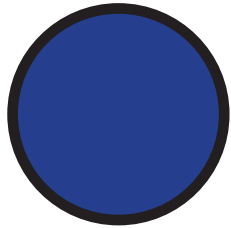# Sense of Number
Visual Calculations Policy

Basic Bespoke Edition for
Fishergate Primary School
April 2014

by Dave Godfrey & Anthony Reddy

For sole use within Fishergate Primary School.

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

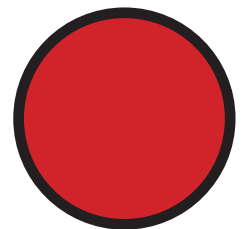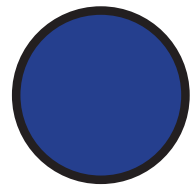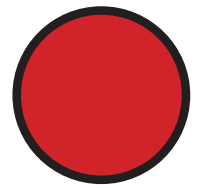# Guide to using a Visual Calculations Policy

The Sense of Number Visual Calculations Policy provides an visual representation of it's written and mental calculation policy.

Typical uses:

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

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

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

Website: Slides from the VCP are inserted on a schools' maths webpages. (Please note: the VCP should not be made available for download)

02

KC1: Key Concepts!

Addition

+

8 + 2 = 10

"What is 8 add 2?"
Answer: 10

Subtraction

–

8 - 2 = 6

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

KC2: Key Concepts!

Multiplication

X

8 x 2 = 16

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

Division

÷

8 ÷ 2 = 4

"8 divided by 2" means "How many 2s are there in 8?"
Answer: 4

("8 shared into 2 sets is 4")

Calculation Vocabulary

equivalent to

=

equals

is the same as

balance

+ Addition

X Multiplication

Operations

− Subtraction

÷ Division

1

Can I do this in my head?

2

Do I need to use a drawing or a jotting?

3

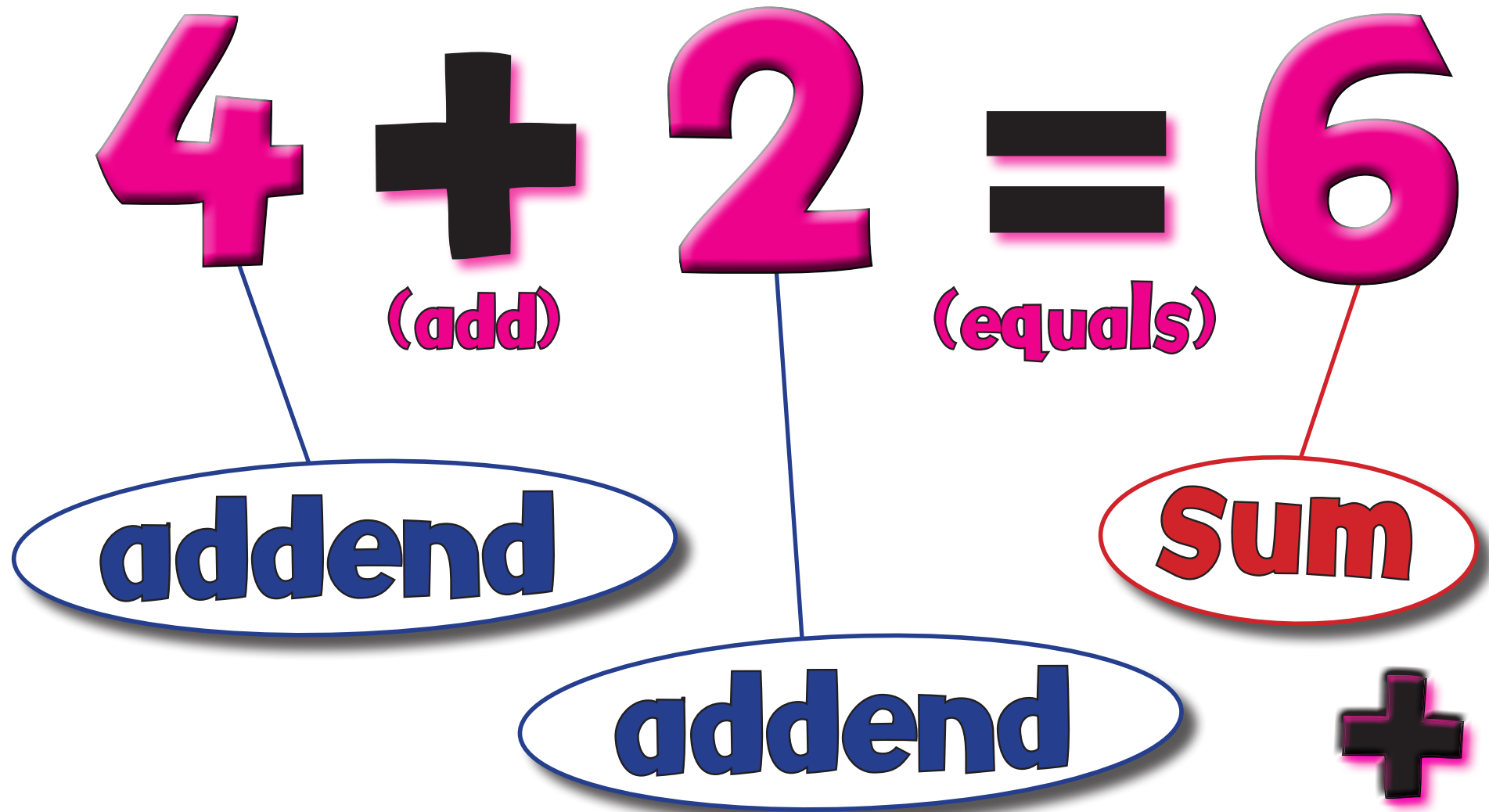Do I need an expanded or a standard method?

4

Do I need a calculator?

Addition Vocabulary

increase

add

total

+

plus

addition

more

+

count on

sum

altogether

Addition Calculation

4 + 2 = 6

(add) (equals)

addend

addend

Sum

+

A1: Objects & Pictures
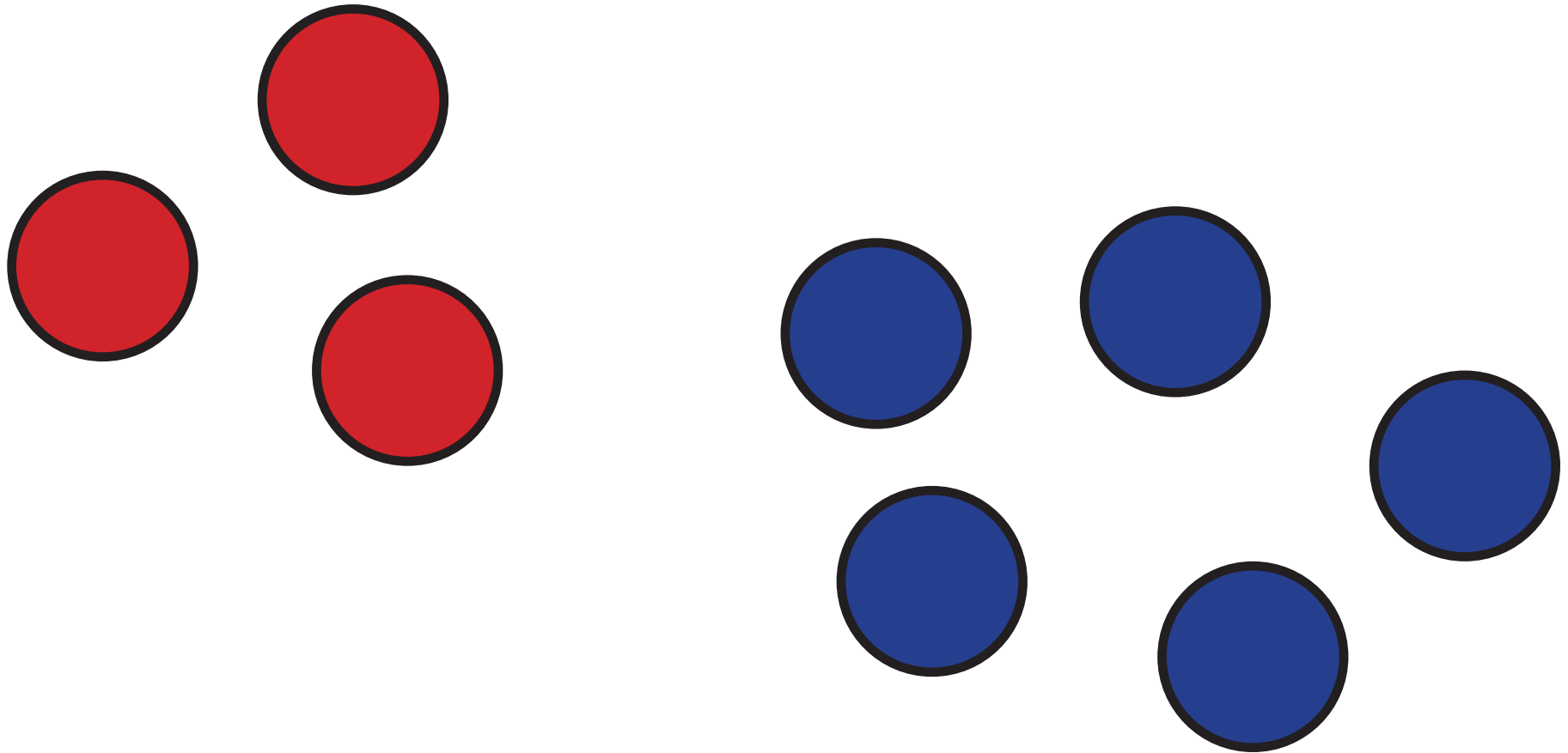
"If I have **3** and then **5** more, how many altogether? Answer: **8**"

A2: Counting On

+1   +1   +1
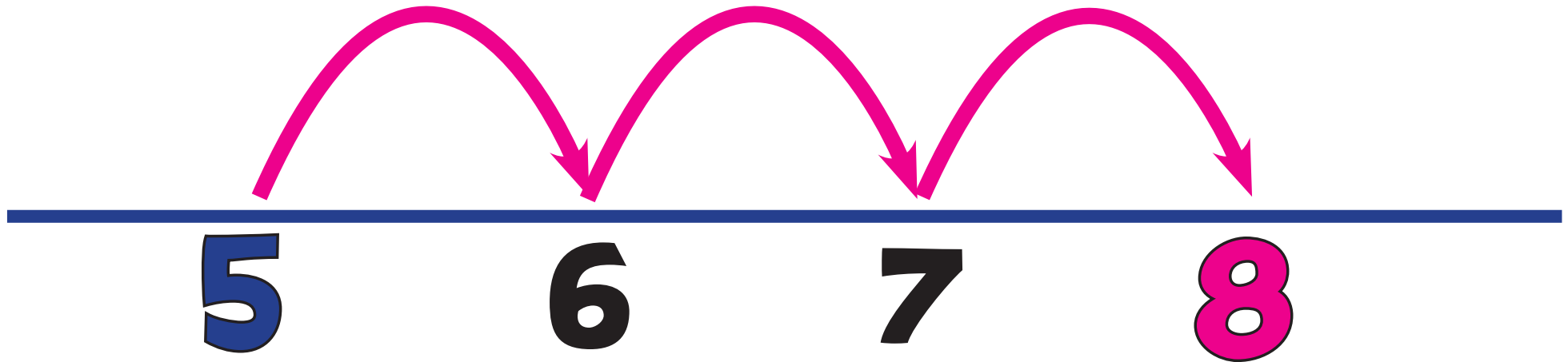
5   6   7   8

5 + 3 = 8

A3: Forwards Jump

43 + 24 = 67
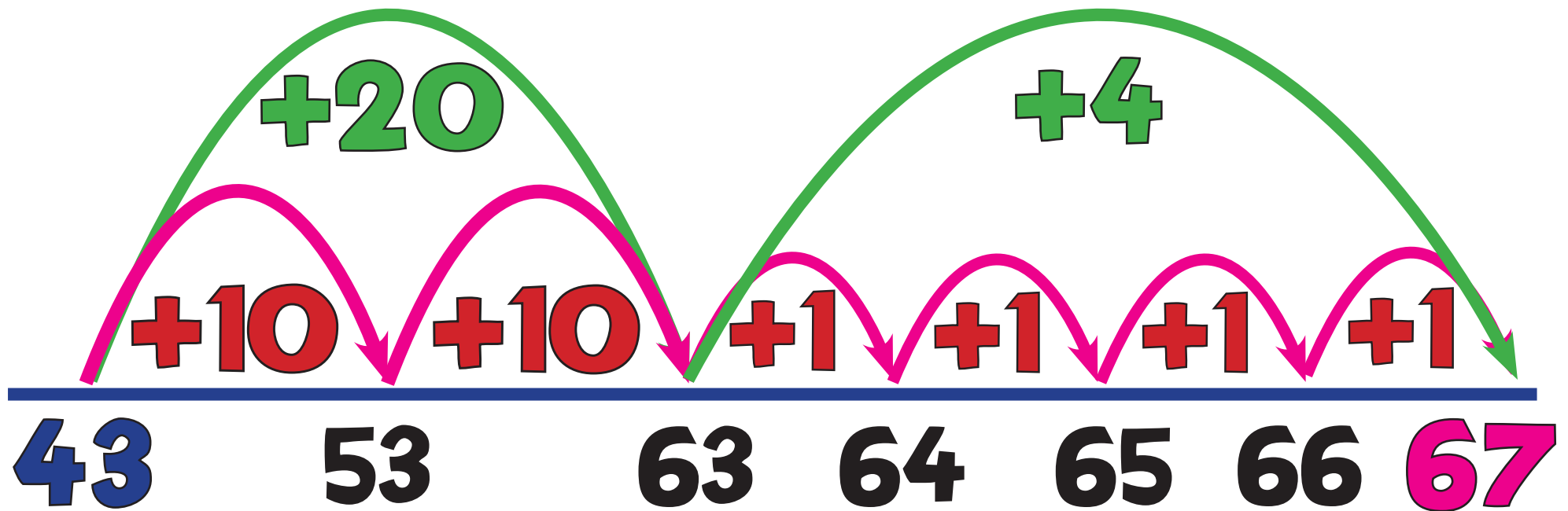
+20

+4

+10 +10 +1 +1 +1 +1

43 53 63 64 65 66 67

A4: Partitioning

$$43 + 24 = 67$$

$$40 + 20 = 60$$
$$3 + 4 = 7$$
$$\overline{67}$$

A5: Partition Jot

$$43 + 24 = 67$$

$$60 + 7$$

A6: Expanded Column Addition

```
      H T U
      6 8 7
  +   2 4 8
  ─────────
        1 5
      1 2 0
    8 0 0
  ─────────
    9 3 5
```

A7: Column Addition

H T U

687
+ 248
935
1 1

MA1: Partitioning
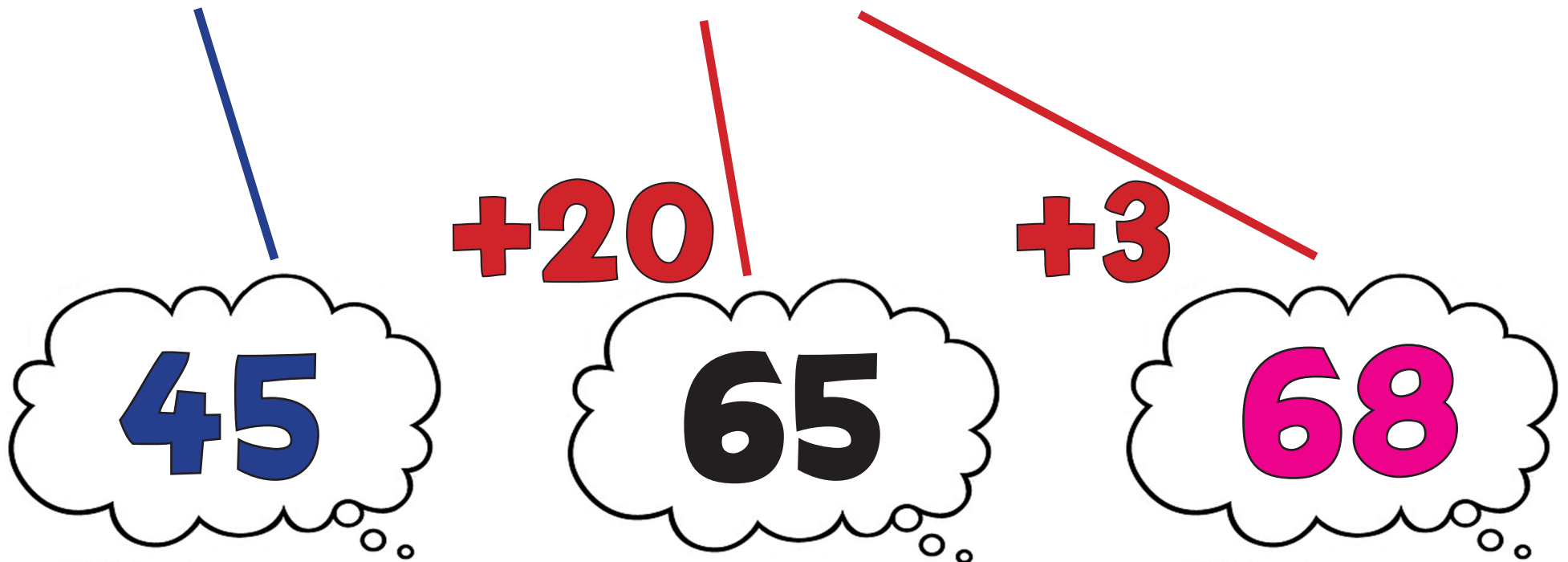
$$45 + 28 = 73$$

$$60 + 13 = 73$$

MA2: Counting On

$$45 + 23 = 68$$

+20   +3

45   65   68

MA3: Number Bonds

$$45 + 95 = 140$$

$$40 + 100 = 140$$

MA4: Double & Adjust

45 + 46 = 91

45 + 45 + 1

90 + 1 = 91

MA5: Round & Adjust

$$45 + 19 = 64$$

$$45 + 20 - 1$$

$$65 - 1 = 64$$

Subtraction Vocabulary

take away

less

minus

subtract

count back

fewer

difference between
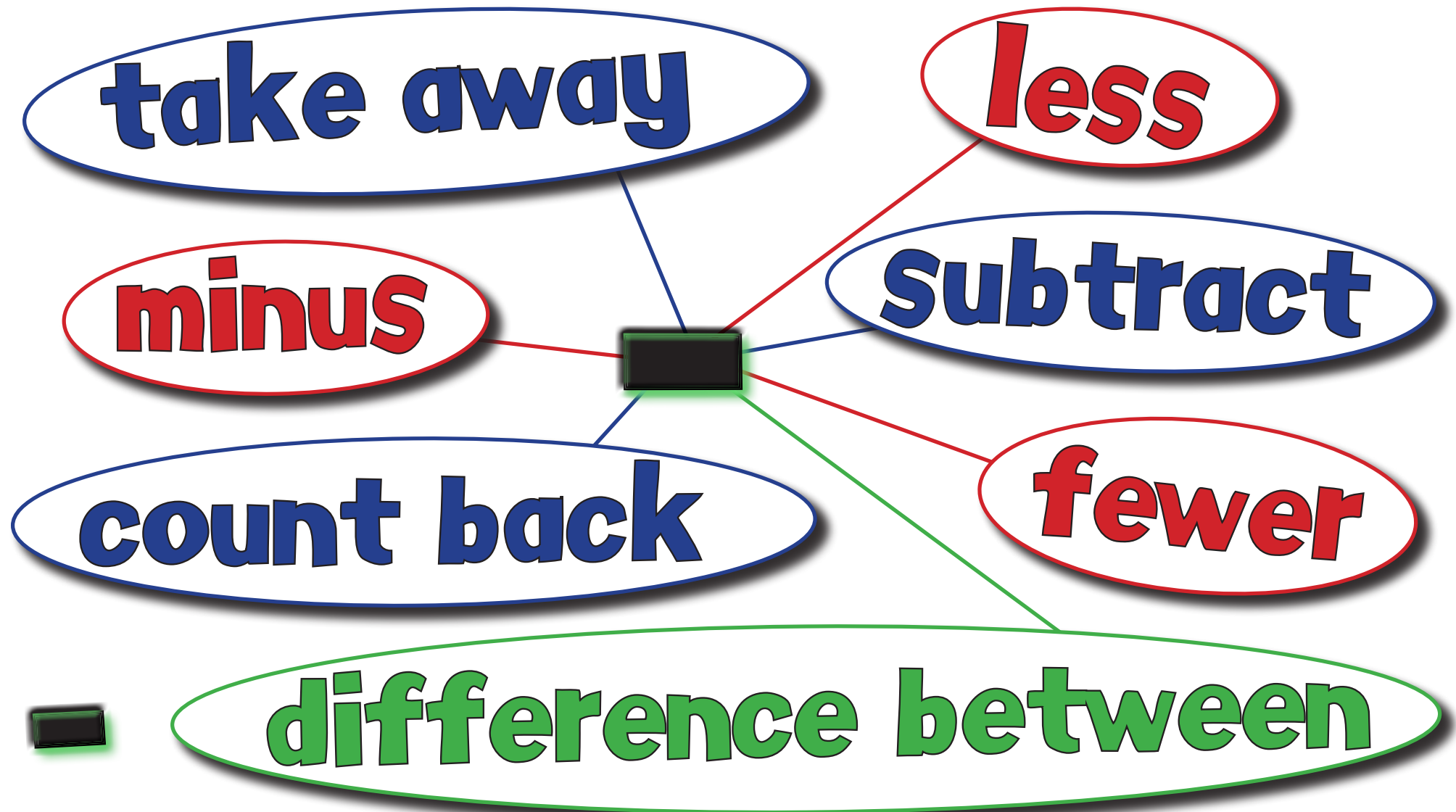
Subtraction Calculation

$$6 - 2 = 4$$

(subtract)   (equals)

minuend

subtrahend

difference

S1: Objects
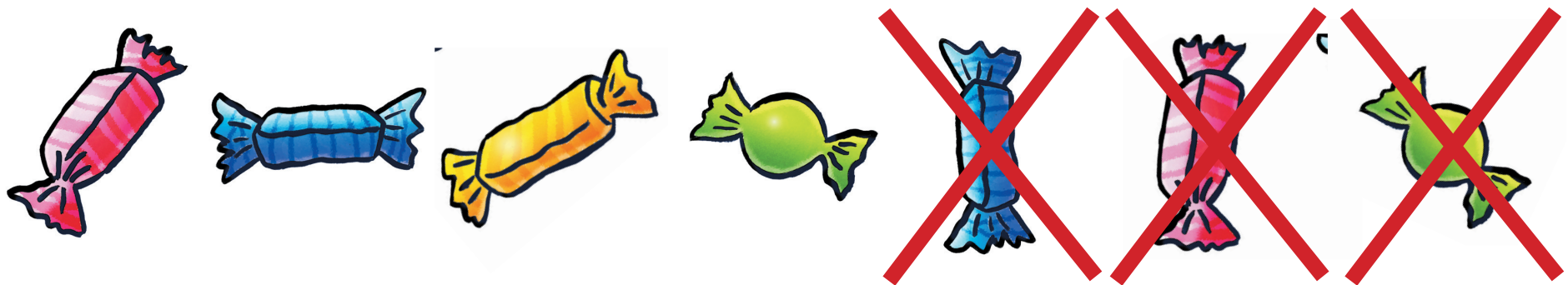
$$7 - 3 = 4$$

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

S2: What's the Difference?
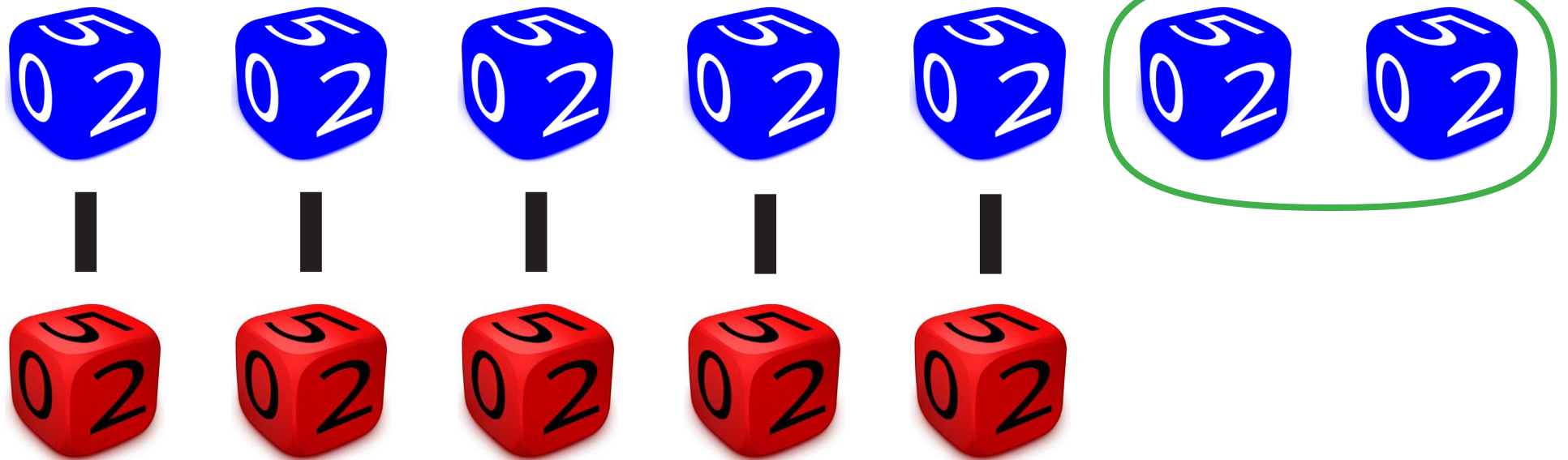
7 - 5 = 2

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

S3: Counting Back

68   70   75

-2   -5
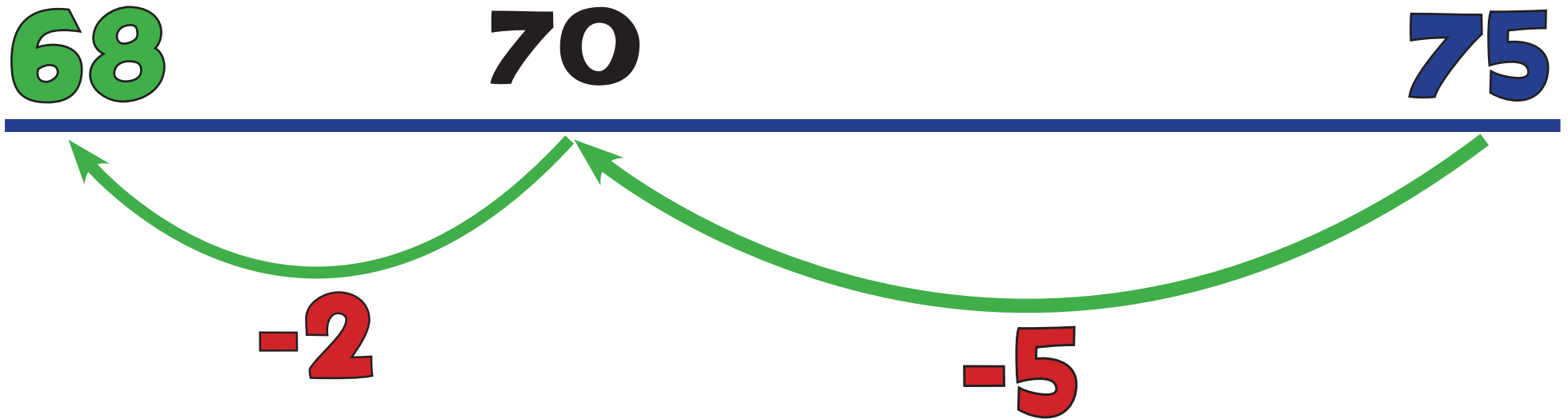
75 - 7 = 68

S4: Counting On

+4   +2

36   40   42
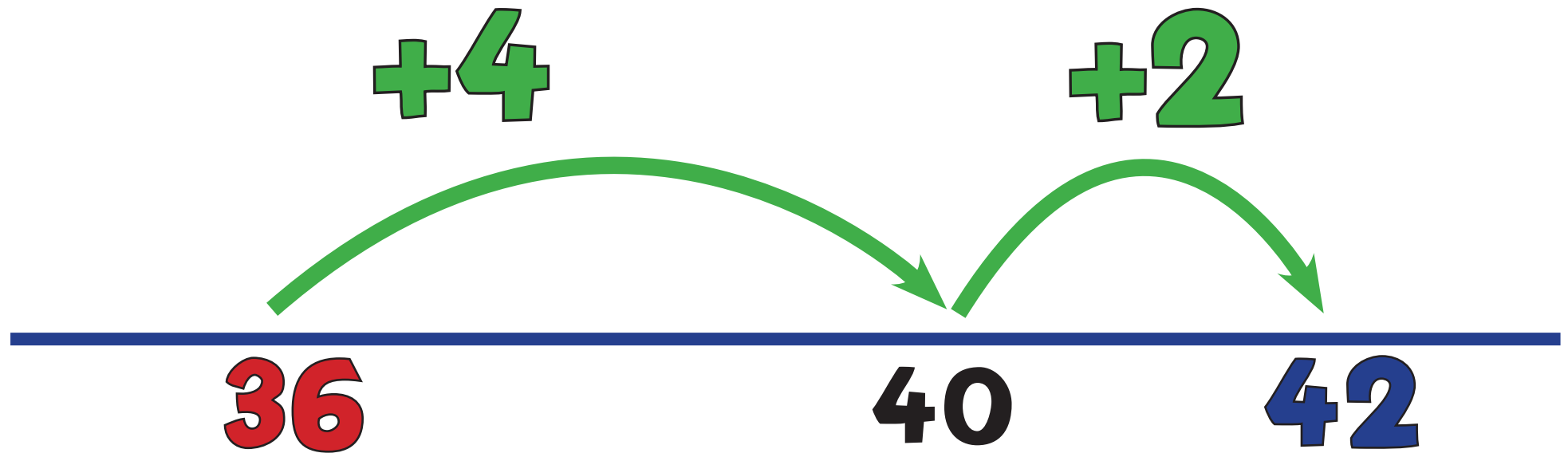
42 - 36 = 6

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

S5: Partitioning

75 - 43 = 22
(40 and 3)

75 - 40 = 35

35 - 3 = 32

S6: Expanded Subtraction

723 - 356 = 367

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

S7: Column Subtraction

H   T   U

6   11   1

7 2 3

- 3 5 6

3 6 7

Multiplication Vocabulary

groups of

product

times

multiple

double

lots of

multiply

x
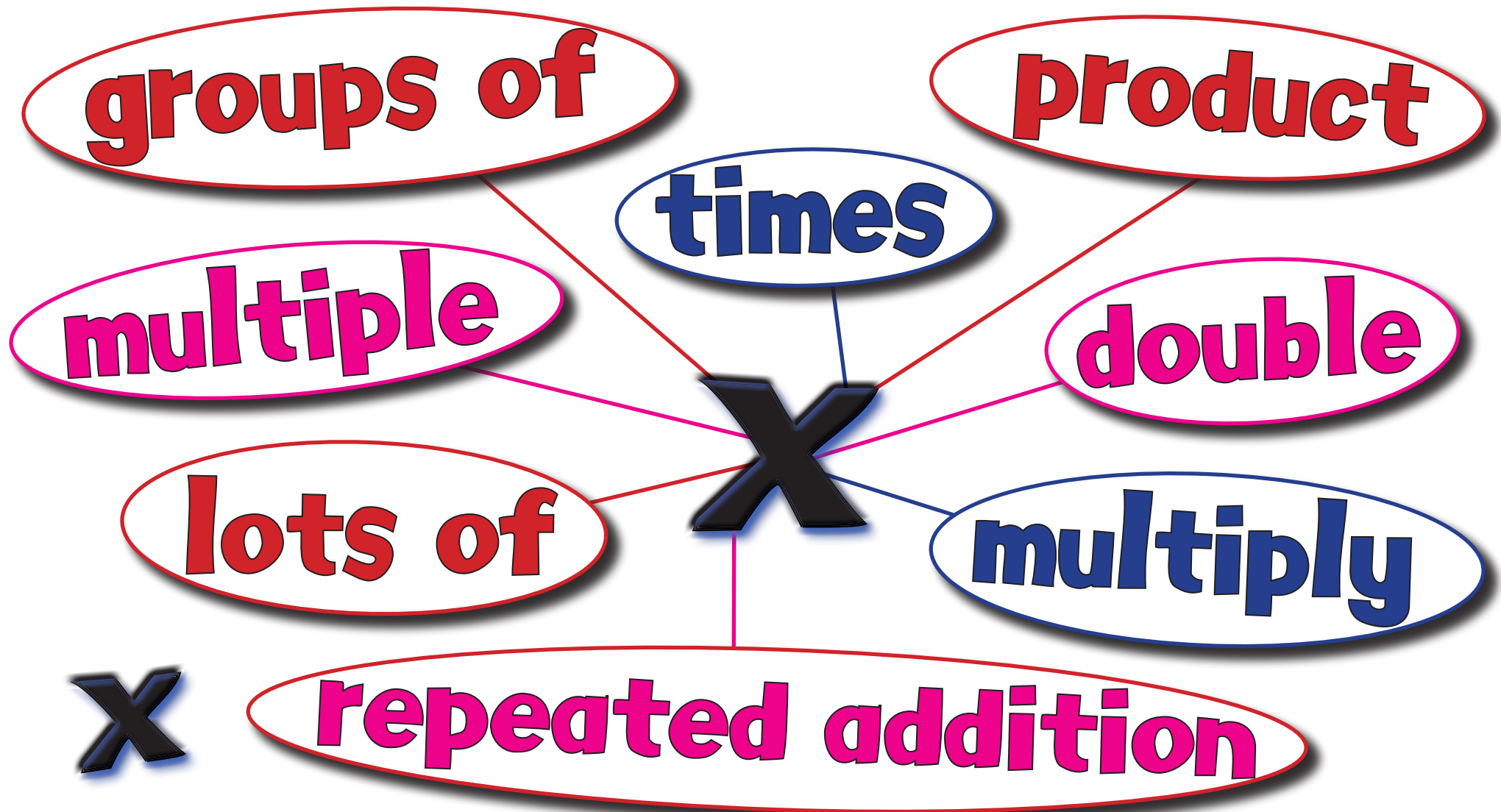
repeated addition

Multiplication Calculation

$$4 \times 2 = 8$$

(multiplied by)   (equals)

multiplicand

x

multiplier

product

M1: Repeated Addition
(Groups)
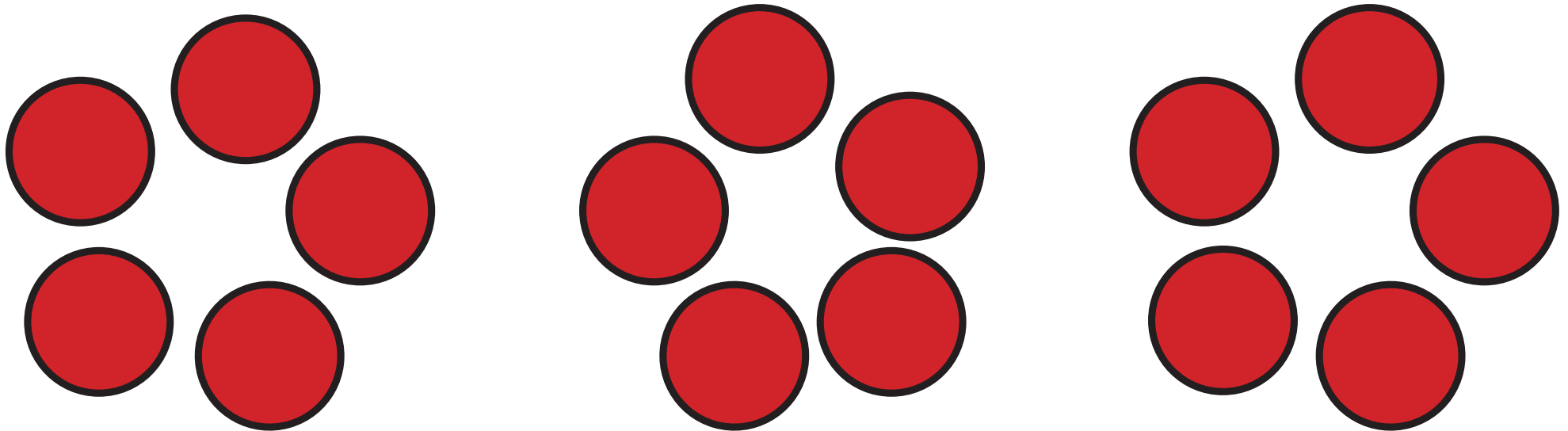
5 x 3 = 5 + 5 + 5 = 15

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

M2: Repeated Addition
(Number Line)

+7   +7   +7

0   7   14   21
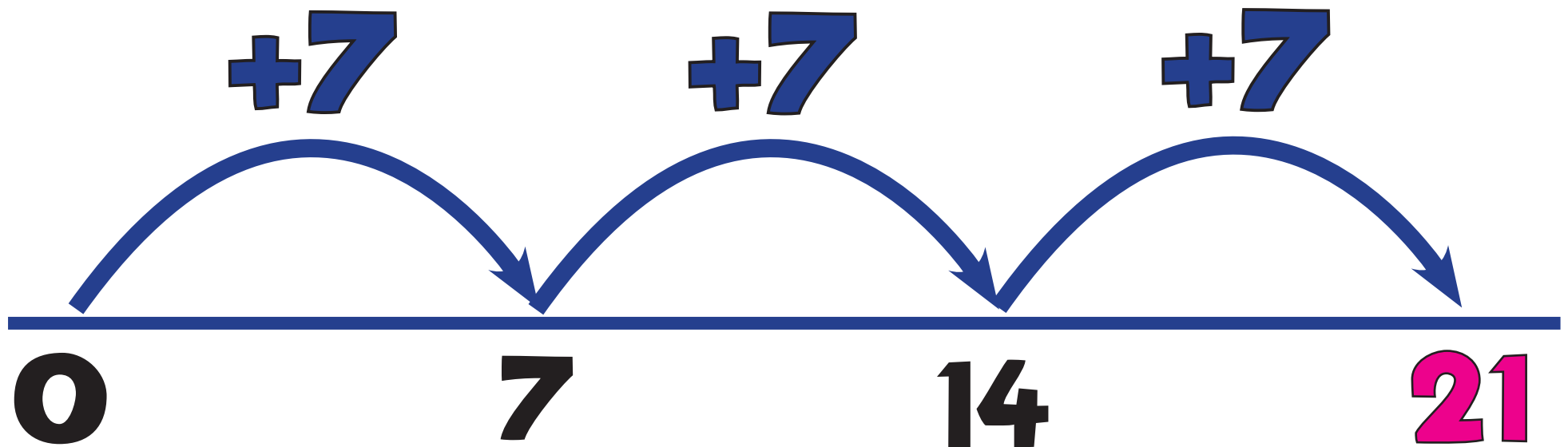
7 x 3 = 7 + 7 + 7 = 21

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

M3: Arrays
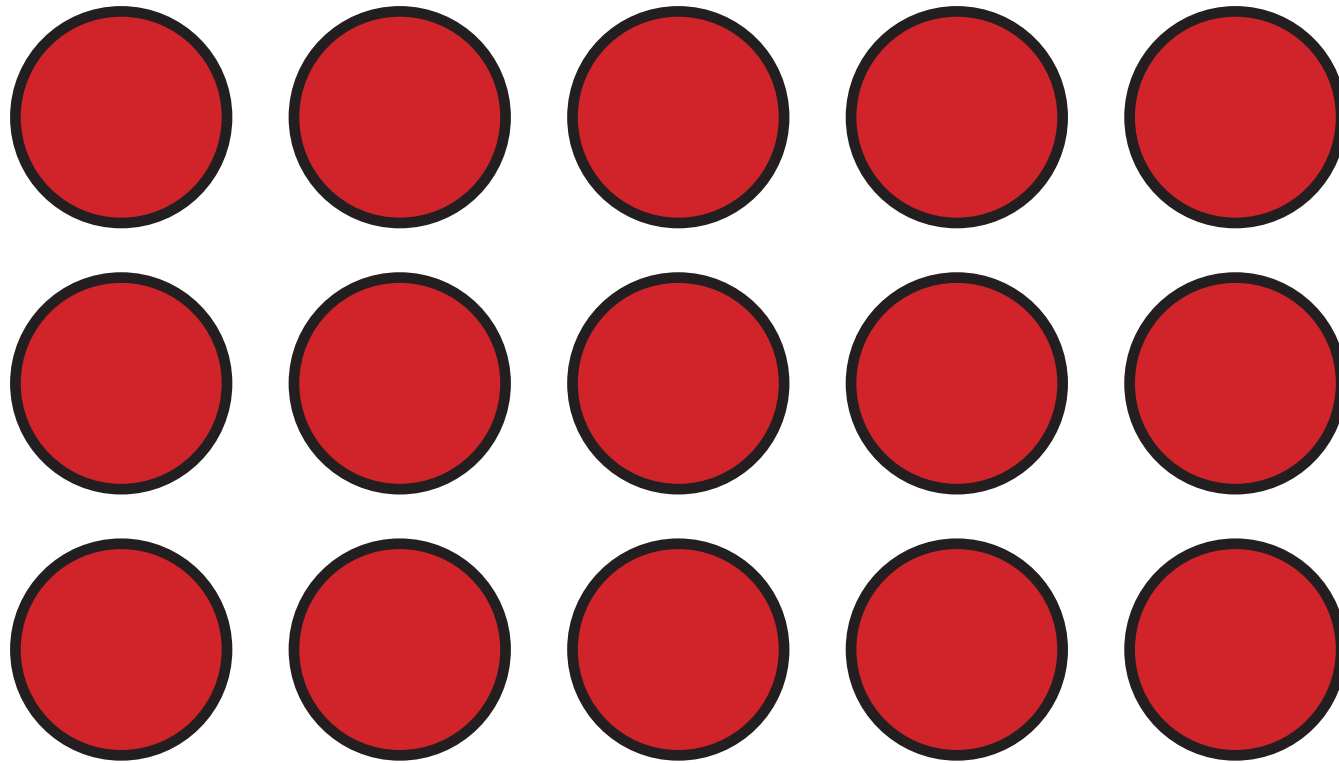
3 x 5 = 15 or 5 x 3 = 15

M4: Multiplication Jump!

10×5 5×5

0   50   75
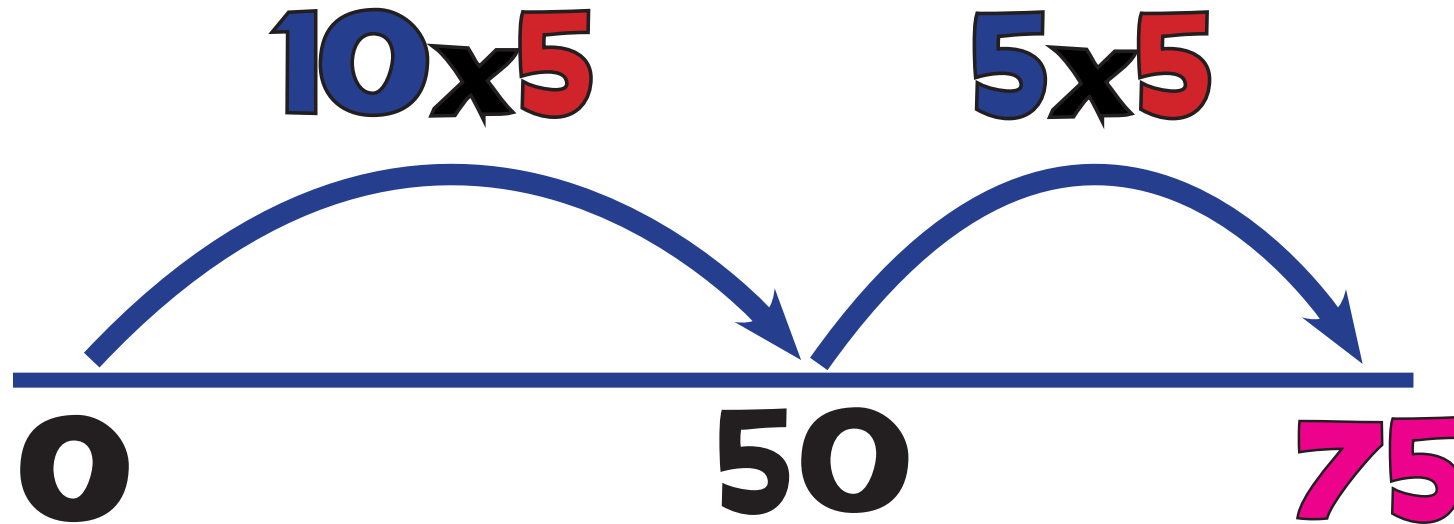
$10 \times 5 = 50$
$5 \times 5 = 25$
_____
75

$15 \times 5 = 75$

M5: Grid Method
Short Multiplication

15 x 5 = 75

x	10	5
5	50	25

50 + 25 = 75

M6: Expanded Column

```
        H   T   U
        1   4   7
    x           4
    _____
            2   8
        1   6   0
        4   0   0
    _____
        5   8   8
```

M7: Column Multiplication

H T U

1 4 7

x   4

——————————

5 8 8

1   2

M8: Long Multiplication
Column

Th   H   T   U

       4 3

x   6 5
_____

    2 1 5   (5 x 43)

  2   1
+ 2 5 8 0   (60 x 43)
  2   1
_____

  2 7 9 5

MM1: Jump!

Th	H	T	U	.	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$

x100   3 4 0 0

x10   3 4 0

3 4

÷10   3 . 4

÷100   0 . 3 4

Division Vocabulary

remainder

group

share

÷

halve

divisor

factor

quotient

equal groups of
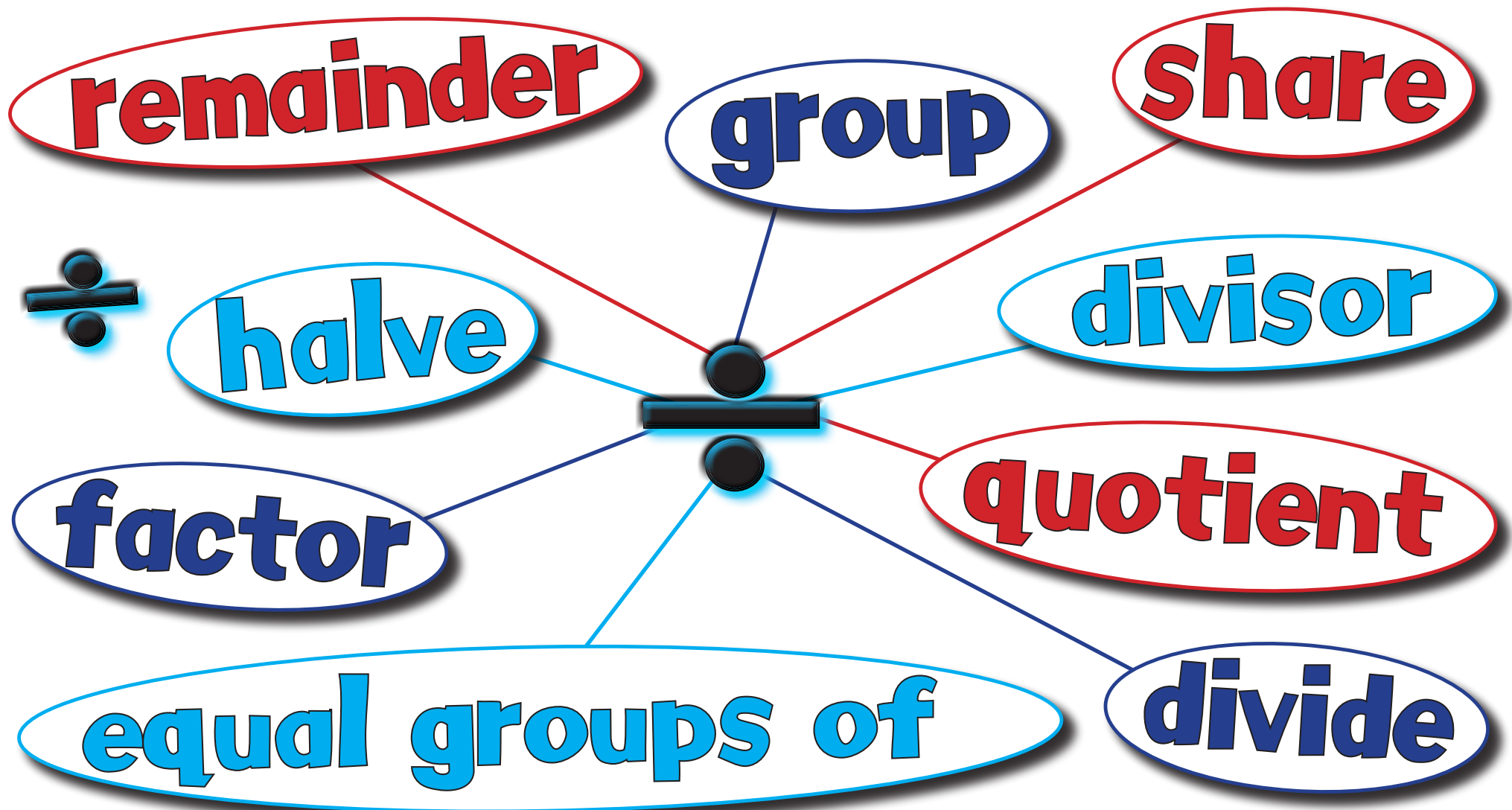
divide

Division Calculation

8 ÷ 2 = 4

(divided by)   (equals)

dividend
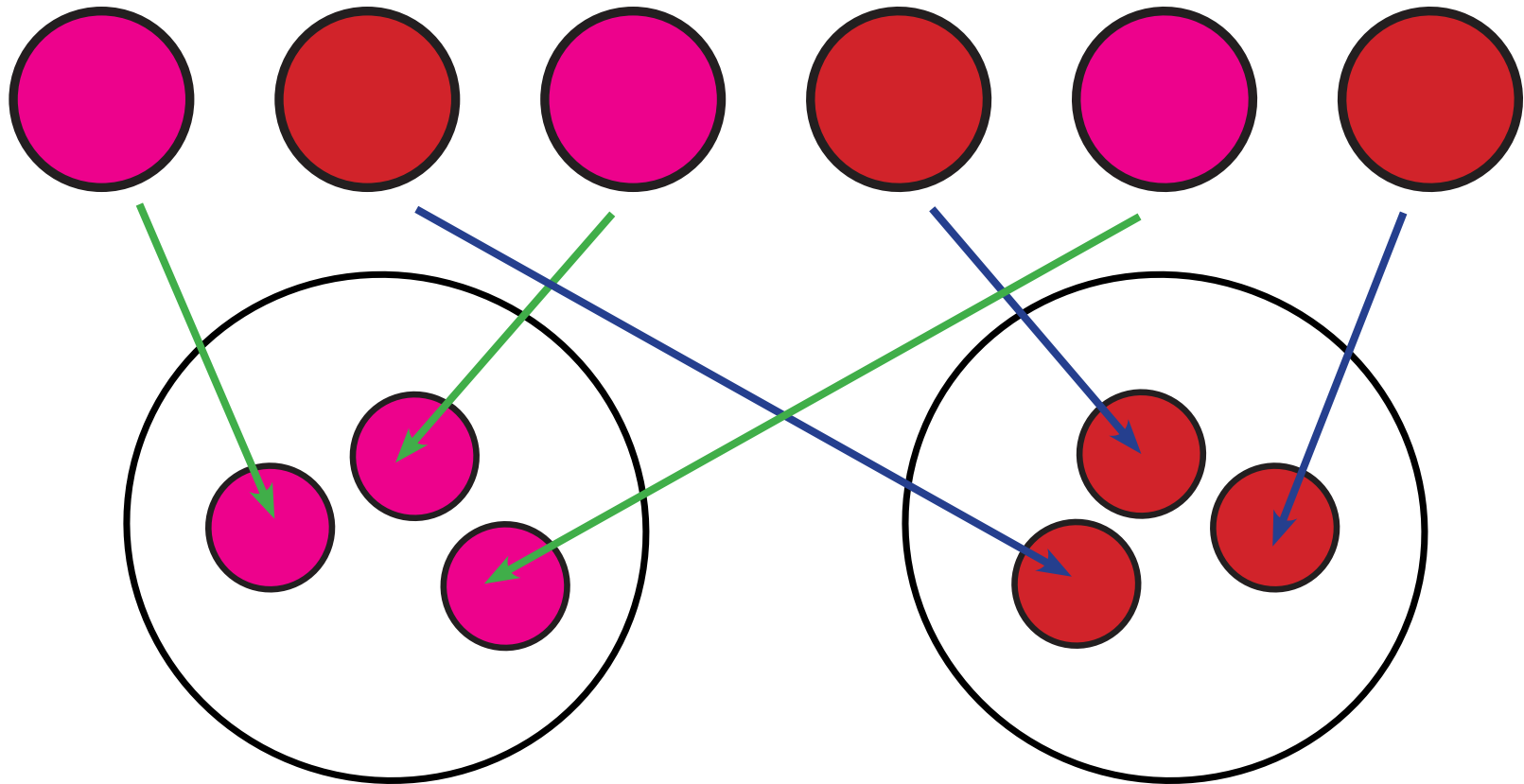
divisor

quotient

÷

D1: Sharing (Concept)

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

D2: Grouping (Concept)
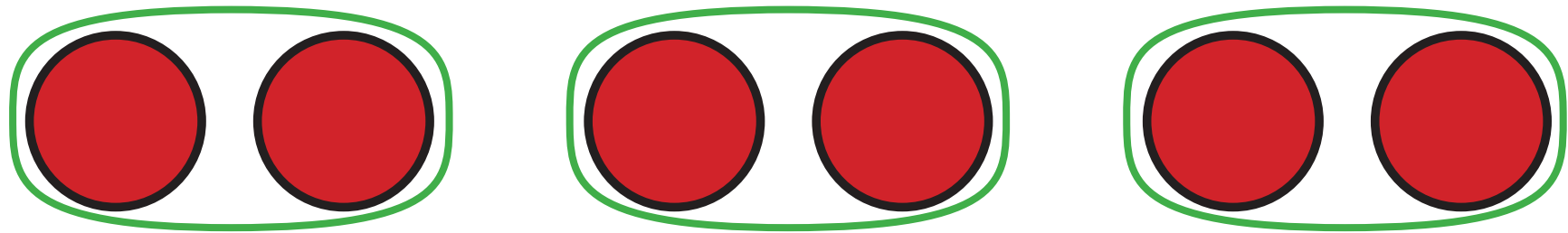
"How many groups of 2 can I make out of 6?
Answer: 3

D3: Division as Sharing

$$12 \div 2 = 6$$

"If I share 12 into 2 equal amounts, how many in each group?" Answer: 6
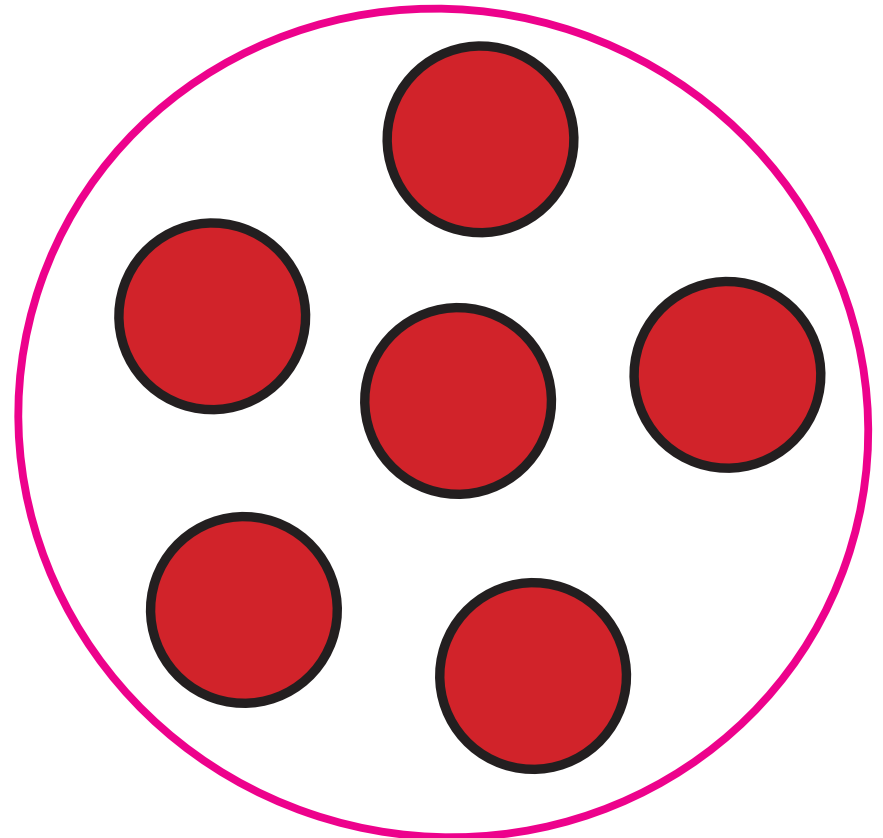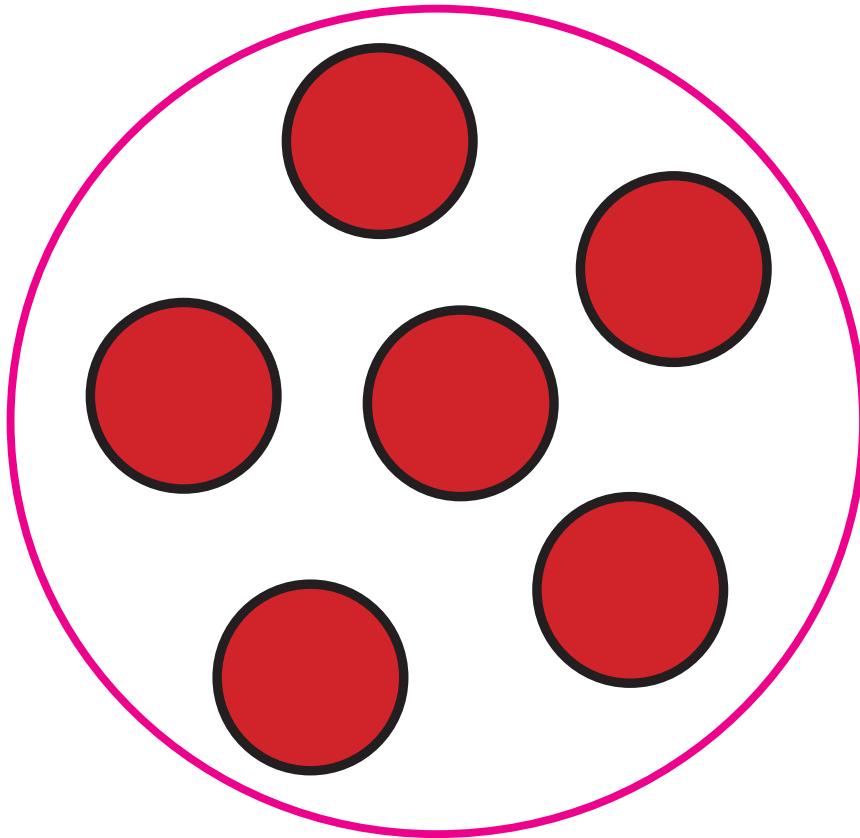
D4: Division as Grouping

$$12 \div 2 = 6$$

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

D5: Grouping on a Number Line

+5   +5   +5   +5

0   5   10   15   20
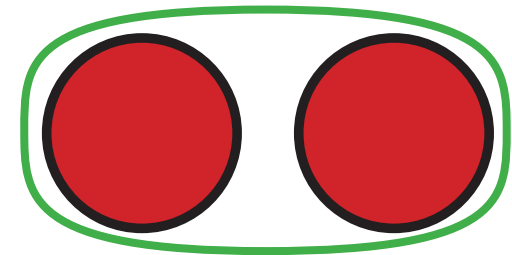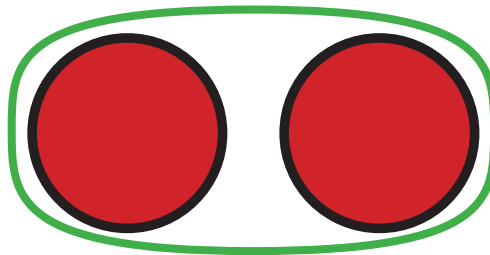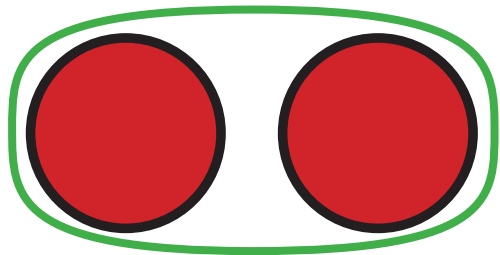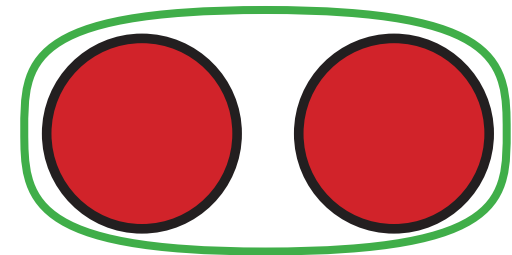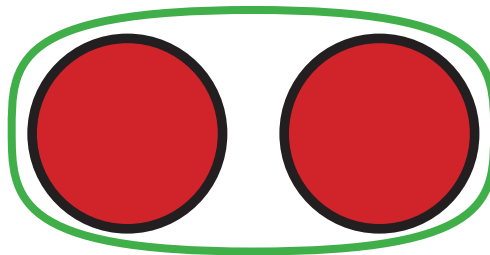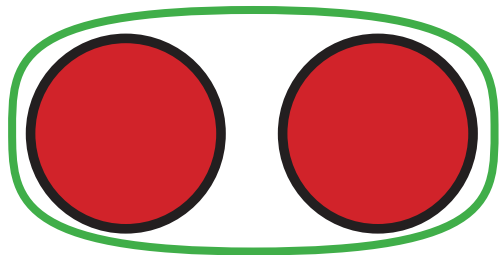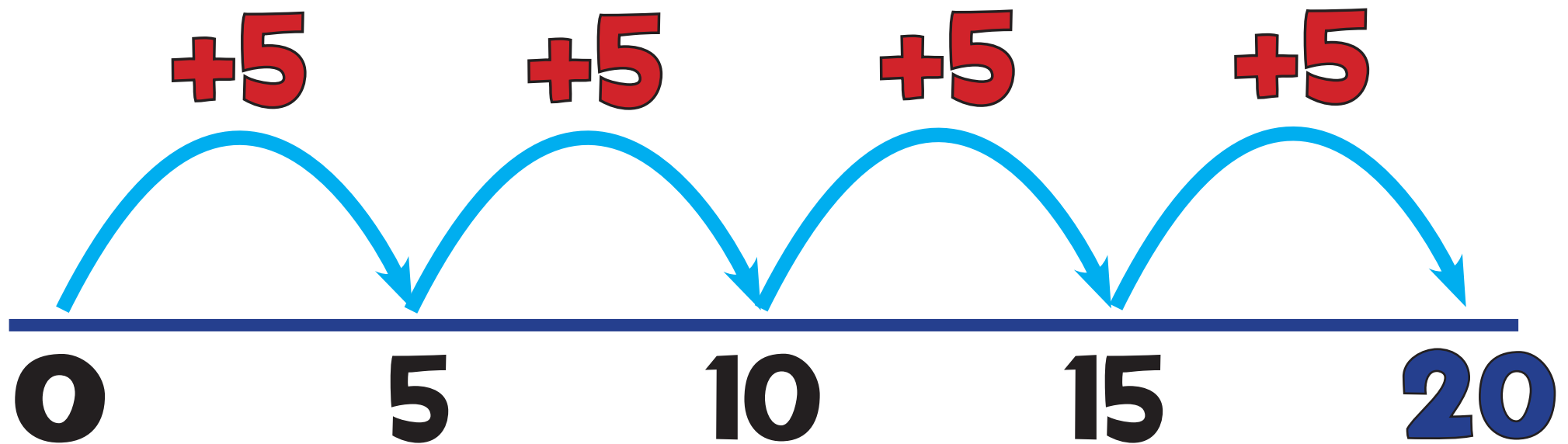
20 ÷ 5 = 4

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

D7: Chunking Jump

4 x 10   4 x 8

+40   +32

0   40   72
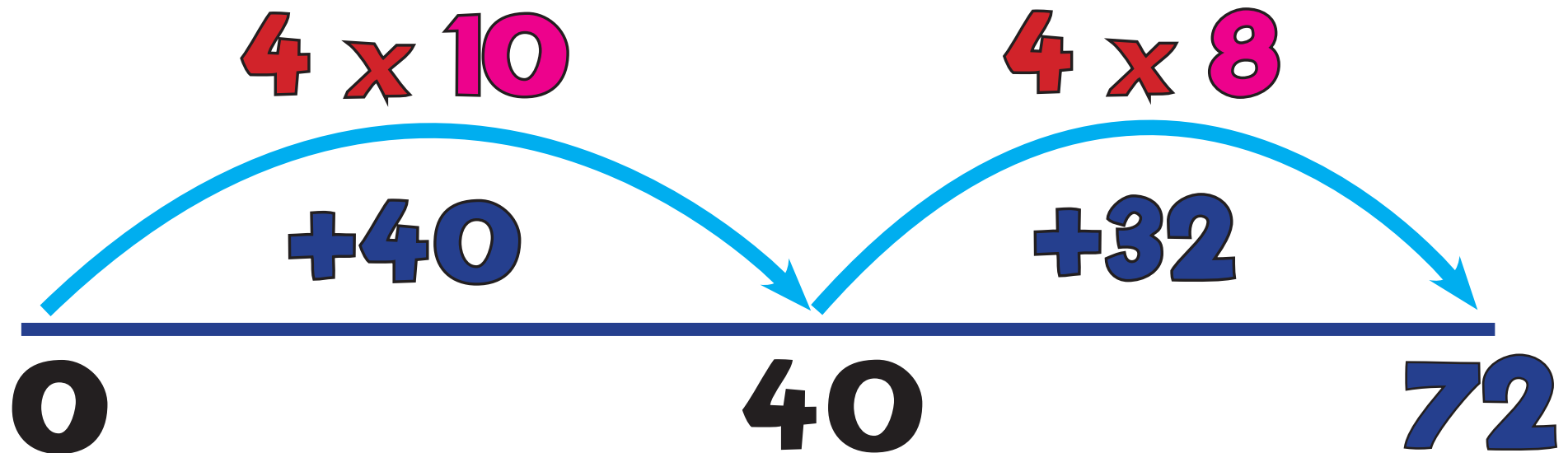
"How many 4s in 72?"
Answer: 18

72 ÷ 4 = 18

D8: Short Division

$$136 \div 4 = 34$$

$$\begin{array}{r} 34 \\ 4\overline{)1^13^16} \end{array}$$

D9: Long Division

$$26\,r21$$

$$37\,)\,983$$

$$-\ 74$$

$$243$$

$$-\ 222$$

$$21$$

$$983 \div 37 = 26\,r21$$
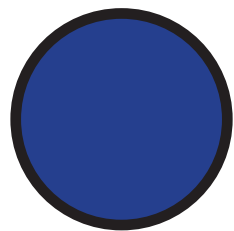
Sense of Number
Visual Calculations Policy

Full Training Edition 2014 by Dave Godfrey, Anthony Reddy and Laurence Hicks
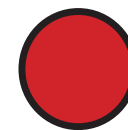
The following pages contain a snapshot of the 235 slide, Sense of Number Full Training Edition of the VCP. It contains a Counting Policy, leveled progression of strategies found in the Basic Edition and additional Subtraction & Multiplication Mental Method slides.

This edition is also available for bespoke preparation at additional cost of £80.

Fishergate Primary School

Y1

A1: Objects & Pictures

A

Addition Calculation
$$4 + 2 = 6$$

Addition Vocabulary
increase · add · total · plus · addition · more · count on · sum · altogether · addend · addend

---

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
+2   +3
+1 +1 +1 +1 +1
8 9 10 11 12 13
$$8 + 5 = 13$$

Y2

A2b: Counting On
+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
```
  T U
  4 3
+ 2 4
    7
  6 0
  6 7
```

A7: Column Addition
```
  T U
  4 3
+ 2 4
  6 7
```

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
```
  T U
  5 7
+ 2 5
  1 2
  7 0
  8 2
```

A7: Column Addition
```
  T U
  5 7
+ 2 5
  8 2
```

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)
H T U
  86
+ 48
  14
120
134

(A7: Column Addition)
H T U
   86
 + 48
  134

| 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 |

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
H T U
  687
+ 248
   15
  120
  800
  935

A7: Column Addition
  687
+ 248
  935

| 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 |

Y4

A5d: Partition Jot
4873 + 3762 = 8635
7000 + 1500 + 130 + 5

A7d: Column Addition
Th H T U
 4873
+ 3762
 8635

| 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 |

Y5

A7e: Column Addition
HTh TTh Th H T U
 787567
+ 446278
 1233845

| 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |

Y5

A3e: Decimal Jump
4.8 + 3.8 = 8.6
+3   +0.8
4.8   7.8 8.6

A4e: Partitioning
4.8 + 3.8 = 8.6
4 + 3 = 7
0.8 + 0.8 = 1.6
8.6

A5e: Partition Jot
4.8 + 3.8 = 8.6
7 + 1.6

A7e: Column Addition
U . t
  4.8
+ 3.8
  8.6

| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 |

Y5

A3f: Decimal Jump
5.65 + 3.29 = 8.94
+3   +0.2 +0.09
5.65 8.65 8.85 8.94

A5f: Partition Jot
5.65 + 3.29 = 8.94
8 + 0.8 + 0.14

A7f: Column Addition
U . t h
  5.65
+ 3.29
  8.94

| 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 |

Y5

| 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 |

A5g: Partition Jot

$76.7 + 58.5 = 135.2$

$120 + 14 + 1.2$

A7g: Column Addition

T   U   .
76.7
$+ 58.5$
135.2

Y5

| 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 |

A5h: Partition Jot

£38.25 + £27.46 = £65.71

£65.00 + £0.71 = £65.71

A7h: Column Addition

£38.25
$+$ £27.46
£65.71

Y5

| 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 |

A7i: Column Addition

$73.4 + 5.67 = 79.07$

T   .   U   .
73.4
$+ 5.67$
79.07

MA

MA1: Partitioning
45 + 28 = 73
60 + 13 = 73

MA2: Counting On
45 + 23 = 68
45 +20 65 +3 68

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 + 19 = 64
45 + 20 - 1
65 - 1 = 64

Y1

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

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

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

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

MA3: Number Bonds
£4.56 + £3.27 + £1.44 = £9.27
£6.00   £3.27

MA4: Double & Adjust
125 + 127 = 251
125 + 125 + 2
250 + 2 = 252

MA5: Round & Adjust
4645 + 1996 = 6641
4645 + 2000 - 4
6645 - 4 = 6641

Y6

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

Y1

S1: Objects
7 - 3 = 4

S

Subtraction Calculation
6 - 2 = 4
minuend   difference
subtrahend

Subtraction Vocabulary
take away   less
minus   subtract
count back   fewer
difference between

Y1

S2: What's the Difference?
7 - 5 = 2

S3: Counting Back
9 10 11 12
12 - 3 = 9

S4: Counting On
+1 +1 +1
9 10 11 12
12 - 9 = 3

Y2

S5: Backwards Boing
68 70 75
-2 -5
75 - 7 = 68

S4a: Counting On
+1 +1 +1 +1 +1
78 79 80 81 82 83
83 - 78 = 5

Y2

S6: Backwards Bounce
64 65 66 67 77 87
-1 -1 -1 -10 -10
87 - 23 = 64

(S8: Triple Jump!)
+7 +50 +7
23 30 80 87
87 - 23 = 64

(S9: 10s Jump, 1s Jump!)
+60 +4
23 83 87
87 - 23 = 64

(S10: Expanded Subtraction)
87 - 23 = 64
80 7
20 3
60 4

(S11: Column Subtraction)
T U
87
- 23
64

Y2

S7: Backwards Jump
38 45 75
-7 -80
75 - 37 = 38

S8: Triple Jump!
+3 +30 +5
37 40 70 75
75 - 37 = 38

S9: 10s Jump, 1s Jump!
+30 +8
37 67 75
75 - 37 = 38

(S10: Expanded Subtraction)
75 - 37 = 38
60 70 5
30 7
30 8

(S11: Column Subtraction)
T U
75
- 37
38

Y3

S8b: Quad Jump!
+4 +40 +30 +2
56 60 100 130 132
132 - 56 = 76

S9b: 10s Jump, 1s Jump!
+70 +6
56 126 132
132 - 56 = 76

(S10: Expanded Subtraction)
132 - 56 = 38
100 30 1
50 6
70 6

(S11: Column Subtraction)
132
- 56
76

Y3

55	56	57	58	59	60	61	62	63

59 — S8c: Big Jump!
+44 +40 +300 +23
356 360 400 700 723
$723 - 356 = 367$

60 — S9c: 100s, 10s, 1s Jump
+300 +60 +7
356 656 716 723
$723 - 356 = 367$

61 — S10: Expanded Subtraction
$723 - 356 = 367$
700 20 3
−300 50 6
300 60 7

62 — S11: Column Subtraction
723
− 356
367

Y4

64	65	66	67	68	69	70	71	72

68 — S8d: Quad Jump Extreme
+24 +200 +3000 +42
1776 1800 2000 5000 5042
$5042 - 1776 = 3266$

69 — S9d: 1000s, 100s, 10s, 1s Jump
+3000 +200 +60 +6
1776 4776 4976 5036 5042
$5042 - 1776 = 3266$

71 — S11d: Column Subtraction
5042
− 1776
3266

Y5

73	74	75	76	77	78	79	80	81

77 — S8e: Decimal T-J!
+0.6 +3 +0.7
9.4 10 13 13.7
$13.7 - 9.4 = 4.3$

78 — S9e: 1s Jump, Tenths Jump!
+4 +0.7
8.7 12.7 13.4
$13.4 - 8.7 = 4.7$

80 — S11e: Column Subtraction
13.4
− 8.7
4.7

Y5

82	83	84	85	86	87	88	89	90

89 — S11f: Column Subtraction
72.43
− 47.85
24.58

Y5

91	92	93	94	95	96	97	98	99

98 — S11g: Column Subtraction
$12.4 - 5.97 = 6.43$
12.40
− 5.97
6.43

Sample Edition Primary School

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

| 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 |
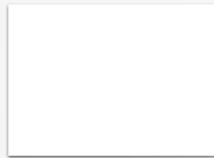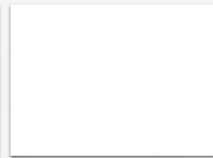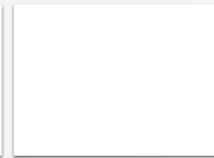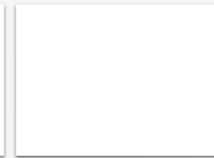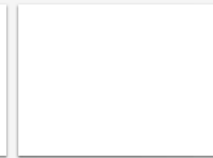
MS2a: Counting On
75 - 47 = 28

+3   +25
47   50   75

| 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 |

Y1 1	**(M1: Groups)** "3 groups of 5 counters makes 10 counters altogether" 2	3	**(M3: Arrays)** "3 groups of 5 counters" or "5 groups of 3 counters" = "10 counters altogether" 4	5	6	**M** 7	**Multiplication Calculation** $4 \times 2 = 8$ 8	**Multiplication Vocabulary** groups of, product, multiple, times, double, lots of, multiply, repeated addition 9
Y2 10	**M1: Repeated Addition (Groups)** $5 \times 3 = 5 + 5 + 5 = 15$ 11	**M2: Repeated Addition (Number Line)** +5 +5 +5 $5 \times 3 = 5 + 5 + 5 = 15$ 12	**M3: Arrays** $3 \times 5 = 15$ or $5 \times 3 = 15$ 13	14	15	16	17	18
Y2 19	**Mx2: Table Facts** **2x table** 20	**Mx5: Table Facts** **5x table** 21	**Mx10: Table Facts** **10x table** 22	23	24	25	26	27
Y3 28	**Mx3: Table Facts** **3x table** 29	**Mx4: Table Facts** **4x table** 30	**Mx8: Table Facts** **8x table** 31	32	33	34	35	36
Y3 37	38	39	40	**M4: Multi Boing!** 10x5 5x5 0 50 75 $10 \times 5 = 50$ $5 \times 5 = 25$ $15 \times 5 = 75$ 41	**M4a: Partitioning** $15 \times 5 = 75$ $10 \times 5 = 50$ $5 \times 5 = 25$ $50 + 25 = 75$ 42	**M5: Grid Method** $15 \times 5 = 75$ 	x	10	5	 	5	50	25	 $50 + 25 = 75$ 43	**(M6: Expanded Column)** 15 × 5 25, 50, 75 44	**(M7: Column Multiplication)** 15 × 5 = 75 45
Y4 46	47	48	49	50	51	**M5a: Grid Method** $43 \times 6 = 258$ 	x	40	3	 	6	240	18	 $240 + 18 = 258$ 52	**(M6: Expanded Column)** 43 × 6 18, 240, 258 53	**(M7: Column Multiplication)** 43 × 6 = 258 54

Y4	Mx6: Table Facts 6x table	Mx7: Table Facts 7x table	Mx9: Table Facts 9x table	Mx11: Table Facts 11x table	Mx12: Table Facts 12x table			
55	56	57	58	59	60	61	62	63

Y4						M5b: Grid Method $147 \times 4 = 588$	M6: Expanded Column	M7: Column Multiplication
64	65	66	67	68	69	70	71	72

Y5						M8: Grid Method $43 \times 65 = 2795$		M9: Long Multiplication
73	74	75	76	77	78	79	80	81

Y5						M8a: Grid Method $243 \times 68 = 16,524$		M9a: Long Multiplication
82	83	84	85	86	87	88	89	90

Y5						M8b: Grid Method $203 \times 68 = 13,804$		M9b: Long Multiplication
91	92	93	94	95	96	97	98	99

Y5						M8c: Decimal Grid $3.6 \times 4 = 14.4$		M9c: Column Multiplication
100	101	102	103	104	105	106	107	108

Y6						M8d: Decimal Grid — Short Multiplication $47.2 \times 3 = 141.6$ 	$\times$	40	7	0.2
3	120	21	0.6	 $120 + 21 + 0.6 = 141.6$		M9d: Column Multiplication 47.2 $\times\ 3$ 141.6
109	110	111	112	113	114	115	116	117
Y6						M8e: Grid Method — Long Multiplication $7.38 \times 6 = 44.28$ 	$\times$	7	0.3	0.08
6	42	1.8	0.48	 $42 + 1.8 + 0.48 = 44.28$		M9e: Column Multiplication 7.38 $\times\ 6$ 44.28
118	119	120	121	122	123	124	125	126
Y6						M8f: Grid Method — Long Multiplication $24.3 \times 2.5 = 60.75$ 	$\times$	20	4	0.3
2	40	8	0.6	= 48.6 | 0.5	10	2	0.15	= 12.15 $48.6 + 12.15 = 60.75$		M9f: Long Multiplication 24.3 $\times\ 2.5$ 12.15 (0.5 x 24.3) $+\ 48.60$ (2 x 24.3) 60.75
127	128	129	130	131	132	133	134	135
Y6								M9g: Long Multiplication 3786 $\times\ 48$ 30288 (8 x 3786) $+\ 151440$ (40 x 3786) 181728
136	137	138	139	140	141	142	143	144

MM

MM	**MM1: Jump!** ThHTU.t h th x100 34 00 x10 34 0 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			
1	2	3	4	5	6	7	8	9
	MM1a: Jump! ThHTU.t h th x1000 634 00 x100 634 0 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			
10	11	12	13	14	15	16	17	18
		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			
19	20	21	22	23	24	25	26	27
				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			
28	29	30	31	32	33	34	35	36
					MM5d: Doubling Double 480 = 960 800 + 160 = 960			
37	38	39	40	41	42	43	44	45
					MM5e: Doubling Double 278 = 556 400 + 140 + 16 = 556			
46	47	48	49	50	51	52	53	54

Sample Edition Primary School

55	56	57	58	59	60	61	62	63

MM5f: Doubling (cell 60)

Double **768** = **1536**

1400 + **120** + **16** = **1536**

64	65	66	67	68	69	70	71	72

MM5g: Doubling (cell 69)

Double **3.7** = **7.4**

6 + **1.4** = **7.4**

73	74	75	76	77	78	79	80	81

82	83	84	85	86	87	88	89	90

MM6: Doubling Table Facts (cell 83)

16 x **7** = **112**

2 x (**8** x **7**)

2 x **56** = **112**

MM7: Doubling Up (cell 84)

36 x **8** = **112**

Double **36** = **72** (36 x 2)
Double **72** = **144** (36 x 4)
Double **144** = **288** (36 x 8)

MM8: Mult by ... then Halve (cell 85)

86 x **5** = **430**

86 x **100** = **860**
860 ÷ **2** = **430**

MM9: Doubling & Halving (cell 86)

45 x **14**

90 x **7** = **630**

MM10: Factorising (cell 87)

32 x **15** = **480**

(**32** x **5** x **3**)

160 x **3** = **480**

91	92	93	94	95	96	97	98	99

MM7a: Doubling Up (cell 93)

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 8)

MM8a: Mult by ... then Halve (cell 94)

56 x **25** = **1400**

56 x **100** = **5600**
5600 ÷ **2** = **2800**
2800 ÷ **2** = **1400**

MM9a: Doubling & Halving (cell 95)

36 x **25**
18 x **50**

9 x **100** = **900**

MM10a: Factorising (cell 96)

52 x **24** = **1248**

(**52** x **4** x **6**)

208 x **6** = **1248**

100	101	102	103	104	105	106	107	108

MM9b: Doubling & Halving (cell 104)

26 x **32**
52 x **16**
104 x **8** = **832**

208 x **4** etc.

School Logo

Sample Edition Primary School

02

Y1

D1: Sharing (Concept)

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

D2: Grouping (Concept)

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

D

Division Calculation

$8 \div 2 = 4$

(dividend by) (equals)

dividend   quotient

÷   divisor

Division Vocabulary

remainder · group · share · halve · divisor · factor · quotient · equal groups of · divide

Y2

D3: Division as Sharing

$12 \div 2 = 6$

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

D4: Division as Grouping

$12 \div 2 = 6$

"How many groups of 2 can I make out of 12?" Answer: 6

D5: Grouping on a Number Line

+5 +5 +5 +5

0   5   10   15   20

$20 \div 5 = 4$

Y2

D5a: Grouping on a Number Line (Remainders)

+5 +5 +5 r2

0   5   10   15   17

$17 \div 5 = 3r2$

Y3

D6: Grouping Grid

4	4	4	4	4
4				③

$27 \div 4 = 6r3$

Y3

D7: Chunking Jump

4 x 10   4 x 8
+40   +32
0   72

$72 \div 4 = 18$

D8: Find the Hunk!

$72 \div 4 = 18$

The Hunk!   Chunk
40   +   32
↓   ↓
10   +   8   = 18

(D10: Short Division)

$72 \div 4 = 18$

18
4)72

(D11: Chunking)

18
4)72
- 40 (4 x 10)
  32
- 32 (4 x 8)
   0    $72 \div 4 = 18$

Y3

D7a: Chunking Jump (Remainders)

4 x 10   4 x 6   r1
+40   +24
0   40   65

$65 \div 4 = 16r1$

D8a: Find the Hunk!

$65 \div 4 = 16r1$

The Hunk!   Chunk
40   +   25
↓   ↓
10   +   6r1   = 16r1

(D10: Short Division)

$65 \div 4 = 16r1$

16r1
4)6²5

(D11: Chunking)

16r1
4)65
- 40 (4 x 10)
  25
- 24 (4 x 6)
   1    $65 \div 4 = 16r1$

Y4

				D9: Mega Hunk!	D10: Short Division	D11: Chunking	D11b: Chunking	
55	56	57	58	59	60	61	62	63

D9: Mega Hunk!
$$136 \div 4 = 34$$
Mega Hunk! Check
$120 + 16$
$30 + 4 = 34$

D10: Short Division
$136 \div 4 = 34$
34
$4\overline{)136}$

D11: Chunking
$4\overline{)136}$
$-120 \ (4 \times 30)$
16
$-16 \ (4 \times 2)$
0

D11b: Chunking

Y5

				D9c: Mega Hunk!	D10c: Short Division	D11c: Chunking		
64	65	66	67	68	69	70	71	72

D9c: Mega Hunk! Remainders
$$394 \div 6 = 65r4$$
Mega Hunk! Check
$360 + 34$ $\div 6$
$60 + 5r4 = 65r4$

D10c: Short Division Remainders
$394 \div 6 = 65r4$
$65r4$
$6\overline{)394}$

D11c: Chunking Remainders
$65r4$
$6\overline{)394}$
$-360 \ (6 \times 60)$
34
$-30 \ (6 \times 5)$
4
$394 \div 6 = 65r4$

Y5

				D9d: Mega Hunk!	D10d: Short Division	D11d: Chunking		
73	74	75	76	77	78	79	80	81

D9d: Mega Hunk!
$$591 \div 3 = 197$$
Mega Hunk! Mega Hunk! Check
$300 + 270 + 21$ $\div 3$
$100 + 90 + 7 = 197$

D10d: Short Division
$591 \div 3 = 197$
197
$3\overline{)591}$

D11d: Chunking
197
$3\overline{)591}$
$-300 \ (3 \times 100)$
291
$-270 \ (3 \times 90)$
21
$-21 \ (3 \times 7)$
0
$591 \div 3 = 197$

Y5

				D9e: Mega Hunk!	D10e: Short Division	D11e: Chunking		
82	83	84	85	86	87	88	89	90

D9e: Mega Hunk!
$$5978 \div 7 = 854$$
Mega Hunk! Mega Hunk! Check
$5600 + 350 + 28$ $\div 7$
$800 + 50 + 4 = 854$

D10e: Short Division
$5978 \div 3 = 854$
854
$7\overline{)5978}$

D11e: Chunking
854
$7\overline{)5978}$
$-5600 \ (7 \times 800)$
378
$-270 \ (7 \times 50)$
28
$-28 \ (7 \times 4)$
0
$5978 \div 7 = 854$

Y5

				D9f: Mega Hunk!	D10f: Short Division	D11f: Chunking		
91	92	93	94	95	96	97	98	99

D9f: Mega Hunk!
$$846 \div 5 = 169r1$$
Mega Hunk! Mega Hunk! Check
$500 + 300 + 46$ $\div 5$
$100 + 60 + 9r1 = 169r1$

D10f: Short Division Different Remainders
169.2
$5\overline{)846.0}$
$169r1$
$5\overline{)846}$
$846 \div 5$
$169\frac{1}{5}$
$5\overline{)846}$

D11f: Chunking
$169r1$
$5\overline{)846}$
$-500 \ (5 \times 100)$
346
$-300 \ (5 \times 60)$
46
$-45 \ (5 \times 9)$
1
$846 \div 5 = 169r1$

Y6

				D9g: Mega Hunk!		D11g1: Chunking	D11g2: Chunking	
100	101	102	103	104	105	106	107	108

D9g: Mega Hunk! Simple Long Division
$$480 \div 15 = 32$$
Mega Hunk! Check
$450 + 30$ $\div 15$
$30 + 2 = 32$

D11g1: Chunking Long Division
32
$15\overline{)480}$
$-450 \ (15 \times 30)$
30
$-30 \ (15 \times 2)$
0
$480 \div 15 = 32$

D11g2: Chunking Long Division
32
$15\overline{)480}$
$-150 \ (15 \times 10)$
330
$-150 \ (15 \times 10)$
180
$-150 \ (15 \times 10)$
30
$-30 \ (15 \times 2)$
0
$480 \div 15 = 32$

Sample Edition Primary School

Y6 — 109 | 110 | 111 | 112

D9h: Decimal Hunk!
$$18 \div 1.5 = 12$$
The Hunk! ... Chunk
$15 + 3$
$+ 1.5$
$10 + 2 = 12$
— 113 | 114 | 115 | 116 | 117

Y6 — 118 | 119 | 120 | 121

D9i: Decimal Hunk!
$$87.5 \div 7 = 12.5$$
Mega Hunk! ... Chunk ... Chunk
$70 + 14 + 3.5$
$+ 7$
$10 + 2 + 0.5 = 65$
— 122

D10i: Short Division
$$87.5 \div 7 = 12.5$$
$$\begin{array}{r} 12.5 \\ 7\overline{)87.5} \end{array}$$
— 123 | 124 | 125 | 126

Y6 — 127 | 128 | 129 | 130 | 131 | 132

D12: Chunking — Long Division WITH Boundary
$$\begin{array}{r} 26\,r21 \\ 37\overline{)983} \\ -370 \quad (37 \times 10) \\ \hline 613 \\ -370 \quad (37 \times 10) \\ \hline 243 \\ -222 \quad (37 \times 6) \\ \hline 21 \end{array}$$
$983 \div 37 = 26\,r21$
— 133 | 134

D13: Long Division
$$\begin{array}{r} 26\,r21 \\ 37\overline{)983} \\ -74 \\ \hline 243 \\ -222 \\ \hline 21 \end{array}$$
$983 \div 37 = 26\,r21$
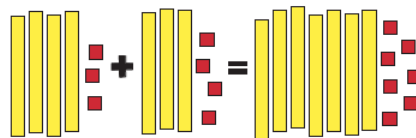— 135

Slide 1: 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.

Slide 2 — A: Base 10 — 43 + 24 = 67

Slide 3 — B: Arrow Cards — 43 + 24 = 67

Slide 4 — C: Hundred Square — 43 + 24 = 67

Slide 5 — D: Numicon — 43 + 24 = 67
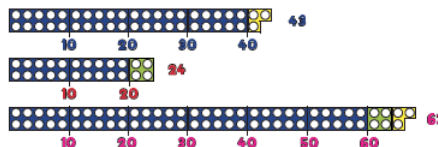
Slide 6 — E: Place Value Counters — 43 + 24 = 67

Slide 7 — F: Money — 43 + 24 = 67

Slide 8 — G: Abacus — 43 + 24 = 67

Slide 9 — H: Number Line — 43 + 24 = 67