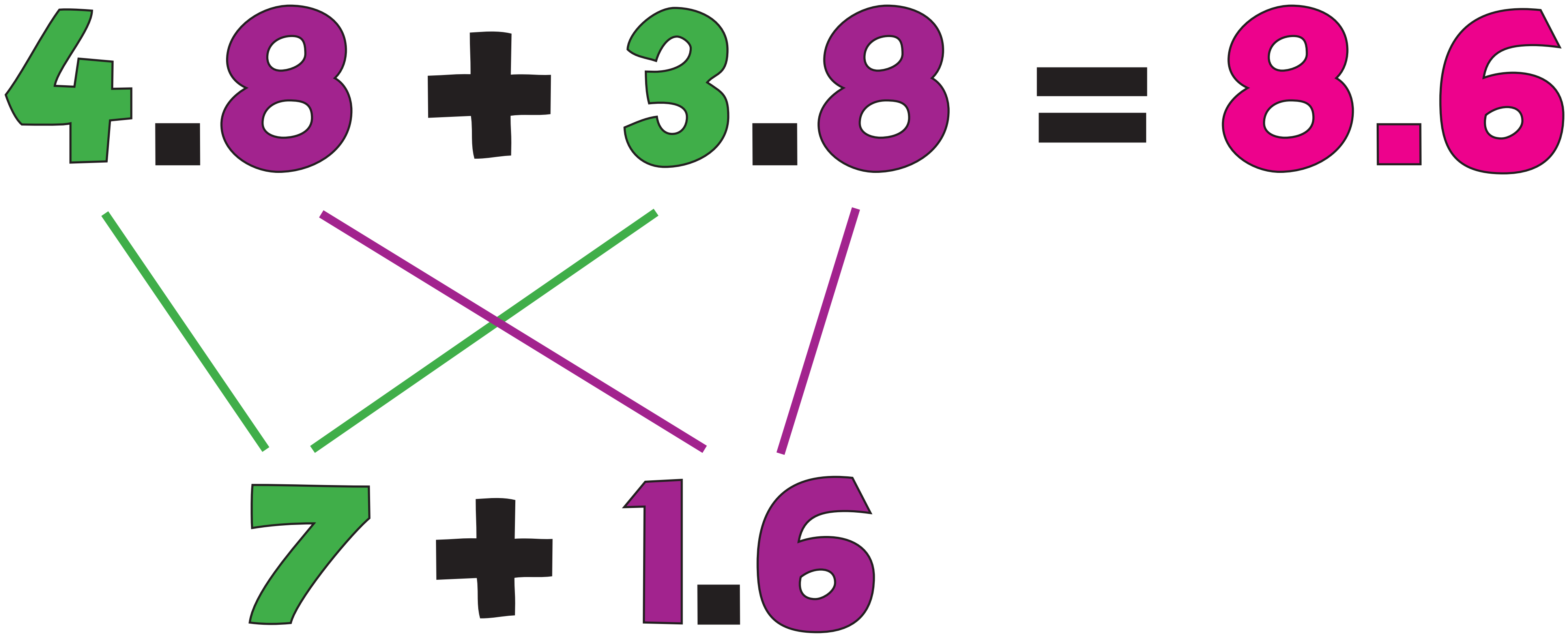
A5f: Partition Jot

5



4.8 + 3.8 = 8.6

7 + 1.6

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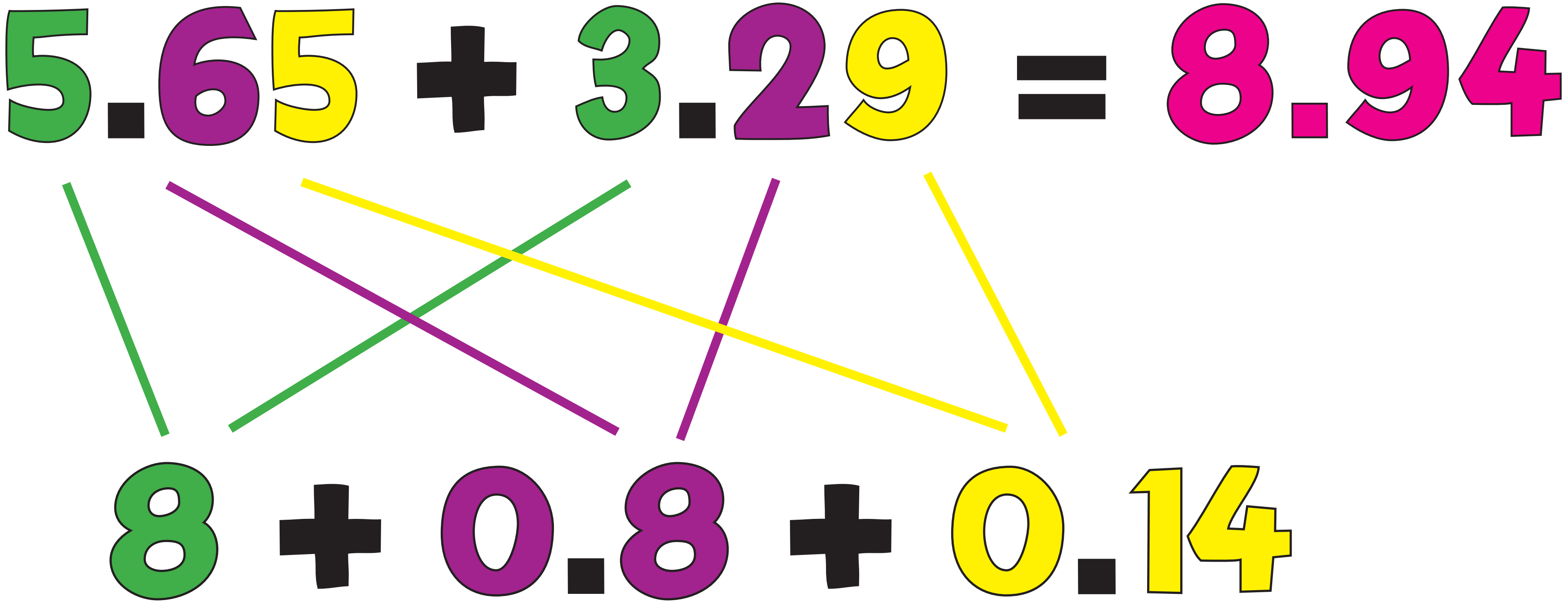
A5g: Partition Jot

5



5.65 + 3.29 = 8.94

8 + 0.8 + 0.14

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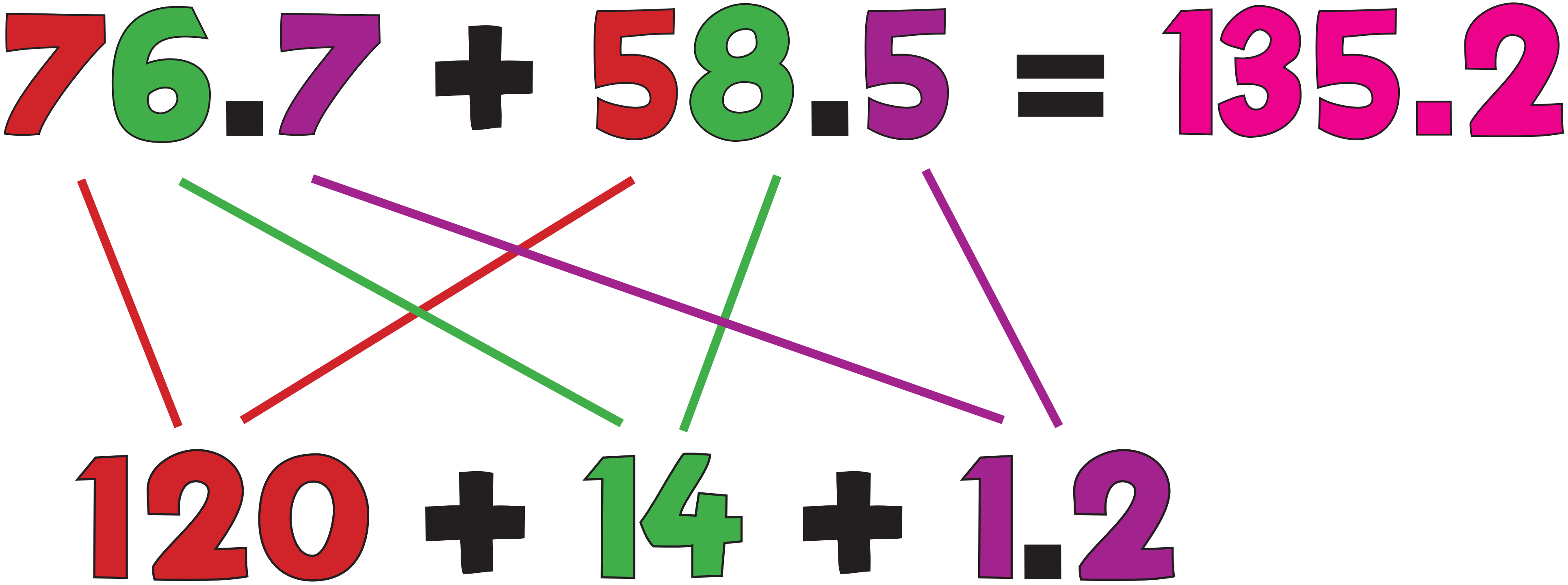
A5h: Partition Jot

5



76.7 + 58.5 = 135.2

120 + 14 + 1.2

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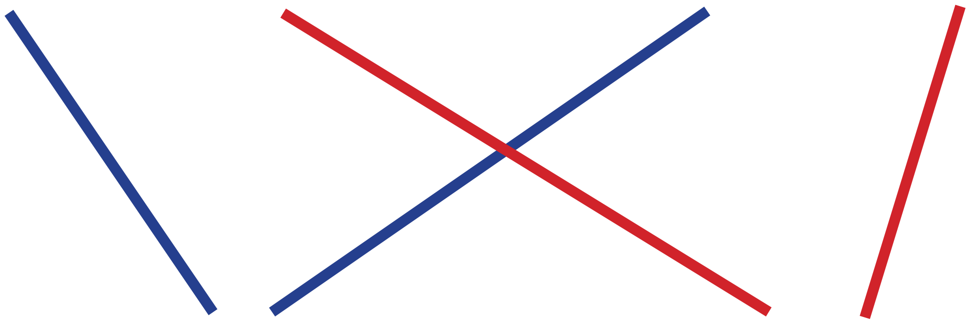
A5i: Partition Jot

5

$$£\underline{38}.\underline{25} + £\underline{27}.\underline{46} = £65.71$$



$$£65.00 + £0.71$$

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(A6: Expanded Column)

2 Additional

Addition

$$\begin{array}{crr} & 10 & 1 \\ & 4 & 3 \\ + & 2 & 4 \\ \hline & & 7 \\ & 6 & 0 \\ \hline & 6 & 7 \\ \hline \end{array}$$

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(A6: Expanded Column)

2 Additional:a

Addition

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

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(A6: Expanded Column)

2/3 Additional:b

Addition

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

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A6: Expanded Column

3

Addition

$$\begin{array}{rrrr} & 100 & 10 & 1 \\ & 6 & 8 & 7 \\ + & 2 & 4 & 8 \\ \hline & & 1 & 5 \\ & 1 & 2 & 0 \\ & 8 & 0 & 0 \\ \hline & 9 & 3 & 5 \\ \hline \end{array}$$

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(A7: Column Addition)

2 Additional

$$\begin{array}{rcc} & 10 & 1 \\ & 4 & 3 \\ + & 2 & 4 \\ \hline & 6 & 7 \\ \hline \end{array}$$

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(A7: Column Addition)

2 **Additional:a**

$$\begin{array}{rcc} & 10 & 1 \\ & 5 & 7 \\ + & 2 & 5 \\ \hline & 8 & 2 \\ \hline & 1 & \end{array}$$

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(A7: Column Addition)

2/3 Additional:b

$$\begin{array}{cccc} & 100 & 10 & 1 \\ & & 8 & 6 \\ + & & 4 & 8 \\ \hline & 1 & 3 & 4 \\ \hline & 1 & 1 & \end{array}$$

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A7: Column Addition

3

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

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A7d: Column Addition

4

$$\begin{array}{ccccc} & 4 & 8 & 7 & 3 \\ + & 3 & 7 & 6 & 2 \\ \hline & 8 & 6 & 3 & 5 \\ \hline & 1 & 1 & & \end{array}$$

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A7e: Column Addition

5

$$\begin{array}{cccccccc}
 & & 7 & 8 & 7 & 5 & 6 & 7 \\
+ & & 4 & 4 & 6 & 2 & 7 & 8 \\ \hline
 & 1 & 2 & 3 & 3 & 8 & 4 & 5 \\ \hline
 & 1 & 1 & 1 & & 1 & 1 &
\end{array}$$

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A7f: Column Addition

5

$$\begin{array}{cccc} & 1 & . & \frac{1}{10} \\ & 4 & . & 8 \\ + & 3 & . & 8 \\ \hline & 8 & . & 6 \\ \hline & 1 & & \end{array}$$

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A7g: Column Addition

5

$$\begin{array}{rccc} 1 & . & \frac{1}{10} & \frac{1}{100} \\ 5 & . & 6 & 5 \\ +\;3 & . & 2 & 9 \\ \hline 8 & . & 9 & 4 \\ \hline & & 1 & \end{array}$$

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A7h: Column Addition

5

$$\begin{array}{cccccc}
 & & 10 & 1 & \cdot & \frac{1}{10} \\
 & & 7 & 6 & . & 7 \\
+ & & 5 & 8 & . & 5 \\
\hline
 & 1 & 3 & 5 & . & 2 \\
\hline
 & 1 & 1 & 1 & &
\end{array}$$

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A7i: Column Addition

5

With Money

£38.25

\+ £27.46

£65.71

---

1 1

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A7j: Column Addition

5

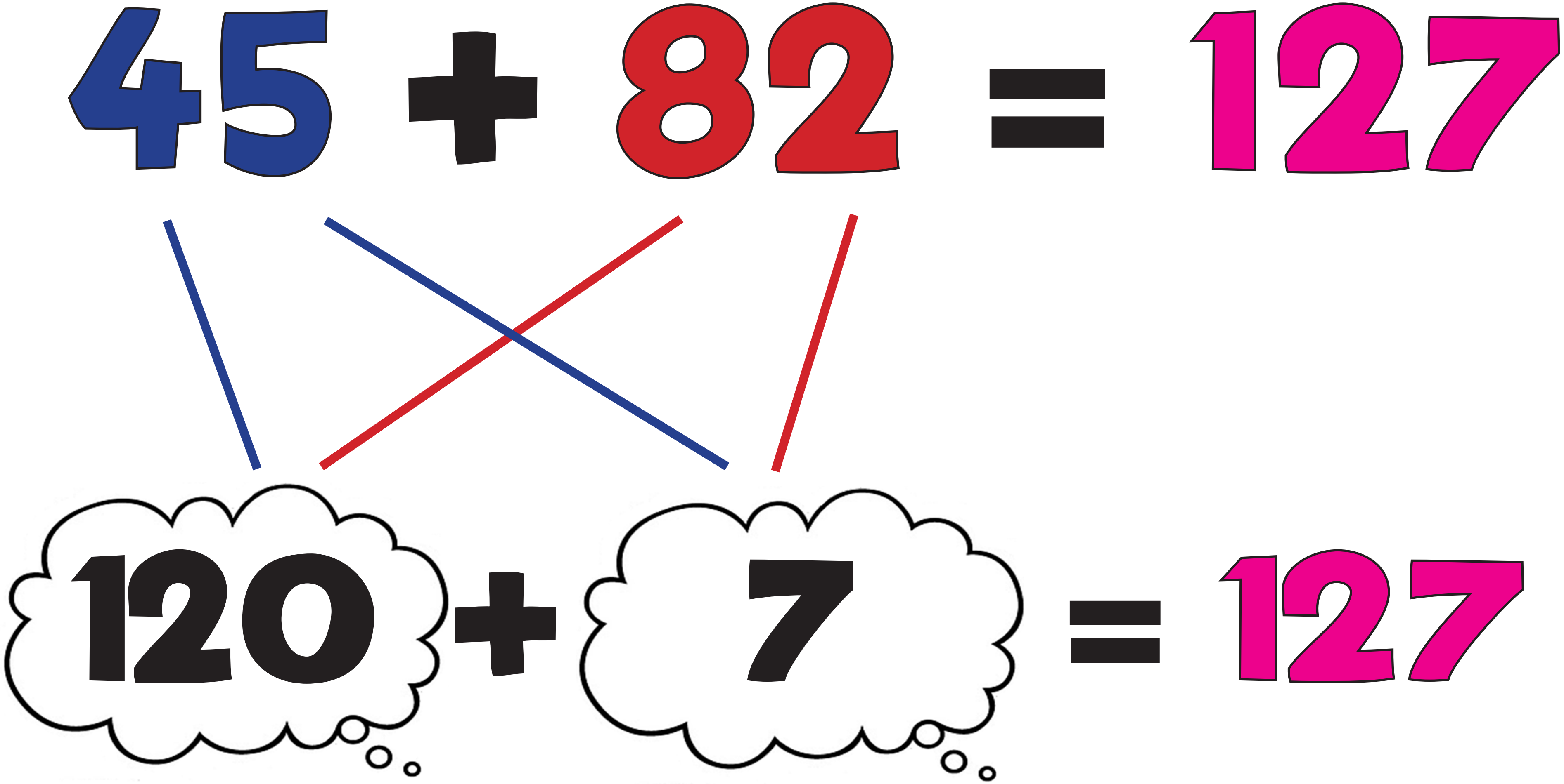
With Decimals

73.4 + 5.67 = 79.07

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

St. Luke's C. of E. Primary School

MA1: Partitioning



45 + 82 = 127

120 + 7 = 127

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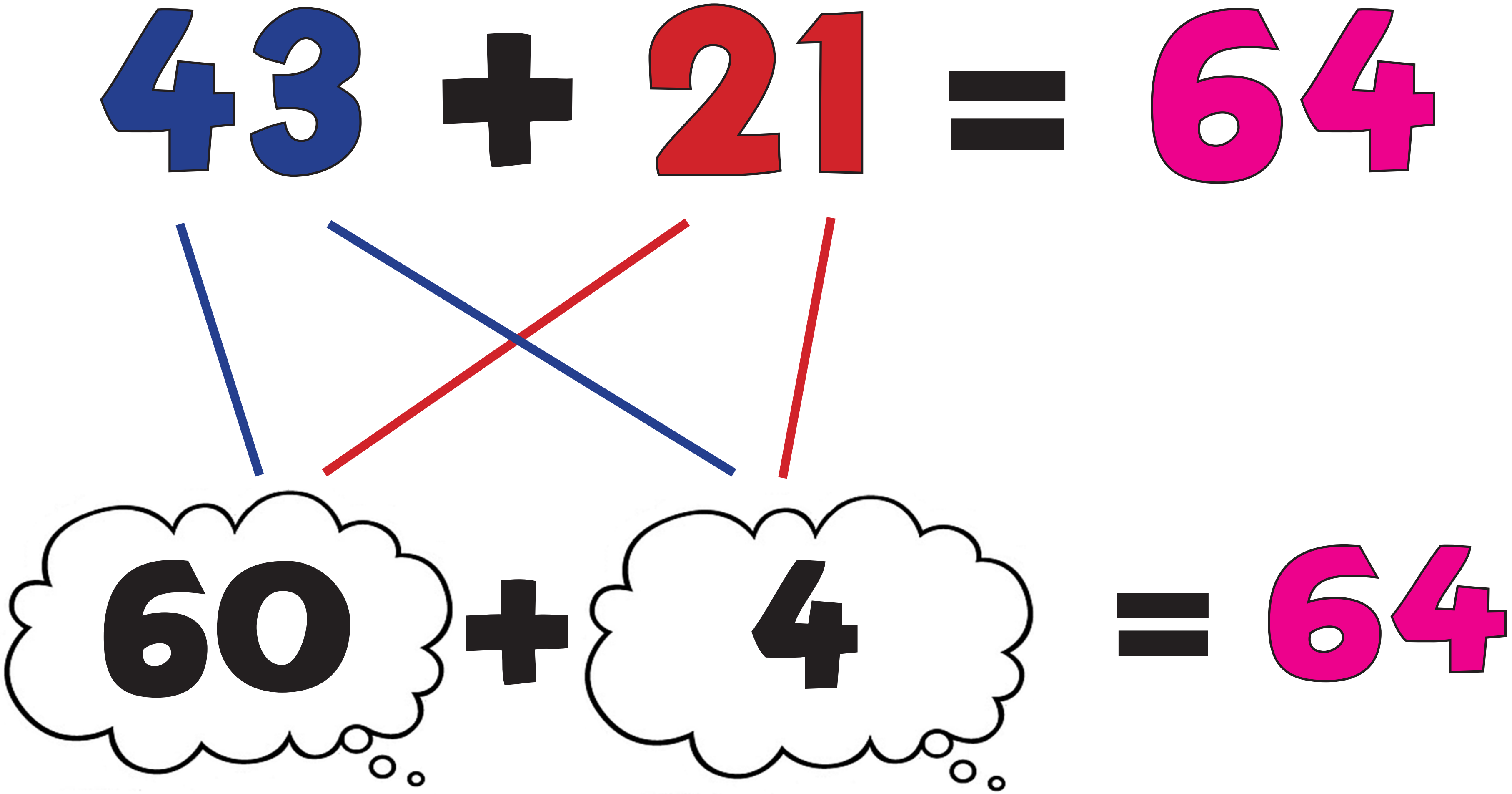
MA1: Partitioning

2



43 + 21 = 64

60 + 4 = 64

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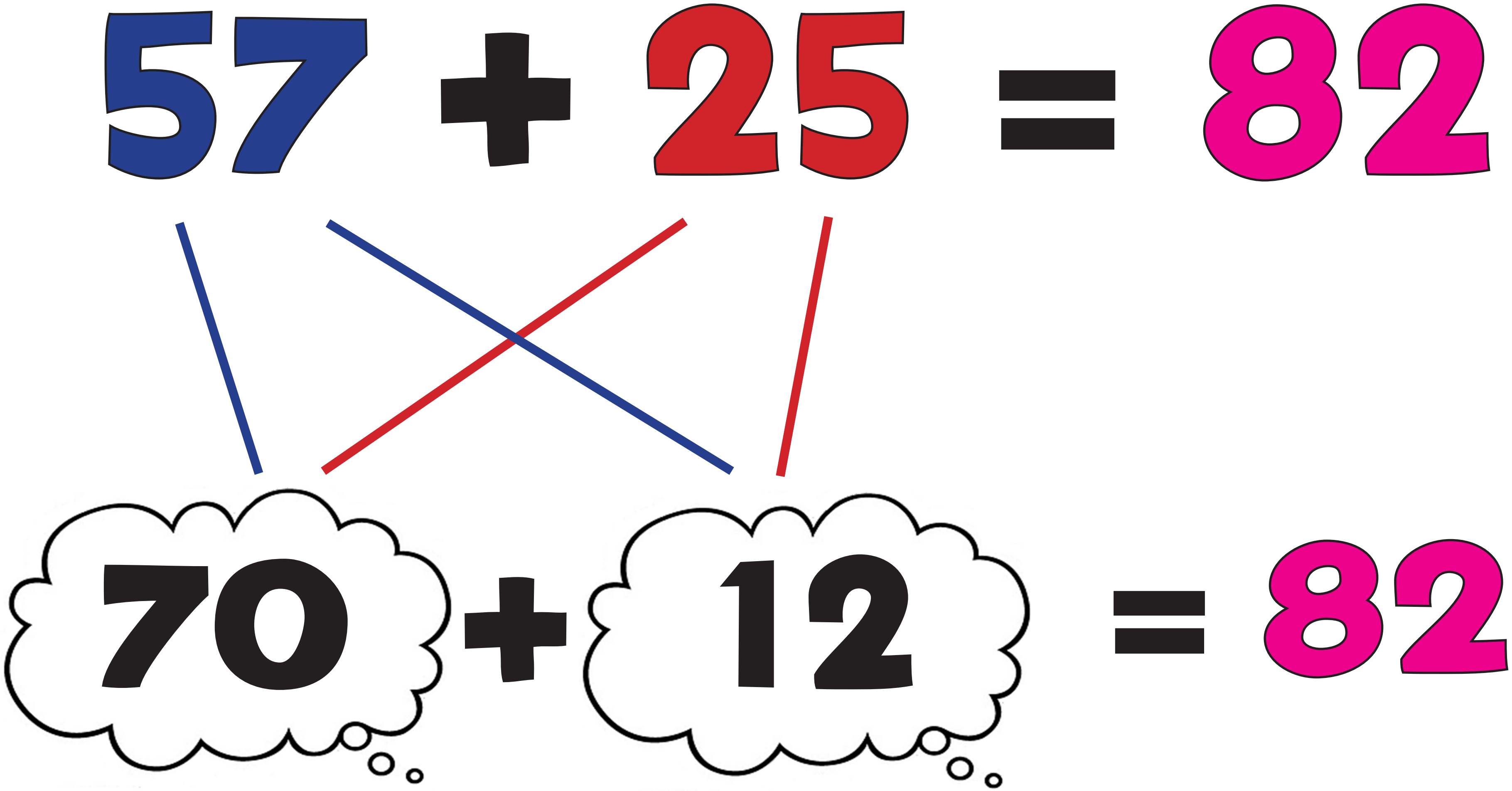
MA1: Partitioning

3



57 + 25 = 82

70 + 12 = 82

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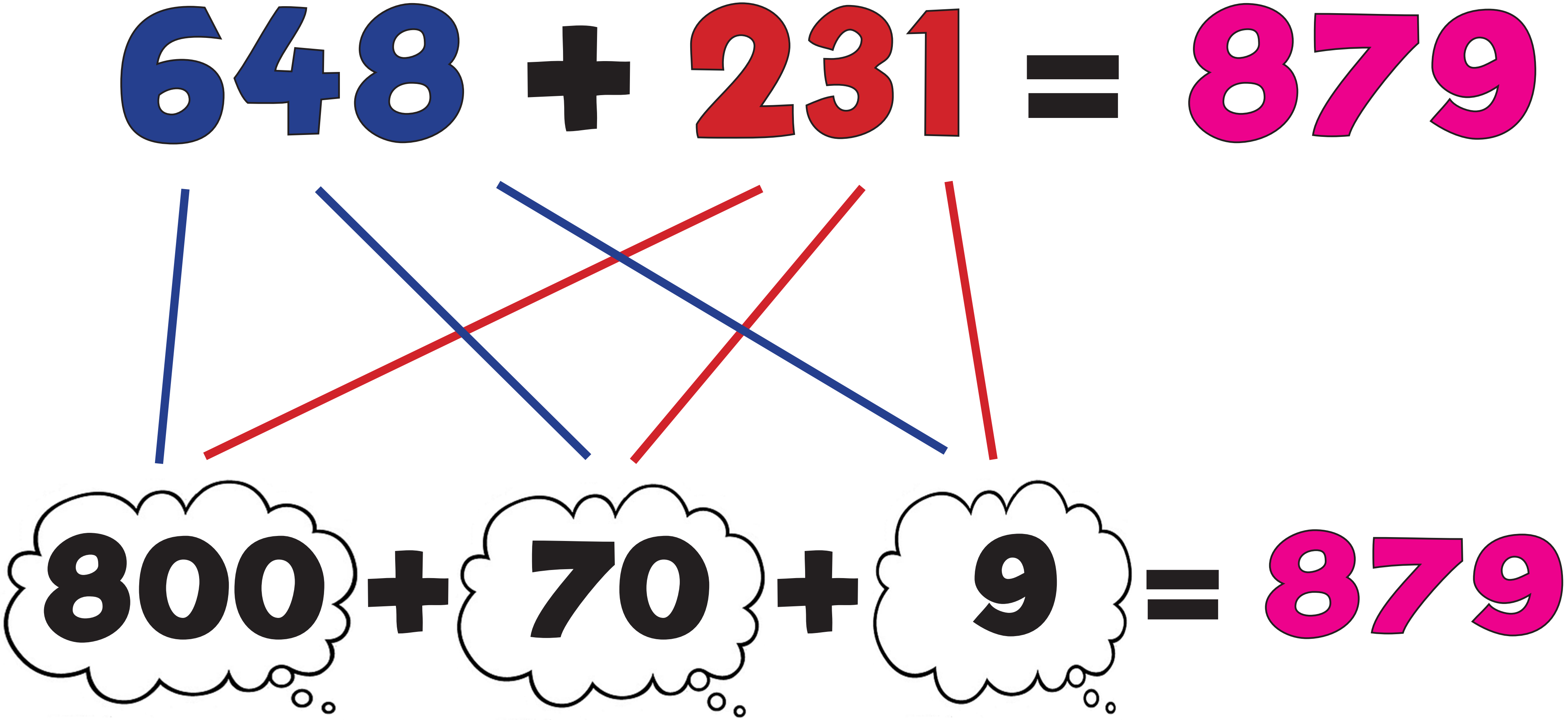
MA1: Partitioning

4



648 + 231 = 879

800 + 70 + 9 = 879

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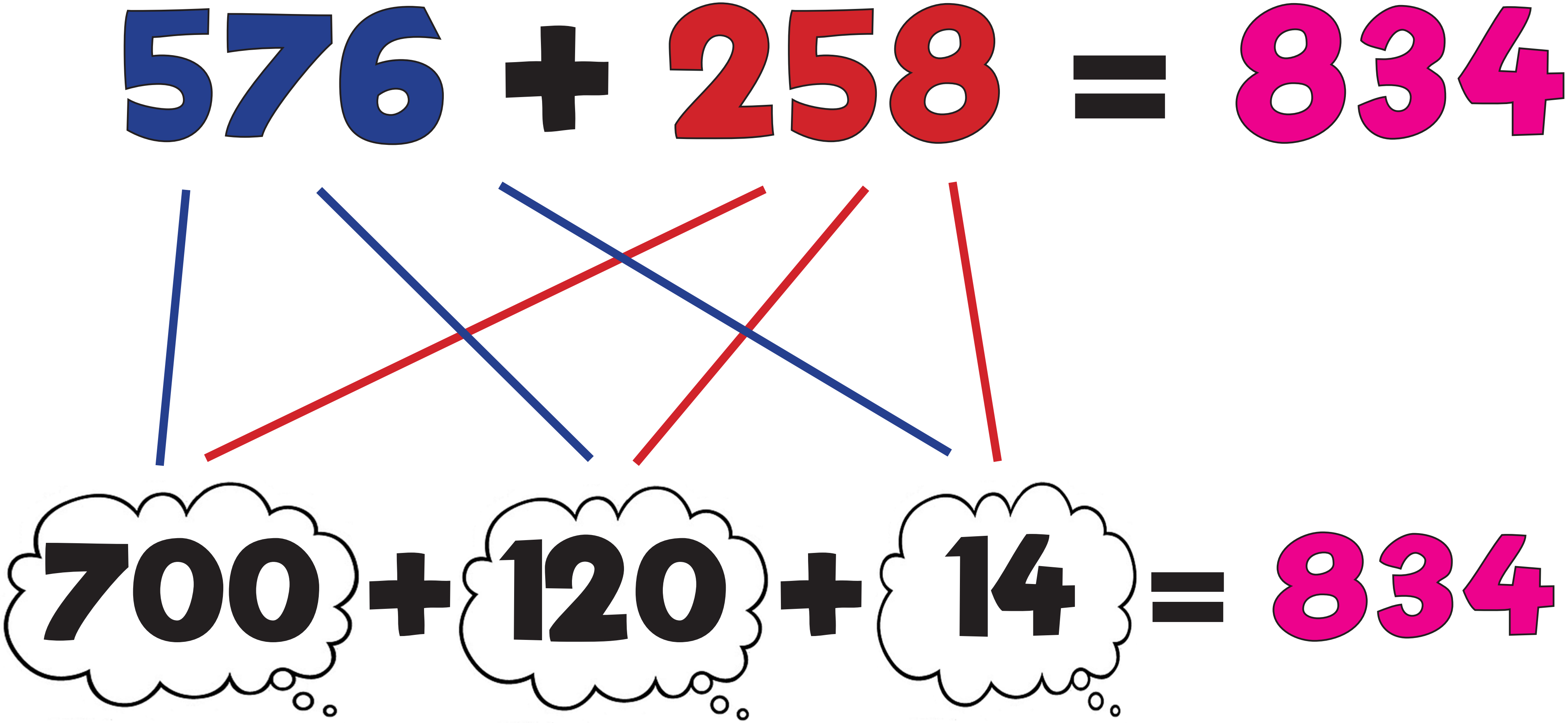
MA1: Partitioning

5



576 + 258 = 834

700 + 120 + 14 = 834

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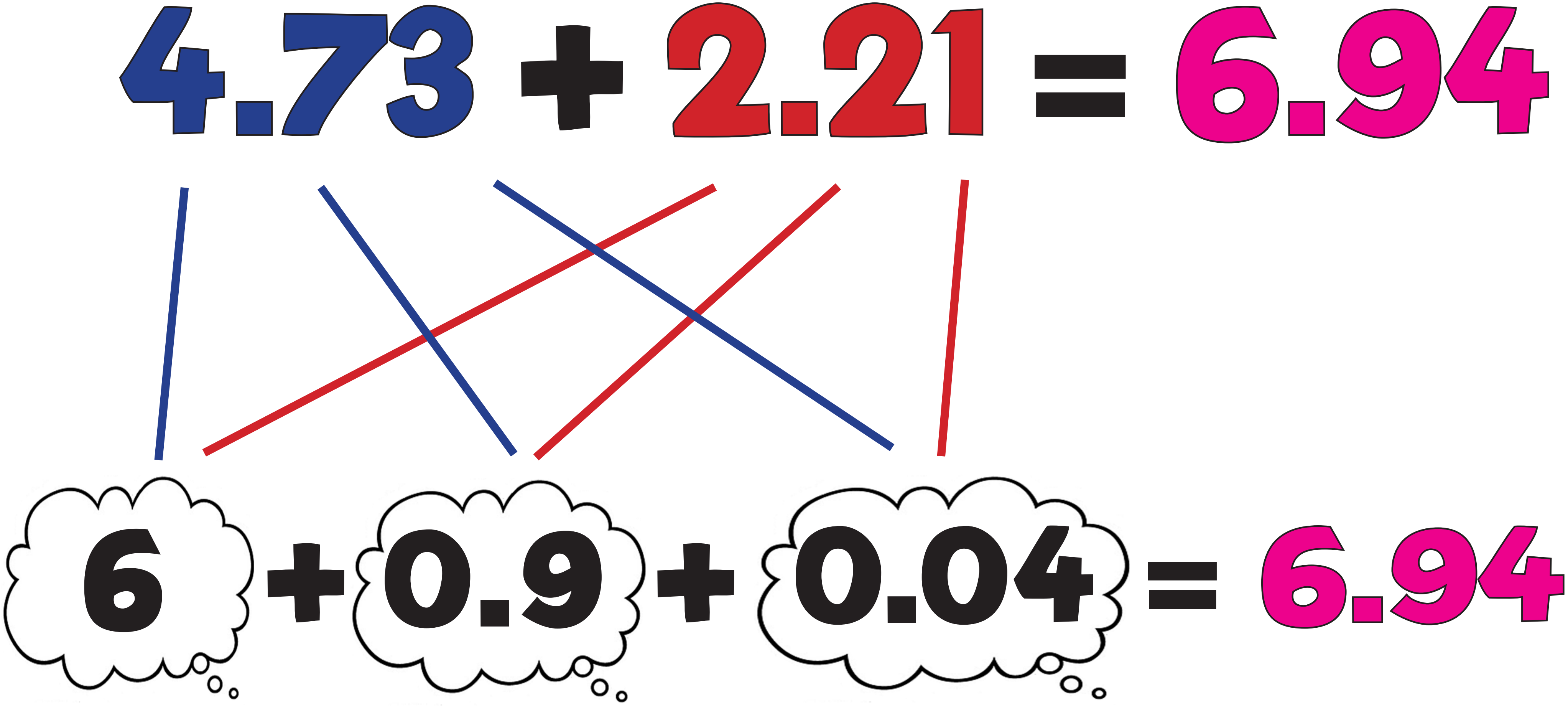
MA1: Partitioning

6



4.73 + 2.21 = 6.94

6 + 0.9 + 0.04 = 6.94

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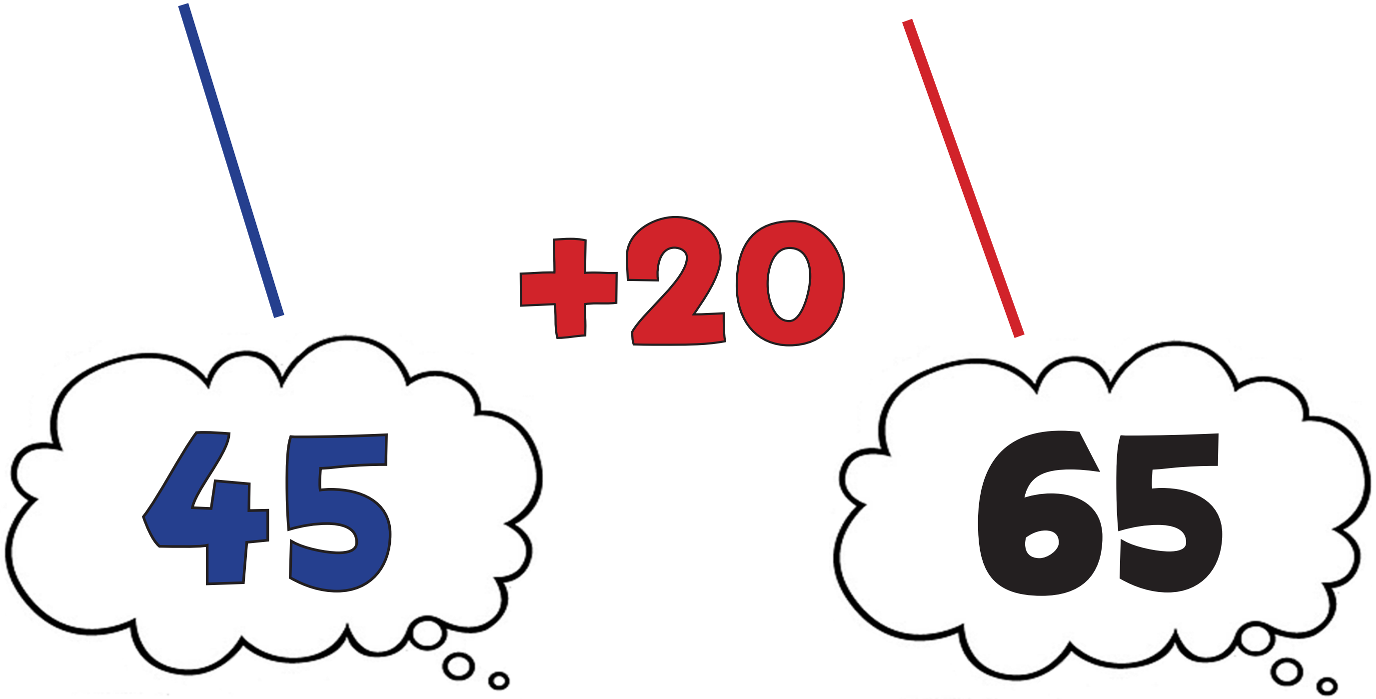
MA2: Counting On

45 + 20 = 65



45

+20

65

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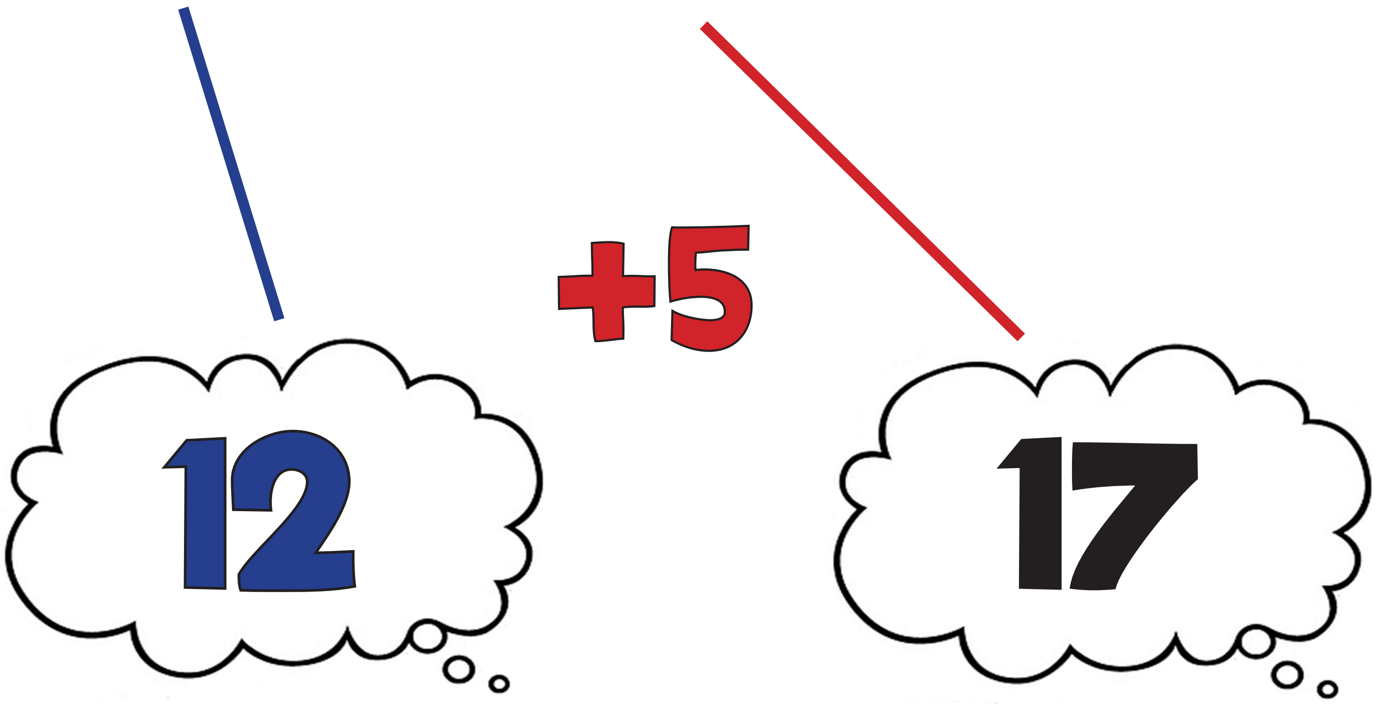
MA2a: Counting On

1

Ones

$$12 + 5 = 17$$



+5

12

17

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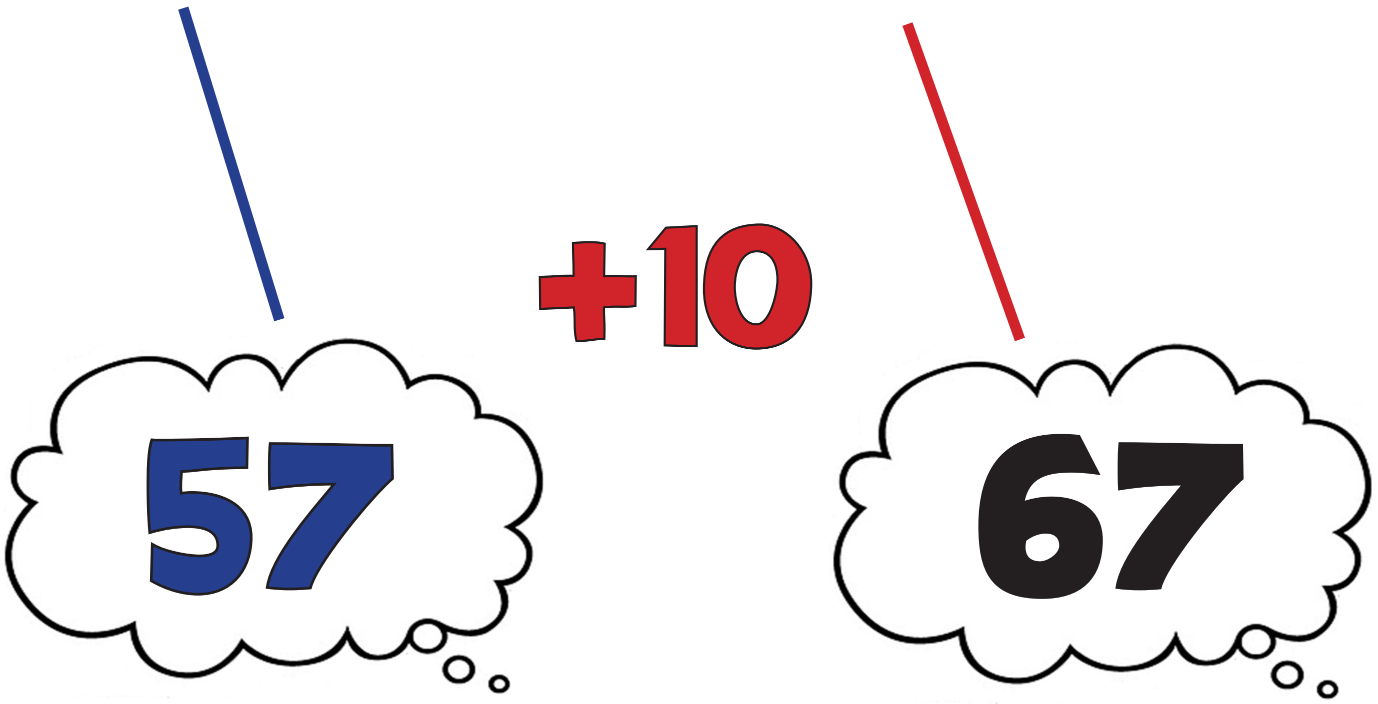
MA2b: Counting On

1

Tens

57 + 10 = 67



57

+10

67

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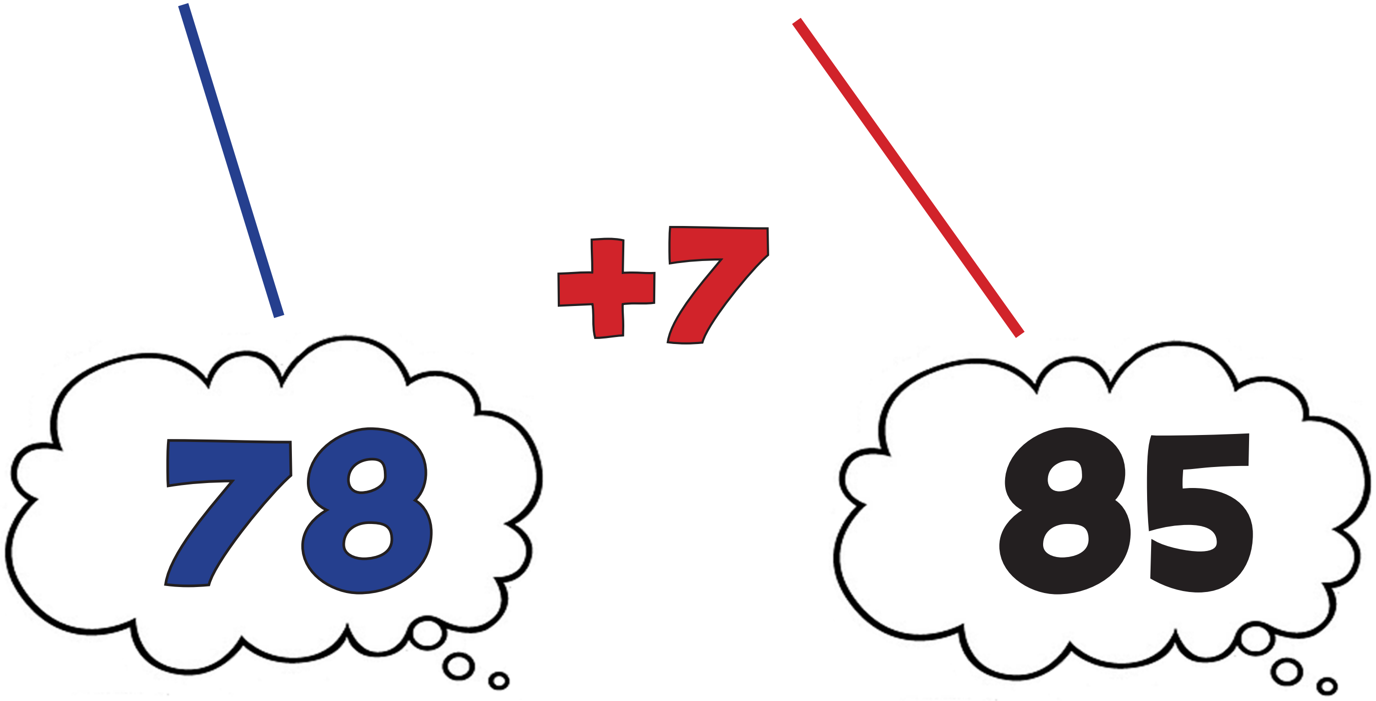
MA2a: Counting On

2

Ones

$$78 + 7 = 85$$



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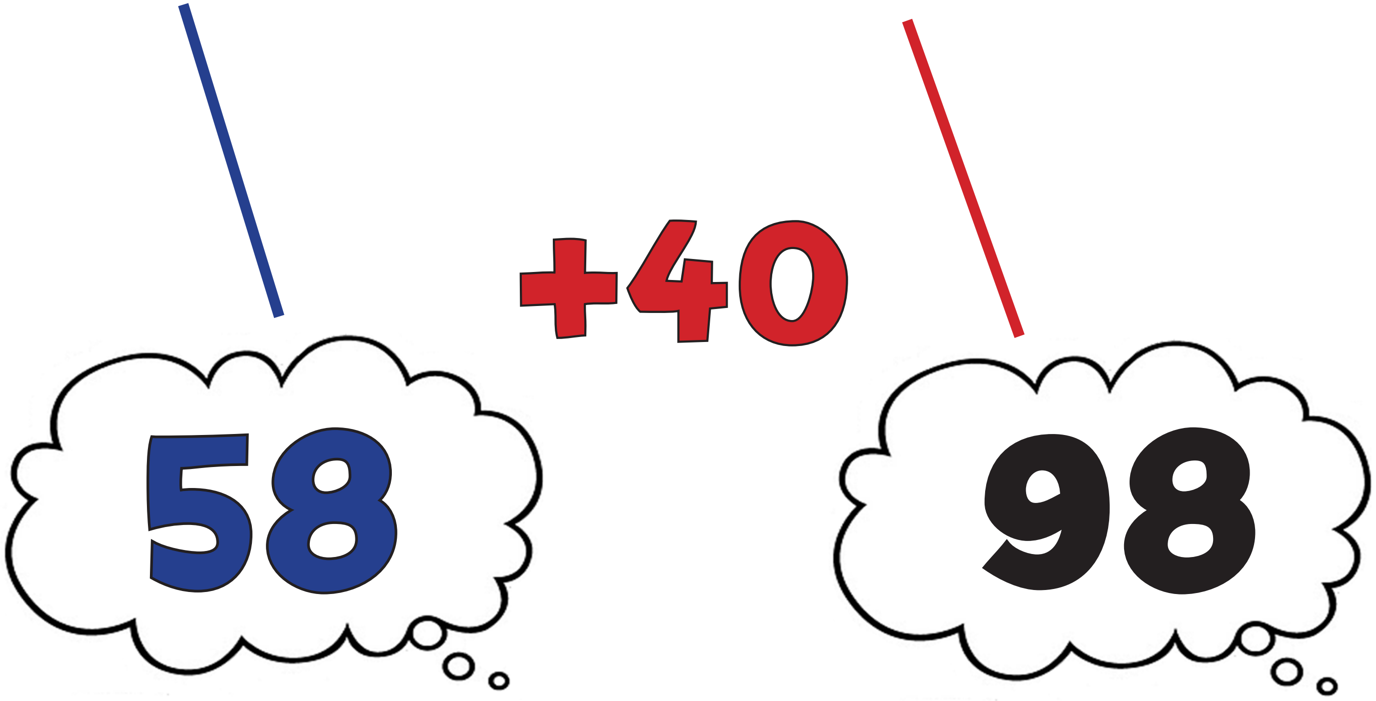
MA2b: Counting On

2

Tens

58 + 40 = 98



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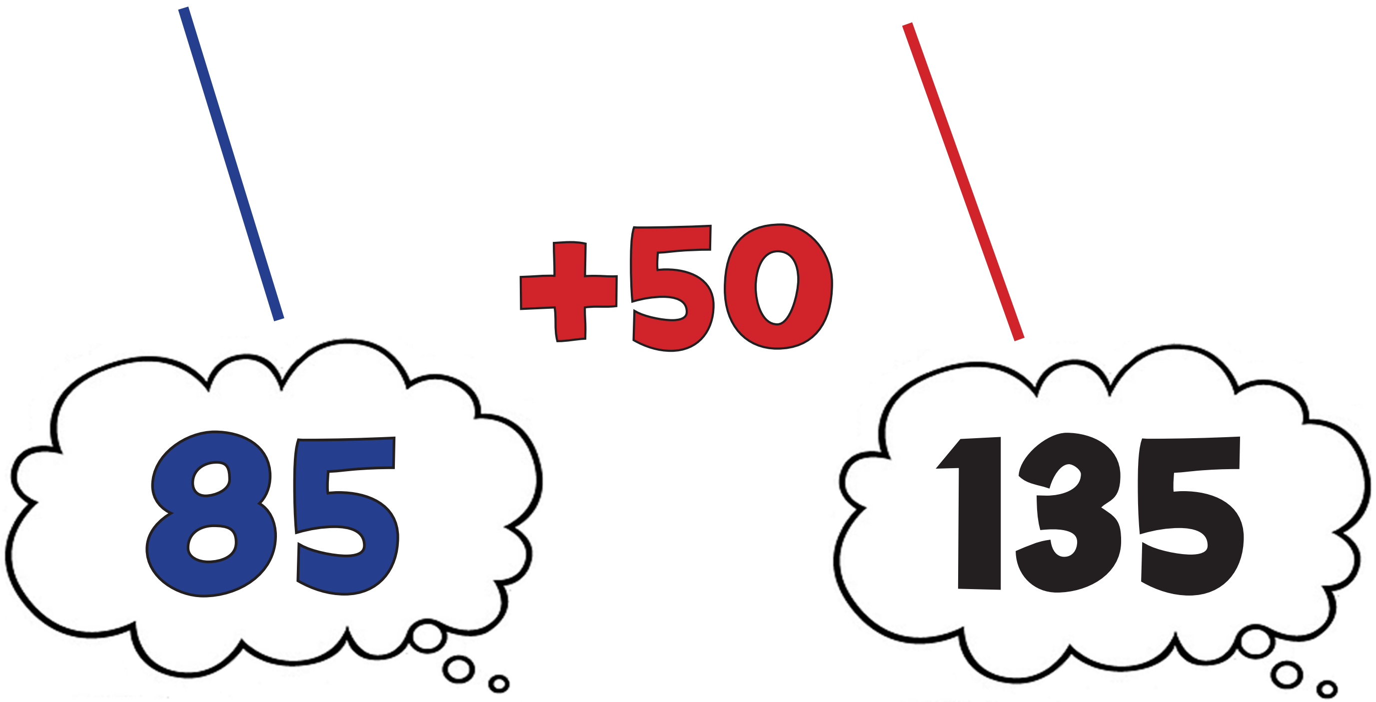
MA2a: Counting On

3

Tens

85 + 50 = 135


85

+50

135

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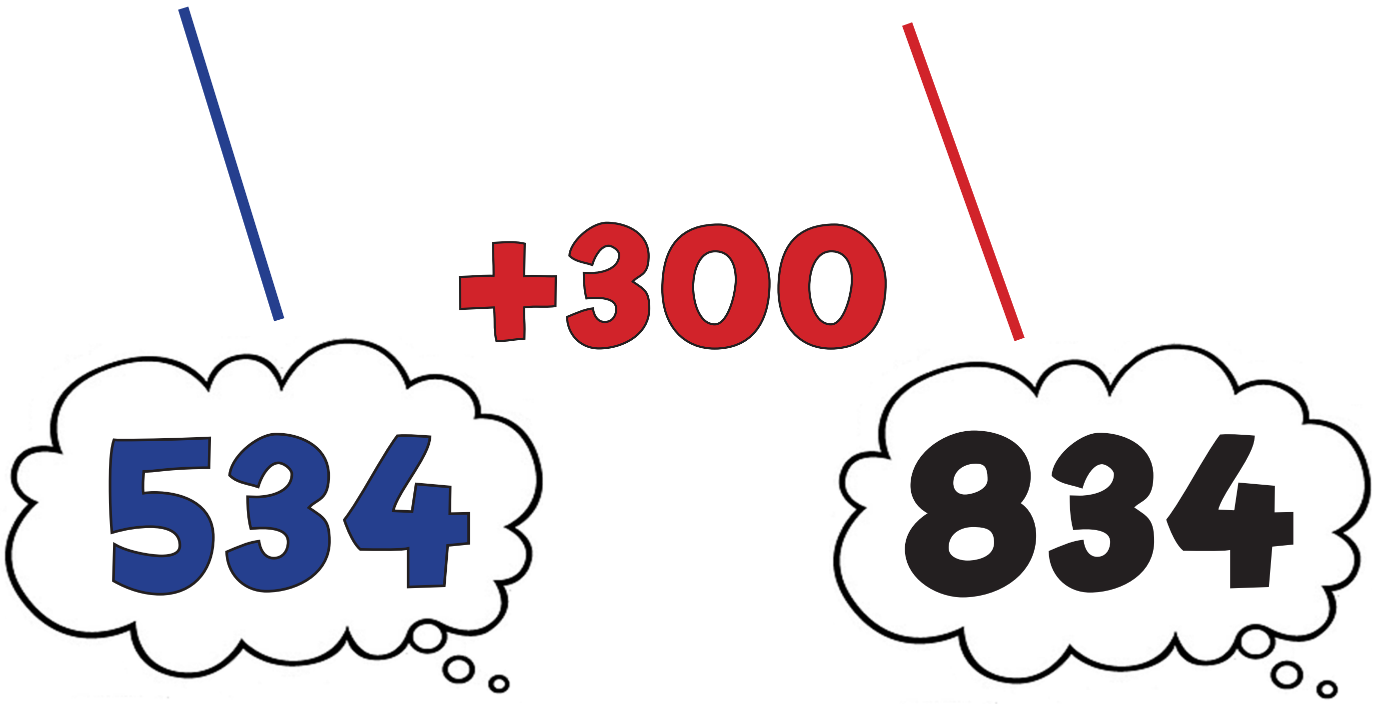
MA2b: Counting On

3

Hundreds

534 + 300 = 834



+300

534

834

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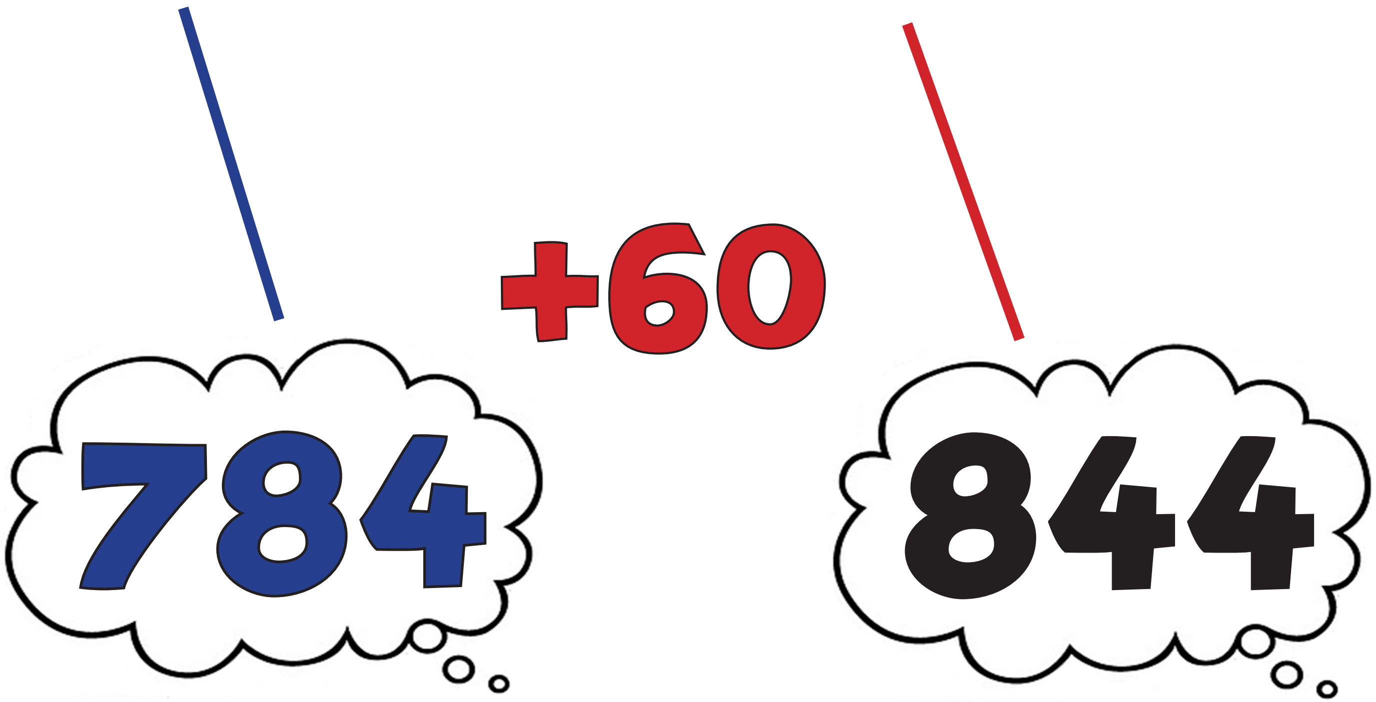
MA2a: Counting On

4

Tens

784 + 60 = 844



784

+60

844

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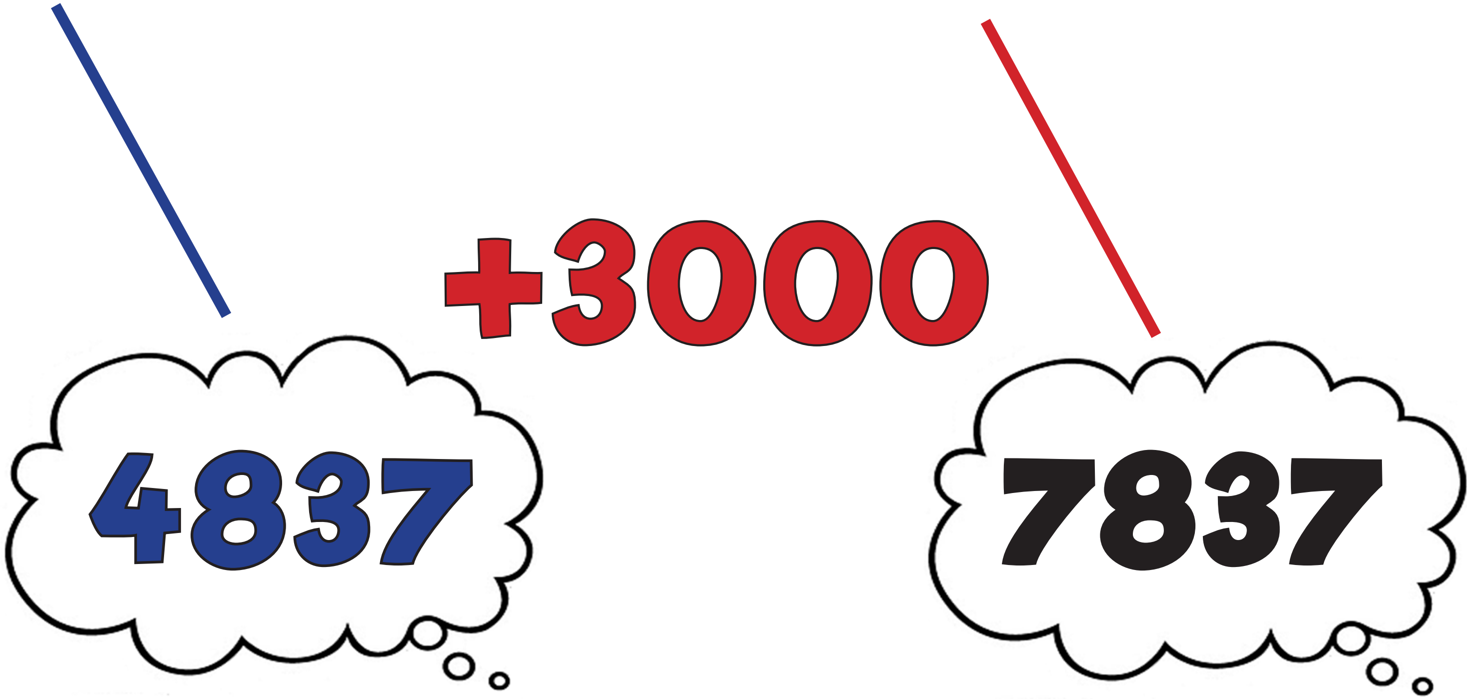
MA2b: Counting On

4

Hundreds

4837 + 3000 = 7837



4837

+3000

7837

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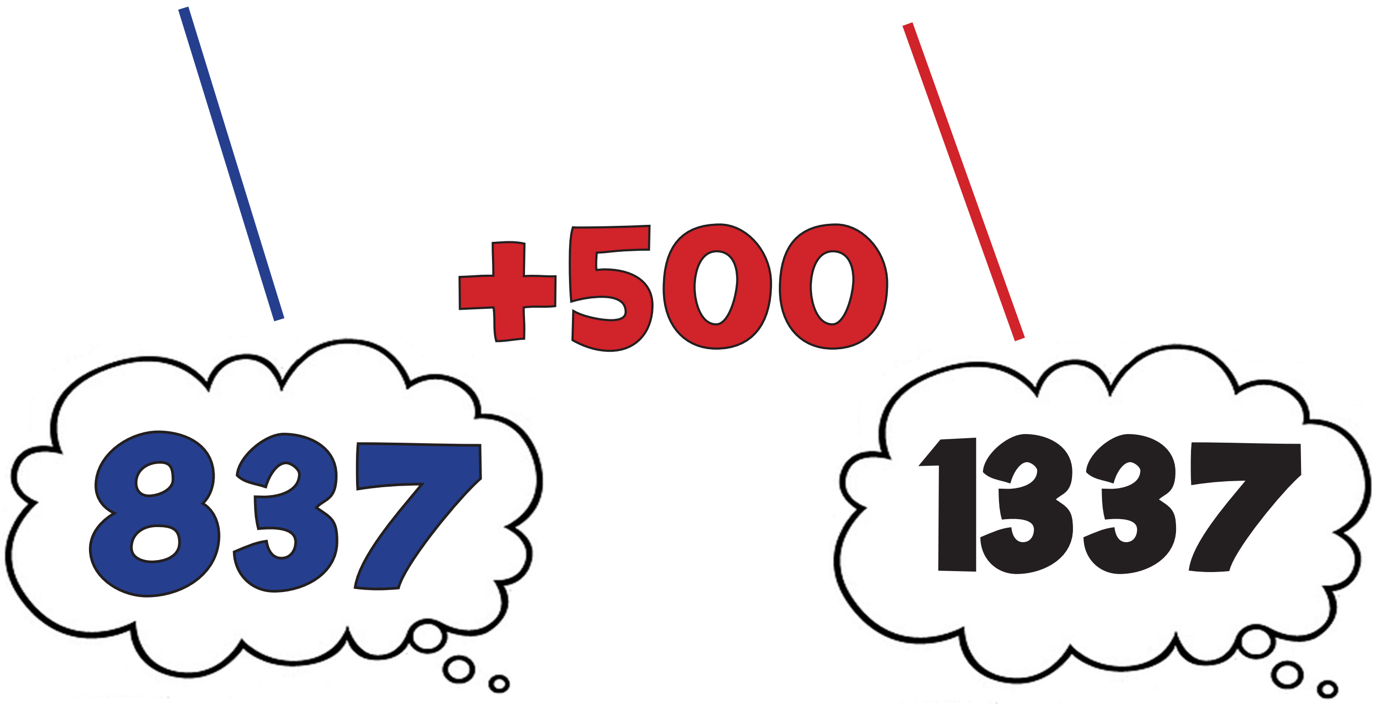
MA2a: Counting On

5

Hundreds

837 + 500 = 1337



+500

837

1337

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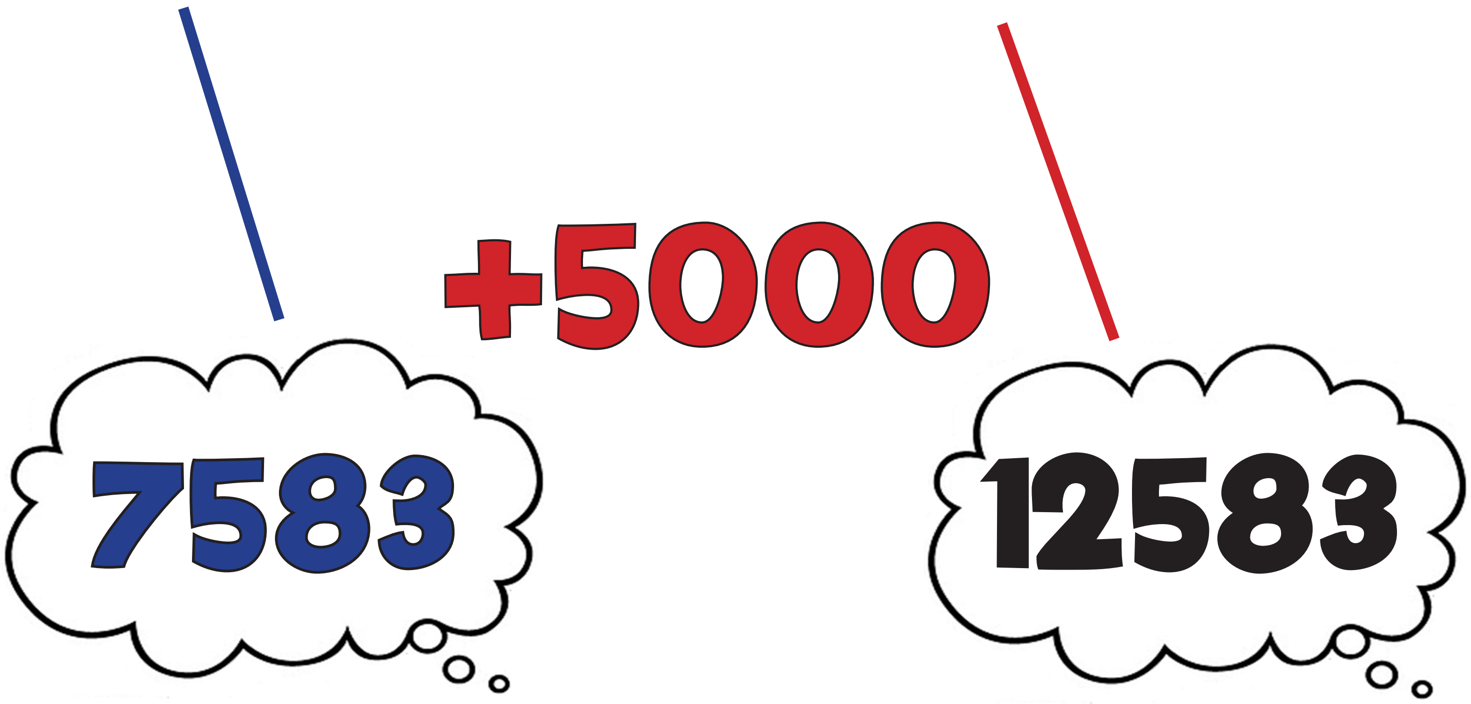
MA2b: Counting On

5

Thousands

7583 + 5000 = 12583



+5000

7583

12583

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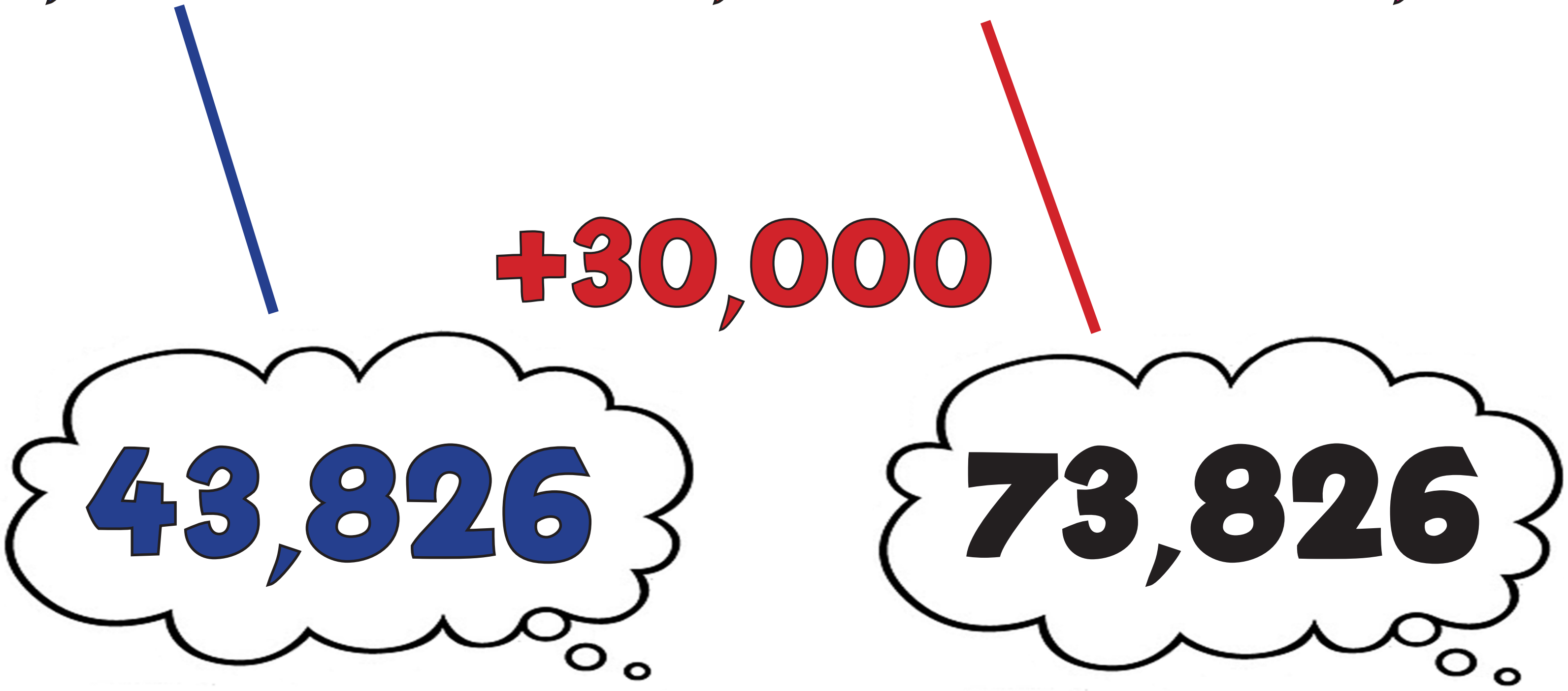
MA2a: Counting On

6

Ten Thousands

43,826 + 30,000 = 73,826



+30,000

43,826

73,826

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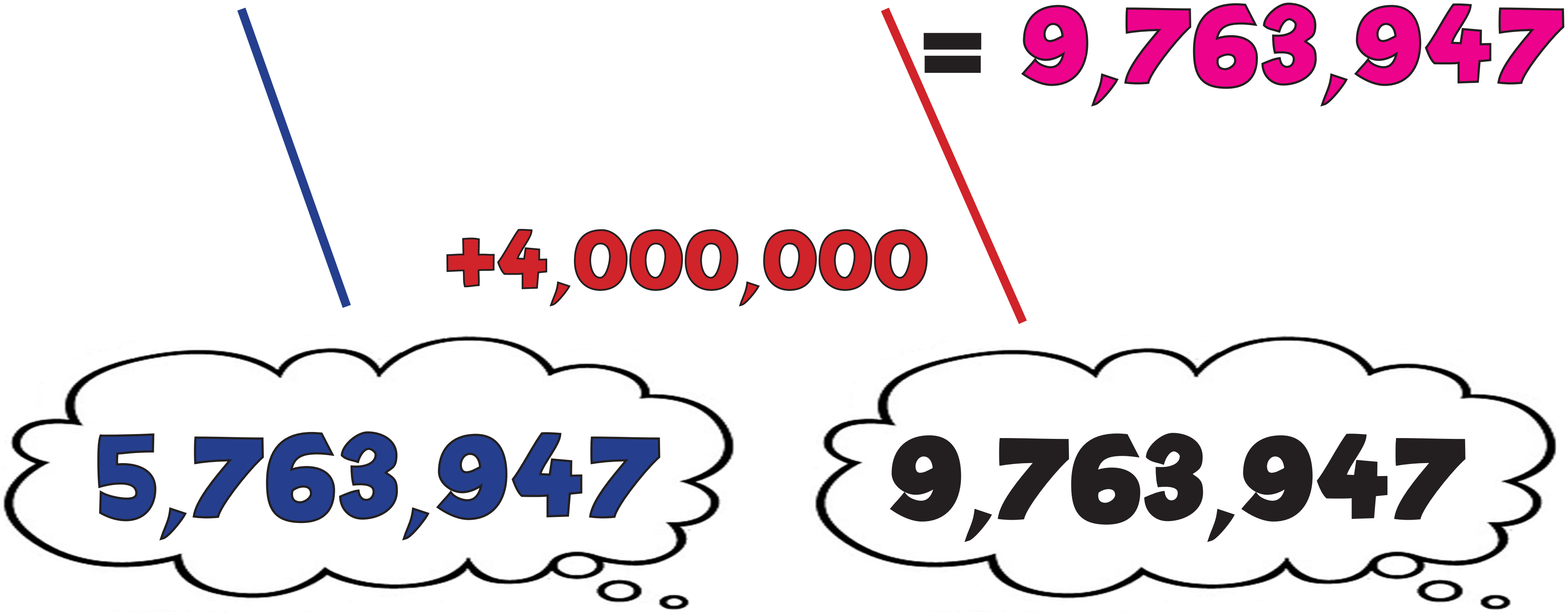
MA2b: Counting On

6

Millions

5,763,947 + 4,000,000

= 9,763,947



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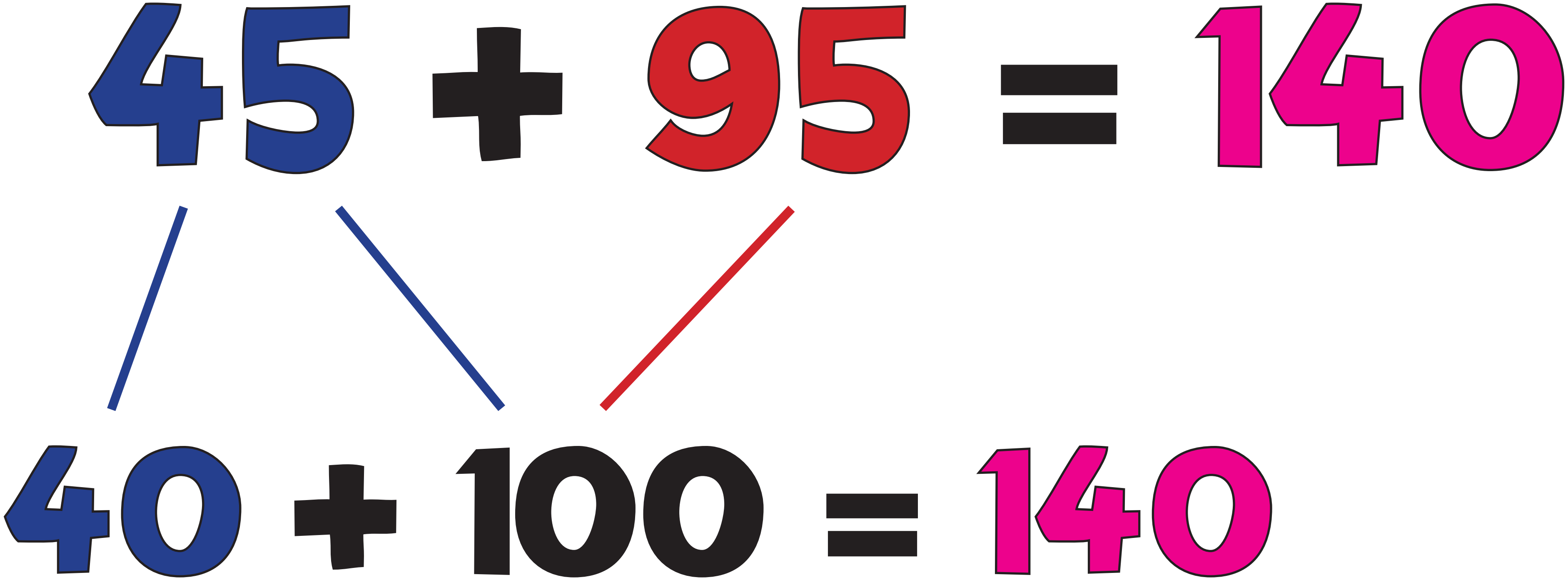
MA3: Number Bonds



45 + 95 = 140

40 + 100 = 140

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MA3: Number Bonds

1

Learn Bonds

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

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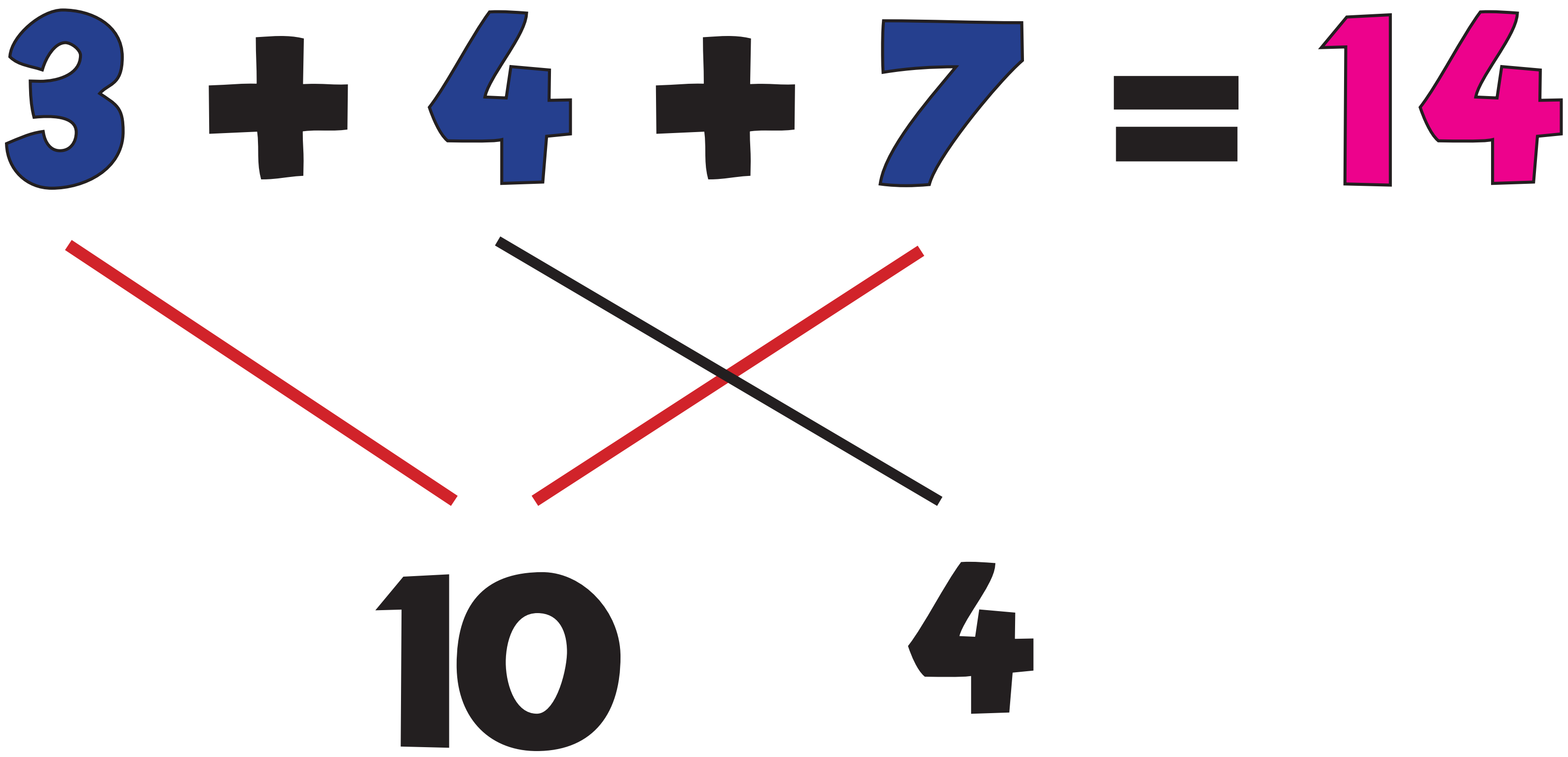
MA3: Number Bonds

2



$$3 + 4 + 7 = 14$$

10 4

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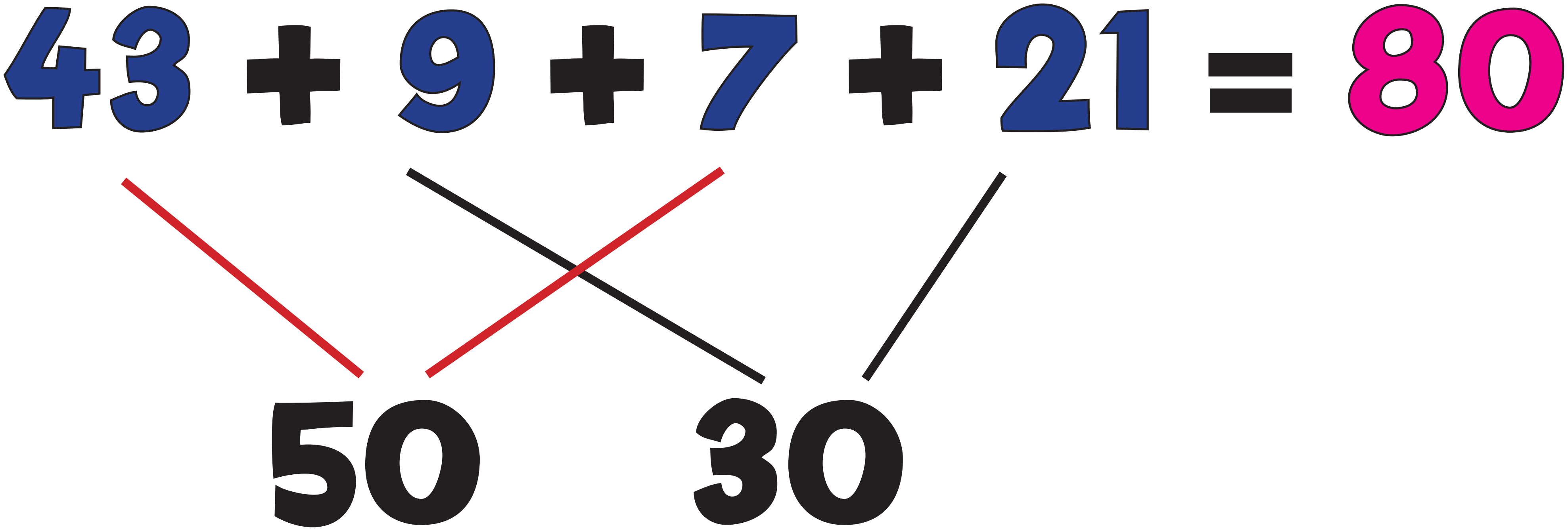
MA3: Number Bonds



43 + 9 + 7 + 21 = 80

50 30

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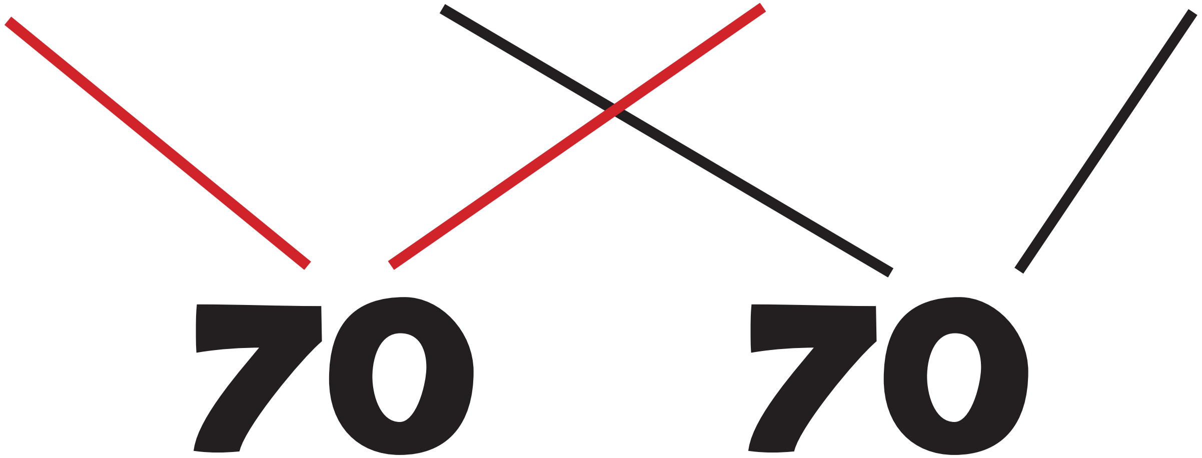
MA3: Number Bonds

4

42 + 16 + 28 + 54 = 140



70 70

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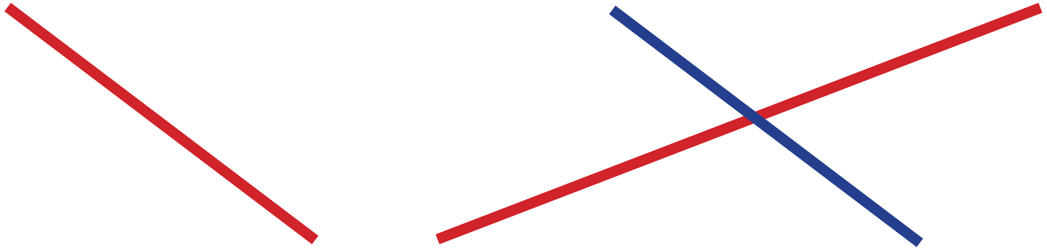
MA3: Number Bonds

5

£4.56 + £3.27 + £1.44 = £9.27



£6.00 £3.27

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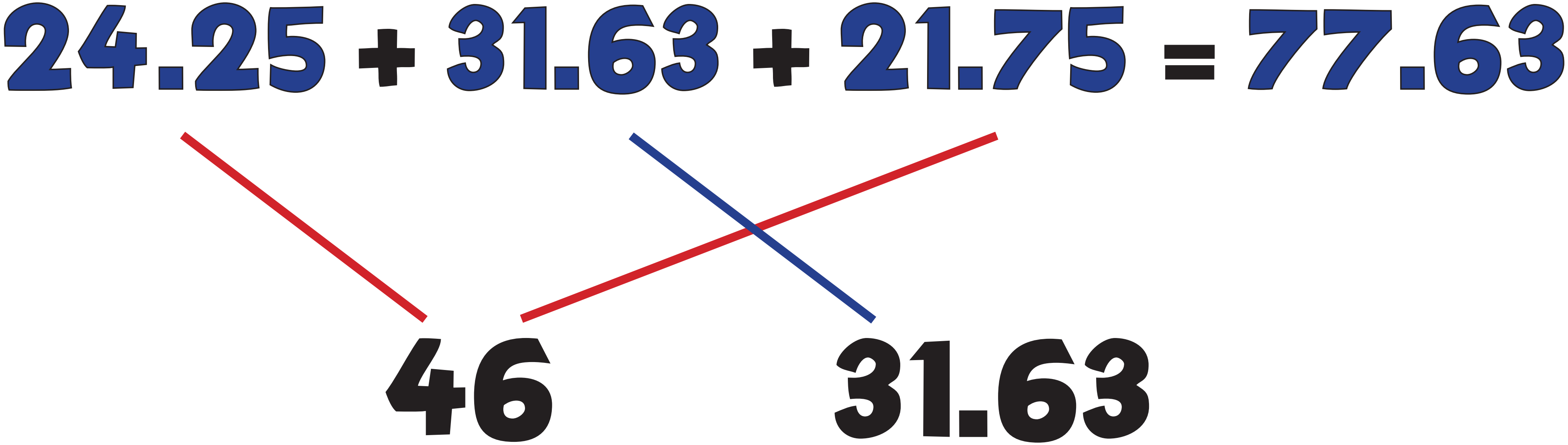
MA3: Number Bonds

6



24.25 + 31.63 + 21.75 = 77.63

46

31.63

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MA4: Double & Adjust

45 + 46 = 91

45 + 45 + 1

90 + 1 = 91

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MA4: Double & Adjust

1

$$5 + 6 = 11$$

$$5 + 5 + 1$$

$$10 + 1 = 11$$

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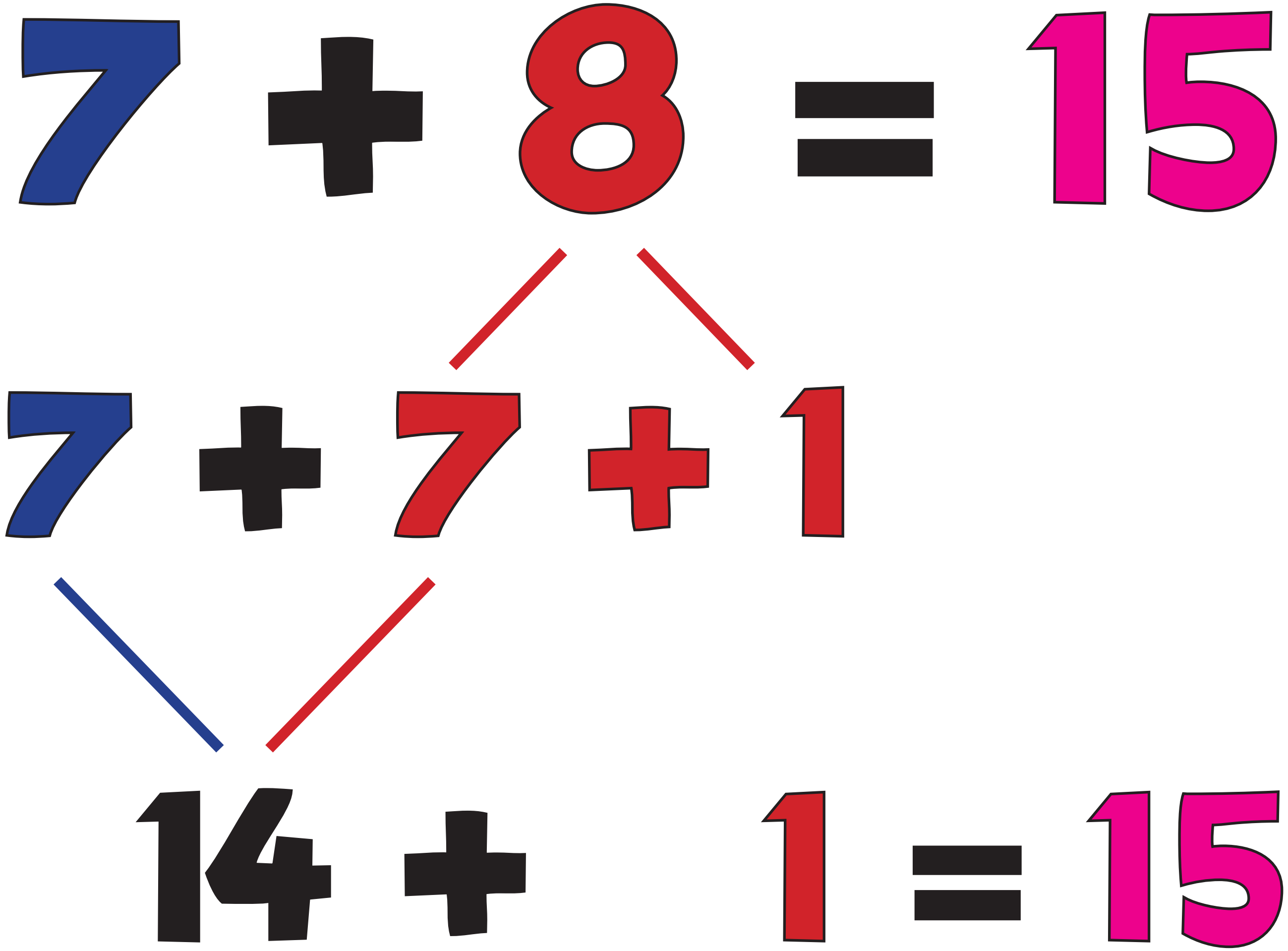
MA4: Double & Adjust

2



7 + 8 = 15

7 + 7 + 1

14 + 1 = 15

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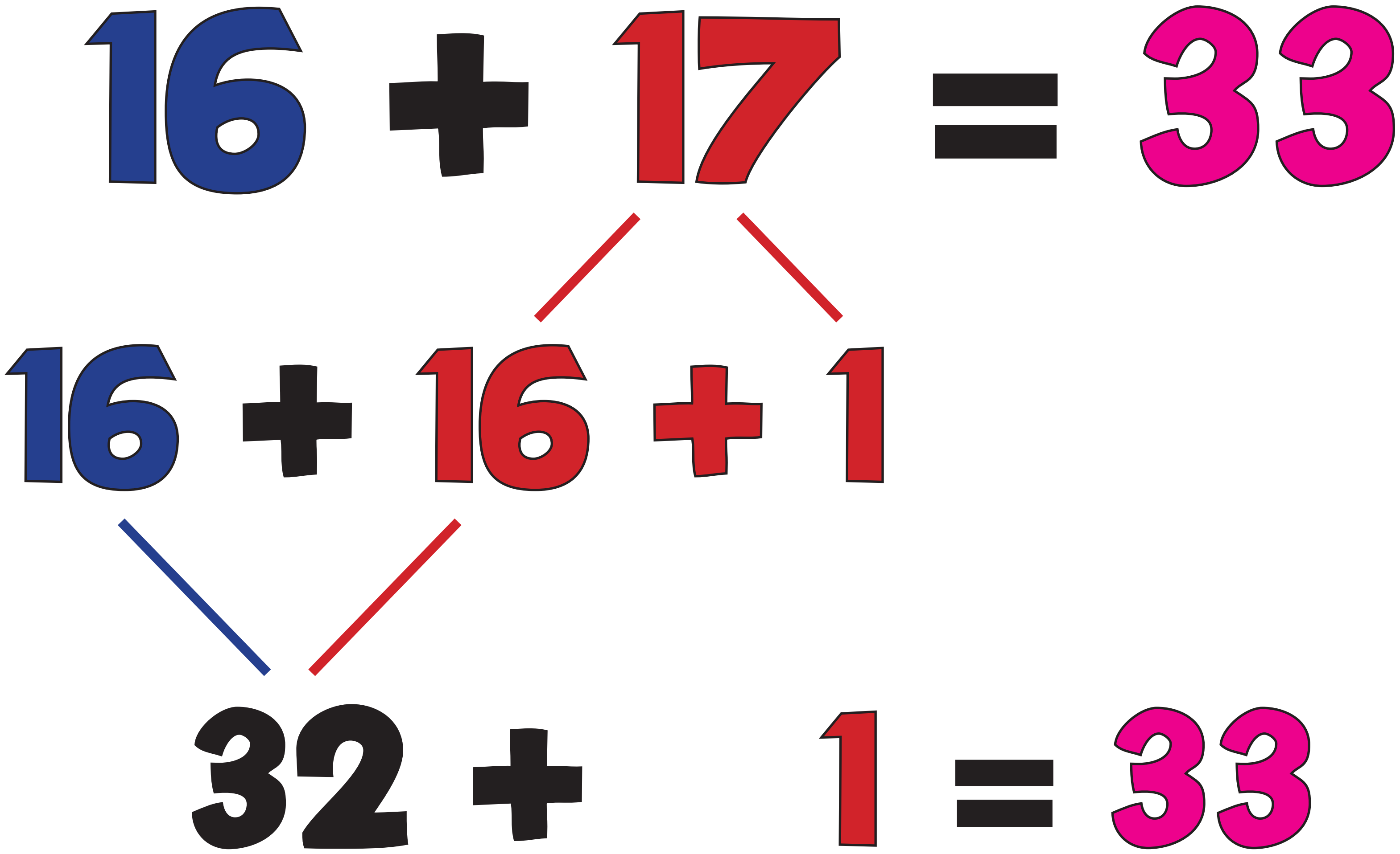
MA4: Double & Adjust

3



16 + 17 = 33

16 + 16 + 1

32 + 1 = 33

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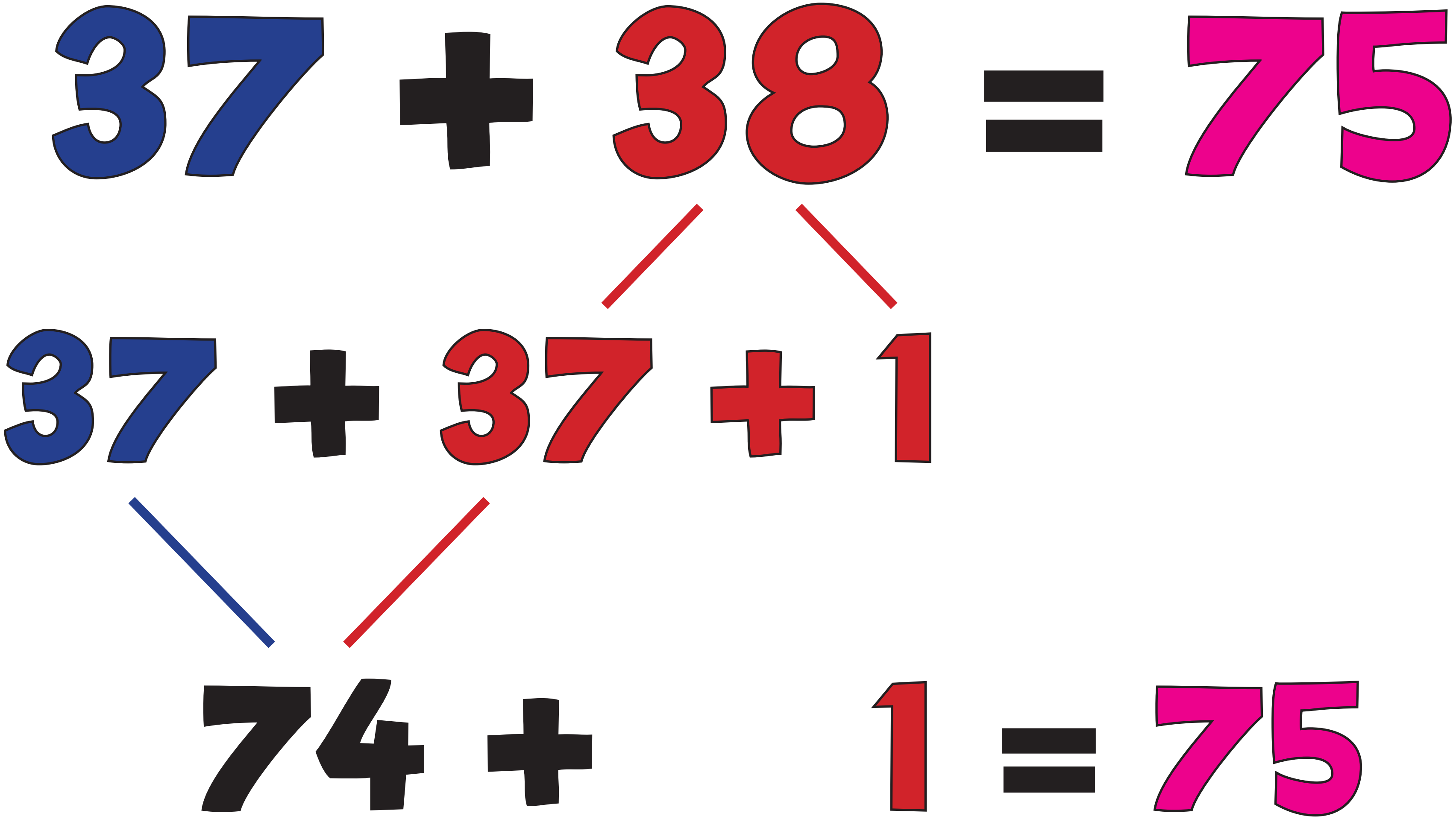
MA4: Double & Adjust

4



37 + 38 = 75

37 + 37 + 1

74 + 1 = 75

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MA4: Double & Adjust

5

125 + 127 = 252

125 + 125 + 2

250 + 2 = 252

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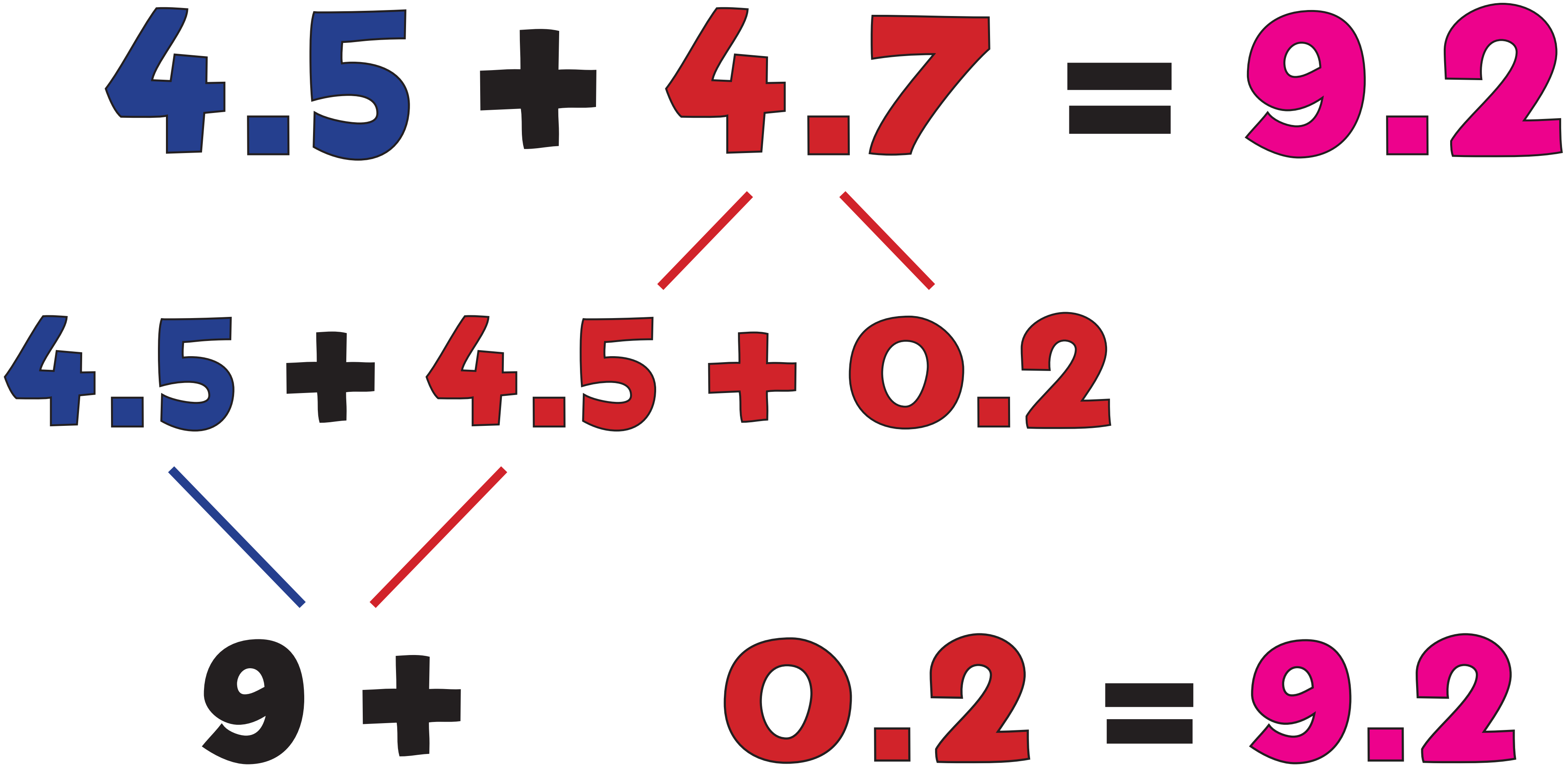
MA4: Double & Adjust

6



$$4.5 + 4.7 = 9.2$$

$$4.5 + 4.5 + 0.2$$

$$9 + \quad 0.2 = 9.2$$

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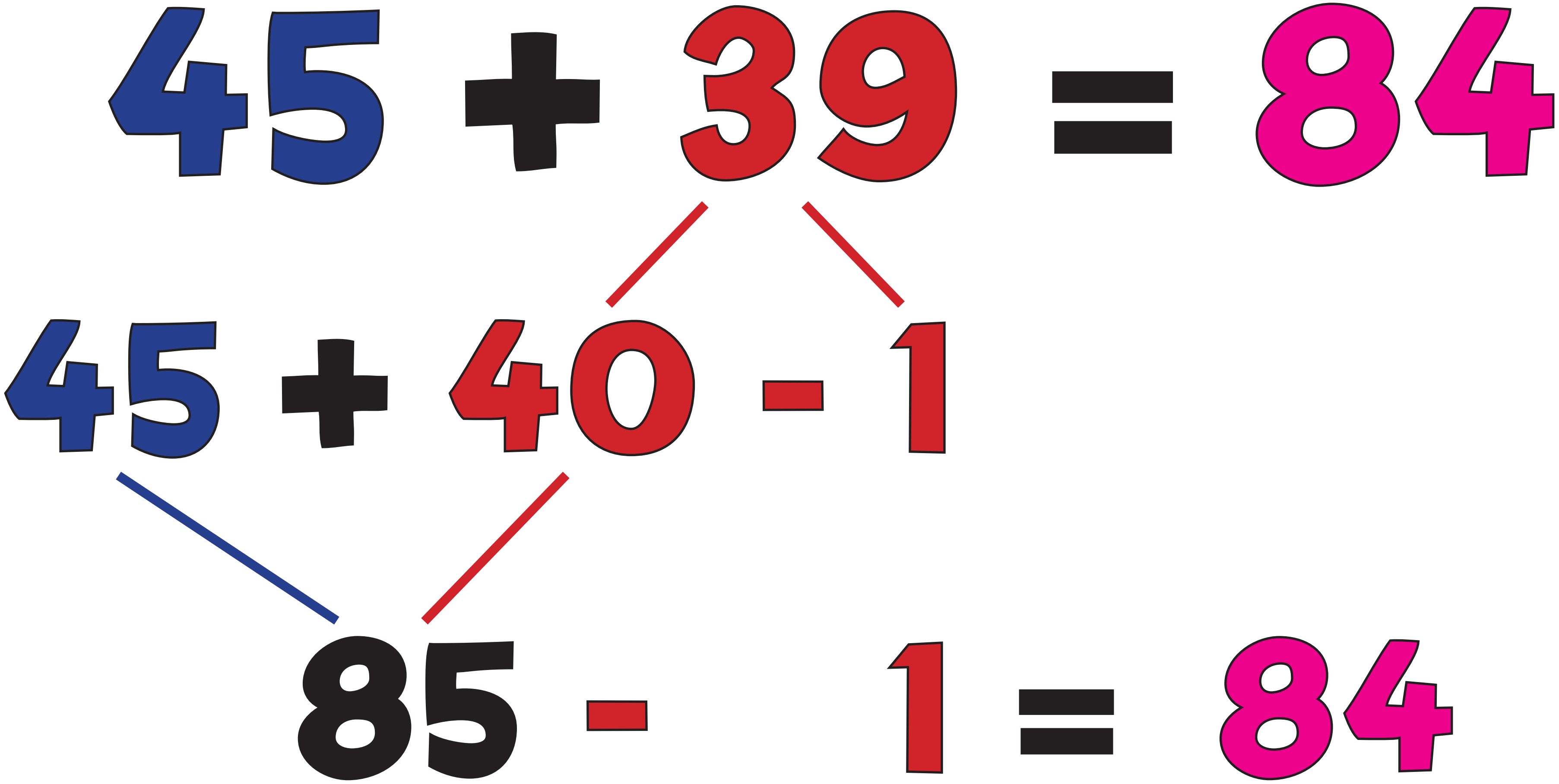
MA5: Round & Adjust



45 + 39 = 84

45 + 40 - 1

85 - 1 = 84

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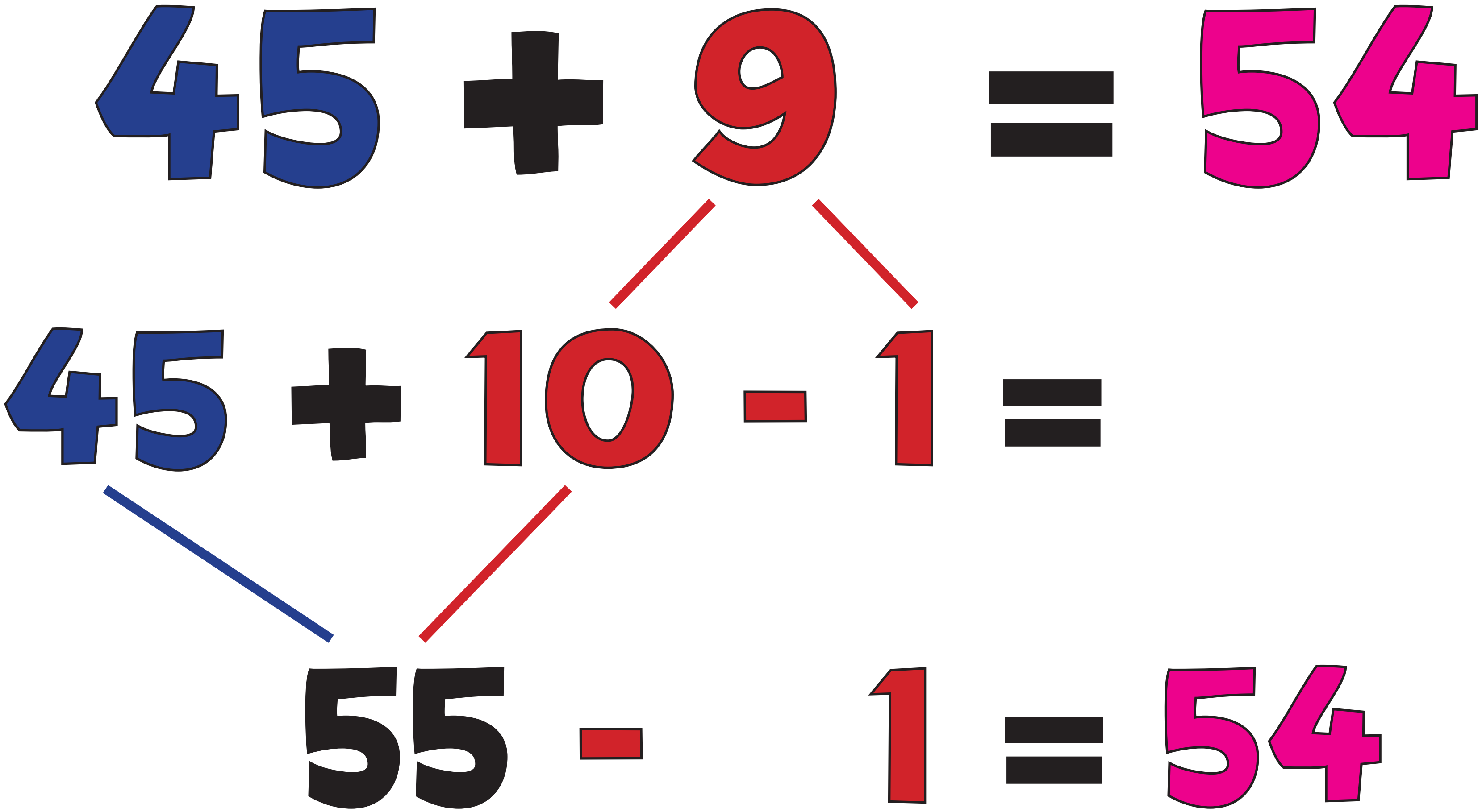
MA5: Round & Adjust

1



45 + 9 = 54

45 + 10 - 1 =

55 - 1 = 54

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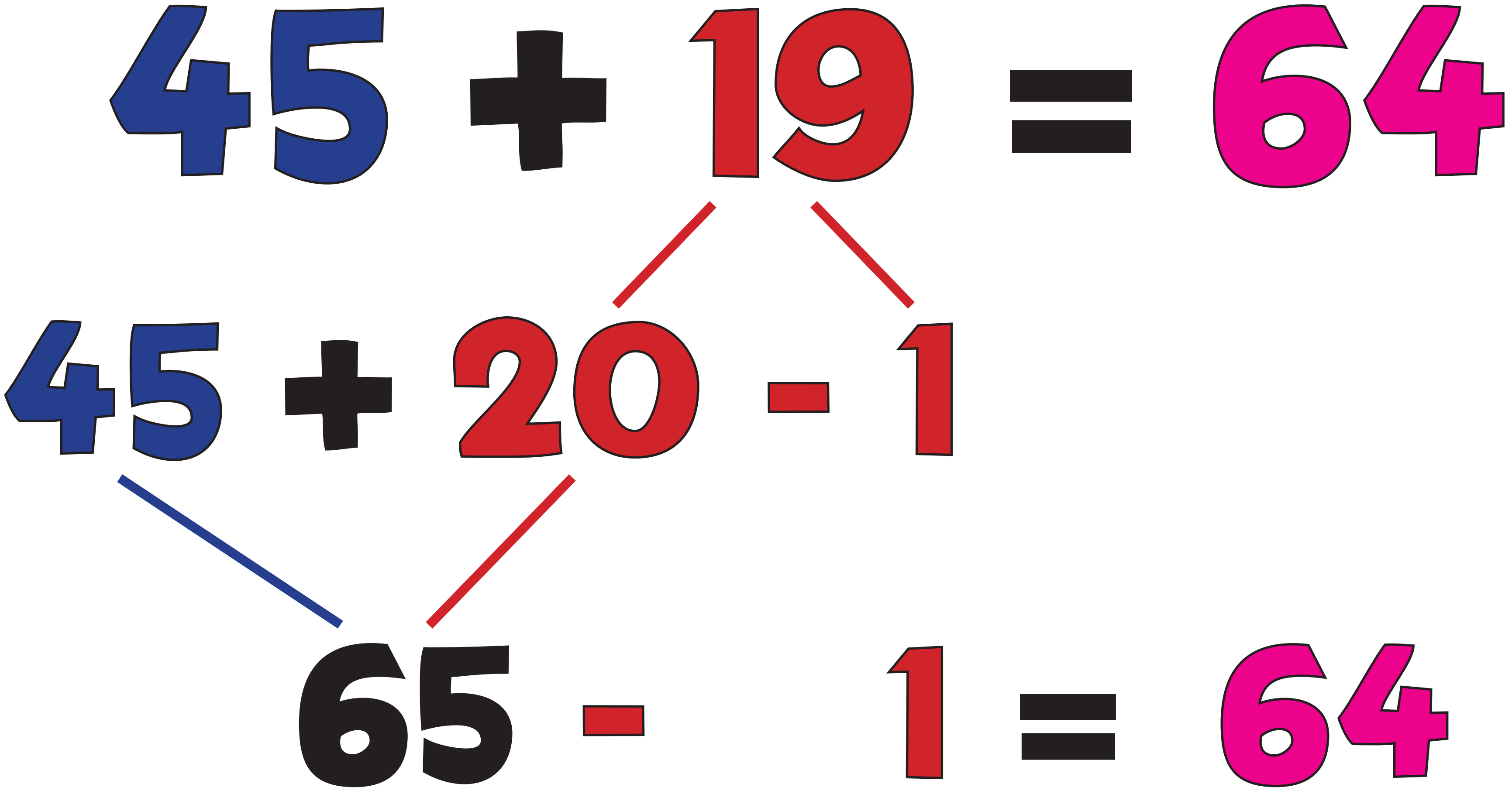
MA5: Round & Adjust

2



45 + 19 = 64

45 + 20 - 1

65 - 1 = 64

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MA5: Round & Adjust

3

45 + 97 = 142

45 + 100 - 3

145 - 3 = 142

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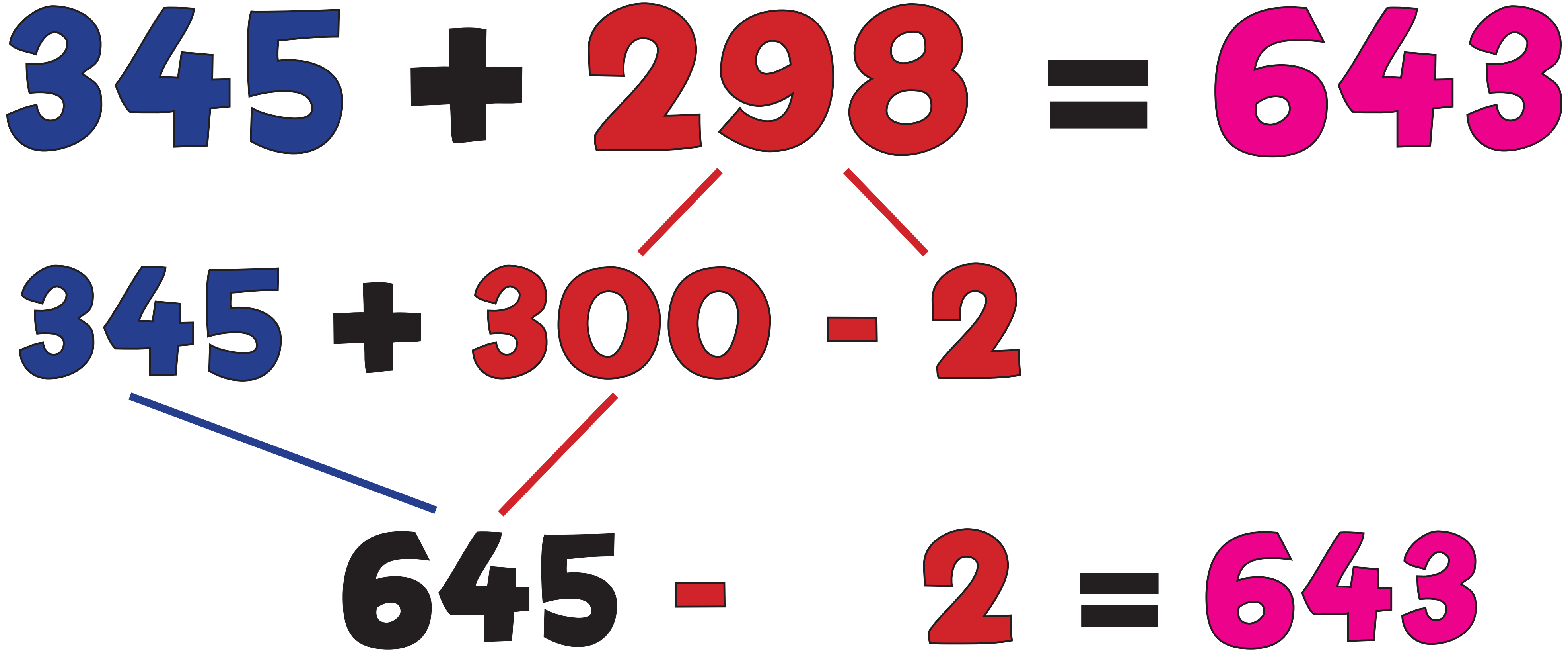
MA5: Round & Adjust

4



$345 + 298 = 643$

$345 + 300 - 2$

$645 - 2 = 643$

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MA5: Round & Adjust

5

4645 + 1996 = 6641

4645 + 2000 - 4

6645 - 4 = 6641

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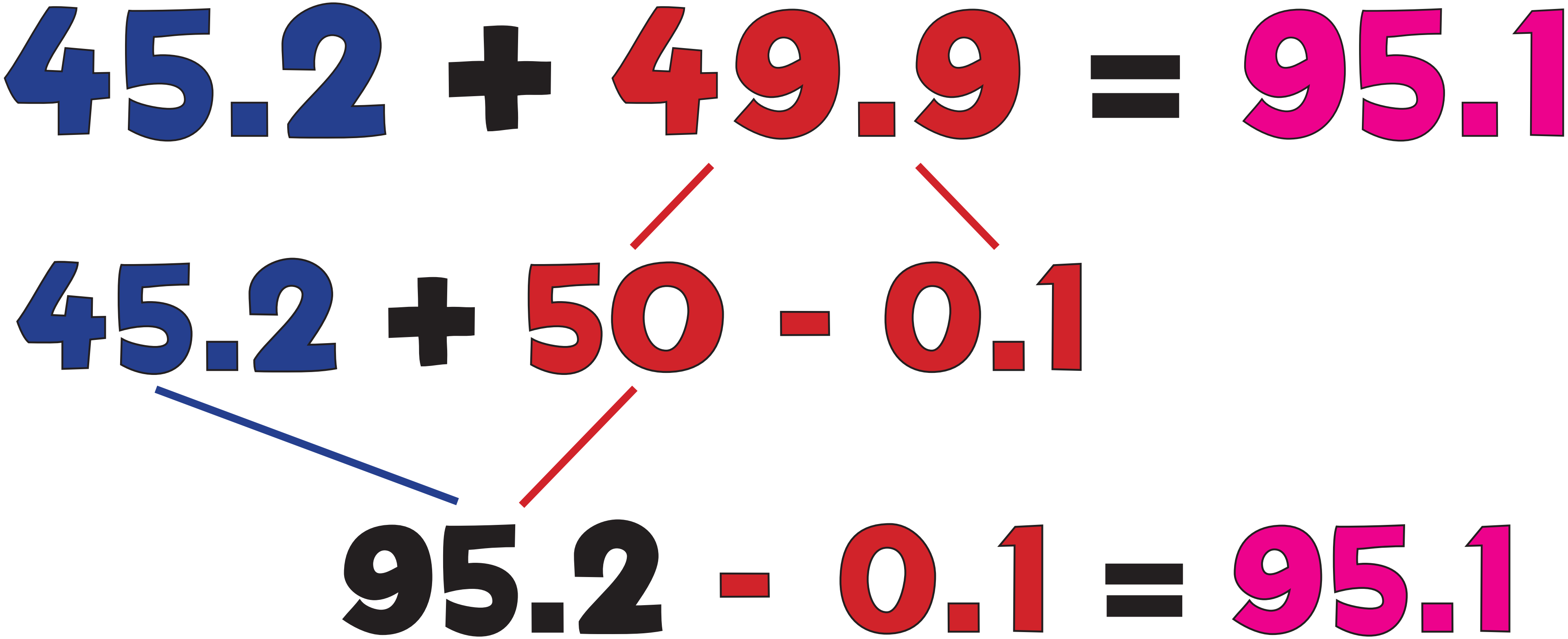
MA5: Round & Adjust

6



45.2 + 49.9 = 95.1

45.2 + 50 - 0.1

95.2 - 0.1 = 95.1

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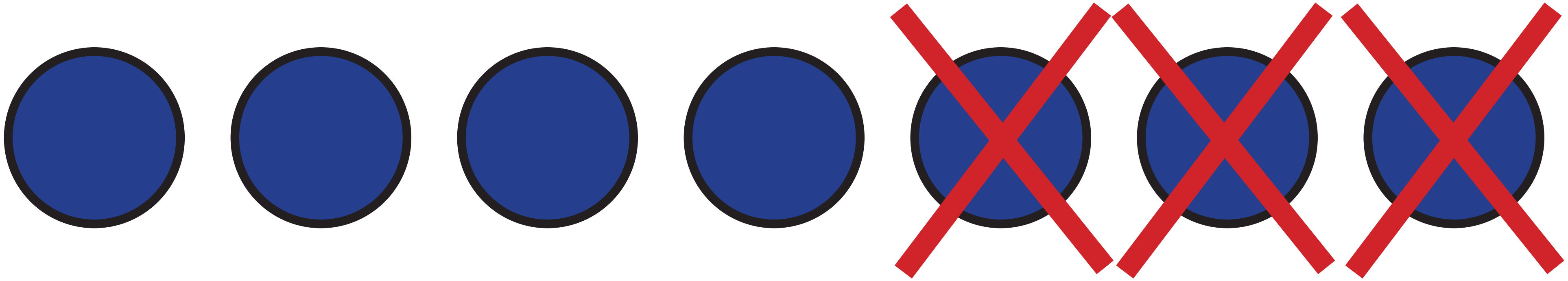
S1: Objects

1



$$7 - 3 = 4$$

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

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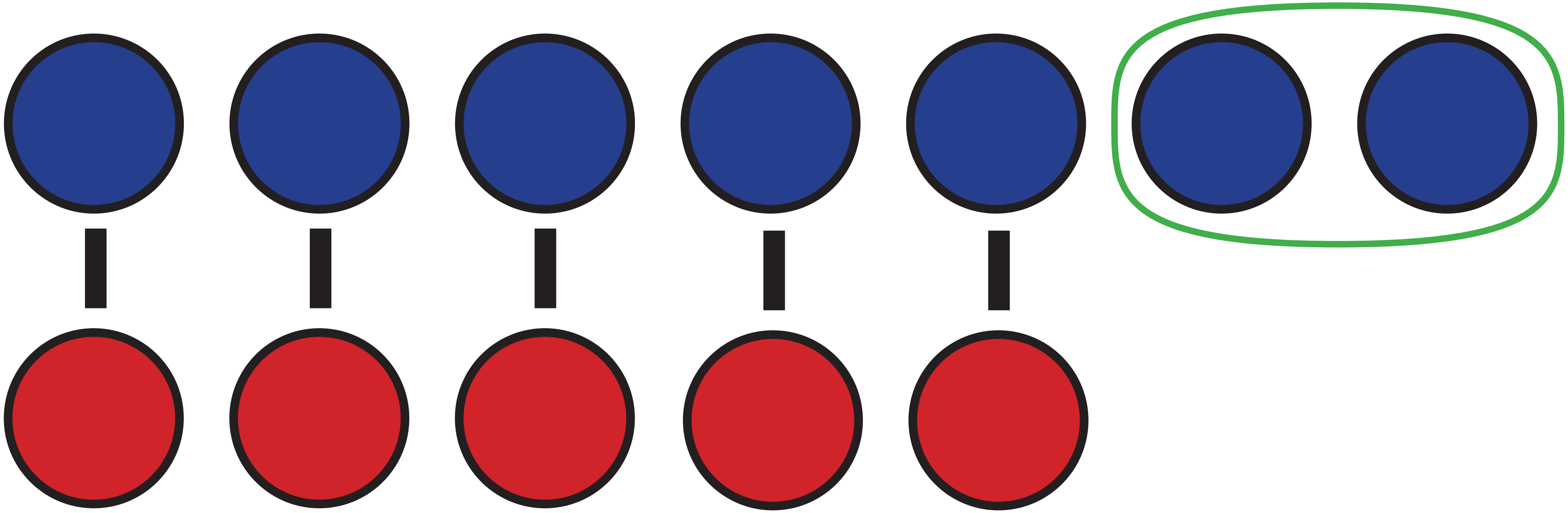
S2: What's the Difference?

1



7 - 5 = 2

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

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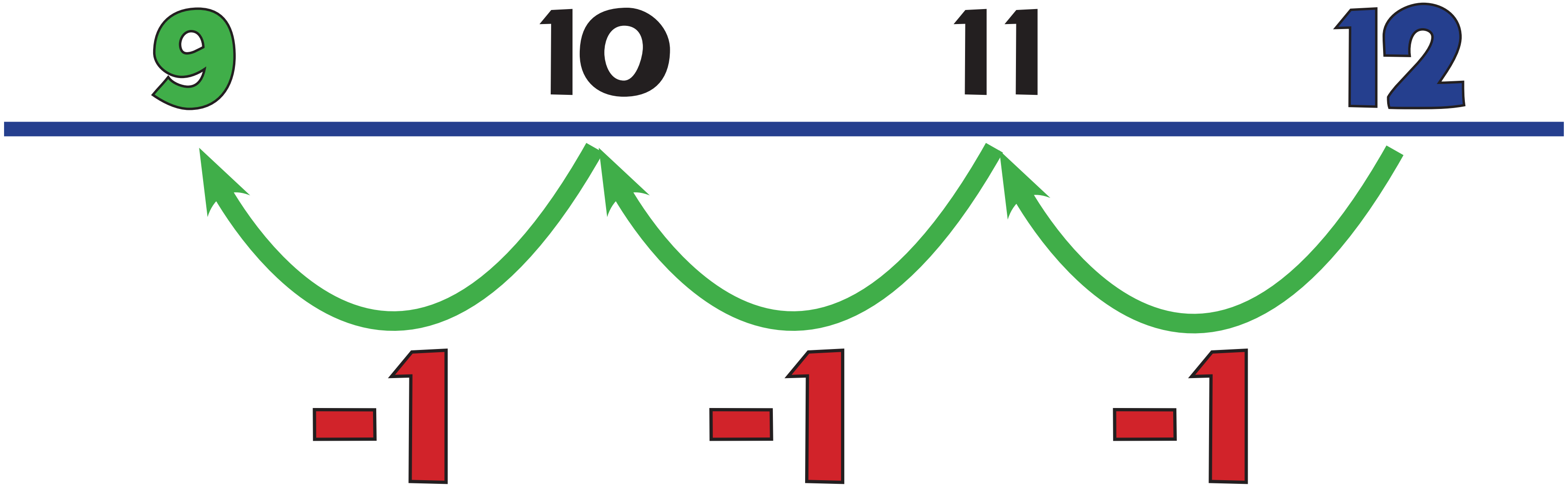
S3: Counting Back

1



$$12 - 3 = 9$$

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

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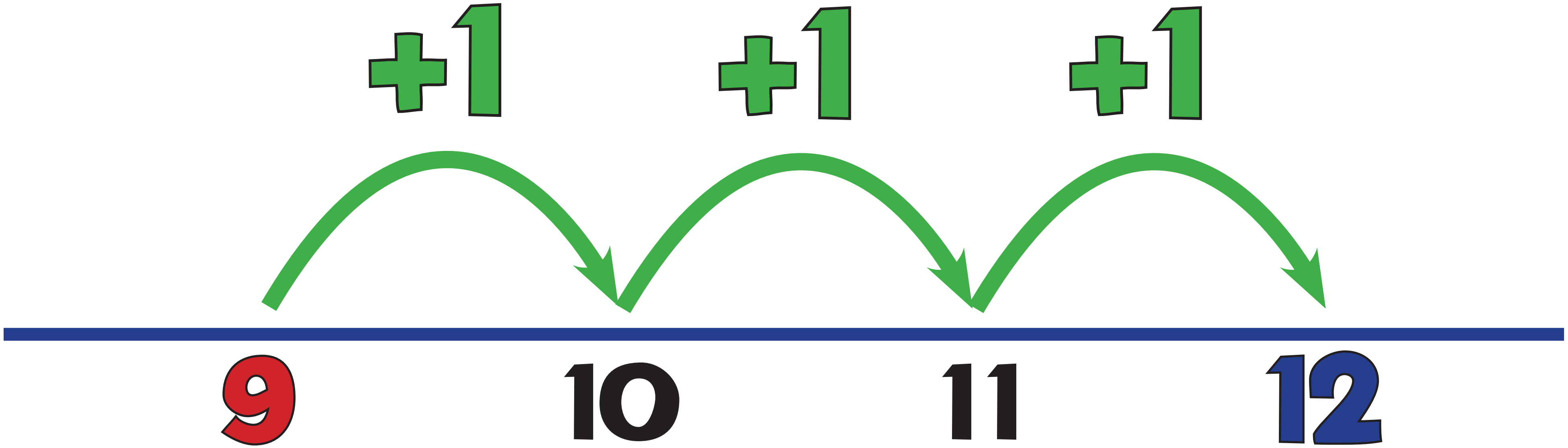
S4: Counting On

1



+1 +1 +1

9 10 11 12

$$12 - 9 = 3$$

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

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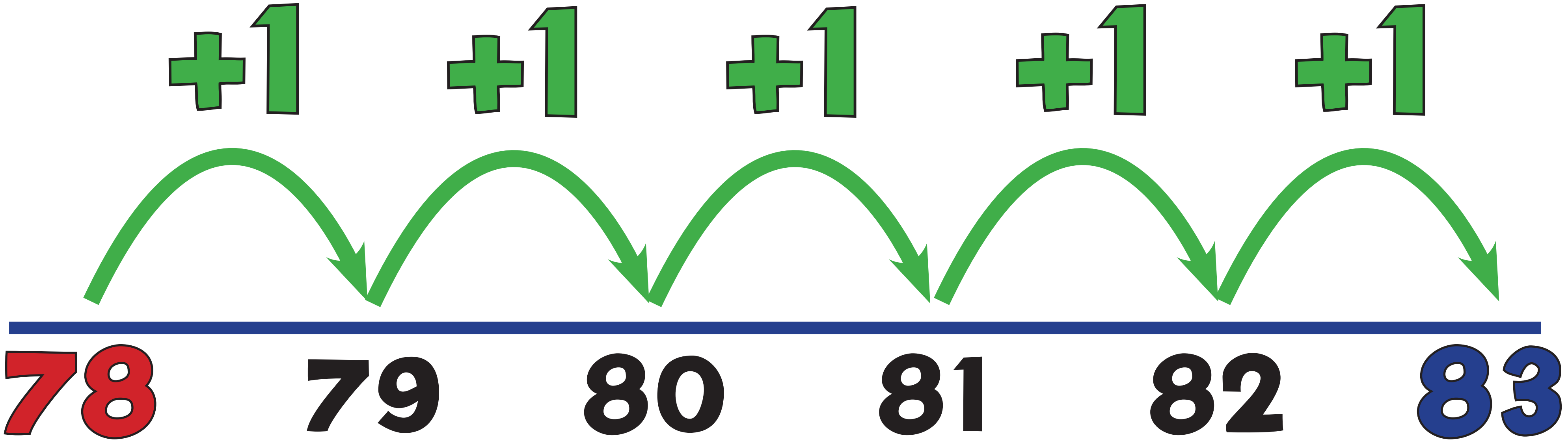
S4a: Counting On

2



$$83 - 78 = 5$$

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

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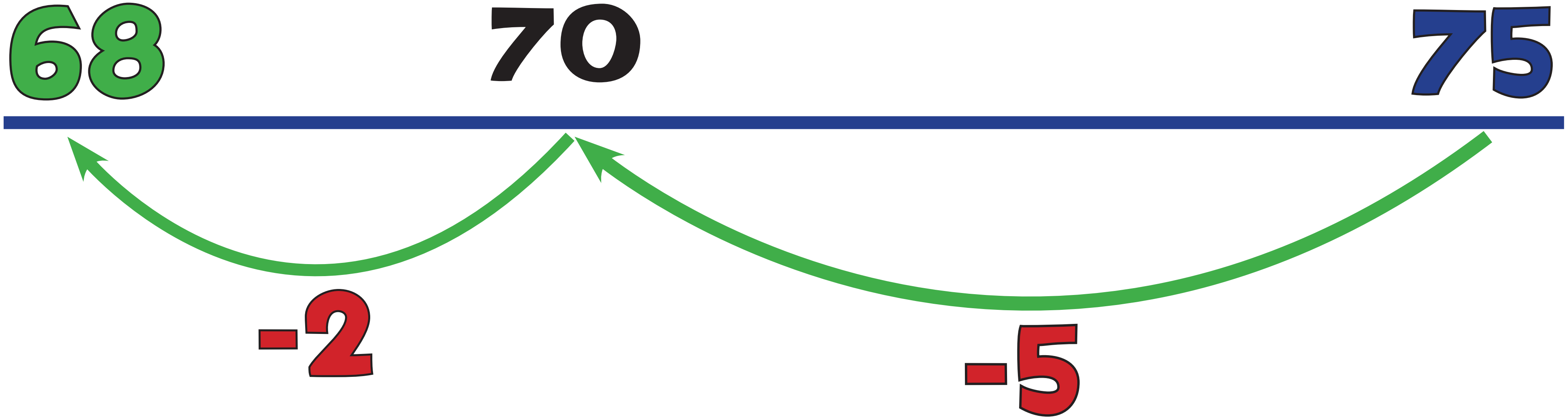
S5: Backwards Boing

2



68 70 75

-2

-5

$$75 - 7 = 68$$

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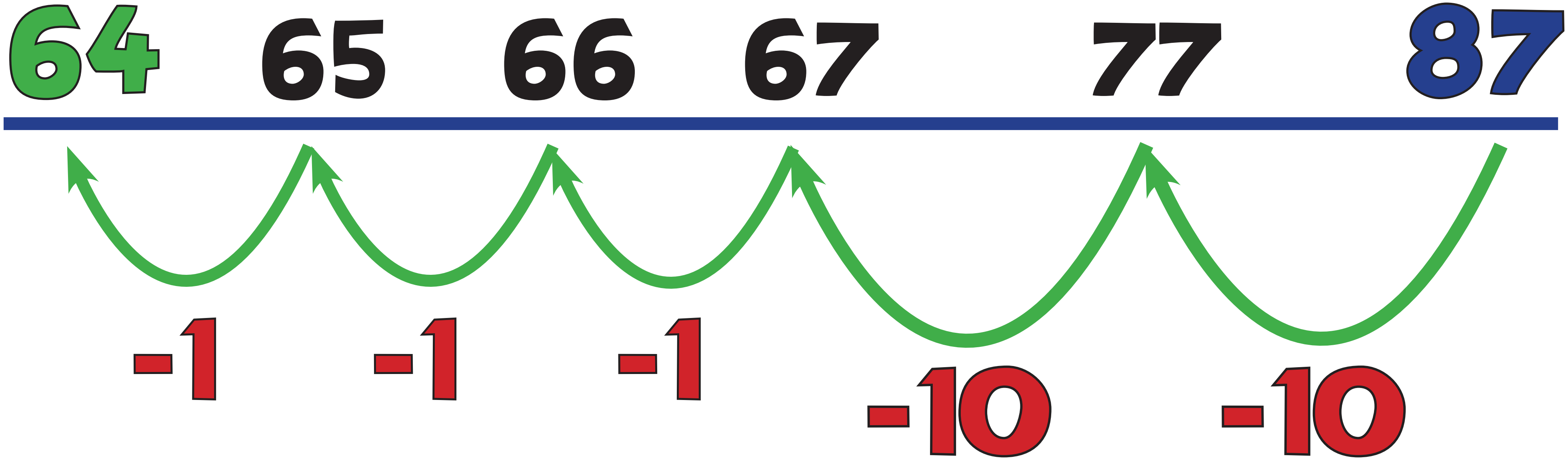
S6: Backwards Bounce

2



87 - 23 = 64

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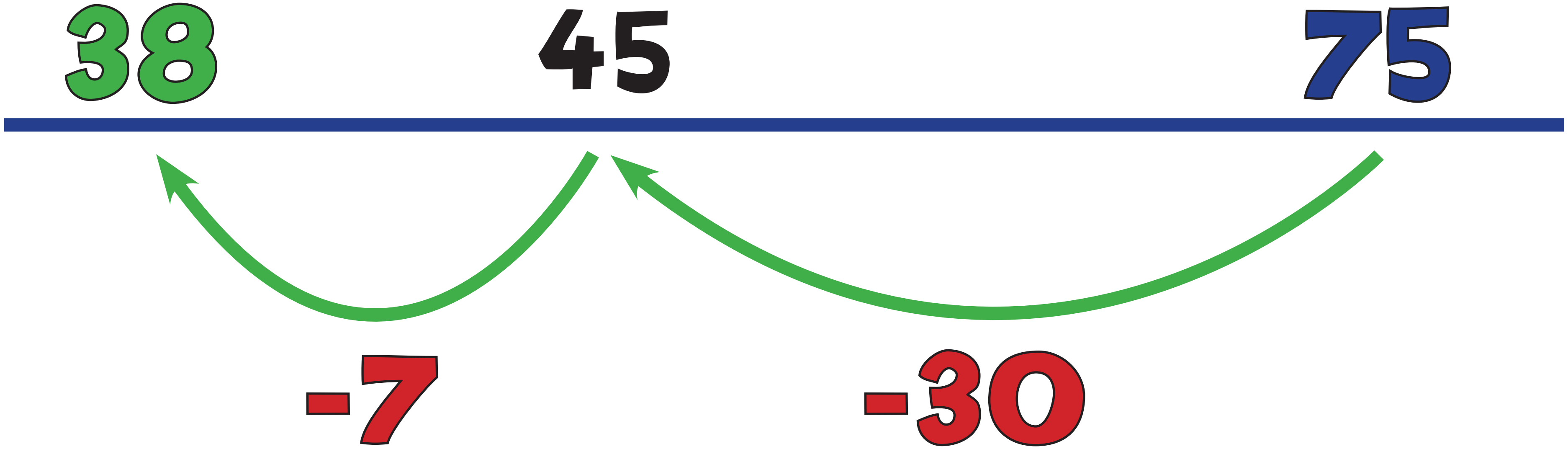
S7: Backwards Jump

2



$$75 - 37 = 38$$

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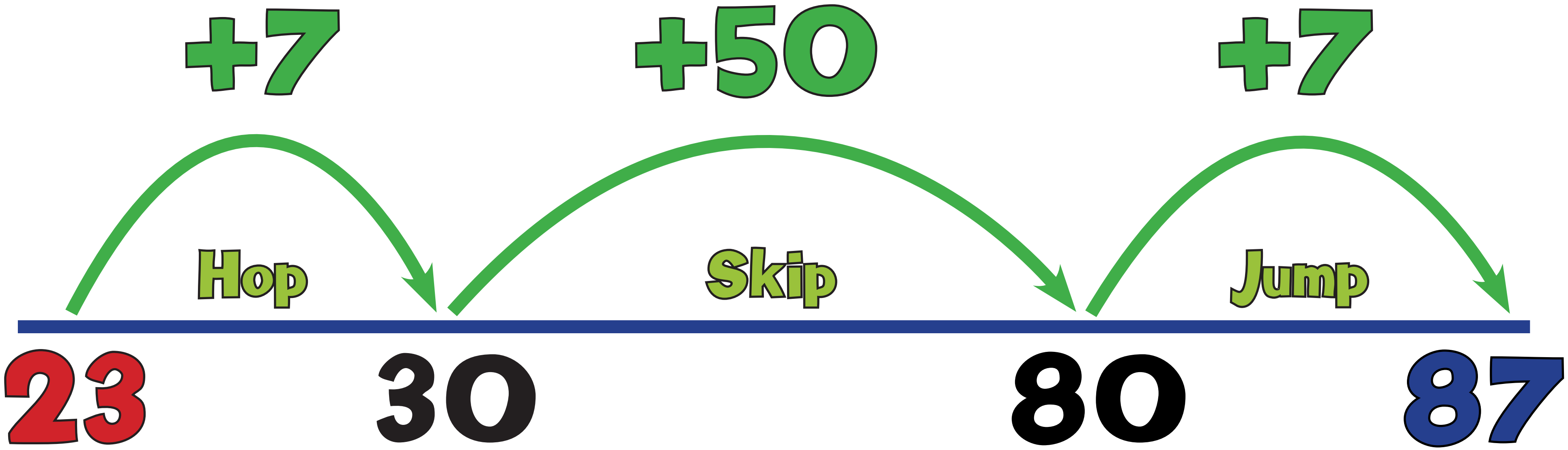
(S8: Triple Jump!)

2 Additional



+7 +50 +7

Hop Skip Jump

23 30 80 87

87 - 23 = 64

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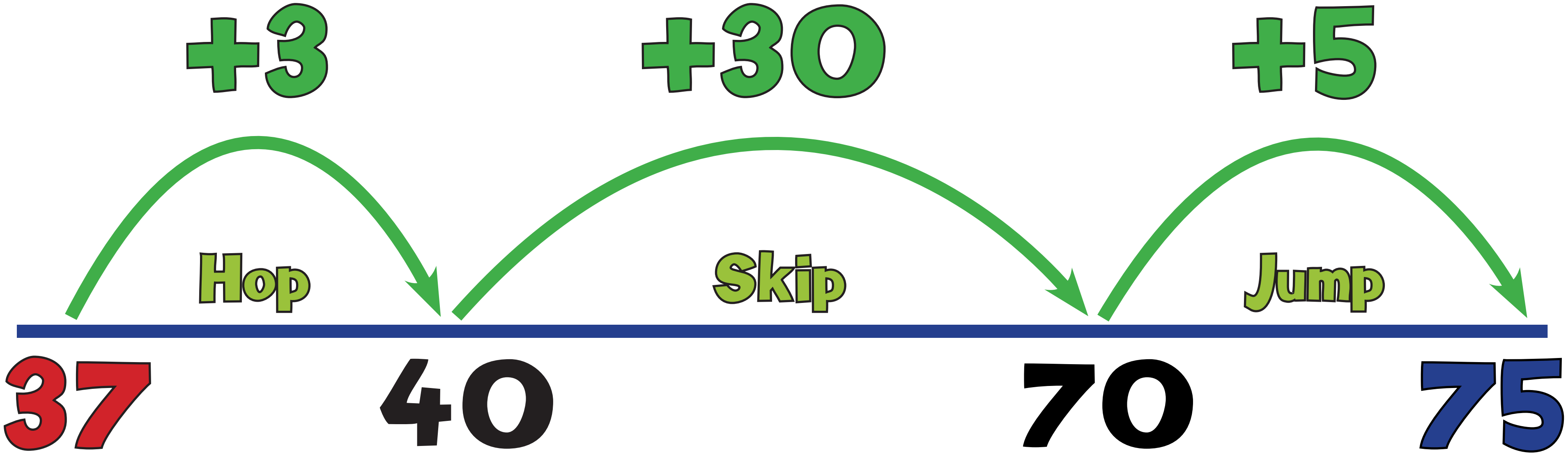
S8: Triple Jump!

2



$$75 - 37 = 38$$

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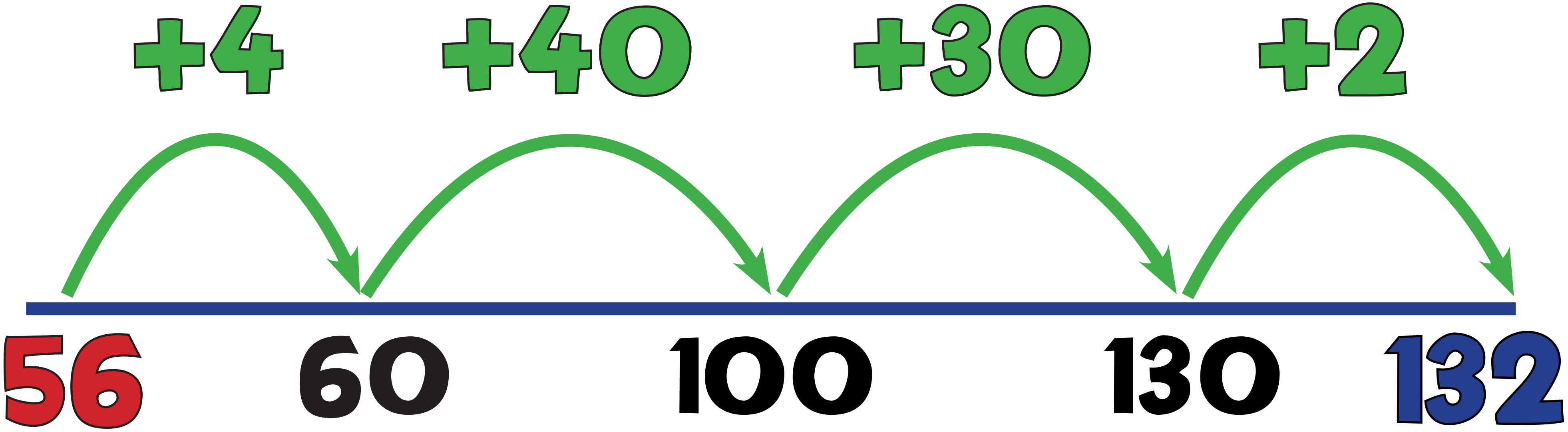
S8b: Quad Jump!

3



+4 +40 +30 +2

56 60 100 130 132

132 - 56 = 76

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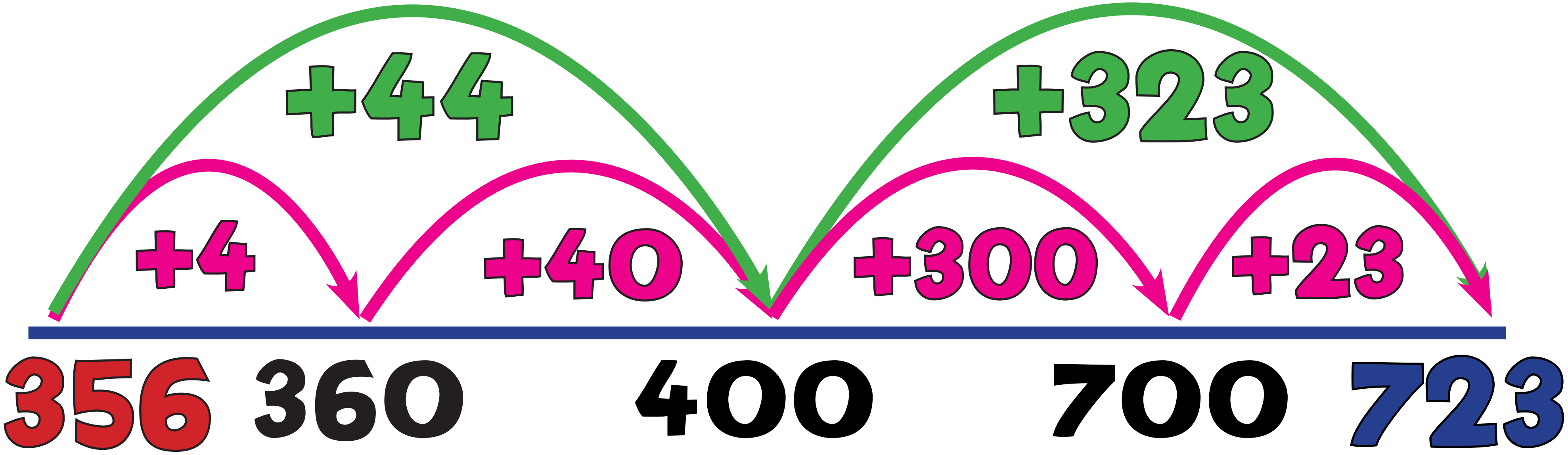
S8c: Big Jump!

3



+44 +323

+4 +40 +300 +23

356 360 400 700 723

723 - 356 = 367

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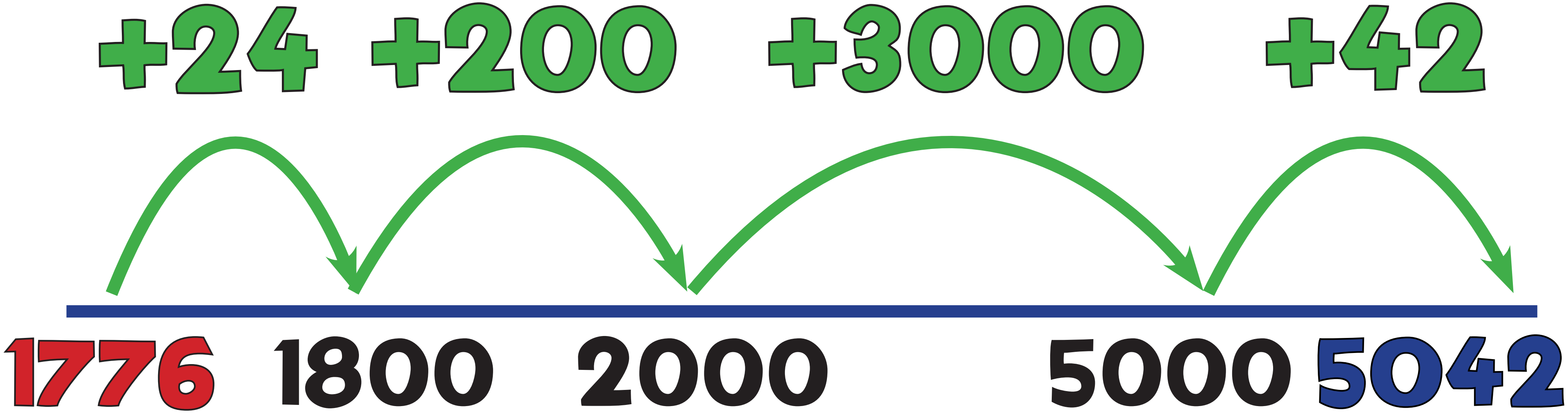
S8d: Quad Jump Extreme

4



5042 - 1776 = 3266

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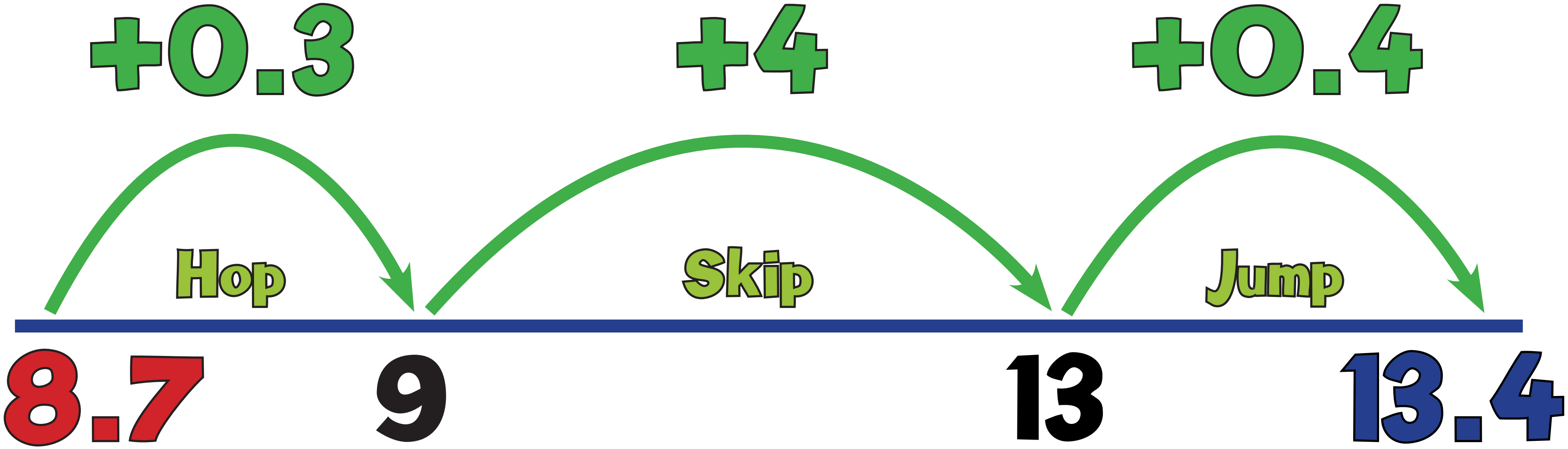
S8f: Decimal T-J!

5



$$13.4 - 8.7 = 4.7$$

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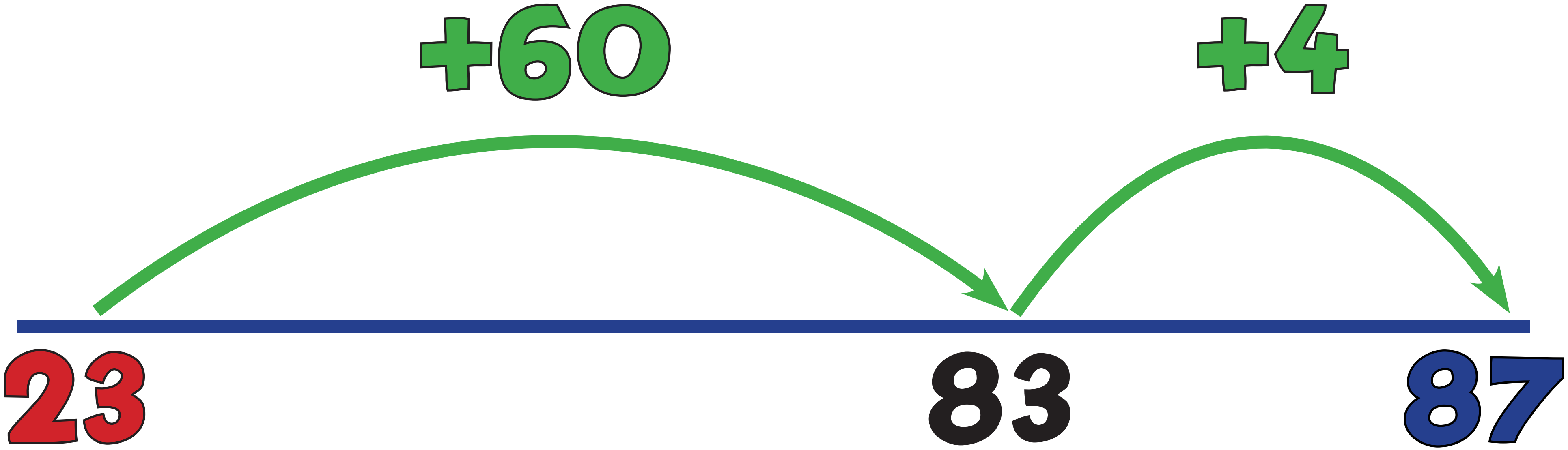
(S9: 10s Jump, 1s Jump!)

2 Additional



$$87 - 23 = 64$$

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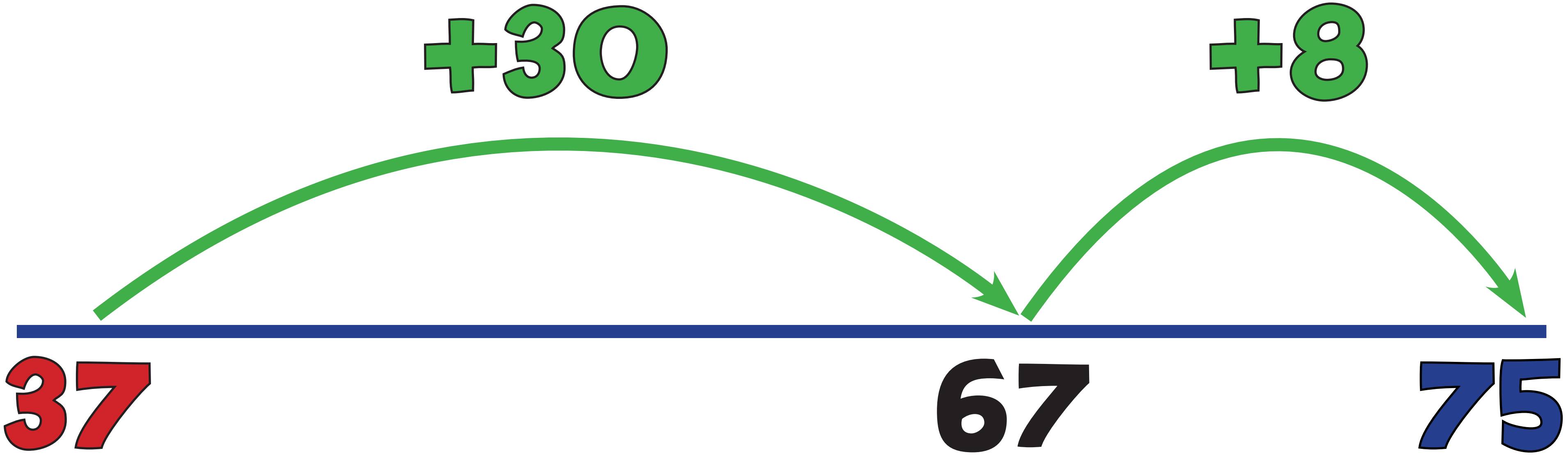
S9: 10s Jump, 1s Jump!

2



+30

+8

37

67

75

75 - 37 = 38

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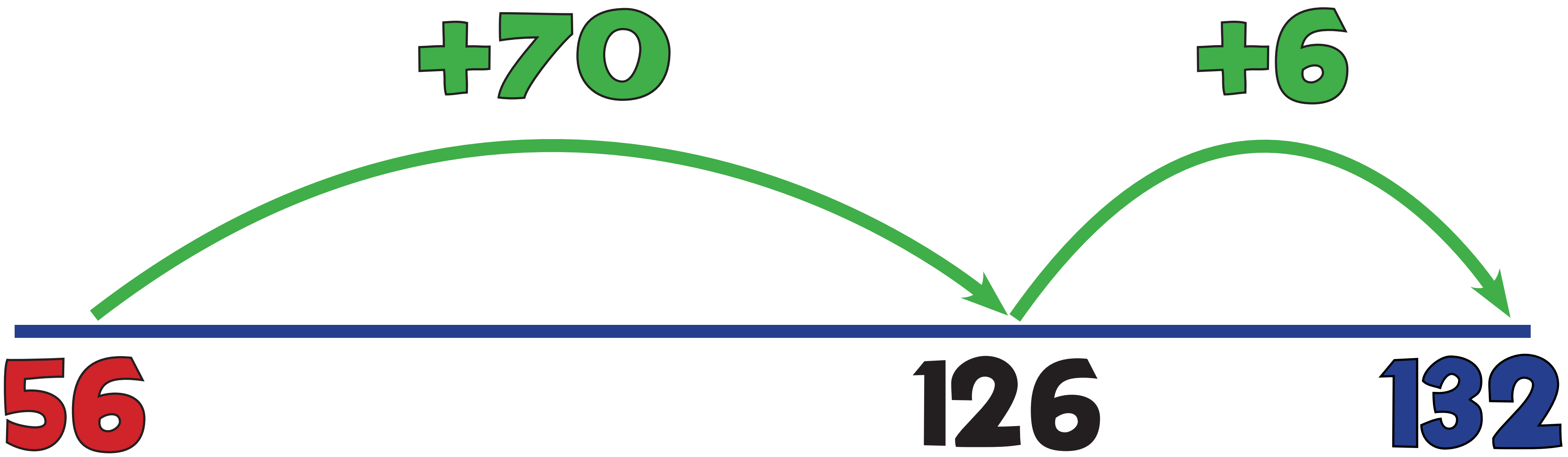
S9b: 10s Jump, 1s Jump!

3



$$132 - 56 = 76$$

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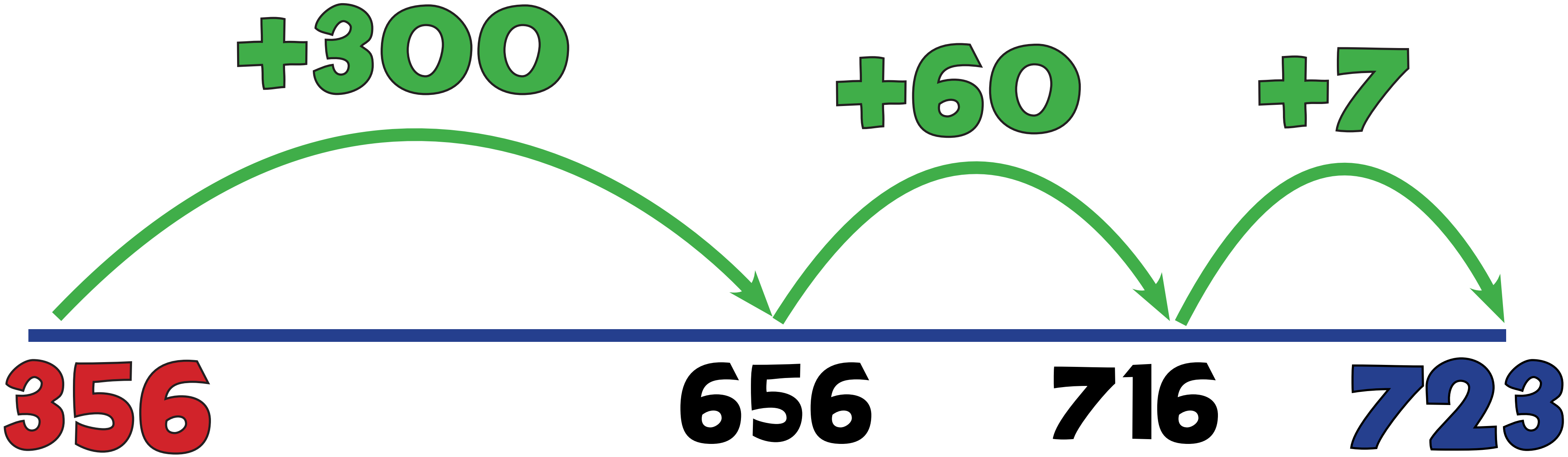
S9c: 100s, 10s, 1s Jump

3



+300

+60

+7

356

656

716

723

$$723 - 356 = 367$$

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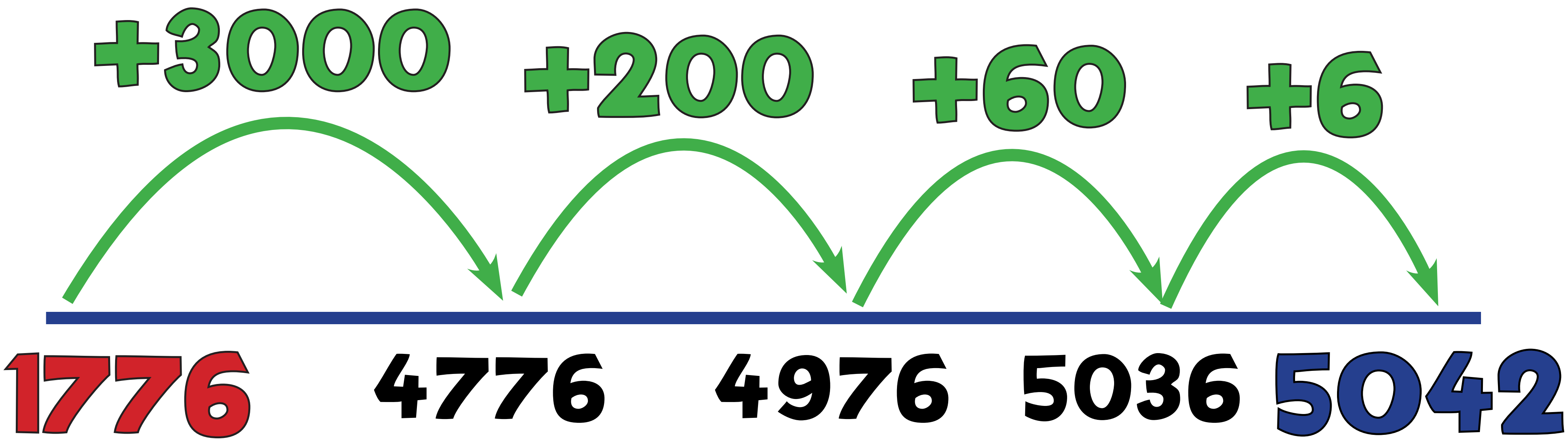
S9d: 1000s, 100s, 10s, 1s Jump

4



+3000 +200 +60 +6

1776 4776 4976 5036 5042

5042 - 1776 = 3266

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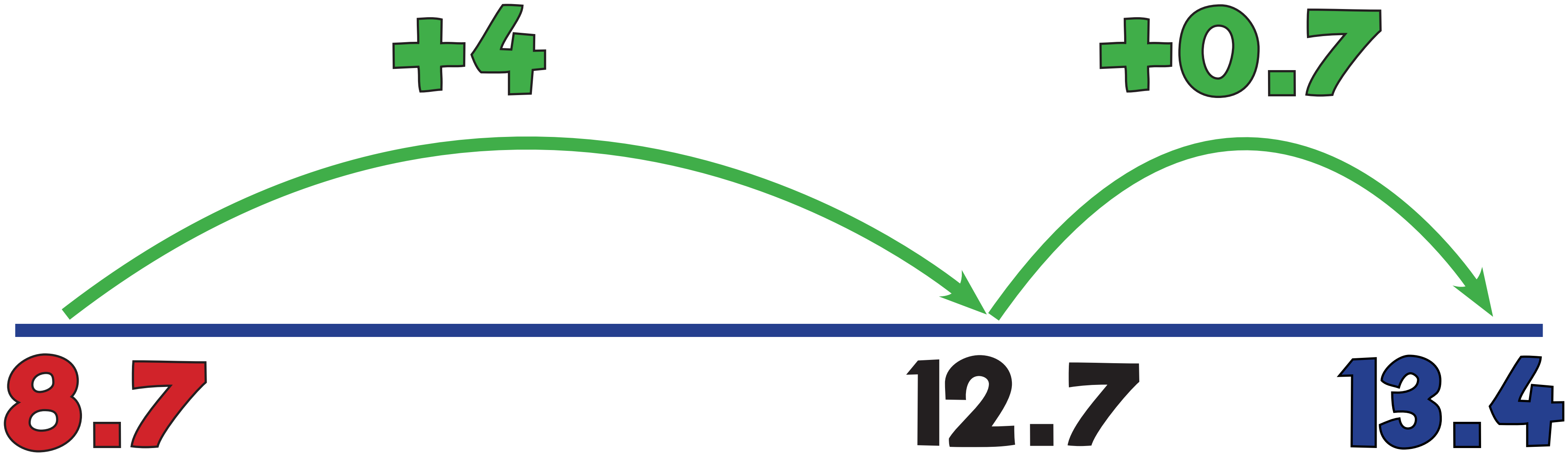
S9f: 1s Jump, Tenths Jump!

5



13.4 - 8.7 = 4.7

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(S10: Expanded Column)

2 Additional

Subtraction

87 - 23 = 64

$$\begin{array}{cc} 80 & 7 \\ 20 & 3 \\ \hline 60 & 4 \end{array}$$

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(S10: Expanded Column)

2 Additional:a

Subtraction

$$75 - 37 = 38$$

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

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(S10: Expanded Column)

3 Additional:b

Subtraction

$$132 - 56 = 38$$

$$\begin{array}{rrrr} & 0 & 120 & 1 \\ & \cancel{100} & \cancel{30} & 2 \\ - & & 50 & 6 \\ \hline & & 70 & 6 \end{array}$$

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S10: Expanded Column

3

Subtraction (100, 10, 1s)

$$723 - 356 = 367$$

$$\begin{array}{rrrr} & \overset{600}{\cancel{700}} & \overset{110}{\cancel{20}} & {}^{1}3 \\ - & 300 & 50 & 6 \\ \hline & 300 & 60 & 7 \end{array}$$

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(S11: Column Subtraction)

2 Additional

$$\begin{array}{rcc} & 10 & 1 \\ & 8 & 7 \\ - & 2 & 3 \\ \hline & 6 & 4 \\ \hline \end{array}$$

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(S11: Column Subtraction)

2 Additional:a

$$
\begin{array}{rcc}
 & 10 & 1 \\
 & {}^{6}\cancel{7} & {}^{1}5 \\
- & 3 & 7 \\
\hline
 & 3 & 8 \\
\hline
\end{array}
$$

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(S11: Column Subtraction)

3 Additional:b

$$\begin{array}{cccc}
 & 100 & 10 & 1 \\
 & 0 & 12 & 1 \\
 & \cancel{1} & \cancel{3} & 2 \\
- & & 5 & 6 \\
\hline
 & & 7 & 6 \\
\hline
\end{array}$$

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S11: Column Subtraction

3

$$\begin{array}{cccc} & 100 & 10 & 1 \\ & 6 & 11 & 1 \\ & \cancel{7} & \cancel{2} & 3 \\ - & 3 & 5 & 6 \\ \hline & 3 & 6 & 7 \\ \hline \end{array}$$

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S11d: Column Subtraction

4

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

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S11e: Column Subtraction

5

$$\begin{array}{r} 7\overset{3}{\cancel{4}}\overset{1}{2}\overset{7}{\cancel{8}}\overset{12}{\cancel{3}}\overset{1}{1} \\ -\ 427358 \\ \hline 315473 \\ \hline \end{array}$$

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S11f: Column Subtraction

5

$$\begin{array}{ccccc} & 10 & 1 & . & \frac{1}{10} \\ & 0 & 12 & & 1 \\ & \cancel{1} & \cancel{3} & . & 4 \\ - & & 8 & . & 7 \\ \hline & & 4 & . & 7 \\ \hline \end{array}$$

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S11g: Column Subtraction

5

$$\begin{array}{cccccc} & 10 & 1 & . & \frac{1}{10} & \frac{1}{100} \\ & 6 & 11 & & 13 & 1 \\ & \cancel{7} & \cancel{2} & . & \cancel{4} & 3 \\ - & 4 & 7 & . & 8 & 5 \\ \hline & 2 & 4 & . & 5 & 8 \\ \hline \end{array}$$

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S11h: Column Subtraction

5

With Decimals

$$12.4 - 5.97 = 6.43$$

$$\begin{array}{rrcrr}
10 & 1 & . & \frac{1}{10} & \frac{1}{100} \\
\overset{0}{\cancel{1}} & \overset{11}{\cancel{2}} & . & \overset{13}{\cancel{4}} & {}^{1}0 \\
- & 5 & . & 9 & 7 \\
\hline
 & 6 & . & 4 & 3 \\
\hline
\end{array}$$

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MS1: Counting Back

46 - 21 = 25

46

-20

26

-1

25

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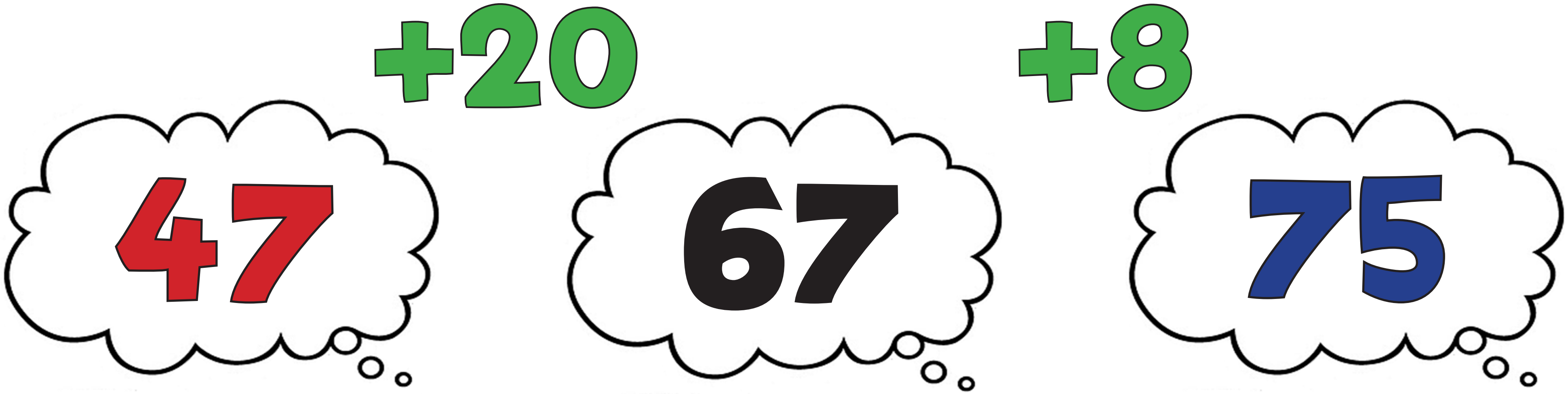
MS2: Counting On

75 - 47 = 28



+20

+8

47

67

75

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MS2a: Counting On

75 - 47 = 28

+3

+25

47

50

75

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MS3: Round & Adjust

84 - 29 = 55

84 - 30 + 1

54 + 1 = 55

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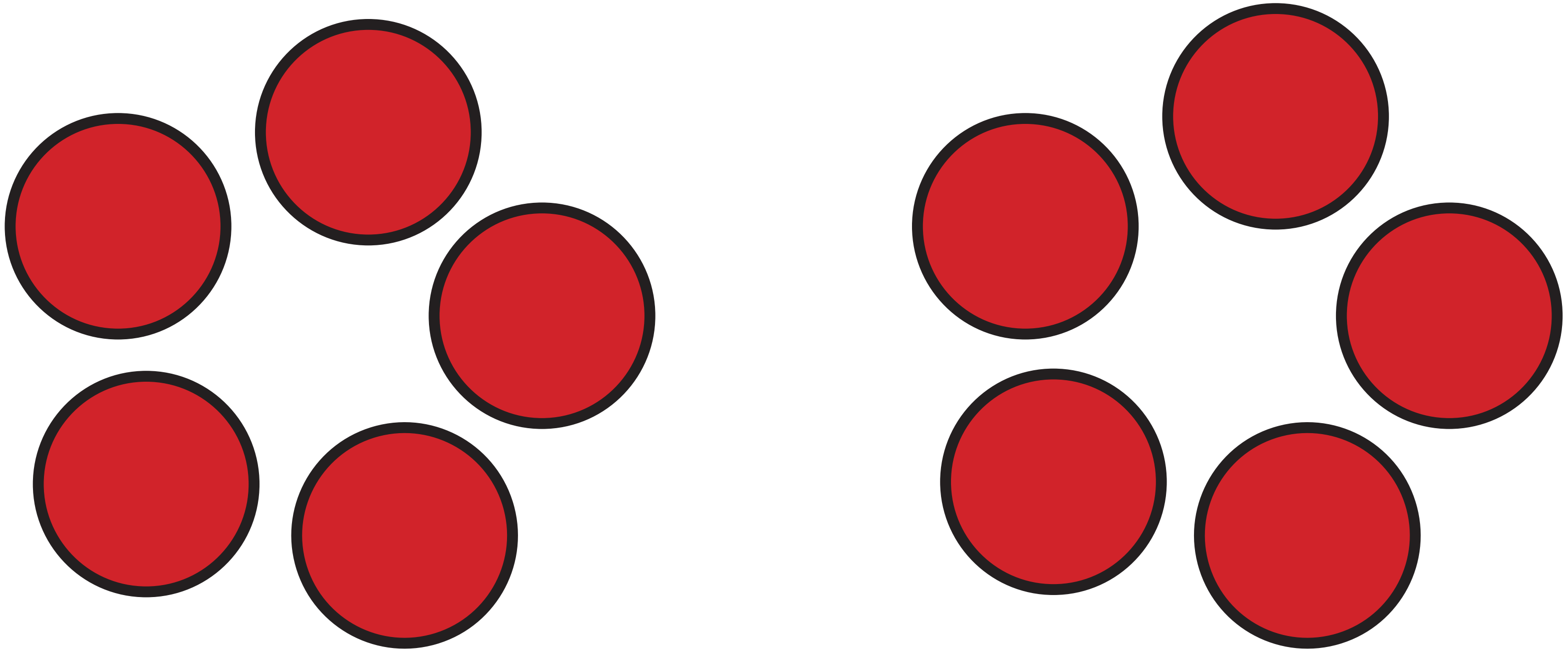
(M1: Groups)

1



"2 groups of 5 counters makes 10 counters altogether"

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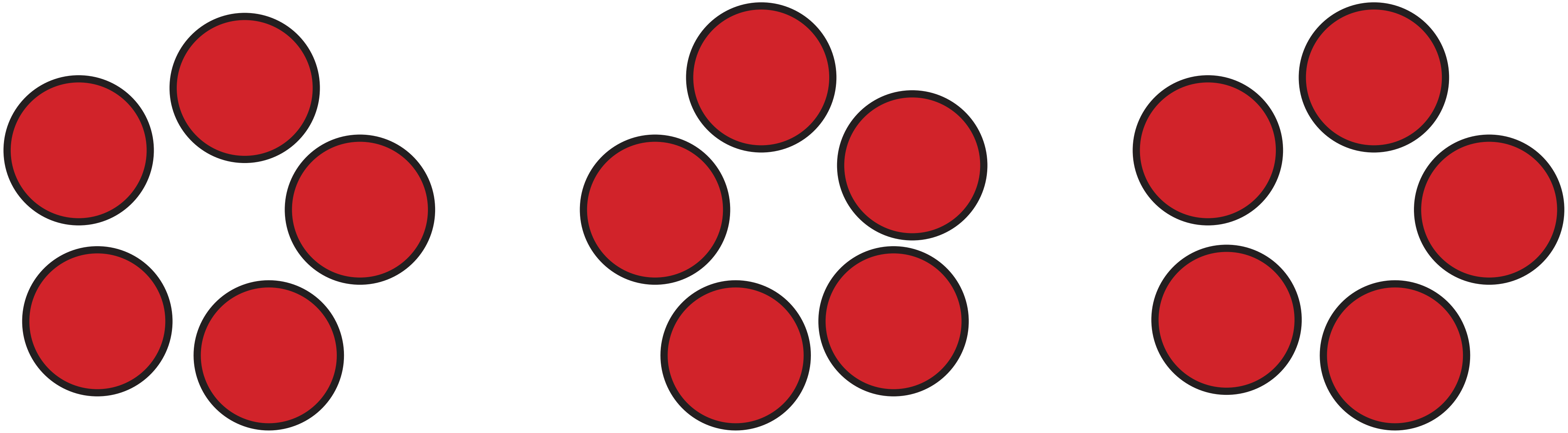
M1: Repeated Addition

2

(Groups)



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

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

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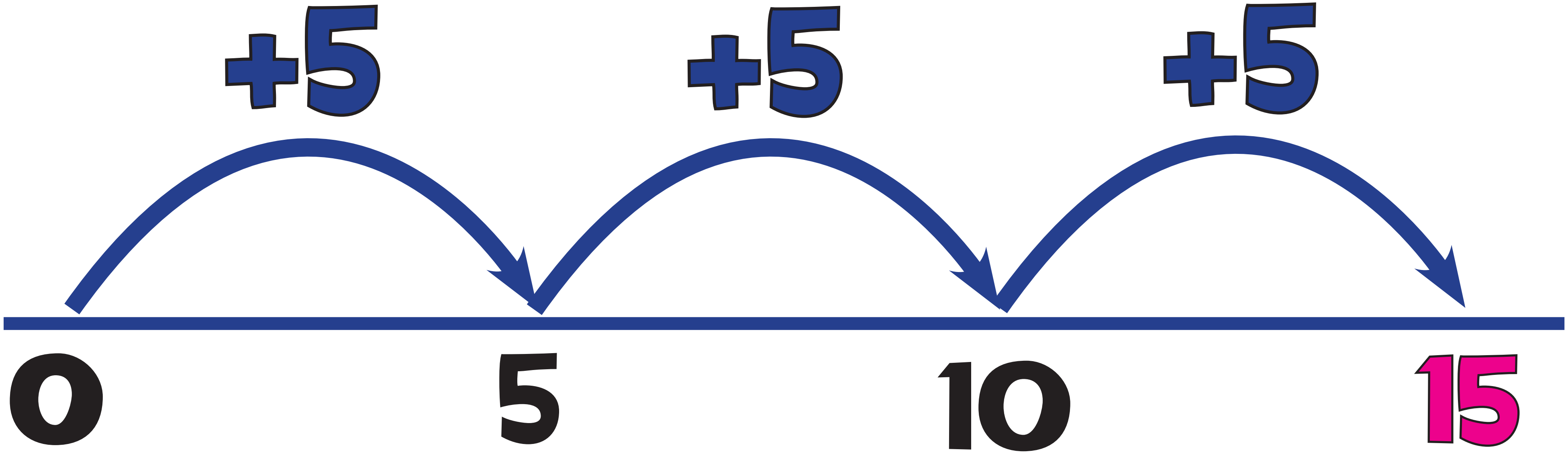
M2: Repeated Addition

2

(Number Line)



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

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

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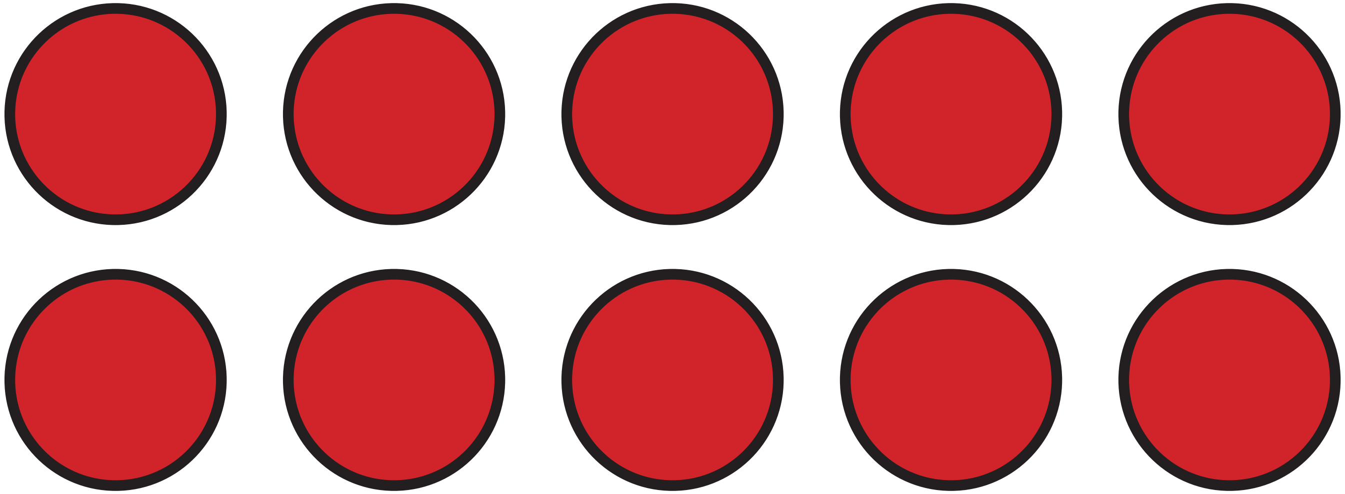
(M3: Arrays)

1



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

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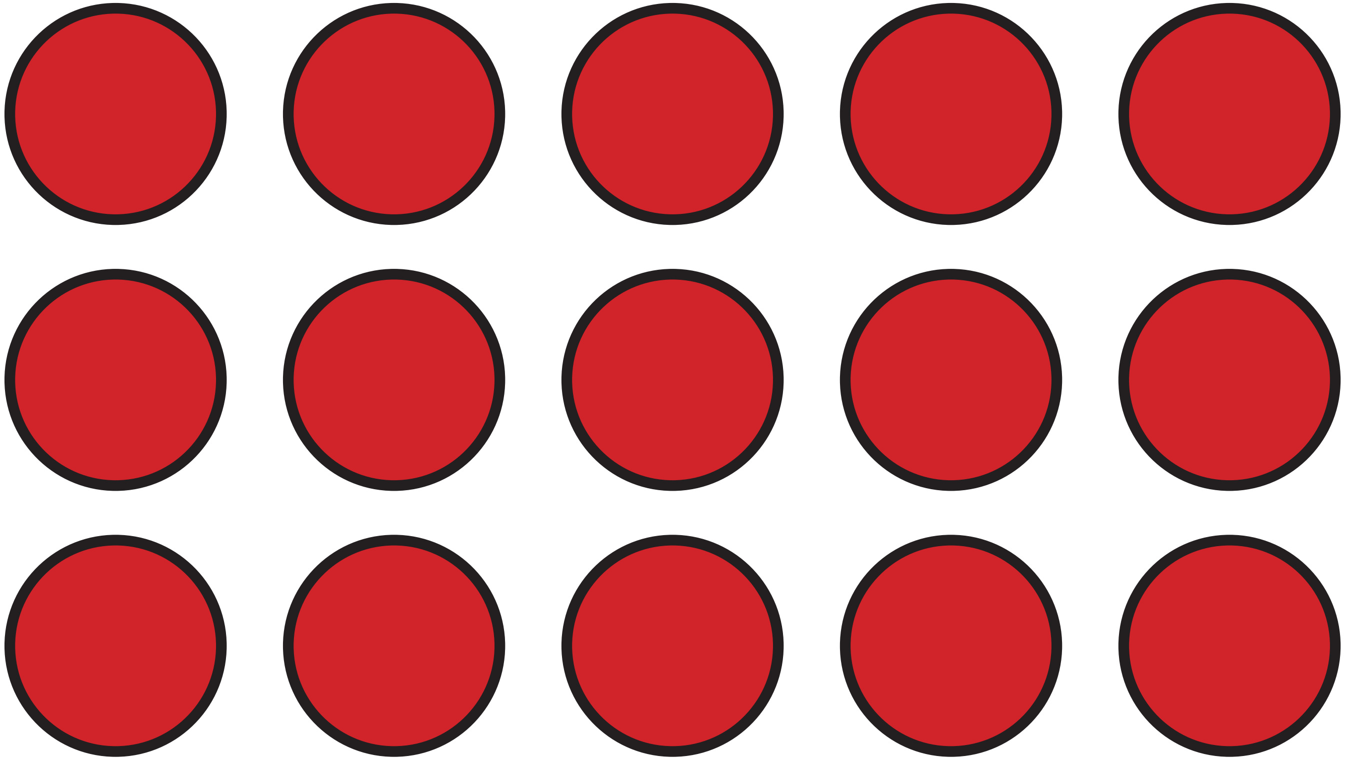
M3: Arrays

2



3 x 5 = 15 or 5 x 3 = 15

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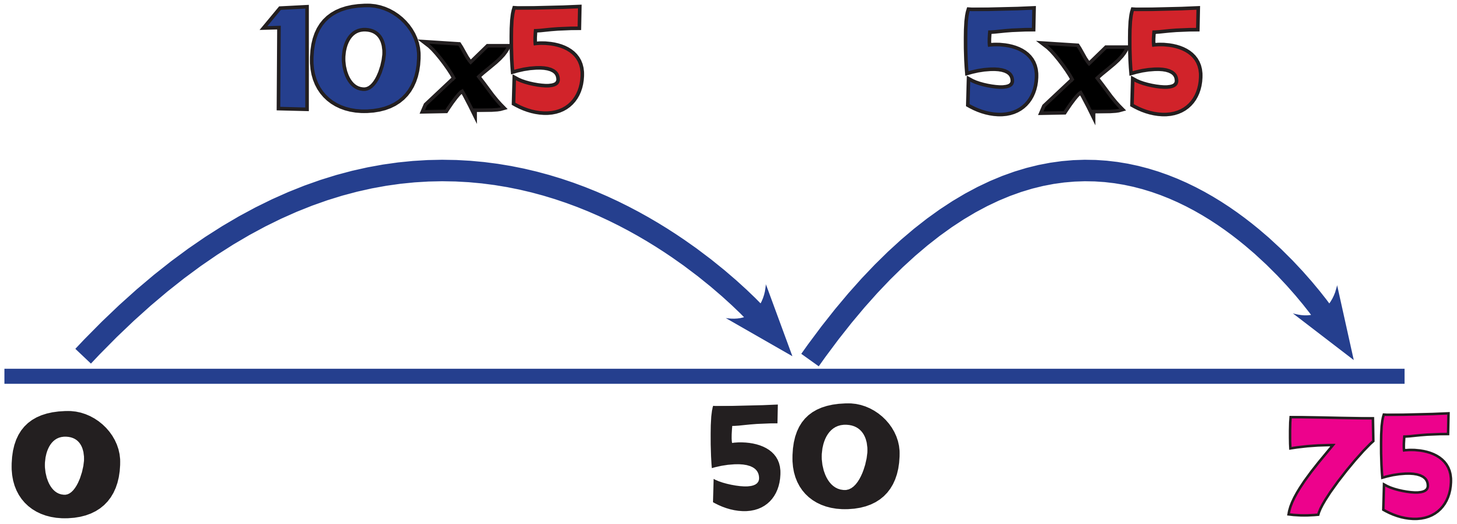
M4: Multi Boing!

3



10 x 5 = 50

5 x 5 = 25

75

15 x 5 = 75

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M4a: Partitioning

3

15 x 5 = 75

10 x 5 = 50

5 x 5 = 25

50 + 25 = 75

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M5: Grid Method

Short Multiplication

3

15 x 5 = 75

x	10	5
5	50	25

50 + 25 = 75

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M5a: Grid Method

4

Short Multiplication

43 x 6 = 258

x	40	3
6	240	18

240 + 18 = 258

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M5b: Grid Method

4

Short Multiplication

147 x 4 = 588

x	100	40	7
4	400	160	28

400 + 160 + 28 = 588

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(M6: Expanded Column)

3 Additional

$$\begin{array}{cccl} & 10 & 1 & \\ & 1 & 5 & \\ \times & & 5 & \\ \hline & 2 & 5 & (5 \times 5) \\ & 5 & 0 & (5 \times 10) \\ \hline & 7 & 5 & \\ \hline \end{array}$$

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(M6: Expanded Column)

4 Additional a

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

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M6: Expanded Column

4

$$\begin{array}{rrrl}
100 & 10 & 1 & \\
1 & 4 & 7 & \\
\times & & 4 & \\
\hline
 & 2 & 8 & (4 \times 7) \\
1 & 6 & 0 & (4 \times 40) \\
4 & 0 & 0 & (4 \times 100) \\
\hline
5 & 8 & 8 & \\
\hline
\end{array}$$

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(M7: Column Multiplication)

3 Additional

$$\begin{array}{rcc} & 10 & 1 \\ & 1 & 5 \\ \times & & 5 \\ \hline & 7 & 5 \\ \hline & 2 & \end{array}$$

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(M7: Column Multiplication)

4 Additional:a

	100	10	1
		4	3
x			6
	2	5	8
		1	

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M7: Column Multiplication

4

$$\begin{array}{cccc} & 100 & 10 & 1 \\ & 1 & 4 & 7 \\ \times & & & 4 \\ \hline & 5 & 8 & 8 \\ \hline & 1 & 2 & \end{array}$$

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M7a: Column Multiplication

4

$$\begin{array}{cccccc}
 & & 3 & 6 & 4 & 7 \\
 & \times & & & & 4 \\
\hline
 & 1 & 4 & 5 & 8 & 8 \\
\hline
 & & 2 & 1 & 2 &
\end{array}$$

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M8: Grid Method

5

Long Multiplication

43 x 65 = 2795

x	40	3
60	2400	180
5	200	15

2400 + 180 + 200 + 15 = 2795

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M8a: Grid Method

5

Long Multiplication

243 x 68 = 16,524

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

14580 + 1944 = 16,524

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M8b: Grid Method

5

Long Multiplication

203 x 68 = 13,804

x	200	0	3	
60	12000	0	180	= 12,180
8	1600	0	24	= 1,624

12180 + 1624 = 13,804

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M8c: Decimal Grid

5

Short Multiplication

3.6 x 4 = 14.4

x	3	0.6
4	12	2.4

12 + 2.4 = 14.4

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M8d: Decimal Grid

6

Short Multiplication

47.2 x 3 = 141.6

x	40	7	0.2
3	120	21	0.6

120 + 21 + 0.6 = 141.6

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M8e: Grid Method

6

Short Multiplication

7.38 x 6 = 44.28

x	7	0.3	0.08
6	42	1.8	0.48

42 + 1.8 + 0.48 = 44.28

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M8f: Grid Method

6

Long Multiplication

24.3 x 2.5 = 60.75

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

48.6 + 12.15 = 60.75

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M9: Long Multiplication

6

Column

$$\begin{array}{cccccl}
 & & & 4 & 3 & \\
\times & & & 6 & 5 & \\
\hline
 & & 2 & 1 & 5 & (5 \times 43) \\
 & & {\scriptstyle 2} & {\scriptstyle 1} & & \\
+ & 2 & 5 & 8 & 0 & (60 \times 43) \\
 & {\scriptstyle 2} & {\scriptstyle 1} & & & \\
\hline
 & 2 & 7 & 9 & 5 & \\
\hline
\end{array}$$

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M9a: Long Multiplication

6

Column

$$\begin{array}{ccccccl}
 & & & 2 & 4 & 3 & \\
\times & & & & 6 & 8 & \\ \hline
 & & 1 & 9 & 4 & 4 & \quad (8 \times 243) \\
 & & {}_{1} & {}_{3} & {}_{2} & & \\
+ & 1 & 4 & 5 & 8 & 0 & \quad (60 \times 243) \\
 & {}_{1} & {}_{2} & {}_{1} & & & \\ \hline
 & 1 & 6 & 5 & 2 & 4 & \\ \hline
 & & & {}_{1} & & &
\end{array}$$

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M9b: Long Multiplication

6

Column

$$\begin{array}{cccccccl}
 & & & 2 & 0 & 3 & & \\
\times & & & & 6 & 8 & & \\
\hline
 & & 1 & 6 & 2 & 4 & & (8 \times 203) \\
 & & {\scriptstyle 1} & & {\scriptstyle 2} & & & \\
+ & 1 & 2 & 1 & 8 & 0 & & (60 \times 203) \\
 & {\scriptstyle 1} & & {\scriptstyle 1} & & & & \\
\hline
 & 1 & 3 & 8 & 0 & 4 & & \\
\hline
 & & & {\scriptstyle 1} & & & &
\end{array}$$

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M9c: Column Multiplication

5

$$\begin{array}{cccc} 10 & 1 & . & \frac{1}{10} \\ & 3 & . & 6 \\ \times & 4 & & \\ \hline 1 & 4 & . & 4 \\ \hline & 2 & & \end{array}$$

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M9d: Column Multiplication

$$\begin{array}{ccccc} 100 & 10 & 1 & . & \frac{1}{10} \\ & 4 & 7 & . & 2 \\ & \times & 3 & & \\ \hline 1 & 4 & 1 & . & 6 \\ \hline & 2 & & & \end{array}$$

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M9e: Column Multiplication

6

$$\begin{array}{ccccc} 10 & 1 & . & \frac{1}{10} & \frac{1}{100} \\ & 7 & . & 3 & 8 \\ \times & 6 & & & \\ \hline 4 & 4 & . & 2 & 8 \\ \hline 4 & 2 & & 4 & \end{array}$$

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M9f: Long Multiplication

6

Column Decimals

$$\begin{array}{cccccccl}
 & 10 & 1 & . & \frac{1}{10} & \frac{1}{100} & & \\
 & 2 & 4 & . & 3 & & & \\
\times & & 2 & . & 5 & & & \\
\cline{1-6}
 & 1 & 2 & . & 1 & 5 & & (0.5 \times 24.3) \\
 & {}_{1} & {}_{2} & & {}_{1} & & & \\
+ & 4 & 8 & . & 6 & 0 & & (2 \times 24.3) \\
\cline{1-6}
 & 6 & 0 & . & 7 & 5 & & \\
\cline{1-6}
 & {}_{1} & & & & & &
\end{array}$$

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M9g Long Multiplication

6

Column

$$\begin{array}{lccccccl}
 & & & 3 & 7 & 8 & 6 & \\
\times & & & & & 4 & 8 & \\
\hline
 & & 3 & 0 & 2 & 8 & 8 & (8 \times 3786) \\
 & & & 6 & 6 & 4 & & \\
+ & 1 & 5 & 1 & 4 & 4 & 0 & (40 \times 3786) \\
 & 1 & 3 & 3 & 2 & & & \\
\hline
 & 1 & 8 & 1 & 7 & 2 & 8 & \\
\hline
 & & & & 1 & & &
\end{array}$$

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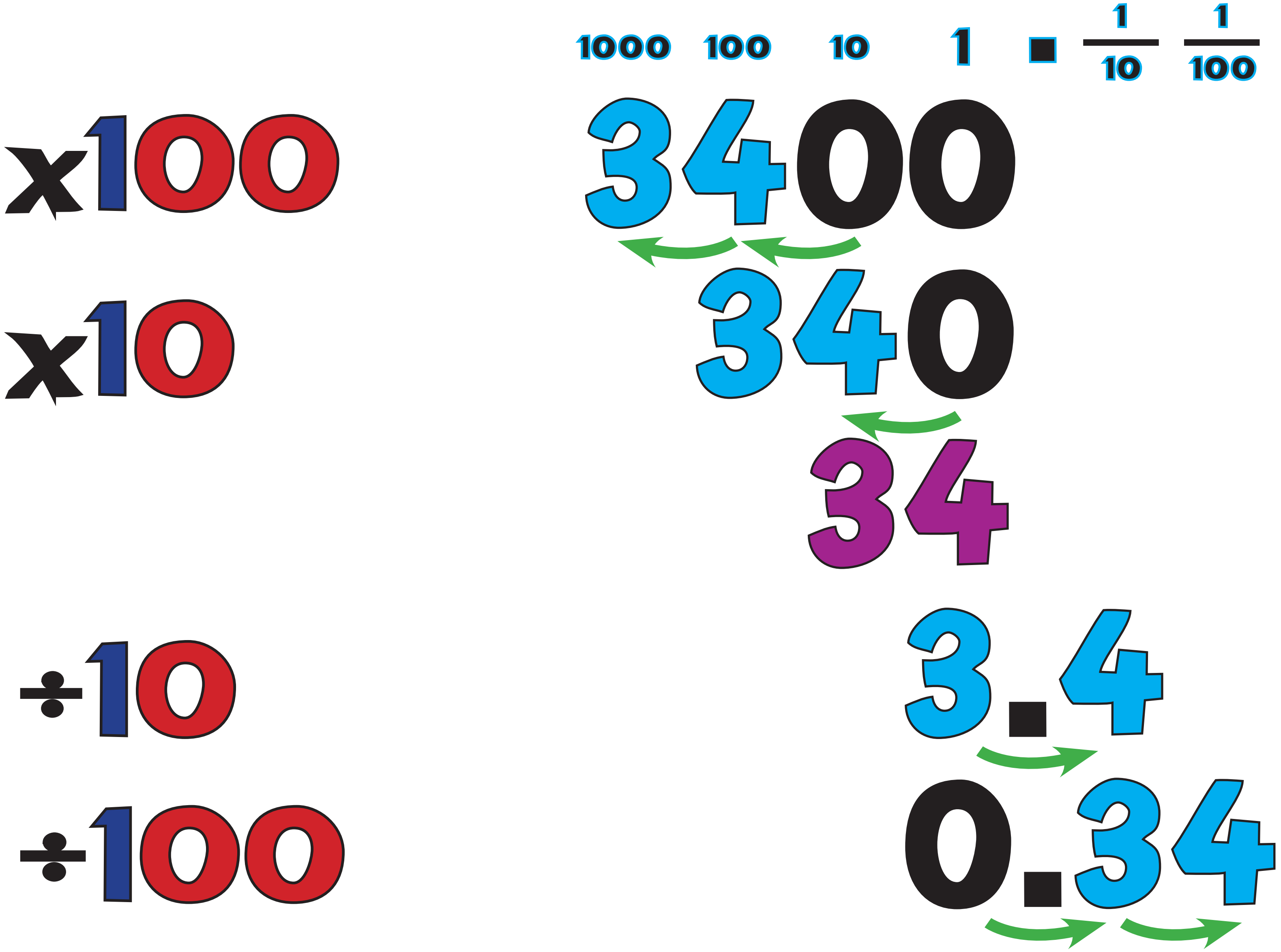
MM1: Jump!



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

x100 3400

x10 340

34

÷10 3.4

÷100 0.34

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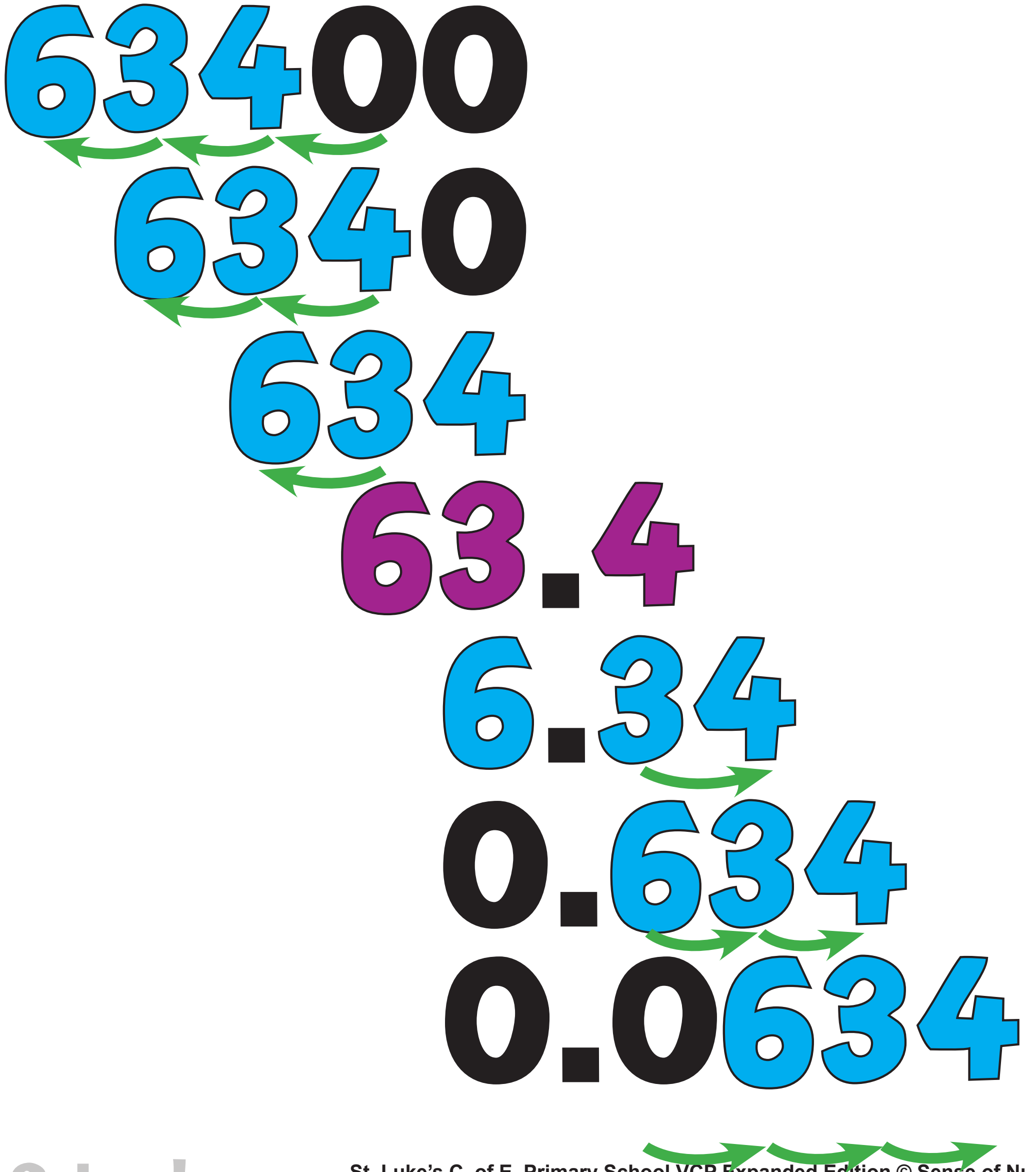
MM1a: Jump!



x1000	63400
x100	6340
x10	634
	63.4
÷10	6.34
÷100	0.634
÷1000	0.0634

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MM2: Re-ordering

(9 x 2) x 5

18 x 5 = 90

(9 x 5) x 2

45 x 2 = 90

(2 x 5) x 9

10 x 9 = 90 *

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MM2a: Re-ordering

(7 x 4) x 5

28 x 5 = 140

(7 x 5) x 4

35 x 4 = 140

(4 x 5) x 7

20 x 7 = 140 *

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MM2b: Re-ordering

(9 x 8) x 6

72 x 6 = 432

(9 x 6) x 8

54 x 8 = 432 *

(8 x 6) x 9

48 x 9 = 432

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MM3: Partitioning

15 x 5 = 75

50 + 25 = 75

(10 x 5) (5 x 5)

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MM3a: Partitioning

37 x 4 = 148

120 + 28 = 148

(30 x 4) (7 x 4)

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MM4: Round & Adjust

49 x 3 = 147

(50 x 3) - (1 x 3)

150 - 3 = 147

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MM4a: Round & Adjust

198 x 4 = 792

(200 x 4) - (2 x 4)

800 - 8 = 792

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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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MM4c: Round & Adjust

£5.99 x 6 = £35.94

(£6 x 6) - (1p x 6)

£36 - 6p = £35.94

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MM5: Doubling

Double 17 = 34

20 + 14 = 34

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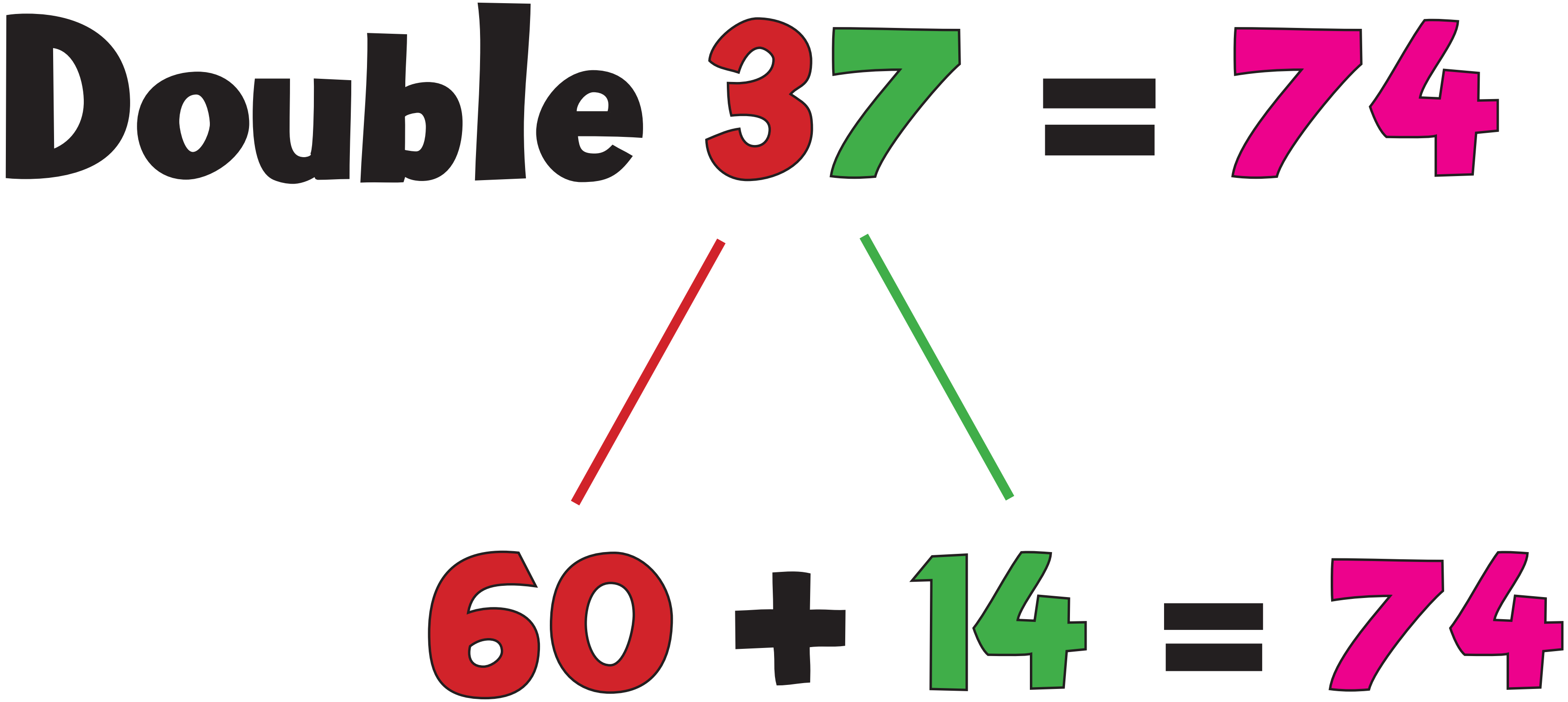
MM5a: Doubling



Double 37 = 74

60 + 14 = 74

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MM5b: Doubling

Double 78 = 156

140 + 16 = 156

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MM5c: Doubling

Double 340 = 680

600 + 80 = 680

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MM5d: Doubling

Double 480 = 960

800 + 160 = 960

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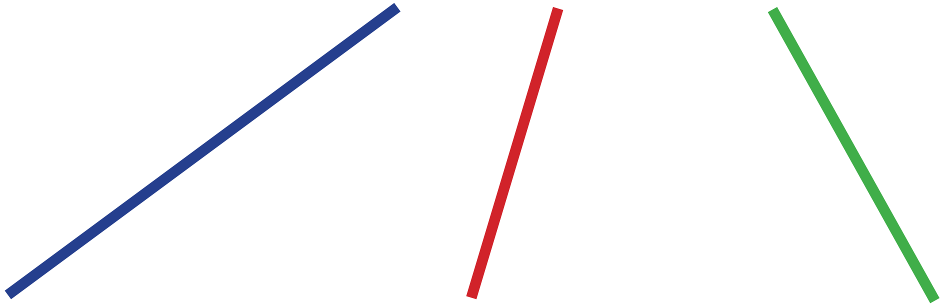
MM5e: Doubling

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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MM6: Doubling Table Facts

16 x 7 = 112

(8 x 2)

8 x 7 = 56

↓ ↓ x 2

16 x 7 = 112

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MM7: Doubling Up

17 x 4 = 68

Double 17 = 34 (17 x 2)

Double 34 = 68 (17 x 4)

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MM7a: Doubling Up

36 x 8 = 288

Double 36 = 72 (36 x 2)

Double 72 = 144 (36 x 4)

Double 144 = 288 (36 x 8)

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MM7b: Doubling Up

125 x 16 = 2000

Double 125 = 250 (125 x 2)

Double 250 = 500 (125 x 4)

Double 500 = 1000 (125 x 8)

Double 1000 = 2000 (125 x 16)

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MM8: Mult by 10, 100 & 1000 then Halve

86 x 5 = 430

86 x 10 = 860

860 ÷ 2 = 430

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MM8a: Mult by 10, 100 & 1000 then Halve

56 x 25 = 1400

56 x 100 = 5600

5600 ÷ 2 = 2800

2800 ÷ 2 = 1400

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MM9: Doubling & Halving

45 x 14

90 x 7 = 630

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MM9a: Doubling & Halving

36 x 25

18 x 50

9 x 100 = 900

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MM9b: Doubling & Halving

26 x 32

52 x 16

104 x 8 = 832

208 x 4 etc.

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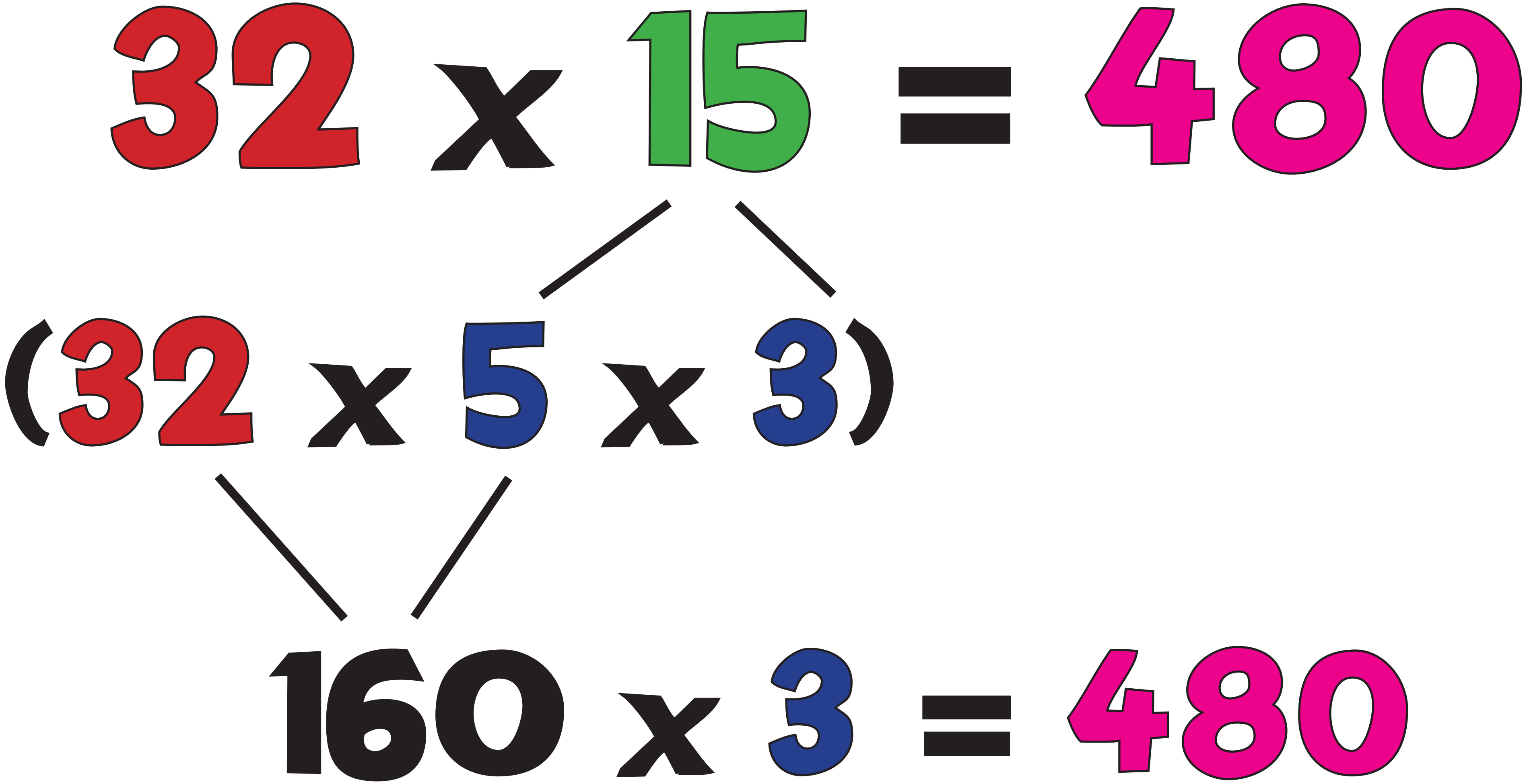
MM10: Factorising



32 x 15 = 480

(32 x 5 x 3)

160 x 3 = 480

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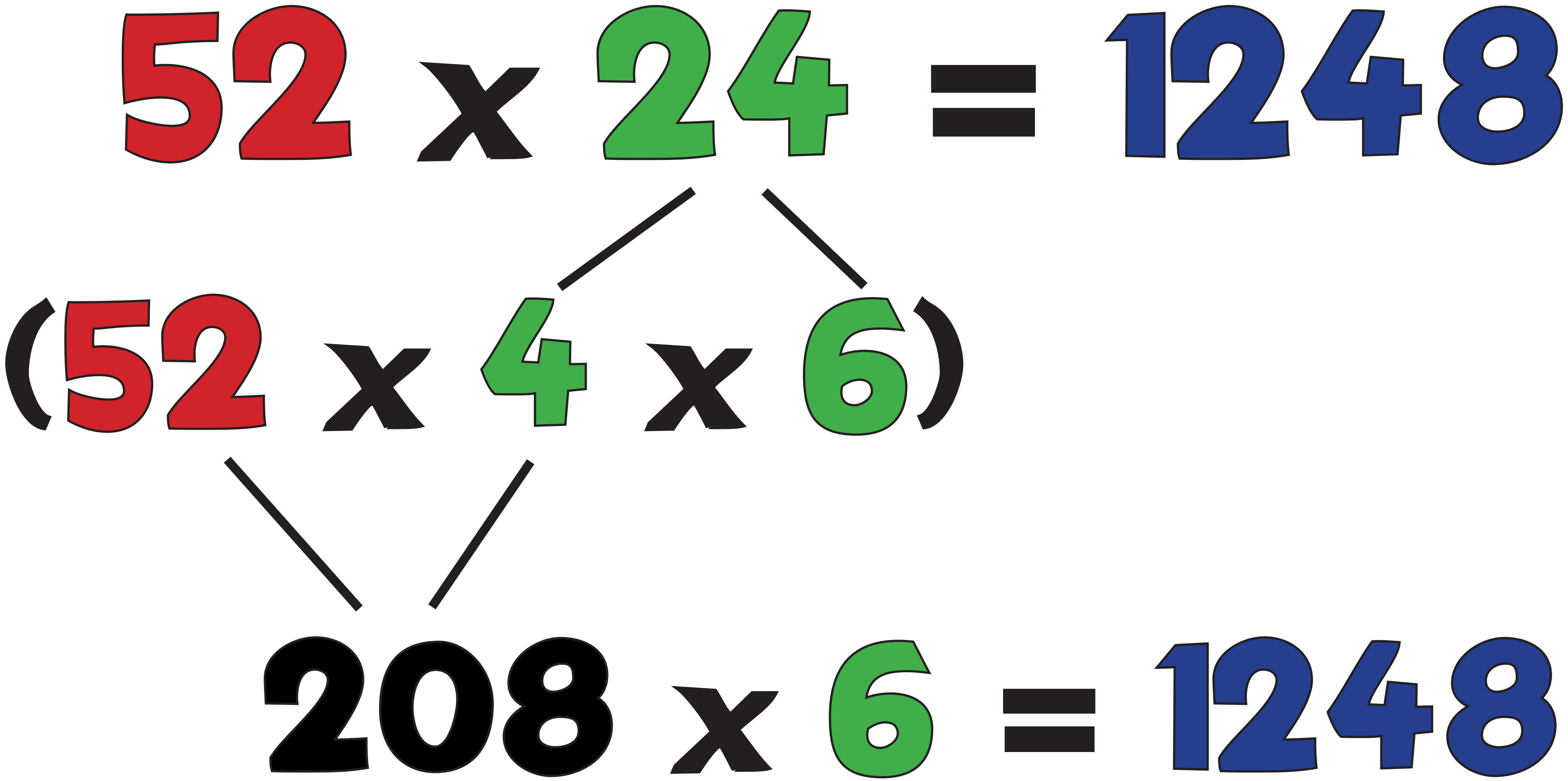
MM10a: Factorising



$52 \times 24 = 1248$

$(52 \times 4 \times 6)$

$208 \times 6 = 1248$

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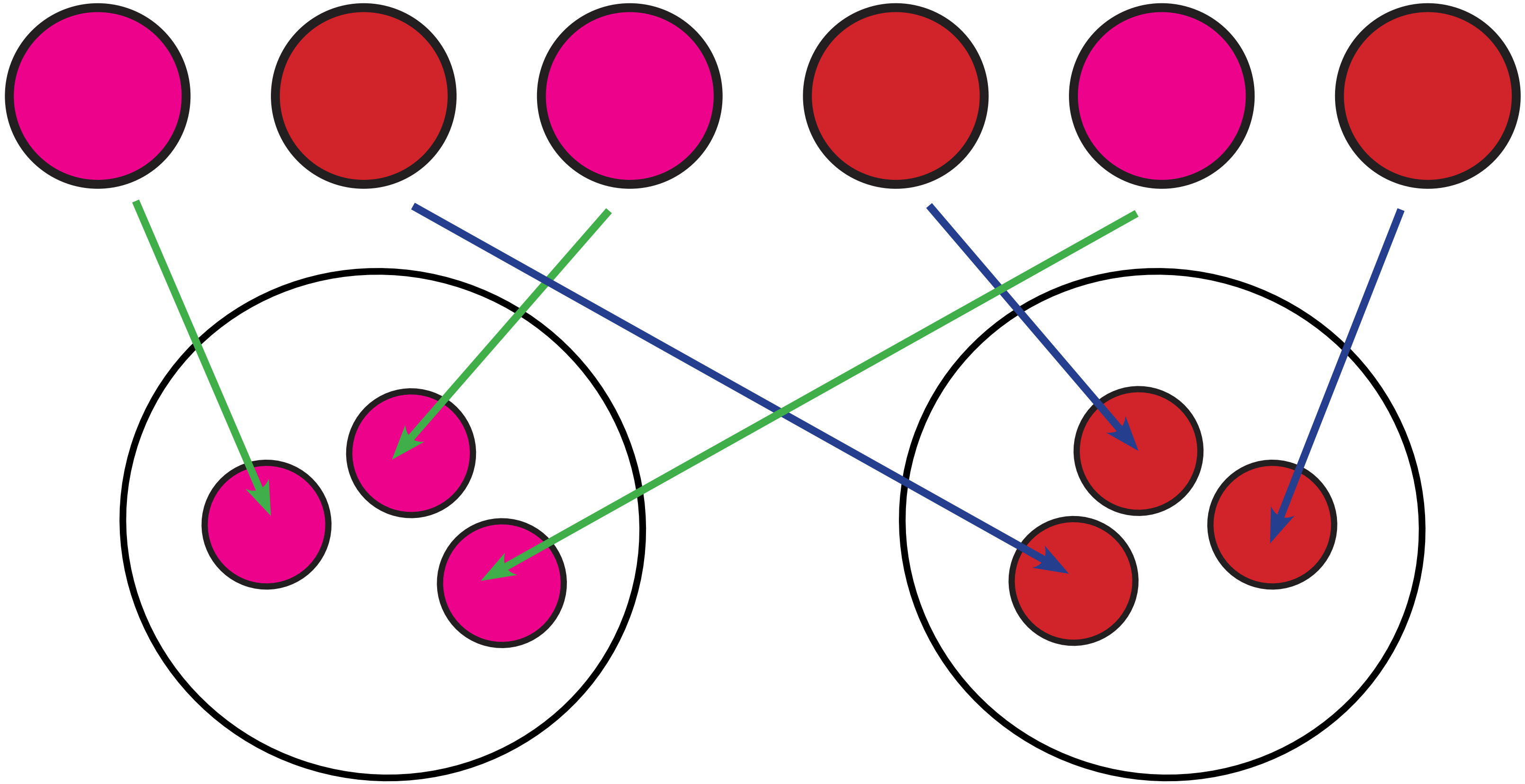
D1: Sharing (Concept)

1



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

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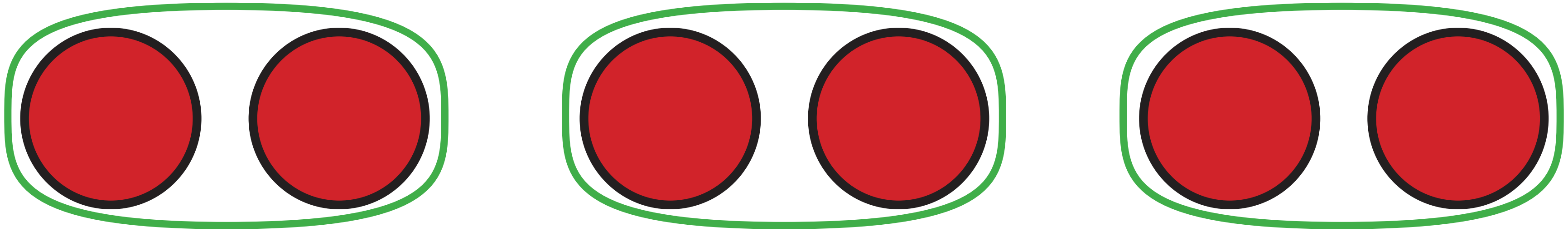
D2: Grouping (Concept)

1



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

Answer: 3

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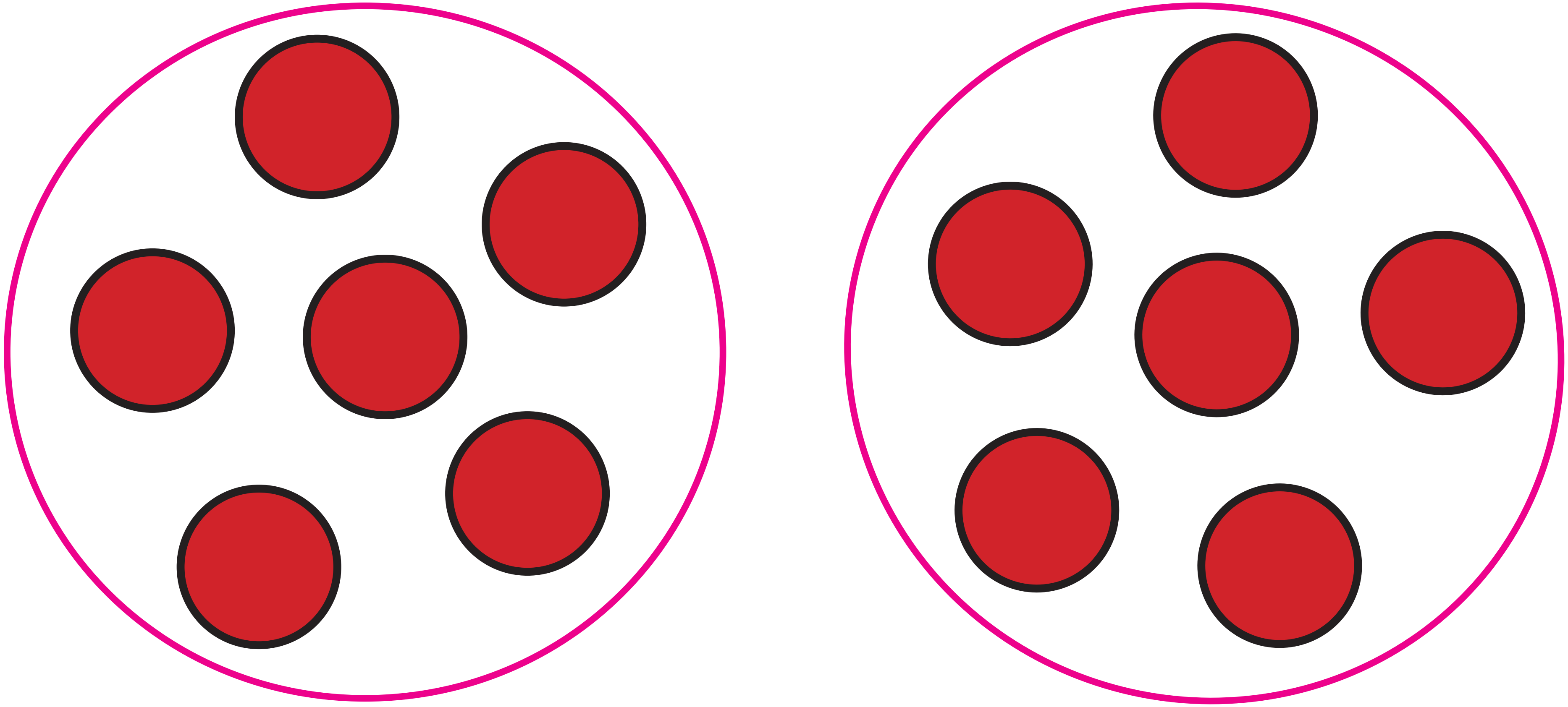
D3: Division as Sharing

2

12 ÷ 2 = 6

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



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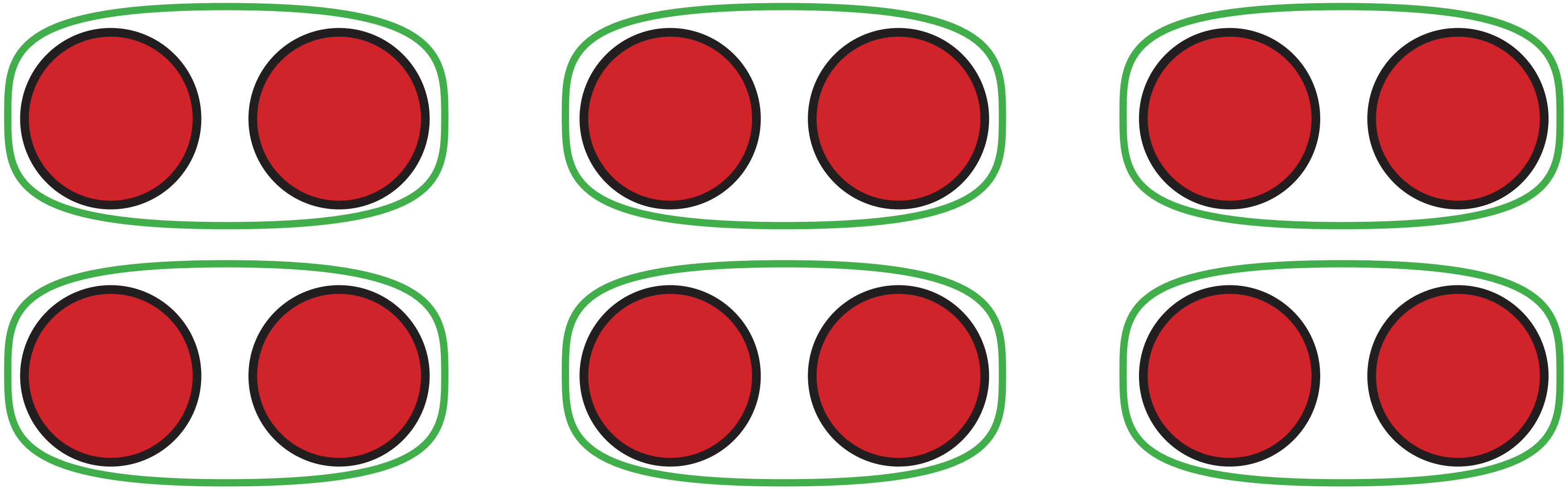
D4: Division as Grouping

2

12 ÷ 2 = 6

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



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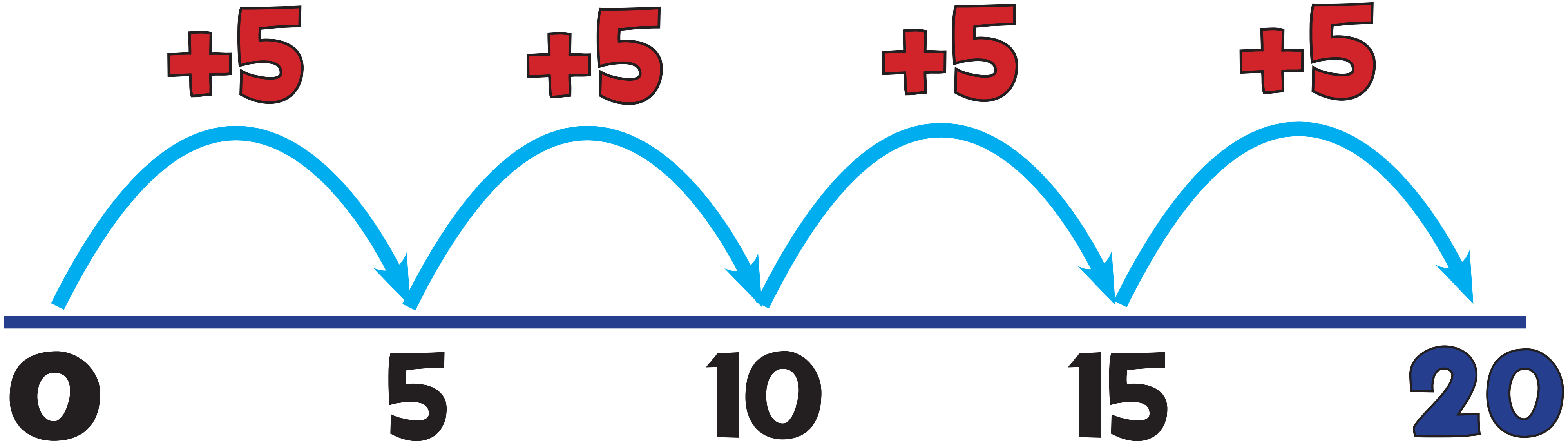
D5: Grouping on a Number Line

2



20 ÷ 5 = 4

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

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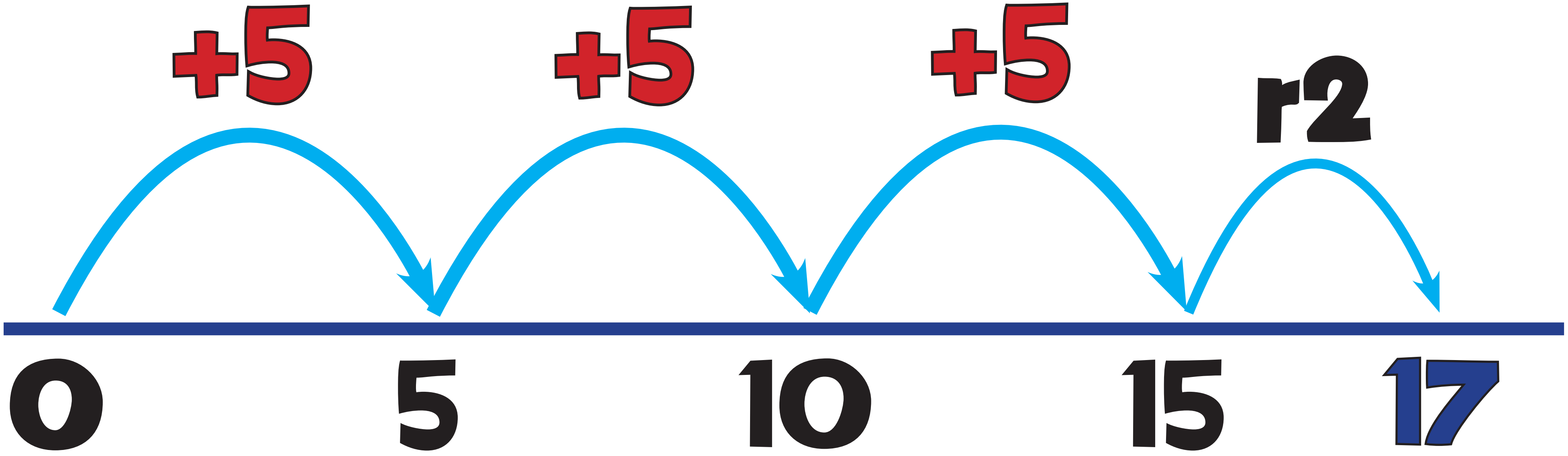
D5a: Grouping on a Number Line

2

Remainders



$$17 \div 5 = 3r2$$

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

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D6: Grouping Grid

4	4	4	4	4
4				③

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

Answer: 6r3

$$27 \div 4 = 6r3$$

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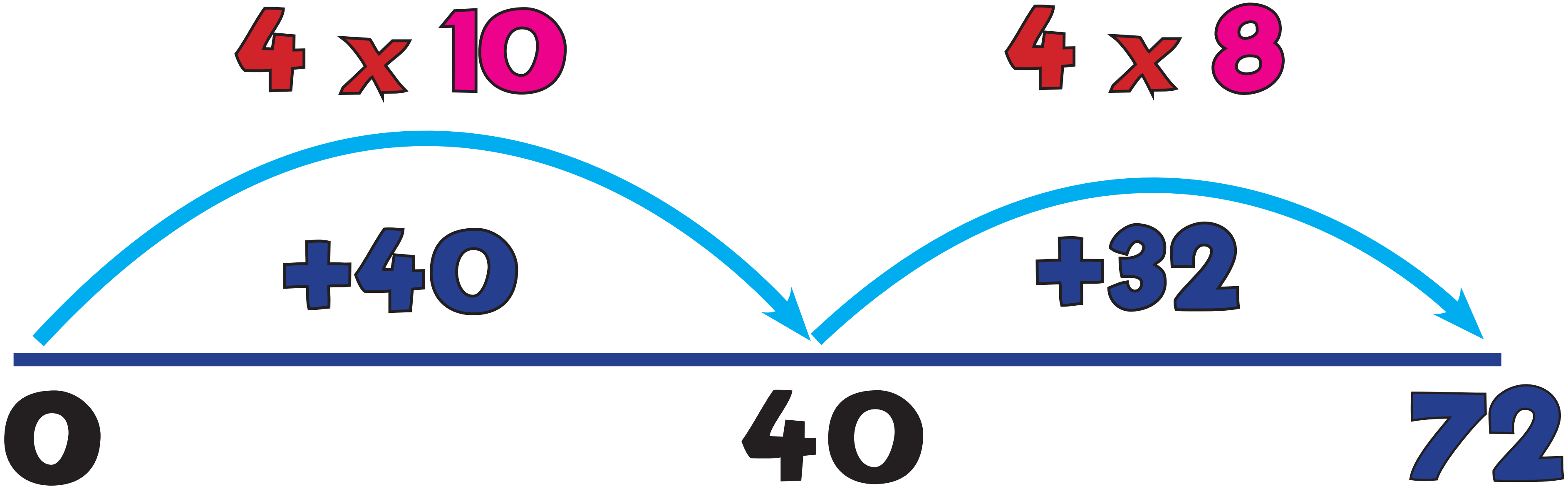
D7: Chunking Jump

3



72 ÷ 4 = 18

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

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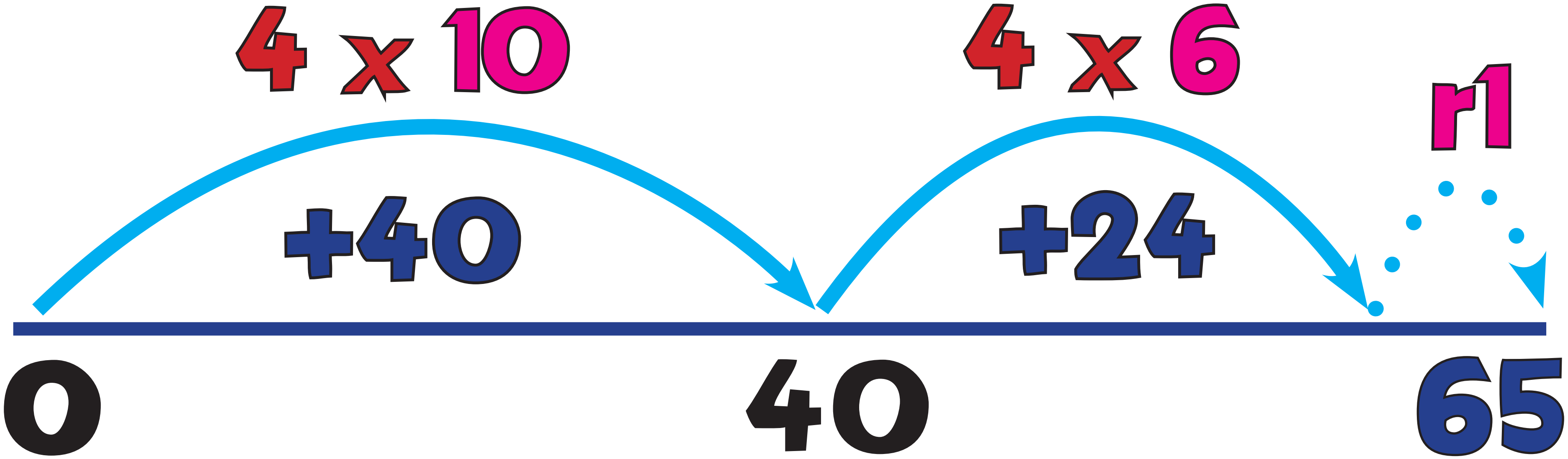
D7a: Chunking Jump

3

Remainders



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

65 ÷ 4 = 16r1

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D8: Find the Hunk!

3

$$72 \div 4 = 18$$

The Hunk! **Chunk**

$$40 + 32$$

↓ ↓ $\div 4$

$$10 + 8 = 18$$

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D8a: Find the Hunk!

3

Remainders

$$65 \div 4 = 16r1$$

The Hunk!

Chunk

$$40 + 25$$

$$\downarrow \qquad \downarrow \qquad \div 4$$

$$10 + 6r1 = 16r1$$

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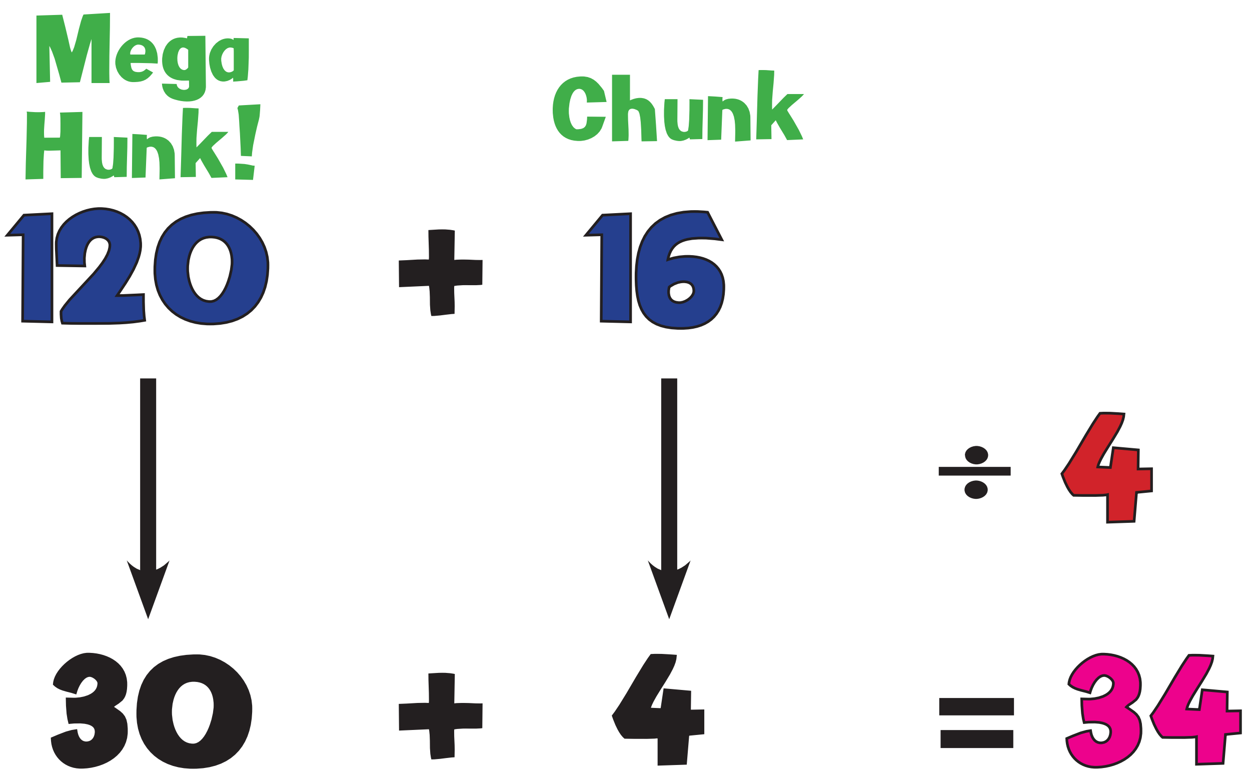
D9: Mega Hunk!

4

$$136 \div 4 = 34$$



Mega Hunk!

Chunk

$120 + 16$

$\div 4$

$30 + 4 = 34$

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D9c: Mega Hunk!

5

Remainders

$$394 \div 6 = 65r4$$

Mega Hunk! **Chunk**

$$\begin{tikzcd} 360 \arrow[d] & + & 34 \arrow[d] & \div 6 \\ 60 & + & 5r4 & = 65r4 \end{tikzcd}$$

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D9d: Mega Hunk!

5

$$591 \div 3 = 197$$

Mega Hunk!		Mega Hunk!		Chunk
300	+	270	+	21

$$\begin{tikzcd}300 \arrow[d] & 270 \arrow[d] & 21 \arrow[d, "\div 3"] \\ 100 & 90 & 7\end{tikzcd}$$

$$100 + 90 + 7 = 197$$

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D9e: Mega Hunk!

5

5978 ÷ 7 = 854

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

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D9f: Mega Hunk!

5

846 ÷ 5 = 169r1

Mega Hunk!		Mega Hunk!		Chunk	
500	+	300	+	46	
↓		↓		↓	÷ 5
100	+	60	+	9r1	= 169r1

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D9g: Mega Hunk!

6

Simple Long Division

480 ÷ 15 = 32

Mega Hunk! **Chunk**

450 + 30

÷ 15

30 + 2 = 32

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D9h: Decimal Hunk!

6

$$18 \div 1.5 = 12$$

The Hunk!

Chunk

$$\begin{tikzcd} 15 \arrow[d] & + & 3 \arrow[d] & \div 1.5 \\ 10 & + & 2 & = 12 \end{tikzcd}$$

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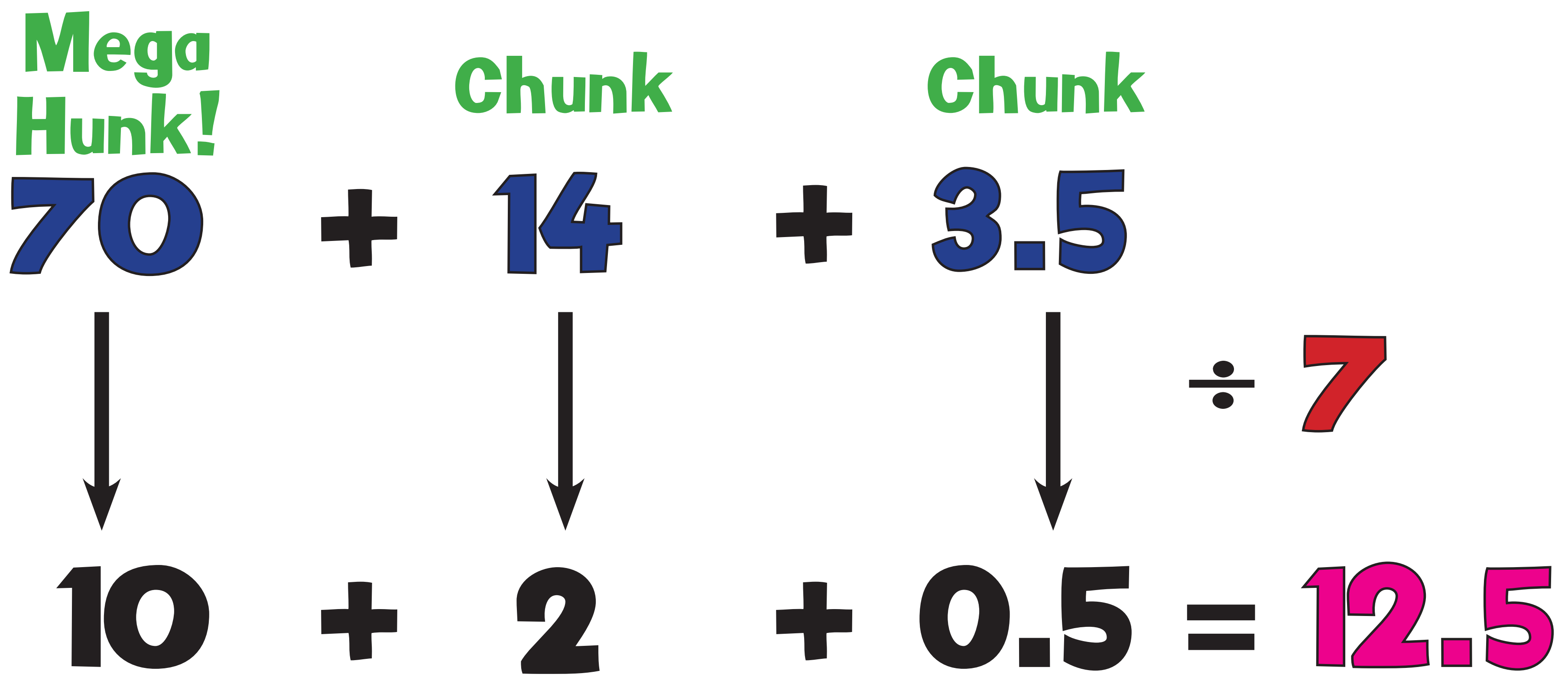
D9i: Decimal Hunk!

87.5 ÷ 7 = 12.5



Mega Hunk!

70 + 14 + 3.5

Chunk

Chunk

÷ 7

10 + 2 + 0.5 = 12.5

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(D10: Short Division)

3 **Additional**

$$72 \div 4 = 18$$

$$\begin{array}{r} 1\;8 \\ 4\overline{)\,7\,{}^{3}2} \end{array}$$

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(D10: Short Division)

3 Additional:a

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

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

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D10: Short Division

4

$$136 \div 4 = 34$$

$$\begin{array}{r} 3\;4 \\ 4\overline{)\,1\,{}^{1}3\,{}^{1}6} \end{array}$$

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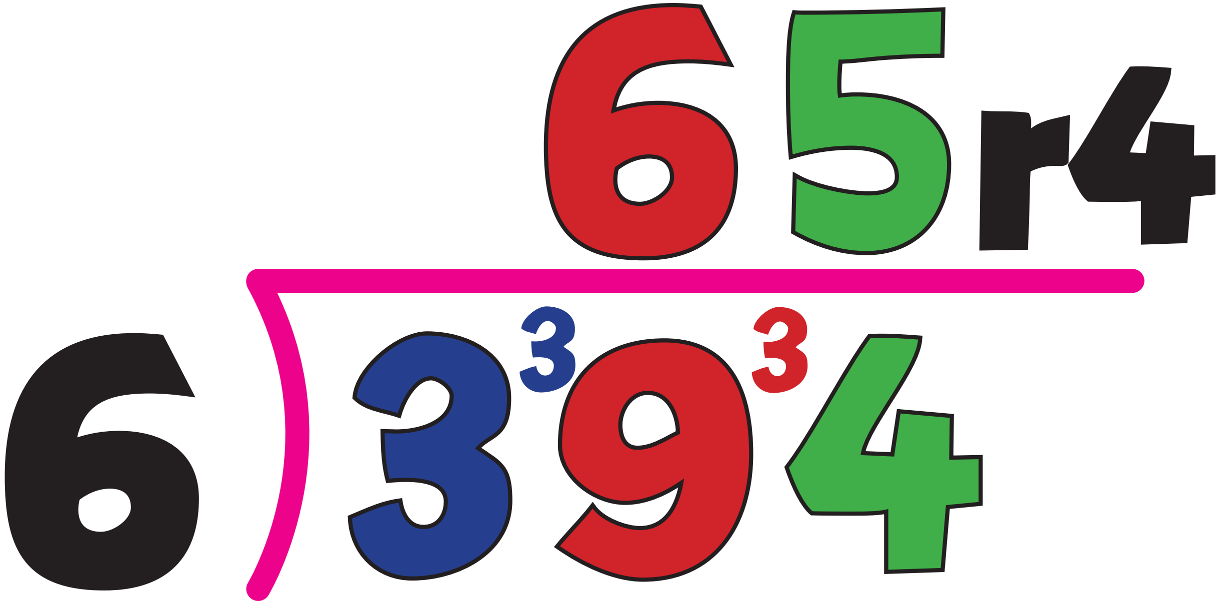
D10c: Short Division

5

394 ÷ 6 = 65r4



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D10d: Short Division

5

$$591 \div 3 = 197$$

$$\begin{array}{r|l} & 1\;\;9\;\;7 \\ \hline 3 & 5\;\;{}^{2}9\;\;{}^{2}1 \end{array}$$

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D10e: Short Division

5

$$5978 \div 7 = 854$$

$$\begin{array}{r|l} & \;8\;5\;4 \\ \hline 7 & 5\;{}^{5}9\;{}^{3}7\;{}^{2}8 \end{array}$$

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D10f: Short Division

5

Different Remainders

$$\begin{array}{r} 169.2 \\ 5\overline{)8{}^{3}4{}^{4}6.{}^{1}0} \end{array}$$

$$846 \div 5$$

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

$$\begin{array}{r} 169\tfrac{1}{5} \\ 5\overline{)8{}^{3}4{}^{4}6} \end{array}$$

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D10i: Short Division

6

87.5 ÷ 7 = 12.5

$$\begin{array}{r|l} & 1\;2\;.\;5 \\ \hline 7 & 8\;{}^{1}7\;.\;{}^{3}5 \end{array}$$

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(D11: Chunking)

3 Additional

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

$72 \div 4 = 18$

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(D11: Chunking)

Additional:a

16r1

4) 65

- 40 (4 x 10)

25

- 24 (4 x 6)

1

65 ÷ 4 = 16r1

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D11: Chunking

4

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

136 ÷ 4 = 34

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D11b: Chunking

4

$$\begin{array}{r l}
 & 34 \\
4 \overline{\smash{)}136} & \\
-\ 40 & (4 \times 10) \\
\hline
96 & \\
-\ 40 & (4 \times 10) \\
\hline
56 & \\
-\ 40 & (4 \times 10) \\
\hline
16 & \\
-\ 16 & (4 \times 2) \\
\hline
0 &
\end{array}$$

$$136 \div 4 = 34$$

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D11c: Chunking

5

Remainders

65r4

6) 394

\- 360 (6 x 60)

34

\- 30 (6 x 5)

4

394 ÷ 6 = 65r4

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D11d: Chunking

5

Mega Chunk

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

$591 \div 3 = 197$

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D11e: Chunking

5

Mega Chunk

$$\begin{array}{rl} 854 & \\ 7\overline{)5978} & \\ -\ 5600 & (7 \times 800) \\ \hline 378 & \\ -\ 350 & (7 \times 50) \\ \hline 28 & \\ -\ 28 & (7 \times 4) \\ \hline 0 & \end{array}$$

$$5978 \div 7 = 854$$

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D11f: Chunking

5

Mega Chunk

169r1
5) 846
- 500 (5 x 100)
346
- 300 (5 x 60)
46
- 45 (5 x 9)
1

846 ÷ 5 = 169r1

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D11g1: Chunking

6

Long Division

$$
\begin{array}{rl}
32 & \\
15\overline{)480} & \\
-\underline{450} & (15 \times 30) \\
30 & \\
-\underline{30} & (15 \times 2) \\
0 &
\end{array}
$$

$$480 \div 15 = 32$$

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D11g2: Chunking

Long Division

6

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

$$480 \div 15 = 32$$

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D12: Long Division

6

Short Division Method

$$\begin{array}{r l} & 26\text{r}21 \\ \cline{2-2} 37 \big) & 9\,{}^{9}8\,{}^{24}3 \end{array}$$

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D13: Long Division

6

Chunking Method

26r21

37) 983

\- 740 (37 x 20)

243

\- 222 (37 x 6)

21

983 ÷ 37 = 26r21

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D13 j: Long Division

Chunking Method

26r21
37) 983
- 370 (37 x 10)
613
- 370 (37 x 10)
243
- 222 (37 x 6)
21

983 ÷ 37 = 26r21

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D14: Long Division

Traditional Method

26r21

37) 983

\- 74

243

\- 222

21

983 ÷ 37 = 26r21

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Sense of Number

Calculation Cards

by Dave Godfrey

dave@senseofnumber.co.uk Tel: 01904 778848

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

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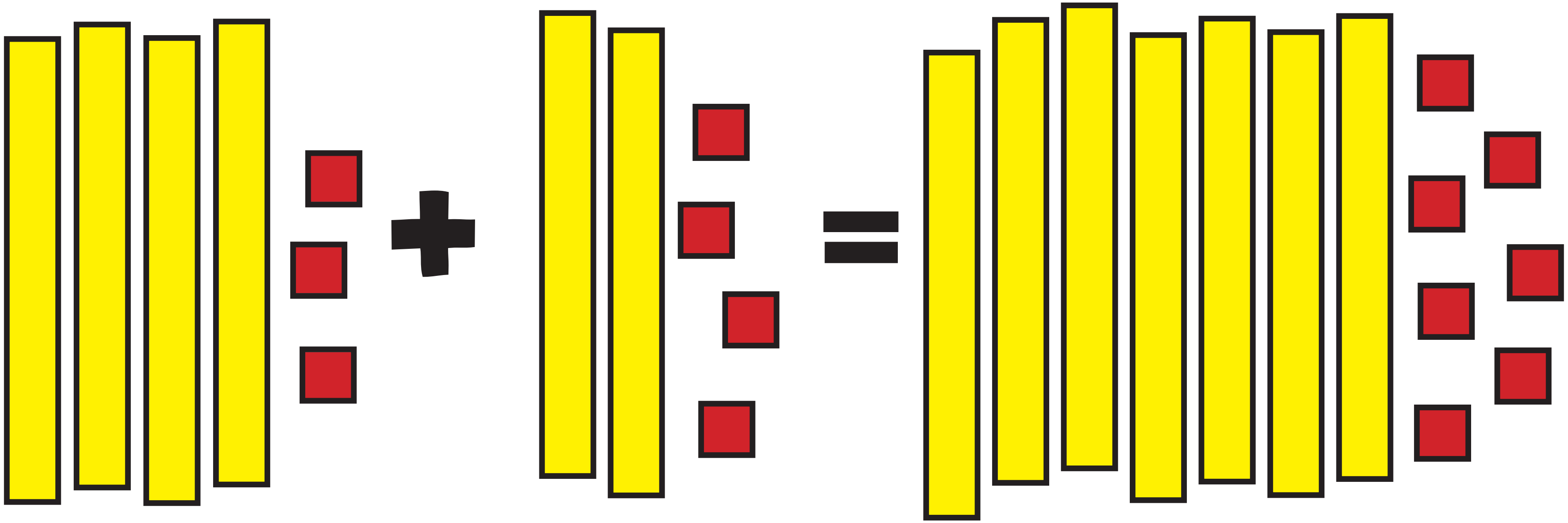
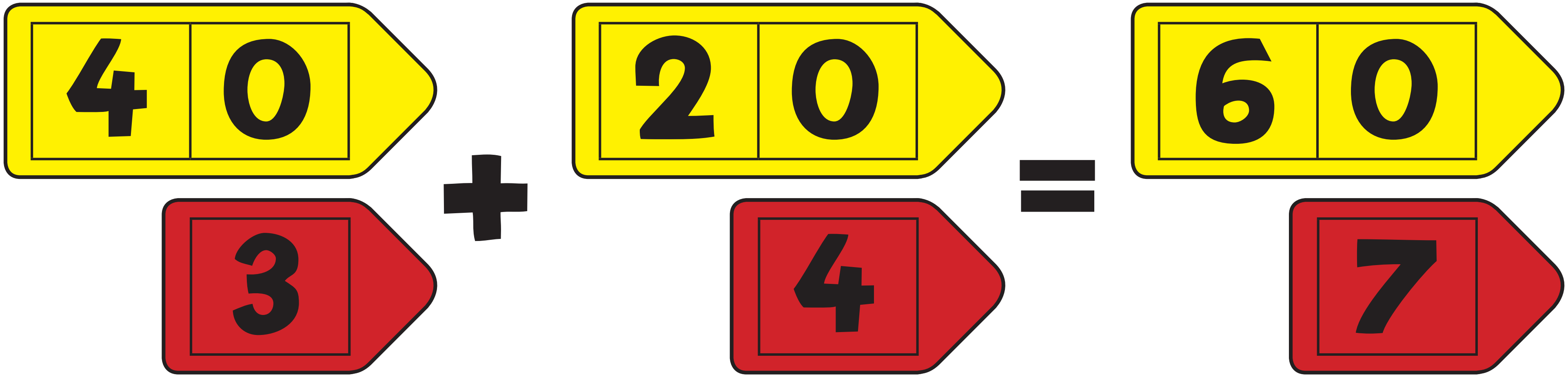
A: Base 10

43 + 24 = 67



B: Arrow Cards

43 + 24 = 67



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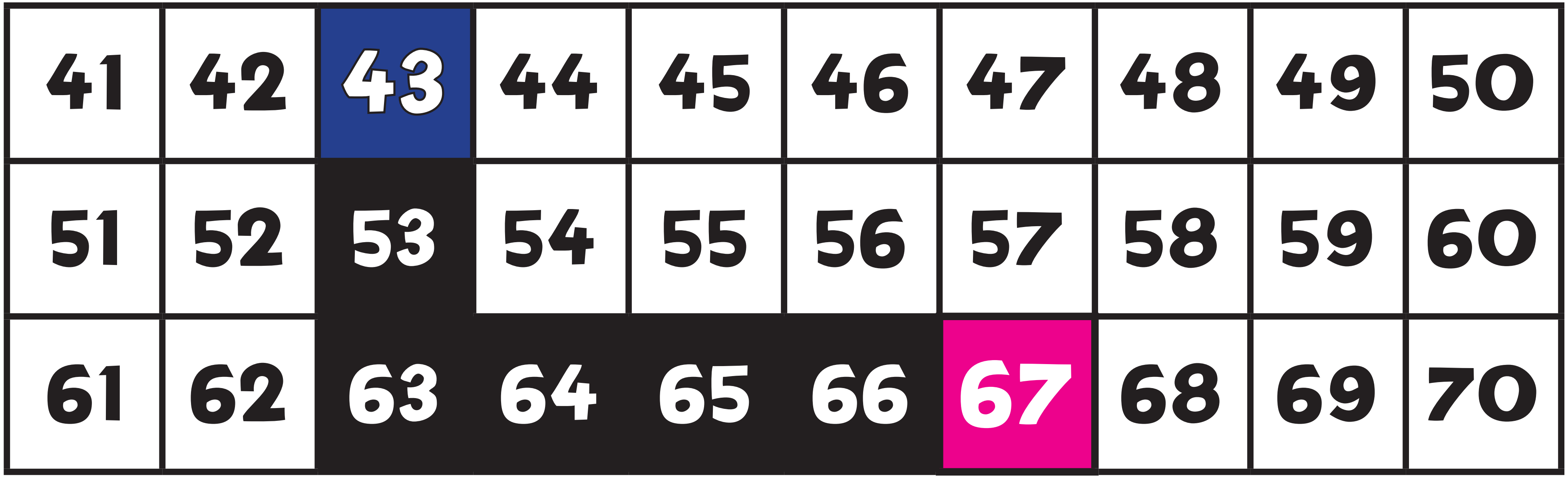
C: Hundred Square

43 + 24 = 67



41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70

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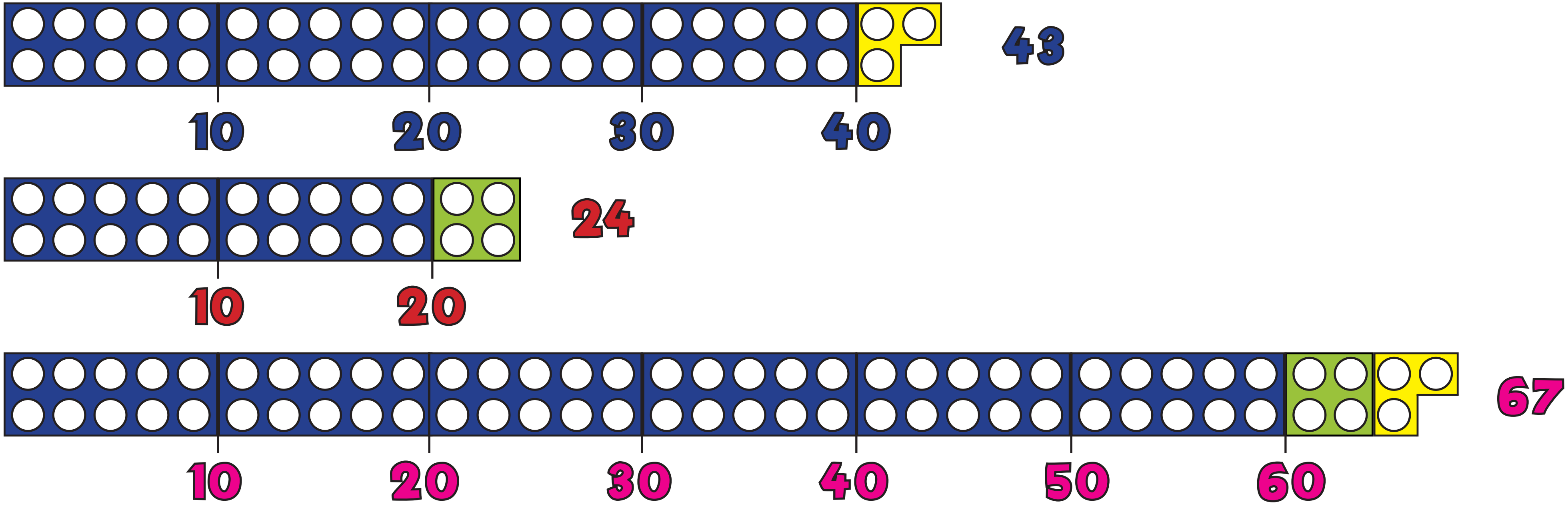
D: Numicon

43 + 24 = 67



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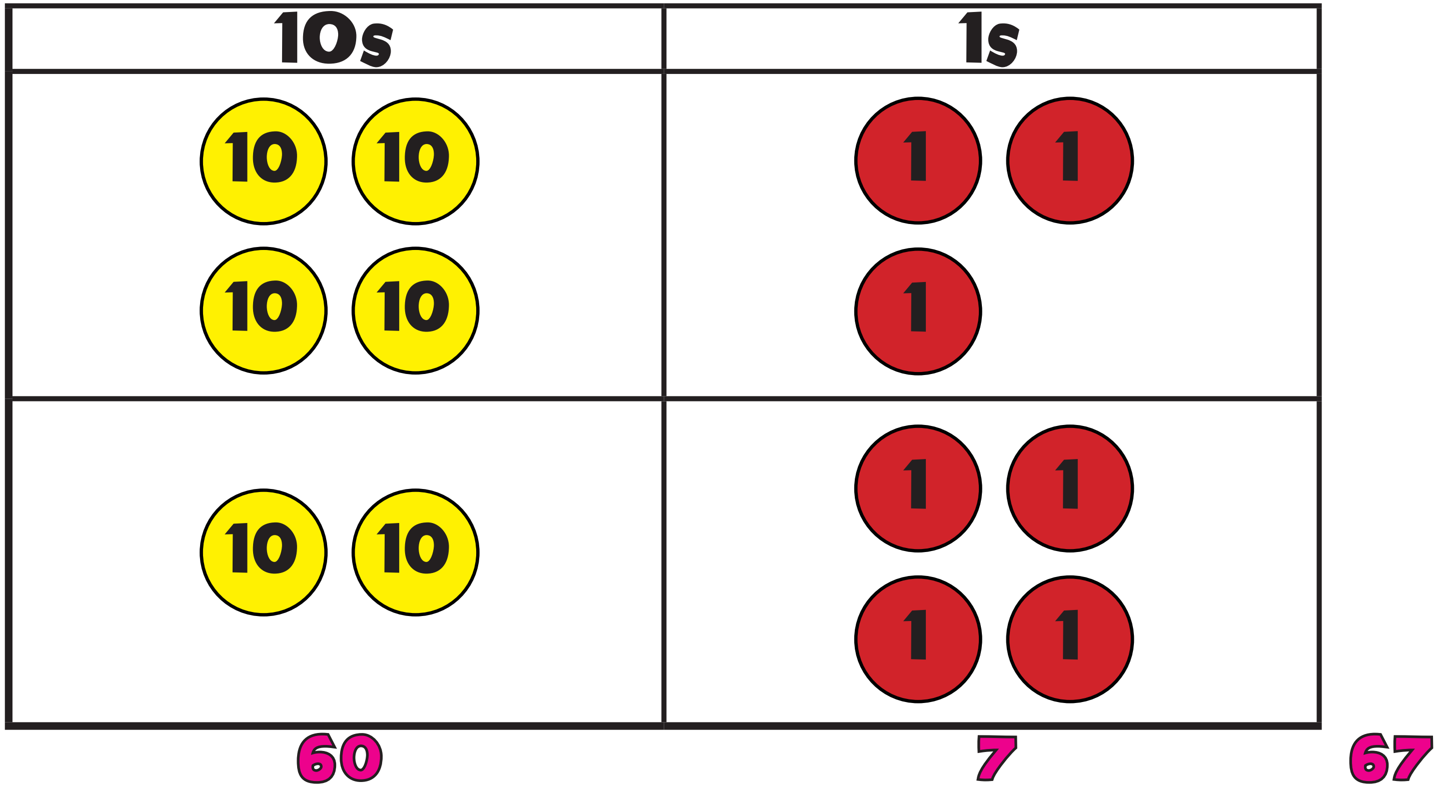
E: Place Value Counters

43 + 24 = 67



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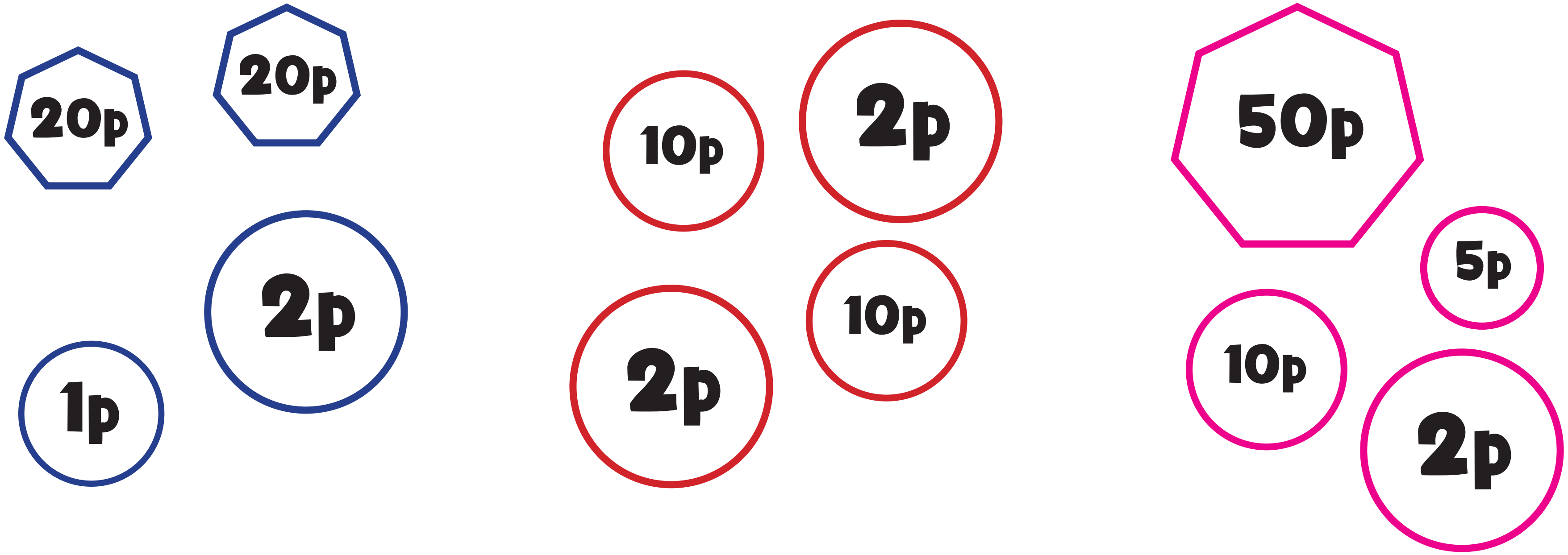
F: Money

43 + 24 = 67



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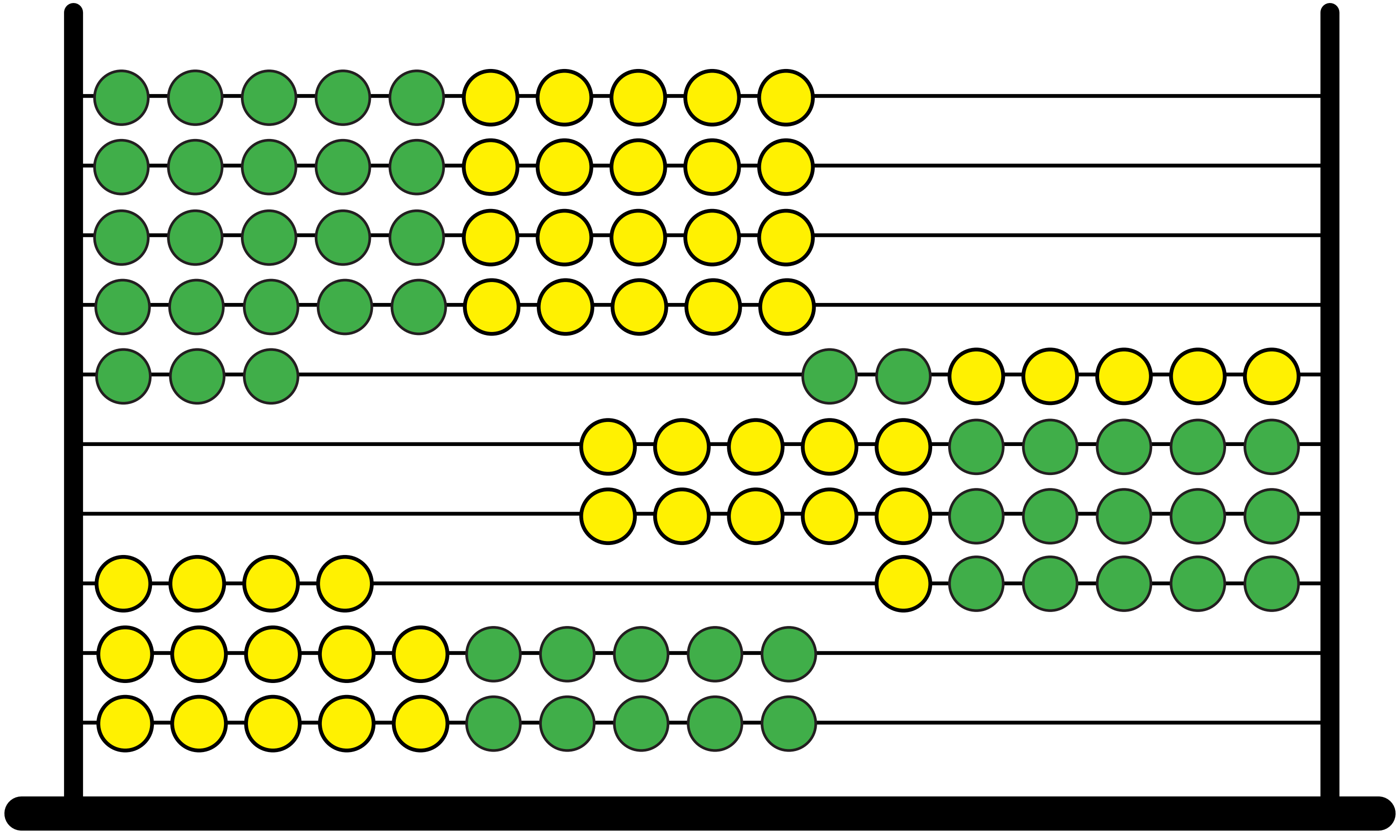
G: Abacus

43 + 24 = 67



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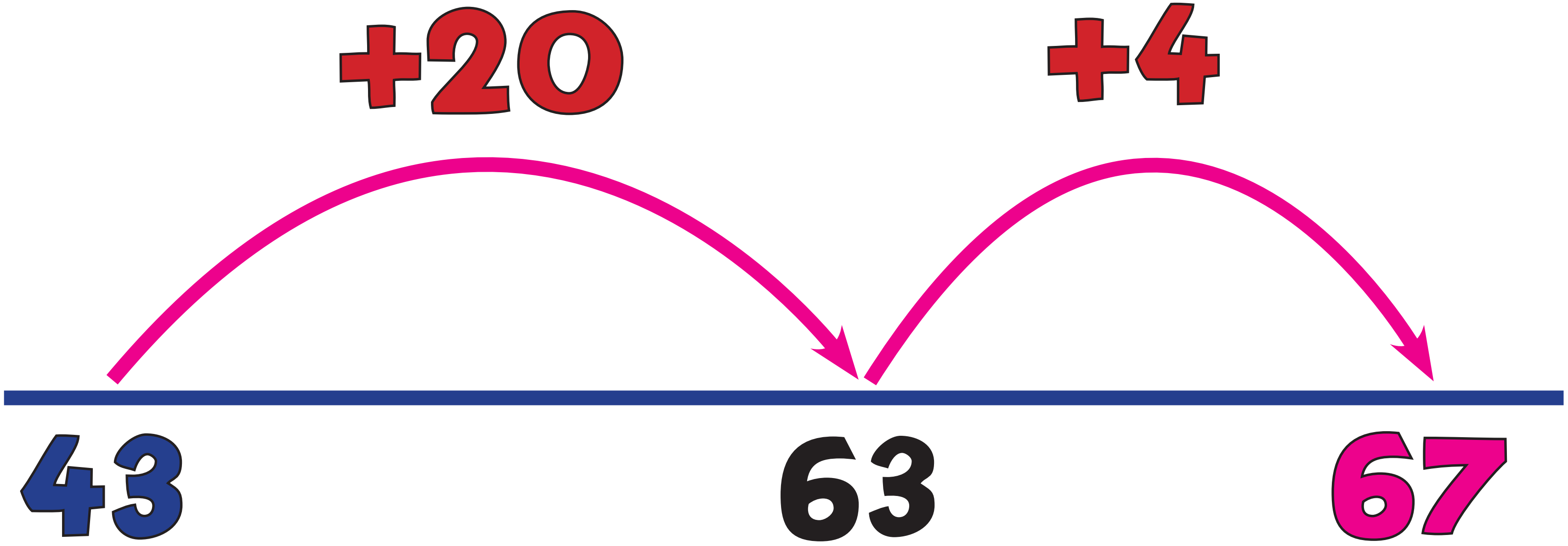
H: Number Line

43 + 24 = 67



+20

+4

43

63

67

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MF: 2x Table Facts

2 x 1 = 2

2 x 2 = 4

2 x 3 = 6

2 x 4 = 8

2 x 5 = 10

2 x 6 = 12

2 x 7 = 14

2 x 8 = 16

2 x 9 = 18

2 x 10 = 20

2 x 11 = 22

2 x 12 = 24

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MF: 3x Table Facts

3 x 1 = 3

3 x 2 = 6

3 x 3 = 9

3 x 4 = 12

3 x 5 = 15

3 x 6 = 18

3 x 7 = 21

3 x 8 = 24

3 x 9 = 27

3 x 10 = 30

3 x 11 = 33

3 x 12 = 36

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MF: 4x Table Facts

4 x 1 = 4

4 x 2 = 8

4 x 3 = 12

4 x 4 = 16

4 x 5 = 20

4 x 6 = 24

4 x 7 = 28

4 x 8 = 32

4 x 9 = 36

4 x 10 = 40

4 x 11 = 44

4 x 12 = 48

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MF: 5x Table Facts

5 x 1 = 5

5 x 2 = 10

5 x 3 = 15

5 x 4 = 20

5 x 5 = 25

5 x 6 = 30

5 x 7 = 35

5 x 8 = 40

5 x 9 = 45

5 x 10 = 50

5 x 11 = 55

5 x 12 = 60

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MF: 6x Table Facts

6 x 1 = 6

6 x 2 = 12

6 x 3 = 18

6 x 4 = 24

6 x 5 = 30

6 x 6 = 36

6 x 7 = 42

6 x 8 = 48

6 x 9 = 54

6 x 10 = 60

6 x 11 = 66

6 x 12 = 72

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MF: 7x Table Facts

7 x 1 = 7
7 x 2 = 14
7 x 3 = 21
7 x 4 = 28
7 x 5 = 35
7 x 6 = 42

7 x 7 = 49
7 x 8 = 56
7 x 9 = 63
7 x 10 = 70
7 x 11 = 77
7 x 12 = 84

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MF: 8x Table Facts

8 x 1 = 8

8 x 2 = 16

8 x 3 = 24

8 x 4 = 32

8 x 5 = 40

8 x 6 = 48

8 x 7 = 56

8 x 8 = 64

8 x 9 = 72

8 x 10 = 80

8 x 11 = 88

8 x 12 = 96

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MF: 9x Table Facts

9 x 1 = 9

9 x 2 = 18

9 x 3 = 27

9 x 4 = 36

9 x 5 = 45

9 x 6 = 54

9 x 7 = 63

9 x 8 = 72

9 x 9 = 81

9 x 10 = 90

9 x 11 = 99

9 x 12 = 108

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MF: 10x Table Facts

10 x 1 = 10

10 x 2 = 20

10 x 3 = 30

10 x 4 = 40

10 x 5 = 50

10 x 6 = 60

10 x 7 = 70

10 x 8 = 80

10 x 9 = 90

10 x 10 = 100

10 x 11 = 110

10 x 12 = 120

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MF: 11x Table Facts

11 x 1 = 11

11 x 2 = 22

11 x 3 = 33

11 x 4 = 44

11 x 5 = 55

11 x 6 = 66

11 x 7 = 77

11 x 8 = 88

11 x 9 = 99

11 x 10 = 110

11 x 11 = 121

11 x 12 = 132

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MF: 12x Table Facts

12 x 1 = 12
12 x 2 = 24
12 x 3 = 36
12 x 4 = 48
12 x 5 = 60
12 x 6 = 72

12 x 7 = 84
12 x 8 = 96
12 x 9 = 108
12 x 10 = 120
12 x 11 = 132
12 x 12 = 144

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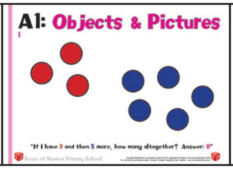
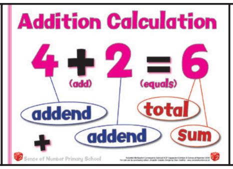
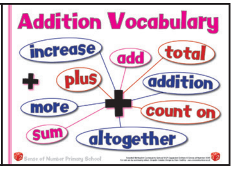
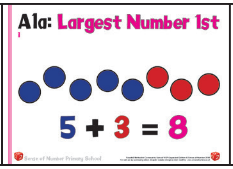
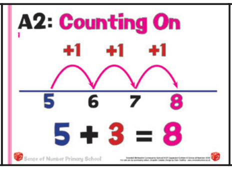
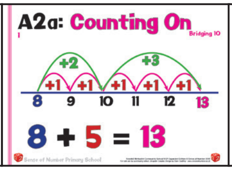
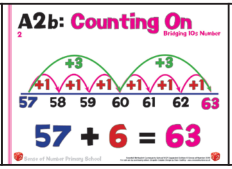
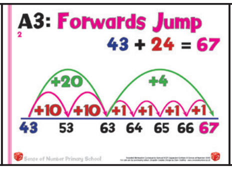
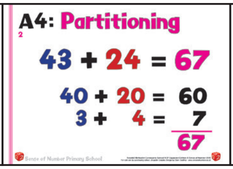
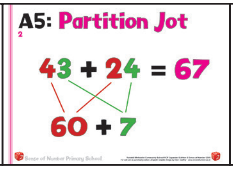
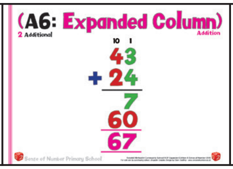
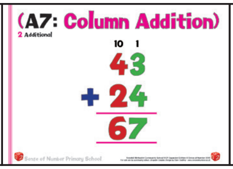
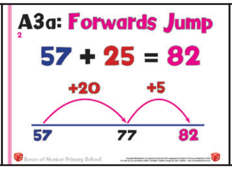
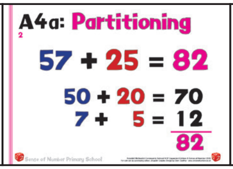
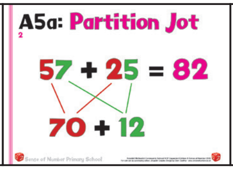
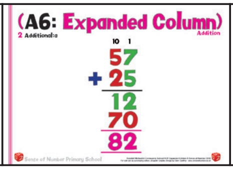
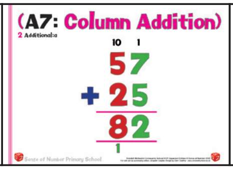
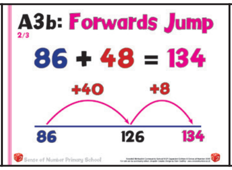
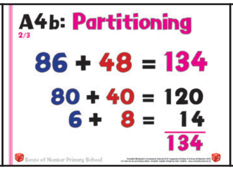
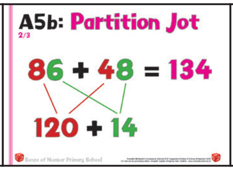
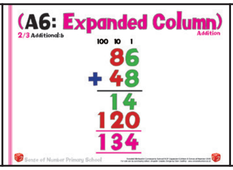
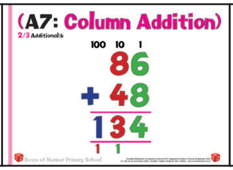
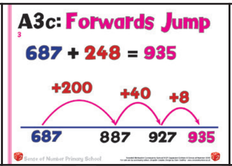
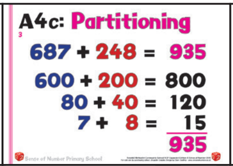
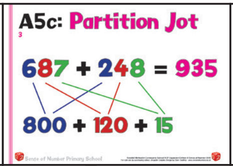
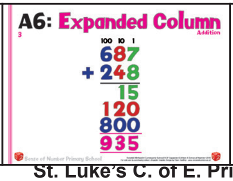
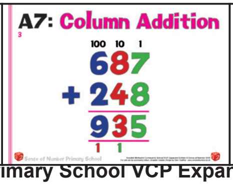
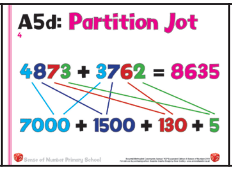
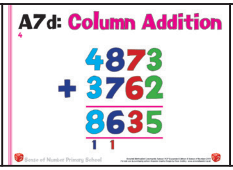
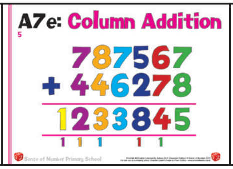
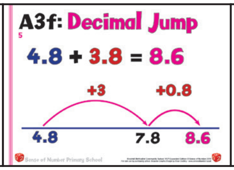
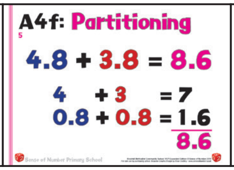
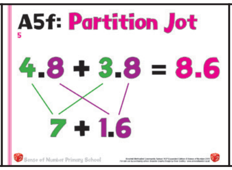
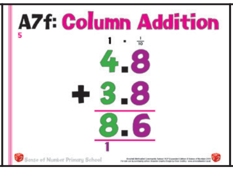
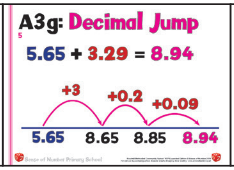
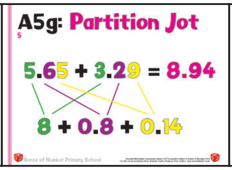
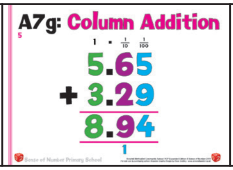
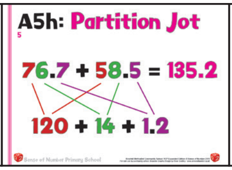
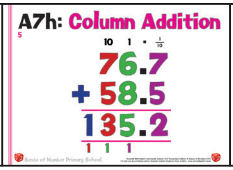
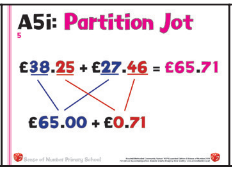
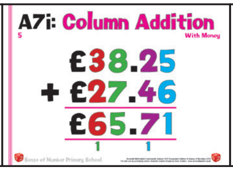
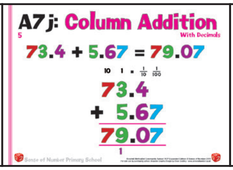
Y1	A1: Objects & Pictures "If I have 3 and then 5 more, how many altogether? Answer: 8"					**A**	Addition Calculation 4 + 2 = 6 (add) (equals) addend + addend total sum	Addition Vocabulary increase add total + plus addition more count on sum altogether
Y1	A1a: Largest Number 1st 5 + 3 = 8	A2: Counting On +1 +1 +1 5 6 7 8 5 + 3 = 8						
Y1		A2a: Counting On Bridging 10 +2 +3 +1 +1 +1 +1 +1 8 9 10 11 12 13 8 + 5 = 13						
Y2		A2b: Counting On Bridging 10s Number +3 +3 +1 +1 +1 +1 +1 +1 57 58 59 60 61 62 63 57 + 6 = 63						
Y2		A3: Forwards Jump 43 + 24 = 67 +20 +4 +10 +10 +1 +1 +1 +1 43 53 63 64 65 66 67	A4: Partitioning 43 + 24 = 67 40 + 20 = 60 3 + 4 = 7 67	A5: Partition Jot 43 + 24 = 67 60 + 7	(A6: Expanded Column) Additional 10 1 43 + 24 7 60 67	(A7: Column Addition) Additional 10 1 43 + 24 67		
Y2		A3a: Forwards Jump 57 + 25 = 82 +20 +5 57 77 82	A4a: Partitioning 57 + 25 = 82 50 + 20 = 70 7 + 5 = 12 82	A5a: Partition Jot 57 + 25 = 82 70 + 12	(A6: Expanded Column) Additional:a 10 1 57 + 25 12 70 82	(A7: Column Addition) Additional:a 10 1 57 + 25 82 1		
Y2/3		A3b: Forwards Jump 86 + 48 = 134 +40 +8 86 126 134	A4b: Partitioning 86 + 48 = 134 80 + 40 = 120 6 + 8 = 14 134	A5b: Partition Jot 86 + 48 = 134 120 + 14	(A6: Expanded Column) Additional:b 100 10 1 86 + 48 14 120 134	(A7: Column Addition) Additional:b 100 10 1 86 + 48 134 1 1		
Y3		A3c: Forwards Jump 687 + 248 = 935 +200 +40 +8 687 887 927 935	A4c: Partitioning 687 + 248 = 935 600 + 200 = 800 80 + 40 = 120 7 + 8 = 15 935	A5c: Partition Jot 687 + 248 = 935 800 + 120 + 15	A6: Expanded Column 100 10 1 687 + 248 15 120 800 935	A7: Column Addition 100 10 1 687 + 248 935 1 1		

Y4				 **A5d: Partition Jot** 4873 + 3762 = 8635 7000 + 1500 + 130 + 5		 **A7d: Column Addition** 4873 + 3762 8635 1 1		
Y5						 **A7e: Column Addition** 787567 + 446278 1233845 1 1 1 1 1		
Y5		 **A3f: Decimal Jump** 4.8 + 3.8 = 8.6 +3 +0.8 4.8 7.8 8.6	 **A4f: Partitioning** 4.8 + 3.8 = 8.6 4 + 3 = 7 0.8 + 0.8 = 1.6 8.6	 **A5f: Partition Jot** 4.8 + 3.8 = 8.6 7 + 1.6		 **A7f: Column Addition** 1 . $\frac{1}{10}$ 4.8 + 3.8 8.6 1		
Y5		 **A3g: Decimal Jump** 5.65 + 3.29 = 8.94 +3 +0.2 +0.09 5.65 8.65 8.85 8.94		 **A5g: Partition Jot** 5.65 + 3.29 = 8.94 8 + 0.8 + 0.14		 **A7g: Column Addition** 1 . $\frac{1}{10}$ $\frac{1}{100}$ 5.65 + 3.29 8.94 1		
Y5				 **A5h: Partition Jot** 76.7 + 58.5 = 135.2 120 + 14 + 1.2		 **A7h: Column Addition** 10 1 . $\frac{1}{10}$ 76.7 + 58.5 135.2 1 1 1		
Y5				 **A5i: Partition Jot** £38.25 + £27.46 = £65.71 £65.00 + £0.71		 **A7i: Column Addition** With Money £38.25 + £27.46 £65.71 1 1		
Y5						 **A7j: Column Addition** With Decimals 73.4 + 5.67 = 79.07 10 1 . $\frac{1}{10}$ $\frac{1}{100}$ 73.4 + 5.67 79.07 1		

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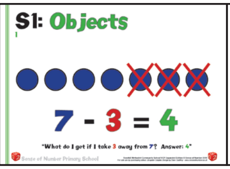
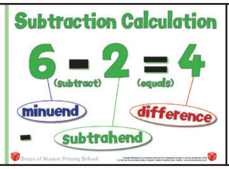
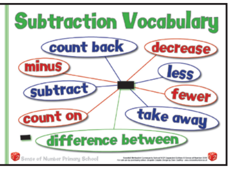
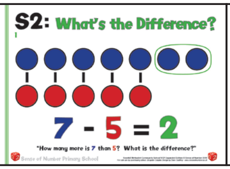
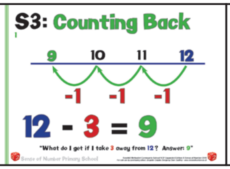
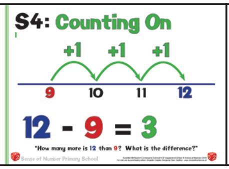
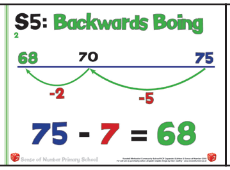
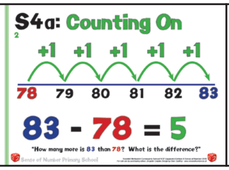
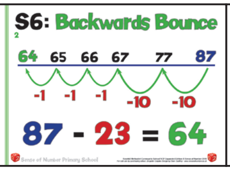
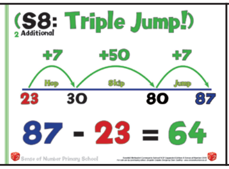
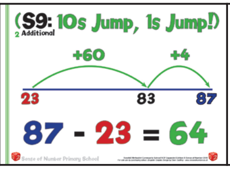
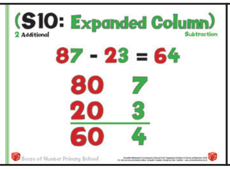
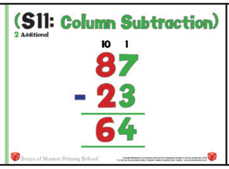
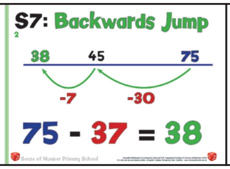
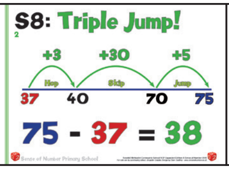
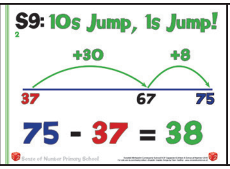
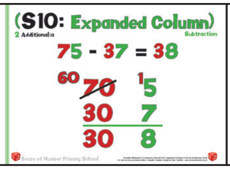
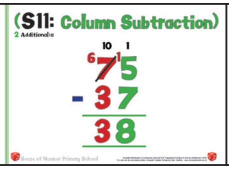
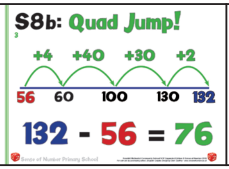
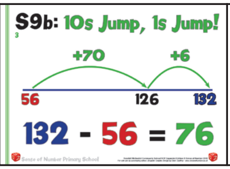
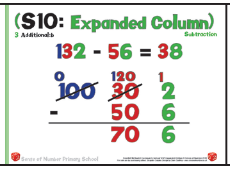
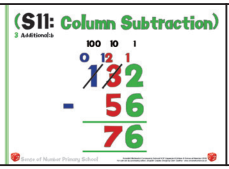
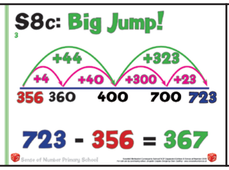
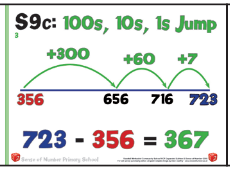
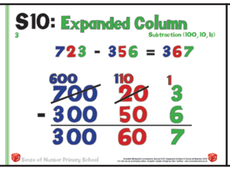
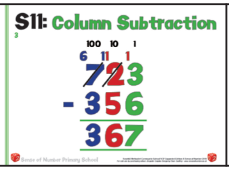
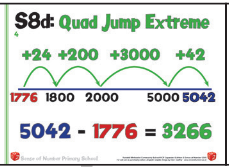
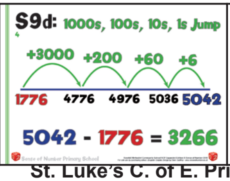
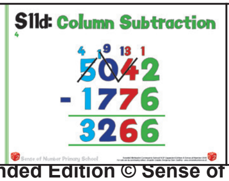
Y1	 **S1: Objects** 7 - 3 = 4 "What do I get if I take 3 away from 7? Answer: 4"					S	 **Subtraction Calculation** 6 - 2 = 4 (subtract) (equals) minuend difference - subtrahend	 **Subtraction Vocabulary** count back decrease minus less subtract fewer count on take away - difference between
Y1		 **S2: What's the Difference?** 7 - 5 = 2 "How many more is 7 than 5? What is the difference?"	 **S3: Counting Back** 12 - 3 = 9 "What do I get if I take 3 away from 12? Answer: 9"	 **S4: Counting On** 12 - 9 = 3 "How many more is 12 than 9? What is the difference?"				
Y2			 **S5: Backwards Boing** 75 - 7 = 68	 **S4a: Counting On** 83 - 78 = 5 "How many more is 83 than 78? What is the difference?"				
Y2			 **S6: Backwards Bounce** 87 - 23 = 64	 **(S8: Triple Jump!)** Additional 87 - 23 = 64	 **(S9: 10s Jump, 1s Jump!)** Additional 87 - 23 = 64	 **(S10: Expanded Column)** Additional 87 - 23 = 64 80 7 20 3 60 4	 **(S11: Column Subtraction)** Additional 87 - 23 64	
Y2			 **S7: Backwards Jump** 75 - 37 = 38	 **S8: Triple Jump!** 75 - 37 = 38	 **S9: 10s Jump, 1s Jump!** 75 - 37 = 38	 **(S10: Expanded Column)** Additional 75 - 37 = 38	 **(S11: Column Subtraction)** Additional 75 - 37 38	
Y3				 **S8b: Quad Jump!** 132 - 56 = 76	 **S9b: 10s Jump, 1s Jump!** 132 - 56 = 76	 **(S10: Expanded Column)** Additional 132 - 56 = 38	 **(S11: Column Subtraction)** Additional 132 - 56 76	
Y3				 **S8c: Big Jump!** 723 - 356 = 367	 **S9c: 100s, 10s, 1s Jump** 723 - 356 = 367	 **S10: Expanded Column** 723 - 356 = 367	 **S11: Column Subtraction** 723 - 356 367	
Y4				 **S8d: Quad Jump Extreme** 5042 - 1776 = 3266	 **S9d: 1000s, 100s, 10s, 1s Jump** 5042 - 1776 = 3266		 **S11d: Column Subtraction** 5042 - 1776 3266	

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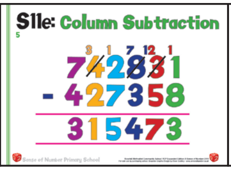
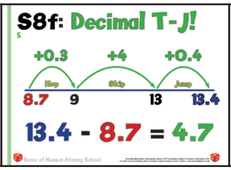
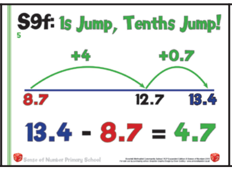
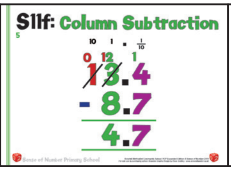
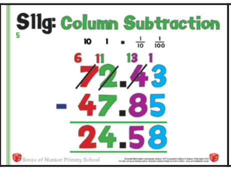
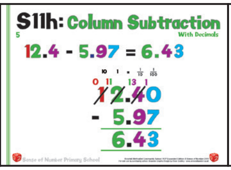
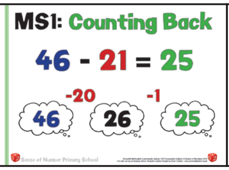
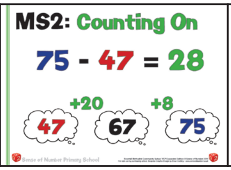
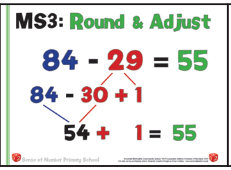
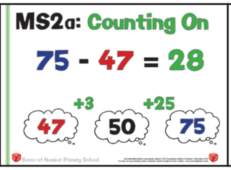
Y5							 **S11e:** Column Subtraction 3 1 7 12 1 742831 - 427358 315473	
Y5				 **S8f:** Decimal T-J! +0.3 +4 +0.4 Hop Skip Jump 8.7 9 13 13.4 13.4 - 8.7 = 4.7	 **S9f:** 1s Jump, Tenths Jump! +4 +0.7 8.7 12.7 13.4 13.4 - 8.7 = 4.7		 **S11f:** Column Subtraction 10 1 . $\frac{1}{10}$ 0 12 1 13.4 - 8.7 4.7	
Y5							 **S11g:** Column Subtraction 10 1 . $\frac{1}{10}$ $\frac{1}{100}$ 6 11 13 1 72.43 - 47.85 24.58	
Y5							 **S11h:** Column Subtraction With Decimals 12.4 - 5.97 = 6.43 10 1 . $\frac{1}{10}$ $\frac{1}{100}$ 0 11 13 1 12.40 - 5.97 6.43	

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

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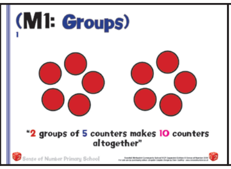
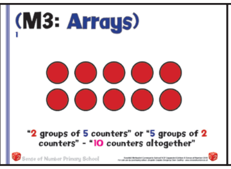
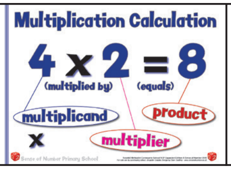
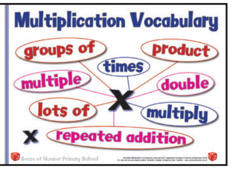
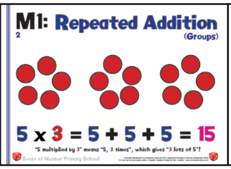
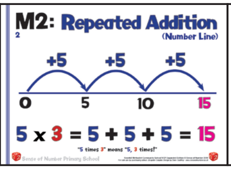
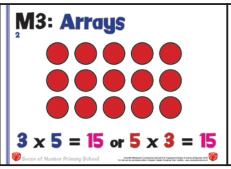
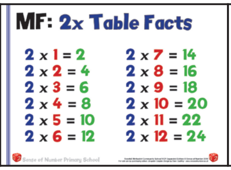
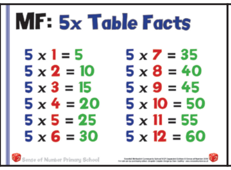
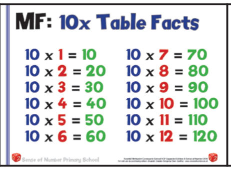
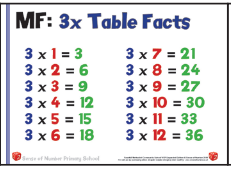
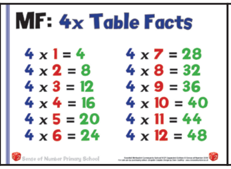
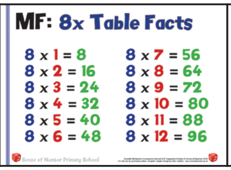
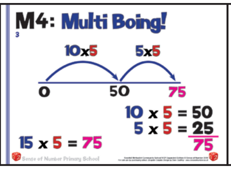
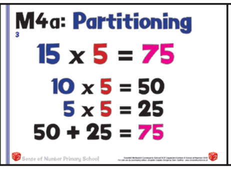
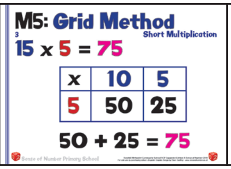
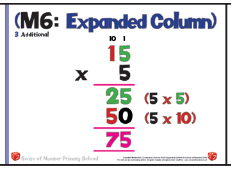
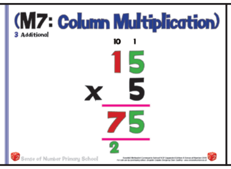
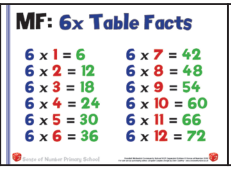
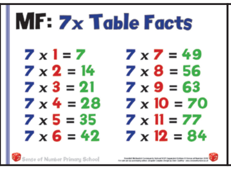
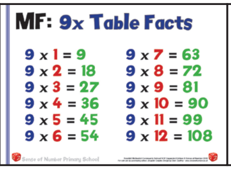
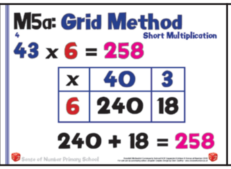
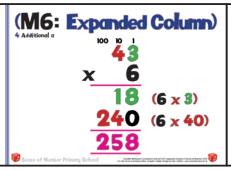
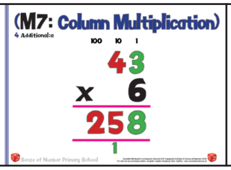
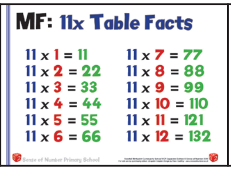
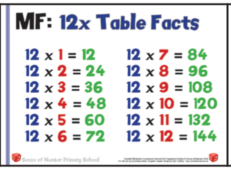
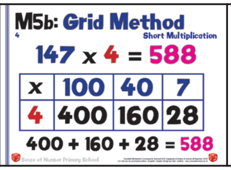
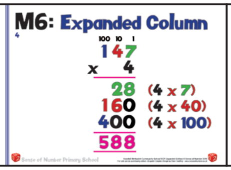
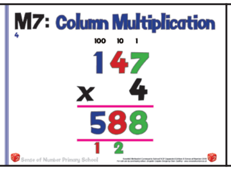
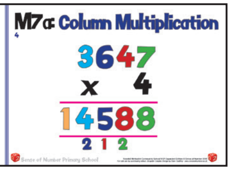
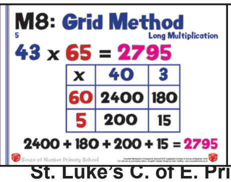
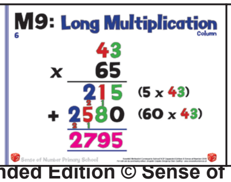
Y1	 **(M1: Groups)** 1 "2 groups of 5 counters makes 10 counters altogether"		 **(M3: Arrays)** 1 "2 groups of 5 counters" or "5 groups of 2 counters" - "10 counters altogether"			**M**	 **Multiplication Calculation** 4 x 2 = 8 (multiplied by) (equals) multiplicand product x multiplier	 **Multiplication Vocabulary** groups of product times multiple double x lots of multiply x repeated addition
Y2	 **M1: Repeated Addition** 2 (Groups) 5 x 3 = 5 + 5 + 5 = 15 "5 multiplied by 3" means "5, 3 times", which gives "3 lots of 5"!	 **M2: Repeated Addition** 2 (Number Line) +5 +5 +5 0 5 10 15 5 x 3 = 5 + 5 + 5 = 15 "5 times 3" means "5, 3 times!"	 **M3: Arrays** 2 3 x 5 = 15 or 5 x 3 = 15					
Y2	 **MF: 2x Table Facts** 2 x 1 = 2 2 x 2 = 4 2 x 3 = 6 2 x 4 = 8 2 x 5 = 10 2 x 6 = 12 2 x 7 = 14 2 x 8 = 16 2 x 9 = 18 2 x 10 = 20 2 x 11 = 22 2 x 12 = 24	 **MF: 5x Table Facts** 5 x 1 = 5 5 x 2 = 10 5 x 3 = 15 5 x 4 = 20 5 x 5 = 25 5 x 6 = 30 5 x 7 = 35 5 x 8 = 40 5 x 9 = 45 5 x 10 = 50 5 x 11 = 55 5 x 12 = 60	 **MF: 10x Table Facts** 10 x 1 = 10 10 x 2 = 20 10 x 3 = 30 10 x 4 = 40 10 x 5 = 50 10 x 6 = 60 10 x 7 = 70 10 x 8 = 80 10 x 9 = 90 10 x 10 = 100 10 x 11 = 110 10 x 12 = 120					
Y3	 **MF: 3x Table Facts** 3 x 1 = 3 3 x 2 = 6 3 x 3 = 9 3 x 4 = 12 3 x 5 = 15 3 x 6 = 18 3 x 7 = 21 3 x 8 = 24 3 x 9 = 27 3 x 10 = 30 3 x 11 = 33 3 x 12 = 36	 **MF: 4x Table Facts** 4 x 1 = 4 4 x 2 = 8 4 x 3 = 12 4 x 4 = 16 4 x 5 = 20 4 x 6 = 24 4 x 7 = 28 4 x 8 = 32 4 x 9 = 36 4 x 10 = 40 4 x 11 = 44 4 x 12 = 48	 **MF: 8x Table Facts** 8 x 1 = 8 8 x 2 = 16 8 x 3 = 24 8 x 4 = 32 8 x 5 = 40 8 x 6 = 48 8 x 7 = 56 8 x 8 = 64 8 x 9 = 72 8 x 10 = 80 8 x 11 = 88 8 x 12 = 96					
Y3		 **M4: Multi Boing!** 3 10x5 5x5 0 50 75 10 x 5 = 50 5 x 5 = 25 75 15 x 5 = 75		 **M4a: Partitioning** 3 15 x 5 = 75 10 x 5 = 50 5 x 5 = 25 50 + 25 = 75	 **M5: Grid Method** 3 Short Multiplication 15 x 5 = 75 x | 10 | 5 5 | 50 | 25 50 + 25 = 75	 **(M6: Expanded Column)** 3 Additional 10 1 15 x 5 25 (5 x 5) 50 (5 x 10) 75	 **(M7: Column Multiplication)** 3 Additional 10 1 15 x 5 75 2	
Y4	 **MF: 6x Table Facts** 6 x 1 = 6 6 x 2 = 12 6 x 3 = 18 6 x 4 = 24 6 x 5 = 30 6 x 6 = 36 6 x 7 = 42 6 x 8 = 48 6 x 9 = 54 6 x 10 = 60 6 x 11 = 66 6 x 12 = 72	 **MF: 7x Table Facts** 7 x 1 = 7 7 x 2 = 14 7 x 3 = 21 7 x 4 = 28 7 x 5 = 35 7 x 6 = 42 7 x 7 = 49 7 x 8 = 56 7 x 9 = 63 7 x 10 = 70 7 x 11 = 77 7 x 12 = 84	 **MF: 9x Table Facts** 9 x 1 = 9 9 x 2 = 18 9 x 3 = 27 9 x 4 = 36 9 x 5 = 45 9 x 6 = 54 9 x 7 = 63 9 x 8 = 72 9 x 9 = 81 9 x 10 = 90 9 x 11 = 99 9 x 12 = 108		 **M5a: Grid Method** 4 Short Multiplication 43 x 6 = 258 x | 40 | 3 6 | 240 | 18 240 + 18 = 258	 **(M6: Expanded Column)** 4 Additional a 100 10 1 43 x 6 18 (6 x 3) 240 (6 x 40) 258	 **(M7: Column Multiplication)** 4 Additional:a 100 10 1 43 x 6 258 1	
Y4	 **MF: 11x Table Facts** 11 x 1 = 11 11 x 2 = 22 11 x 3 = 33 11 x 4 = 44 11 x 5 = 55 11 x 6 = 66 11 x 7 = 77 11 x 8 = 88 11 x 9 = 99 11 x 10 = 110 11 x 11 = 121 11 x 12 = 132	 **MF: 12x Table Facts** 12 x 1 = 12 12 x 2 = 24 12 x 3 = 36 12 x 4 = 48 12 x 5 = 60 12 x 6 = 72 12 x 7 = 84 12 x 8 = 96 12 x 9 = 108 12 x 10 = 120 12 x 11 = 132 12 x 12 = 144			 **M5b: Grid Method** 4 Short Multiplication 147 x 4 = 588 x | 100 | 40 | 7 4 | 400 | 160 | 28 400 + 160 + 28 = 588	 **M6: Expanded Column** 4 100 10 1 147 x 4 28 (4 x 7) 160 (4 x 40) 400 (4 x 100) 588	 **M7: Column Multiplication** 4 100 10 1 147 x 4 588 1 2	 **M7a: Column Multiplication** 4 3647 x 4 14588 2 1 2
Y5					 **M8: Grid Method** 5 Long Multiplication 43 x 65 = 2795 x | 40 | 3 60 | 2400 | 180 5 | 200 | 15 2400 + 180 + 200 + 15 = 2795		 **M9: Long Multiplication** 6 Column 43 x 65 215 (5 x 43) 2 1 + 2580 (60 x 43) 2 1 2795	

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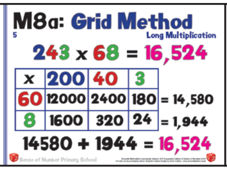
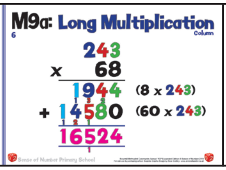
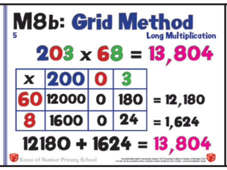
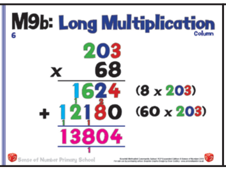
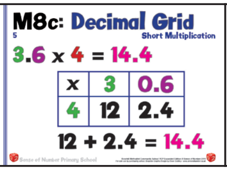
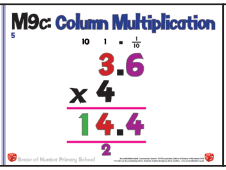
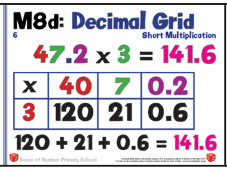
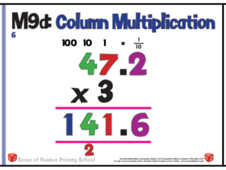
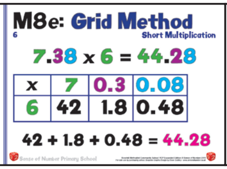
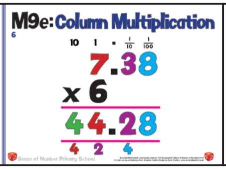
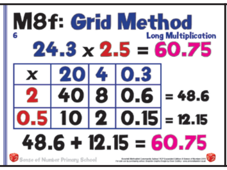
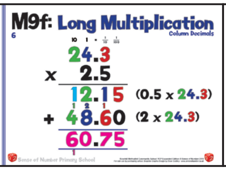
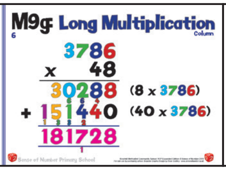
Y5					 M8a: Grid Method 5 Long Multiplication 243 x 68 = 16,524 x | 200 | 40 | 3 60 | 12000 | 2400 | 180 = 14,580 8 | 1600 | 320 | 24 = 1,944 14580 + 1944 = 16,524 Sense of Number Primary School		 M9a: Long Multiplication 6 Column 243 x 68 1944 (8 x 243) + 14580 (60 x 243) 16524 Sense of Number Primary School	
Y5					 M8b: Grid Method 5 Long Multiplication 203 x 68 = 13,804 x | 200 | 0 | 3 60 | 12000 | 0 | 180 = 12,180 8 | 1600 | 0 | 24 = 1,624 12180 + 1624 = 13,804 Sense of Number Primary School		 M9b: Long Multiplication 6 Column 203 x 68 1624 (8 x 203) + 12180 (60 x 203) 13804 Sense of Number Primary School	
Y5					 M8c: Decimal Grid 5 Short Multiplication 3.6 x 4 = 14.4 x | 3 | 0.6 4 | 12 | 2.4 12 + 2.4 = 14.4 Sense of Number Primary School		 M9c: Column Multiplication 5 10 1 . $\frac{1}{10}$ 3.6 x 4 14.4 2 Sense of Number Primary School	
Y6					 M8d: Decimal Grid 6 Short Multiplication 47.2 x 3 = 141.6 x | 40 | 7 | 0.2 3 | 120 | 21 | 0.6 120 + 21 + 0.6 = 141.6 Sense of Number Primary School		 M9d: Column Multiplication 6 100 10 1 . $\frac{1}{10}$ 47.2 x 3 141.6 2 Sense of Number Primary School	
Y6					 M8e: Grid Method 6 Short Multiplication 7.38 x 6 = 44.28 x | 7 | 0.3 | 0.08 6 | 42 | 1.8 | 0.48 42 + 1.8 + 0.48 = 44.28 Sense of Number Primary School		 M9e: Column Multiplication 6 10 1 . $\frac{1}{10}$ $\frac{1}{100}$ 7.38 x 6 44.28 4 2 4 Sense of Number Primary School	
Y6					 M8f: Grid Method 6 Long Multiplication 24.3 x 2.5 = 60.75 x | 20 | 4 | 0.3 2 | 40 | 8 | 0.6 = 48.6 0.5 | 10 | 2 | 0.15 = 12.15 48.6 + 12.15 = 60.75 Sense of Number Primary School		 M9f: Long Multiplication 6 Column Decimals 10 1 . $\frac{1}{10}$ $\frac{1}{100}$ 24.3 x 2.5 12.15 (0.5 x 24.3) + 48.60 (2 x 24.3) 60.75 Sense of Number Primary School	
Y6							 M9g: Long Multiplication 6 Column 3786 x 48 30288 (8 x 3786) + 151440 (40 x 3786) 181728 Sense of Number Primary School	

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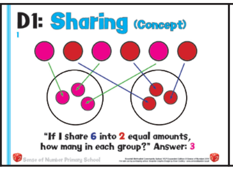
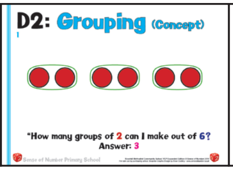
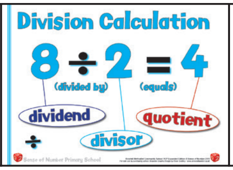
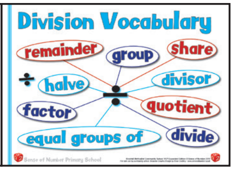
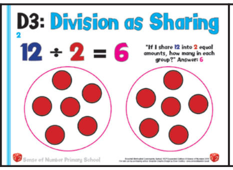
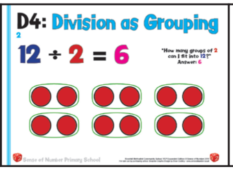
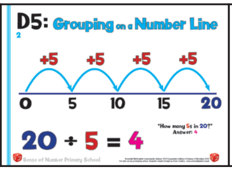
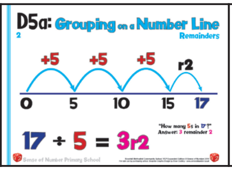
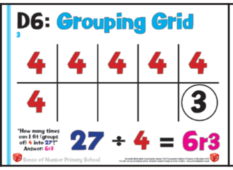
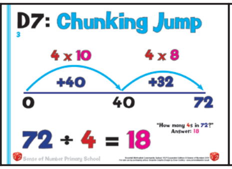
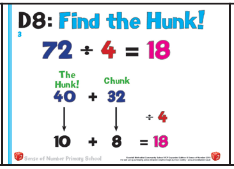
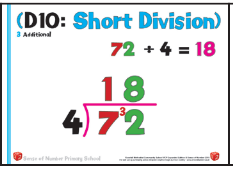
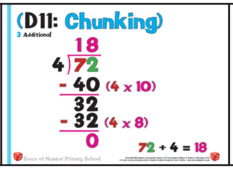
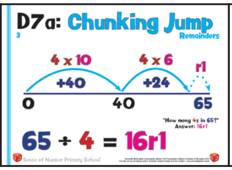
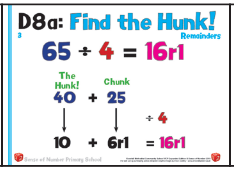
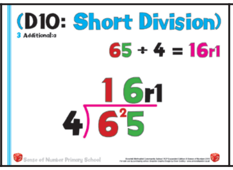
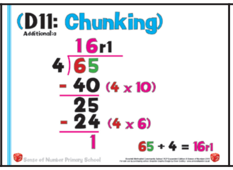
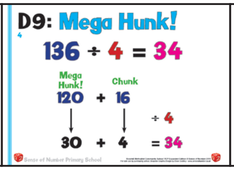
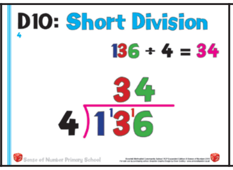
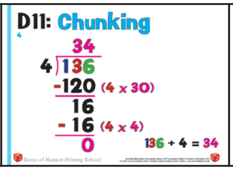
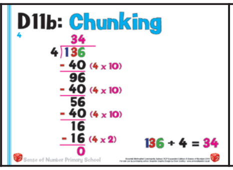
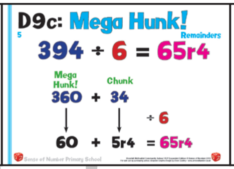
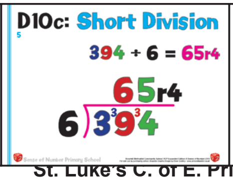
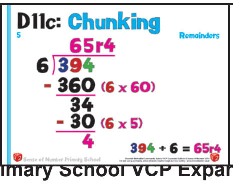
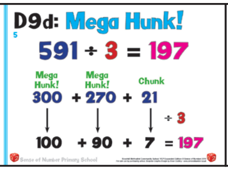
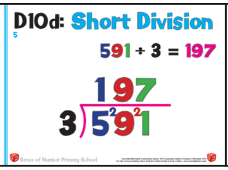
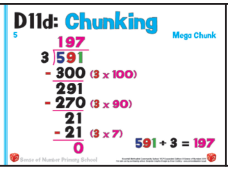
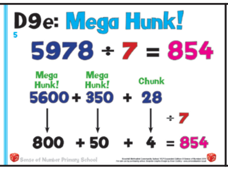
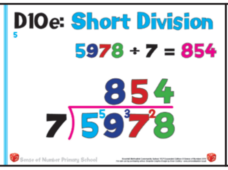
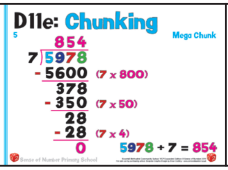
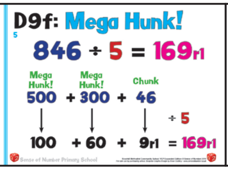
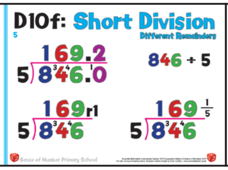
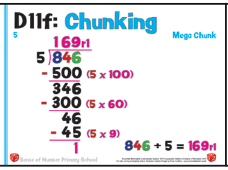
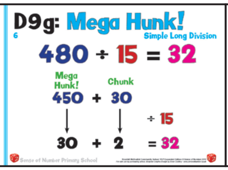
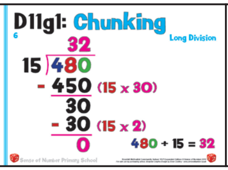
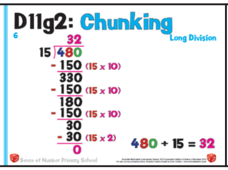
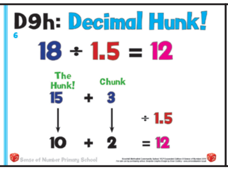
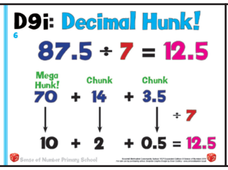
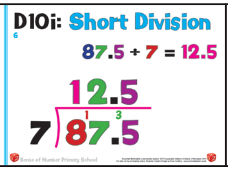
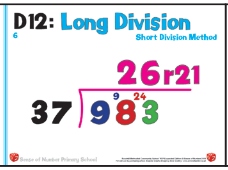
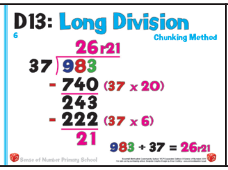
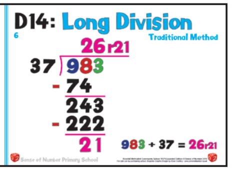
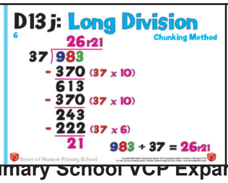
Y1	 D1: Sharing (Concept) "If I share 6 into 2 equal amounts, how many in each group?" Answer: 3	 D2: Grouping (Concept) "How many groups of 2 can I make out of 6? Answer: 3				**D**	 Division Calculation 8 ÷ 2 = 4 (divided by) (equals) dividend divisor quotient ÷	 Division Vocabulary remainder group share ÷ halve divisor factor quotient equal groups of divide
Y2	 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 +5 +5 +5 +5 0 5 10 15 20 20 ÷ 5 = 4 "How many 5s in 20?" Answer: 4					
Y2			 D5a: Grouping on a Number Line Remainders +5 +5 +5 r2 0 5 10 15 17 17 ÷ 5 = 3r2 "How many 5s in 17?" Answer: 3 remainder 2					
Y3		 D6: Grouping Grid 4 4 4 4 4 4 3 "How many times can I fit (groups of) 4 into 27?" Answer: 6r3 27 ÷ 4 = 6r3						
Y3			 D7: Chunking Jump 4 x 10 4 x 8 +40 +32 0 40 72 72 ÷ 4 = 18 "How many 4s in 72?" Answer: 18	 D8: Find the Hunk! 72 ÷ 4 = 18 The Hunk! 40 + Chunk 32 ÷ 4 10 + 8 = 18	 (D10: Short Division) Additional 72 ÷ 4 = 18 $4\overline{)7^{3}2}$ 18	 (D11: Chunking) Additional 4)72 18 - 40 (4 x 10) 32 - 32 (4 x 8) 0 72 ÷ 4 = 18		
Y3			 D7a: Chunking Jump Remainders 4 x 10 4 x 6 r1 +40 +24 0 40 65 65 ÷ 4 = 16r1 "How many 4s in 65?" Answer: 16r1	 D8a: Find the Hunk! Remainders 65 ÷ 4 = 16r1 The Hunk! 40 + Chunk 25 ÷ 4 10 + 6r1 = 16r1	 (D10: Short Division) Additional:a 65 ÷ 4 = 16r1 $4\overline{)6^{2}5}$ 16r1	 (D11: Chunking) Additional:a 4)65 16r1 - 40 (4 x 10) 25 - 24 (4 x 6) 1 65 ÷ 4 = 16r1		
Y4				 D9: Mega Hunk! 136 ÷ 4 = 34 Mega Hunk! 120 + Chunk 16 ÷ 4 30 + 4 = 34	 D10: Short Division 136 ÷ 4 = 34 $4\overline{)1^{1}3^{1}6}$ 34	 D11: Chunking 4)136 34 -120 (4 x 30) 16 - 16 (4 x 4) 0 136 ÷ 4 = 34	 D11b: Chunking 4)136 34 - 40 (4 x 10) 96 - 40 (4 x 10) 56 - 40 (4 x 10) 16 - 16 (4 x 2) 0 136 ÷ 4 = 34	
Y5				 D9c: Mega Hunk! Remainders 394 ÷ 6 = 65r4 Mega Hunk! 360 + Chunk 34 ÷ 6 60 + 5r4 = 65r4	 D10c: Short Division 394 ÷ 6 = 65r4 $6\overline{)3^{3}9^{3}4}$ 65r4	 D11c: Chunking Remainders 6)394 65r4 - 360 (6 x 60) 34 - 30 (6 x 5) 4 394 ÷ 6 = 65r4		

Y5				**D9d: Mega Hunk!** 5 591 ÷ 3 = 197 Mega Hunk! 300 + Mega Hunk! 270 + Chunk 21 ÷ 3 100 + 90 + 7 = 197	**D10d: Short Division** 5 591 ÷ 3 = 197 197 $3\overline{)5^{2}9^{2}1}$	**D11d: Chunking** Mega Chunk 5 197 3 ⟌591 - 300 (3 x 100) 291 - 270 (3 x 90) 21 - 21 (3 x 7) 0 591 ÷ 3 = 197		
Y5				**D9e: Mega Hunk!** 5 5978 ÷ 7 = 854 Mega Hunk! 5600 + Mega Hunk! 350 + Chunk 28 ÷ 7 800 + 50 + 4 = 854	**D10e: Short Division** 5 5978 ÷ 7 = 854 854 $7\overline{)5^{5}9^{3}7^{2}8}$	**D11e: Chunking** Mega Chunk 5 854 7 ⟌5978 - 5600 (7 x 800) 378 - 350 (7 x 50) 28 - 28 (7 x 4) 0 5978 ÷ 7 = 854		
Y5				**D9f: Mega Hunk!** 5 846 ÷ 5 = 169r1 Mega Hunk! 500 + Mega Hunk! 300 + Chunk 46 ÷ 5 100 + 60 + 9r1 = 169r1	**D10f: Short Division** Different Remainders 5 846 ÷ 5 169.2 $5\overline{)8^{3}4^{4}6.^{1}0}$ 169r1 $5\overline{)8^{3}4^{4}6}$ $169\frac{1}{5}$ $5\overline{)8^{3}4^{4}6}$	**D11f: Chunking** Mega Chunk 5 169r1 5 ⟌846 - 500 (5 x 100) 346 - 300 (5 x 60) 46 - 45 (5 x 9) 1 846 ÷ 5 = 169r1		
Y6				**D9g: Mega Hunk!** Simple Long Division 6 480 ÷ 15 = 32 Mega Hunk! 450 + Chunk 30 ÷ 15 30 + 2 = 32		**D11g1: Chunking** Long Division 6 32 15 ⟌480 - 450 (15 x 30) 30 - 30 (15 x 2) 0 480 ÷ 15 = 32	**D11g2: Chunking** Long Division 6 32 15 ⟌480 - 150 (15 x 10) 330 - 150 (15 x 10) 180 - 150 (15 x 10) 30 - 30 (15 x 2) 0 480 ÷ 15 = 32	
Y6				**D9h: Decimal Hunk!** 6 18 ÷ 1.5 = 12 The Hunk! 15 + Chunk 3 ÷ 1.5 10 + 2 = 12				
Y6				**D9i: Decimal Hunk!** 6 87.5 ÷ 7 = 12.5 Mega Hunk! 70 + Chunk 14 + Chunk 3.5 ÷ 7 10 + 2 + 0.5 = 12.5	**D10i: Short Division** 6 87.5 ÷ 7 = 12.5 12.5 $7\overline{)8^{1}7.^{3}5}$			
Y6					**D12: Long Division** Short Division Method 6 26r21 $37\overline{)9^{9}8^{24}3}$	**D13: Long Division** Chunking Method 6 26r21 37 ⟌983 - 740 (37 x 20) 243 - 222 (37 x 6) 21 983 ÷ 37 = 26r21		**D14: Long Division** Traditional Method 6 26r21 37 ⟌983 - 74 243 - 222 21 983 ÷ 37 = 26r21
Y6						**D13j: Long Division** Chunking Method 6 26r21 37 ⟌983 - 370 (37 x 10) 613 - 370 (37 x 10) 243 - 222 (37 x 6) 21 983 ÷ 37 = 26r21		

MA	**MA1: Partitioning** 45 + 82 = 127 120 + 7 = 127	**MA2: Counting On** 45 + 20 = 65 +20 45 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		
Y1		**MA2a: Counting On** Ones 12 + 5 = 17 +5 12 17	**MA2b: Counting On** Tens 57 + 10 = 67 +10 57 67	**MA3: Number Bonds** Learn Bonds 0 + 10 = 10 1 + 9 = 10 2 + 8 = 10 3 + 7 = 10 4 + 6 = 10 5 + 5 = 10 6 + 4 = 10 7 + 3 = 10 8 + 2 = 10 9 + 1 = 10 10 + 0 = 10	**MA4: Double & Adjust** 5 + 6 = 11 5 + 5 + 1 10 + 1 = 11	**MA5: Round & Adjust** 45 + 9 = 54 45 + 10 - 1 = 55 - 1 = 54		
Y2	**MA1: Partitioning** 43 + 21 = 64 60 + 4 = 64	**MA2a: Counting On** Ones 78 + 7 = 85 +7 78 85	**MA2b: Counting On** Tens 58 + 40 = 98 +40 58 98	**MA3: Number Bonds** 3 + 4 + 7 = 14 10 4	**MA4: Double & Adjust** 7 + 8 = 15 7 + 7 + 1 14 + 1 = 15	**MA5: Round & Adjust** 45 + 19 = 64 45 + 20 - 1 65 - 1 = 64		
Y3	**MA1: Partitioning** 57 + 25 = 82 70 + 12 = 82	**MA2a: Counting On** Tens 85 + 50 = 135 +50 85 135	**MA2b: Counting On** Hundreds 534 + 300 = 834 +300 534 834	**MA3: Number Bonds** 43 + 9 + 7 + 21 = 80 50 30	**MA4: Double & Adjust** 16 + 17 = 33 16 + 16 + 1 32 + 1 = 33	**MA5: Round & Adjust** 45 + 97 = 142 45 + 100 - 3 145 - 3 = 142		
Y4	**MA1: Partitioning** 648 + 231 = 879 800 + 70 + 9 = 879	**MA2a: Counting On** Tens 784 + 60 = 844 +60 784 844	**MA2b: Counting On** Hundreds 4837 + 3000 = 7837 +3000 4837 7837	**MA3: Number Bonds** 42 + 16 + 28 + 54 = 140 70 70	**MA4: Double & Adjust** 37 + 38 = 75 37 + 37 + 1 74 + 1 = 75	**MA5: Round & Adjust** 345 + 298 = 643 345 + 300 - 2 645 - 2 = 643		
Y5	**MA1: Partitioning** 576 + 258 = 834 700 + 120 + 14 = 834	**MA2a: Counting On** Hundreds 837 + 500 = 1337 +500 837 1337	**MA2b: Counting On** Thousands 7583 + 5000 = 12583 +5000 7583 12583	**MA3: Number Bonds** £4.56 + £3.27 + £1.44 = £9.27 £6.00 £3.27	**MA4: Double & Adjust** 125 + 127 = 252 125 + 125 + 2 250 + 2 = 252	**MA5: Round & Adjust** 4645 + 1996 = 6641 4645 + 2000 - 4 6645 - 4 = 6641		
Y6	**MA1: Partitioning** 4.73 + 2.21 = 6.94 6 + 0.9 + 0.04 = 6.94	**MA2a: Counting On** Ten Thousands 43,826 + 30,000 = 73,826 +30,000 43,826 73,826	**MA2b: Counting On** Millions 5,763,947 + 4,000,000 = 9,763,947 +4,000,000 5,763,947 9,763,947	**MA3: Number Bonds** 24.25 + 31.63 + 21.75 = 77.63 46 31.63	**MA4: Double & Adjust** 4.5 + 4.7 = 9.2 4.5 + 4.5 + 0.2 9 + 0.2 = 9.2	**MA5: Round & Adjust** 45.2 + 49.9 = 95.1 45.2 + 50 - 0.1 95.2 - 0.1 = 95.1		

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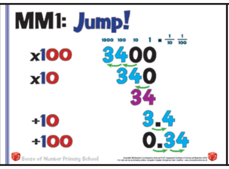
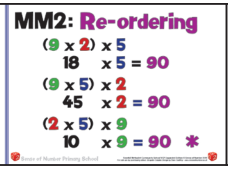
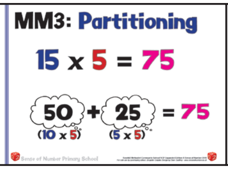
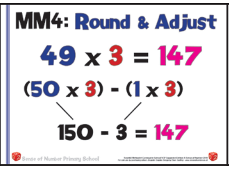
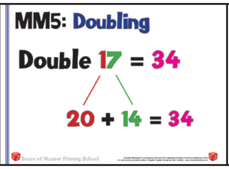
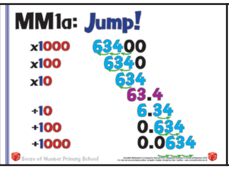
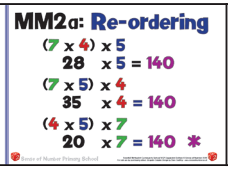
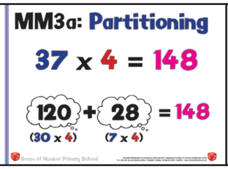
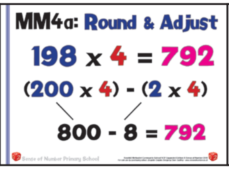
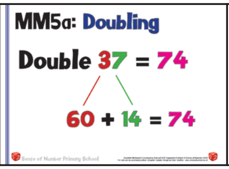
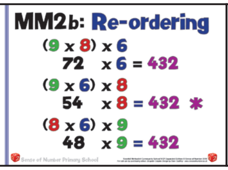
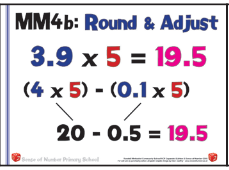
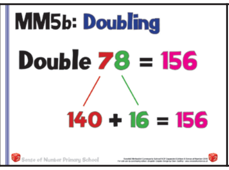
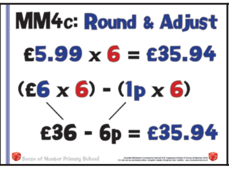
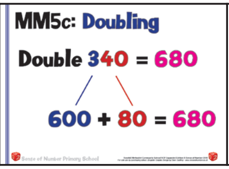
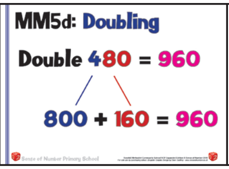
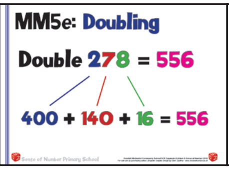
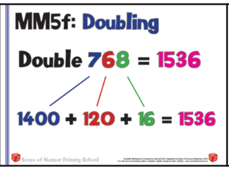
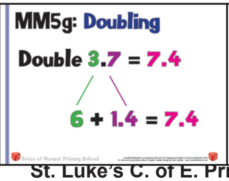
MM	 **MM1: Jump!** 1000 100 10 1 · $\frac{1}{10}$ $\frac{1}{100}$ x100 3400 x10 340 34 ÷10 3.4 ÷100 0.34	 **MM2: Re-ordering** (9 x 2) x 5 18 x 5 = 90 (9 x 5) x 2 45 x 2 = 90 (2 x 5) x 9 10 x 9 = 90 *	 **MM3: Partitioning** 15 x 5 = 75 50 + 25 = 75 (10 x 5) (5 x 5)	 **MM4: Round & Adjust** 49 x 3 = 147 (50 x 3) - (1 x 3) 150 - 3 = 147	 **MM5: Doubling** Double 17 = 34 20 + 14 = 34			
	 **MM1a: Jump!** x1000 63400 x100 6340 x10 634 63.4 ÷10 6.34 ÷100 0.634 ÷1000 0.0634	 **MM2a: Re-ordering** (7 x 4) x 5 28 x 5 = 140 (7 x 5) x 4 35 x 4 = 140 (4 x 5) x 7 20 x 7 = 140 *	 **MM3a: Partitioning** 37 x 4 = 148 120 + 28 = 148 (30 x 4) (7 x 4)	 **MM4a: Round & Adjust** 198 x 4 = 792 (200 x 4) - (2 x 4) 800 - 8 = 792	 **MM5a: Doubling** Double 37 = 74 60 + 14 = 74			
		 **MM2b: Re-ordering** (9 x 8) x 6 72 x 6 = 432 (9 x 6) x 8 54 x 8 = 432 * (8 x 6) x 9 48 x 9 = 432		 **MM4b: Round & Adjust** 3.9 x 5 = 19.5 (4 x 5) - (0.1 x 5) 20 - 0.5 = 19.5	 **MM5b: Doubling** Double 78 = 156 140 + 16 = 156			
				 **MM4c: Round & Adjust** £5.99 x 6 = £35.94 (£6 x 6) - (1p x 6) £36 - 6p = £35.94	 **MM5c: Doubling** Double 340 = 680 600 + 80 = 680			
					 **MM5d: Doubling** Double 480 = 960 800 + 160 = 960			
					 **MM5e: Doubling** Double 278 = 556 400 + 140 + 16 = 556			
					 **MM5f: Doubling** Double 768 = 1536 1400 + 120 + 16 = 1536			
					 **MM5g: Doubling** Double 3.7 = 7.4 6 + 1.4 = 7.4			

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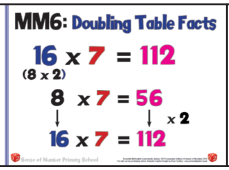
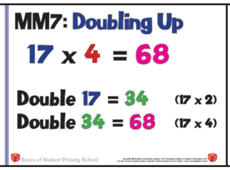
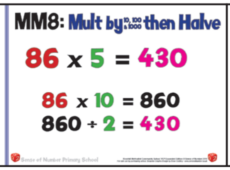
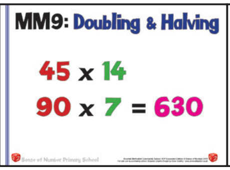
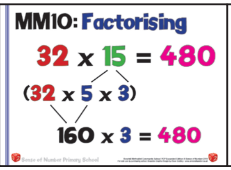
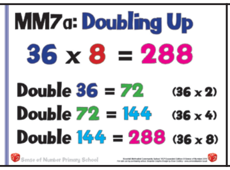
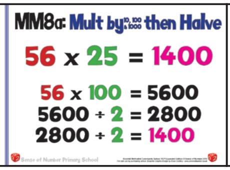
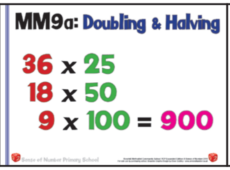
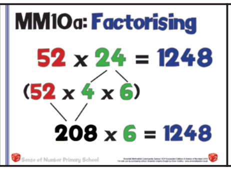
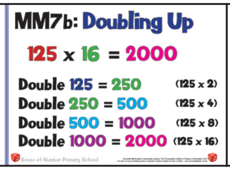
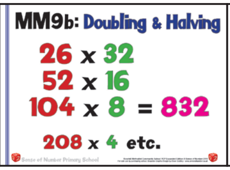
	**MM6: Doubling Table Facts** 16 x 7 = 112 (8 x 2) 8 x 7 = 56 ↓ ↓ x 2 16 x 7 = 112	**MM7: Doubling Up** 17 x 4 = 68 Double 17 = 34 (17 x 2) Double 34 = 68 (17 x 4)	**MM8: Mult by 10, 100 & 1000 then Halve** 86 x 5 = 430 86 x 10 = 860 860 ÷ 2 = 430	**MM9: Doubling & Halving** 45 x 14 90 x 7 = 630	**MM10: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

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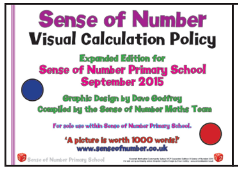

Sense of Number
Visual Calculation Policy

Expanded Edition for
Sense of Number Primary School
September 2015

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

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'A picture is worth 1000 words!'
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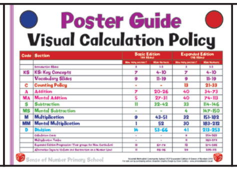
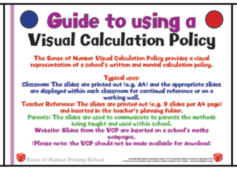
Sense of Number Primary School



Poster Guide
Visual Calculation Policy

Code	Section	Basic Edition		Expanded Edition	
		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 Addtion	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	-	-	[illegible]	[illegible]
	Expanded Edition Progression (Year groups for New Curriculum)	[illegible]	[illegible]	[illegible]	[illegible]
	Alternative layouts (Addition and Subtraction on a Number Line)	[illegible]	[illegible]	[illegible]	[illegible]

Sense of Number Primary School

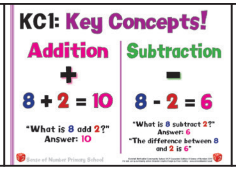


Guide to using a
Visual Calculation Policy

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

Typical uses:
Classoom: The slides are printed out (e.g. A4) and the appropriate slides are displayed within each classroom for continual reference or on a working wall.
Teacher Reference: The slides are printed out (e.g. 9 slides per A4 page) and inserted in the teacher's planning folder.
Parents: The slides are used to communicate to parents the methods being taught and used within school.
Website: Slides from the VCP are inserted on a school's maths webpages.
(Please note: the VCP should not be made available for download)

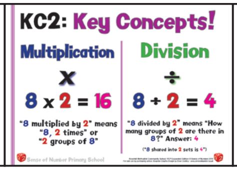
Sense of Number Primary School



KC1: Key Concepts!

Addition	Subtraction
+	-
8 + 2 = 10	8 - 2 = 6
"What is 8 add 2?" Answer: 10	"What is 8 subtract 2?" Answer: 6 "The difference between 8 and 2 is 6"

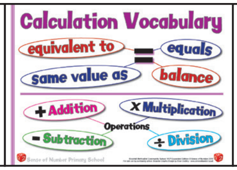
Sense of Number Primary School



KC2: Key Concepts!

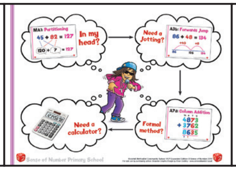
Multiplication	Division
x	÷
8 x 2 = 16	8 ÷ 2 = 4
"8 multiplied by 2" means "8, 2 times" or "2 groups of 8"	"8 divided by 2" means "How many groups of 2 are there in 8?" Answer: 4 ("8 shared into 2 sets is 4")

Sense of Number Primary School

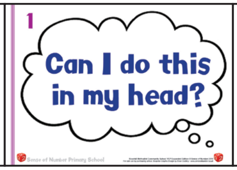


Calculation Vocabulary

Sense of Number Primary School

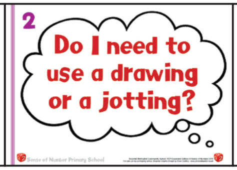


Sense of Number Primary School



1

Can I do this in my head?

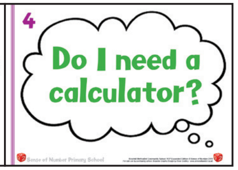


2

Do I need to use a drawing or a jotting?

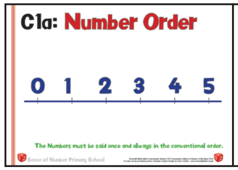
3

Do I need an expanded or a standard method?



4

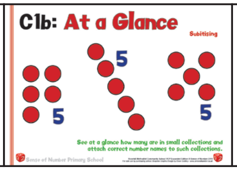
Do I need a calculator?



C1a: Number Order

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

Sense of Number Primary School

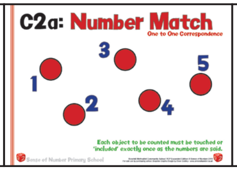


C1b: At a Glance

Subitising

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

Sense of Number Primary School

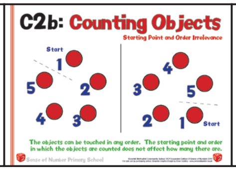


C2a: Number Match

One to One Correspondence

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

Sense of Number Primary School

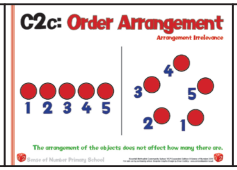


C2b: Counting Objects

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.

Sense of Number Primary School

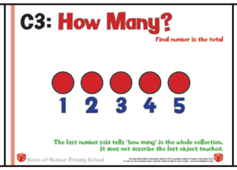


C2c: Order Arrangement

Arrangement Irrelevance

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

Sense of Number Primary School

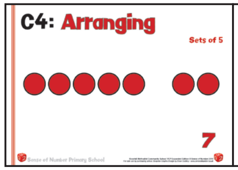


C3: How Many?

Final number is the total

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

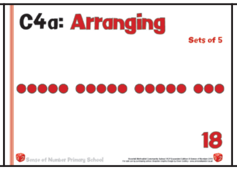
Sense of Number Primary School



C4: Arranging

Sets of 5

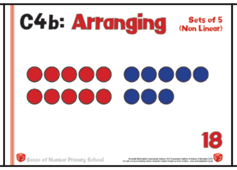
Sense of Number Primary School



C4a: Arranging

Sets of 5

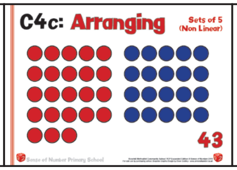
Sense of Number Primary School



C4b: Arranging

Sets of 5
(Non Linear)

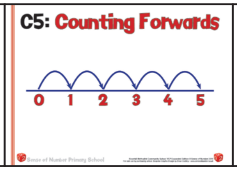
Sense of Number Primary School



C4c: Arranging

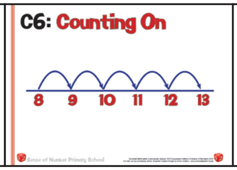
Sets of 5
(Non Linear)

Sense of Number Primary School



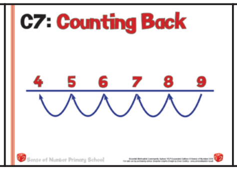
C5: Counting Forwards

Sense of Number Primary School



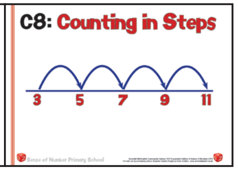
C6: Counting On

Sense of Number Primary School



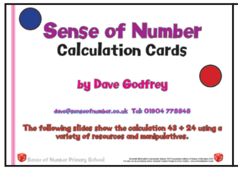
C7: Counting Back

Sense of Number Primary School



C8: Counting in Steps

Sense of Number Primary School



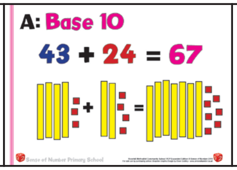
Sense of Number
Calculation Cards

by Dave Godfrey

dave@senseofnumber.co.uk Tel: 01904 778848

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

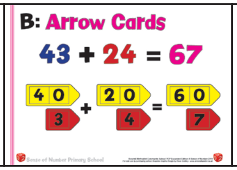
Sense of Number Primary School



A: Base 10

43 + 24 = 67

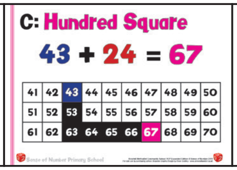
Sense of Number Primary School



B: Arrow Cards

43 + 24 = 67

Sense of Number Primary School

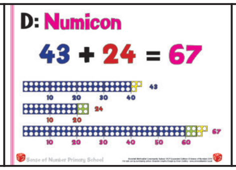


C: Hundred Square

43 + 24 = 67

41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70

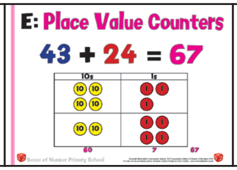
Sense of Number Primary School



D: Numicon

43 + 24 = 67

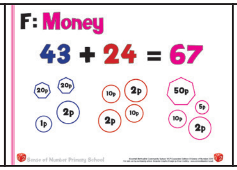
Sense of Number Primary School



E: Place Value Counters

43 + 24 = 67

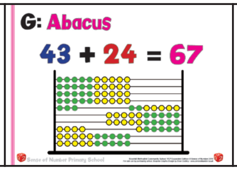
Sense of Number Primary School



F: Money

43 + 24 = 67

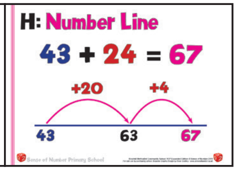
Sense of Number Primary School



G: Abacus

43 + 24 = 67

Sense of Number Primary School



H: Number Line

43 + 24 = 67

Sense of Number Primary School

Sense of Number

Standard Alternative Slides

Alternative Layout Slides

by Dave Godfrey

dave@senseofnumber.co.uk Tel: 01904 778848

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

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(A7: Column Addition)

2 Additional:a

Alternative Layout Slides

	10	1
	5	7
+	2	5
	1	
	8	2

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(A7: Column Addition)

2/3 Additional:b

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

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A7: Column Addition

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

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A7d: Column Addition

4

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

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A7e: Column Addition

5

$$\begin{array}{ccccccc}
 & 7 & 8 & 7 & 5 & 6 & 7 \\
+ & 4 & 4 & 6 & 2 & 7 & 8 \\
1 & 1 & 1 & & 1 & 1 & \\
\hline
1 & 2 & 3 & 3 & 8 & 4 & 5 \\
\hline
\end{array}$$

Alternative Layouts

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A7f: Column Addition

$$\begin{array}{rcl} 1 & . & \frac{1}{10} \\ 4 & . & 8 \\ +3 & . & 8 \\ {}_{1} & & \\ \hline 8 & . & 6 \\ \hline \end{array}$$

Alternative Layout Slides

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A7g: Column Addition

5

$$\begin{array}{cccc} 1 & . & \frac{1}{10} & \frac{1}{100} \\ 5 & . & 6 & 5 \\ +\,3 & . & 2 & 9 \\ & & 1 & \\ \hline 8 & . & 9 & 4 \\ \hline \end{array}$$

Alternative Layout Slides

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A7h: Column Addition

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

$$\begin{array}{r} 76.7 \\ +\,58.5 \\ {}^{1}\,{}^{1}\,{}^{1} \\ \hline 135.2 \\ \hline \end{array}$$

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A7i: Column Addition

5

With Money

Alternative Layout Slides

£38.25

+ £27.46

1 1

£65.71

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A7 j: Column Addition

With Decimals

$$73.4 + 5.67 = 79.07$$

$$\begin{array}{cccccc}
 & 10 & 1 & . & \frac{1}{10} & \frac{1}{100} \\
 & 7 & 3 & . & 4 & \\
+ & & 5 & . & 6 & 7 \\
 & & 1 & & & \\
\hline
 & 7 & 9 & . & 0 & 7 \\
\hline
\end{array}$$

Alternative Layout Slides

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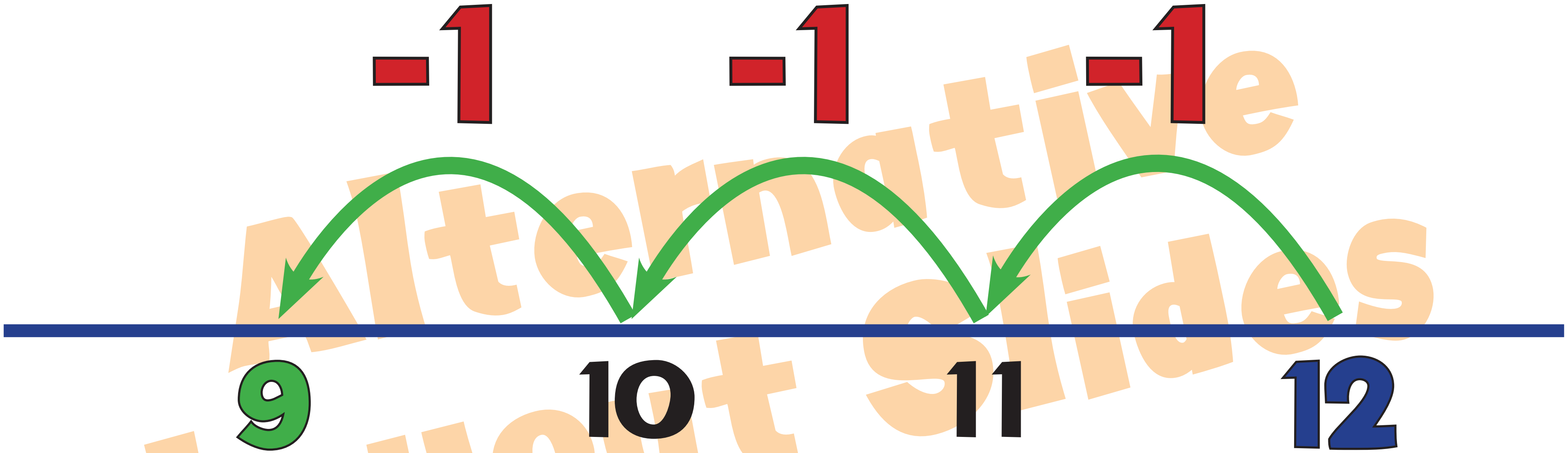
S3a: Counting Back



Alternative Layout Slides

$$12 - 3 = 9$$

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

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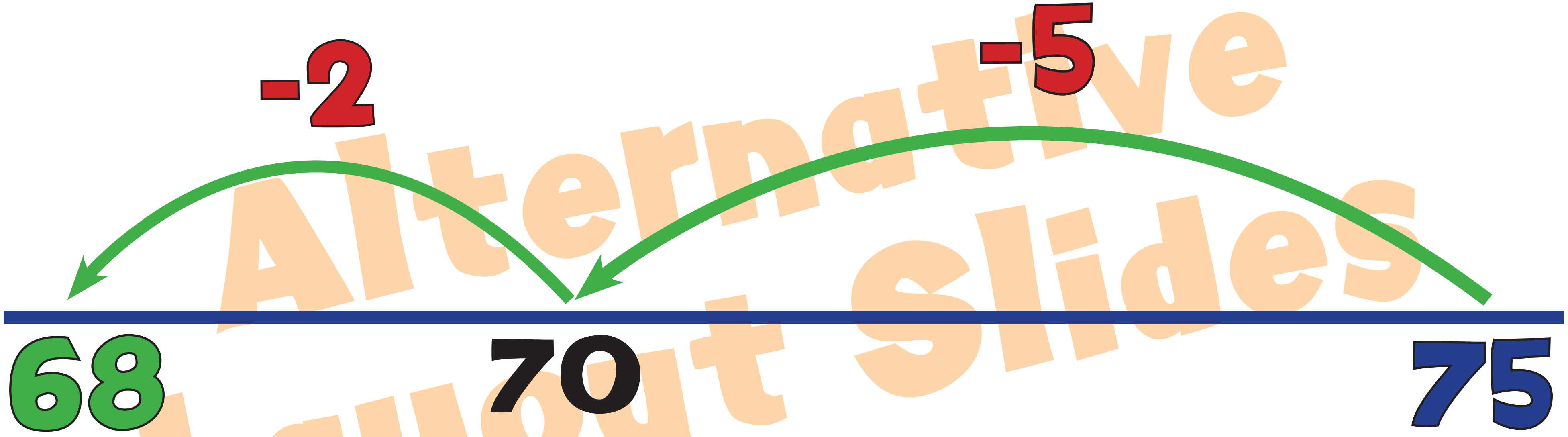
S5a: Backwards Boing

2

Alternative Layout Slides



75 - 7 = 68

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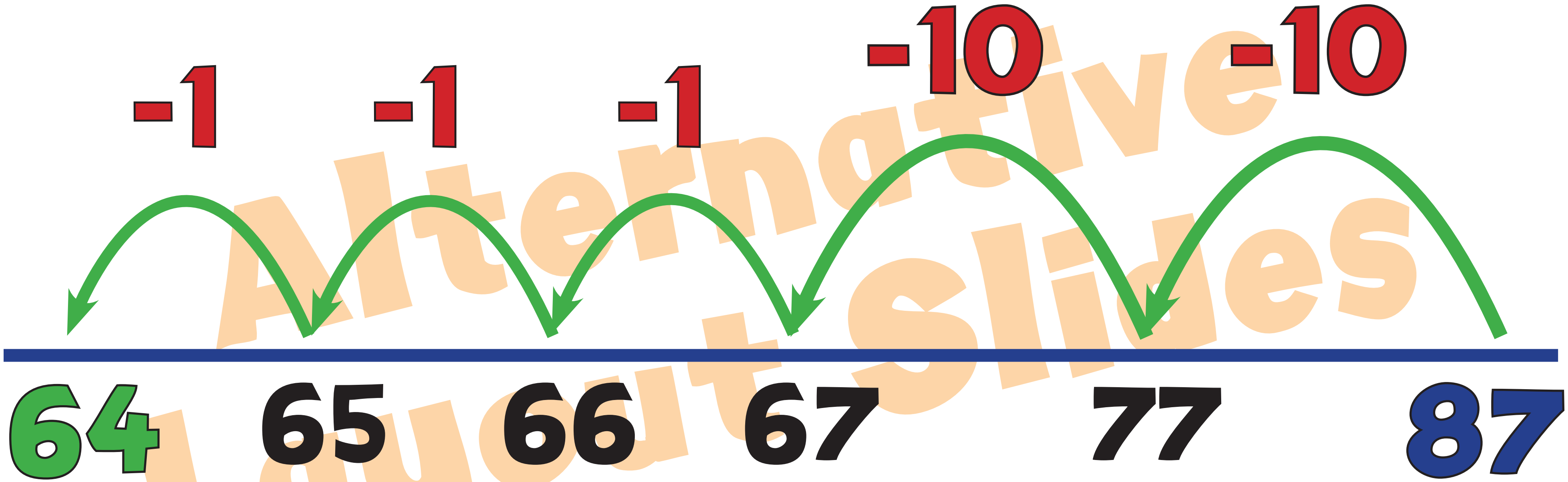
S6a: Backwards Bounce



Alternative Layout Slides

87 - 23 = 64

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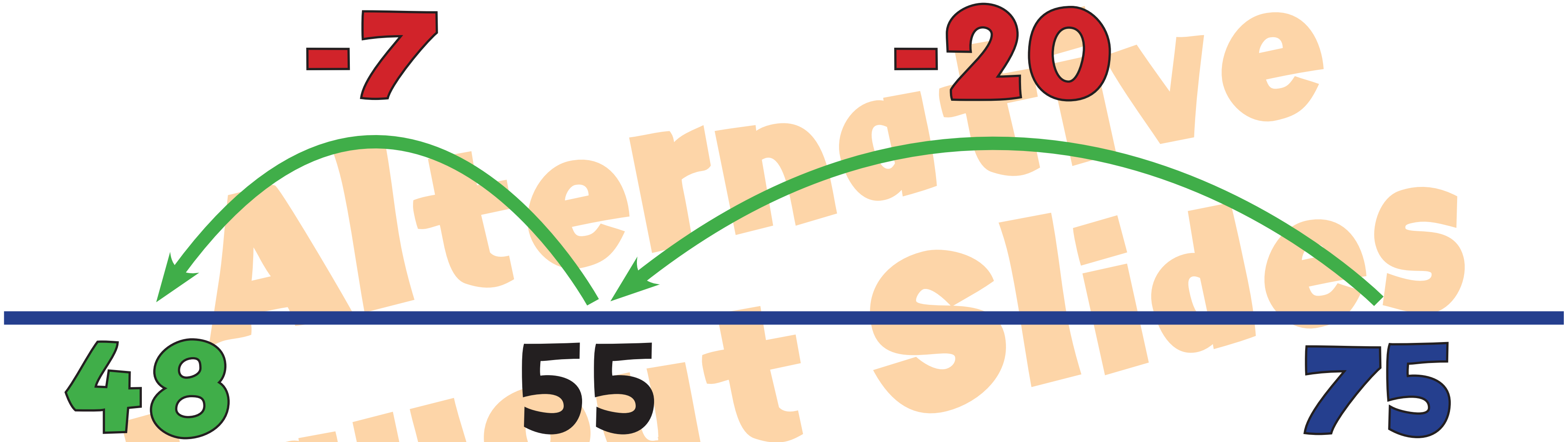
S7a: Backwards Jump

2



Alternative Layout Slides

$$75 - 27 = 48$$

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(M7: Column Multiplication)

3 Additional

	10	1
	1	5
x		5
	2	
	7	5

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(M7: Column Multiplication)

4 Additional:a

100 10 1

43

x 24 6

1

258

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M7: Column Multiplication

Alternative Layout Slides

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

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M7a: Column Multiplication

4

Alternative Layout Slides

3647

x 4

2 1 2

14588

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M9: Long Multiplication

Column

$$\begin{array}{rrrrrl} & & & 4 & 3 & \\ \times & & & 6 & 5 & \\ \hline & & \overset{2}{2} & \overset{1}{1} & 5 & (5 \times 43) \\ + & \overset{2}{2} & \overset{1}{5} & 8 & 0 & (60 \times 43) \\ \hline & 2 & 7 & 9 & 5 & \\ \hline \end{array}$$

Alternative Layout Slides

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M9a: Long Multiplication

5

Column

$$\begin{array}{cccccc}
 & & & 2 & 4 & 3 \\
\times & & & & 6 & 8 \\
\hline
 & & {}^{1} & {}^{3} & {}^{2} & \\
 & & 1 & 9 & 4 & 4 \\
 & {}^{1} & {}^{2} & {}^{1} & & \\
+ & 1 & 4 & 5 & 8 & 0 \\
\hline
 & & & {}^{1} & & \\
 & 1 & 6 & 5 & 2 & 4 \\
\hline
\end{array}$$

(8 x 243)

(60 x 243)

Alternative Layout Slides

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M9b: Long Multiplication

Column

$$\begin{array}{rl} 203 & \\ \times\ 68 & \\ \hline \overset{1}{1}6\overset{2}{2}4 & (8 \times 203) \\ +\ \overset{1}{1}2\overset{1}{1}80 & (60 \times 203) \\ \hline 13\overset{1}{8}04 & \\ \hline \end{array}$$

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M9c: Column Multiplication

$$\begin{array}{cccc} 10 & 1 & . & \frac{1}{10} \\ & 3 & . & 6 \\ \times & 4 & & \\ & {\scriptstyle 2} & & \\ \hline 1 & 4 & . & 4 \\ \hline \end{array}$$

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M9d: Column Multiplication

6

$$
\begin{array}{ccccc}
100 & 10 & 1 & . & \frac{1}{10} \\
 & 4 & 7 & . & 2 \\
 & \times & 3 & & \\
 & {}_{2} & & & \\
\hline
1 & 4 & 1 & . & 6 \\
\hline
\end{array}
$$

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M9e: Column Multiplication

$$\begin{array}{ccccc}
10 & 1 & . & \frac{1}{10} & \frac{1}{100} \\
 & 7 & . & 3 & 8 \\
\times & 6 & & & \\
4 & 2 & & 4 & \\
\hline
4 & 4 & . & 2 & 8 \\
\hline
\end{array}$$

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M9f: Long Multiplication

Column Decimals

$$\begin{array}{rrrcrrl}
 & 10 & 1 & . & \frac{1}{10} & \frac{1}{100} & \\
 & 2 & 4 & . & 3 & & \\
\times & & 2 & . & 5 & & \\
\hline
 & 1 & 2 & . & 1 & 5 & (0.5 \times 24.3) \\
 & {\scriptstyle 1} & {\scriptstyle 2} & & {\scriptstyle 1} & & \\
+ & 4 & 8 & . & 6 & 0 & (2 \times 24.3) \\
 & {\scriptstyle 1} & & & & & \\
\hline
 & 6 & 0 & . & 7 & 5 & \\
\hline
\end{array}$$

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M9g Long Multiplication

6

Column

$$\begin{array}{cccccccc}
 & & & 3 & 7 & 8 & 6 & \\
\times & & & & & 4 & 8 & \\
\hline
 & & & {}^{6} & {}^{6} & {}^{4} & & \\
 & & 3 & 0 & 2 & 8 & 8 & (8 \times 3786) \\
 & {}^{1} & {}^{3} & {}^{3} & {}^{2} & & & \\
+ & 1 & 5 & 1 & 4 & 4 & 0 & (40 \times 3786) \\
\hline
 & & & & {}^{1} & & & \\
 & 1 & 8 & 1 & 7 & 2 & 8 & \\
\hline
\end{array}$$

Alternative Logged Slides

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