Sense of Number

Expanded Visual Calculation Policy

Mental Strategies Policy

Laceby Acres Academy

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Compiled by the Sense of Number Maths Team

For sole use in Laceby Acres Academy

'A picture is worth 1000 words!' www.numberfun.com

MAP

Number Fun

Guide to using a Visual Calculation Policy

The Full Sense of Number Visual Calculation Policy Package provides a comprehensive visual representation of a school's Calculation Policy.

1: CPVCP	Concrete and Pictorial VCP - The foundation of the policy, featuring key models and images to help children gain deep understanding of the abstract proceedures.
2: WSVCP	Written Strategies progression from jottings to formal written methods from Y1 to Y6.
3: MSVCP	Mental Strategies progression across KS1 and KS2 for all four operations.
4: ECPD	Editable Calculation Policy Document - a comprehensive written explanation of a school's calculation policy, featuring thumbnails of the posters from the three documents above.

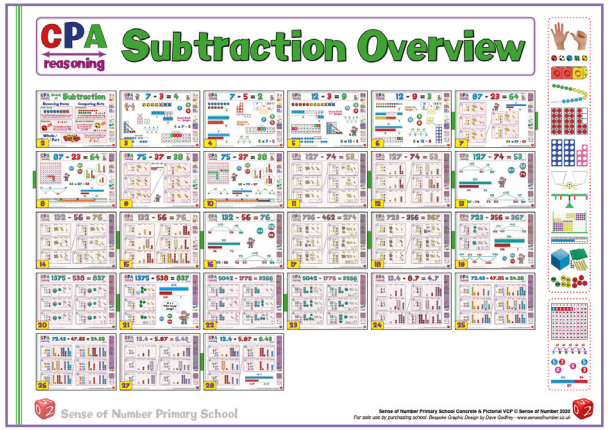
Typical uses:

Classoom:	The posters are printed out (e.g. A4) and the appropriate slides are displayed for continual reference or on a working wall. Posters are used on the interactive whiteboard.
Reference:	The summary overviews are printed out and inserted in the teacher's planning folder.
Parents:	The posters are used to communicate to parents the methods being used within school.
Website:	Screen grabs of slides from the VCP are inserted on a schools' maths webpages. (PLEASE NOTE: the VCP should not be placed on school website for copyright reasons.) A secure PDF copy of the Editable Calculation Policy may be placed on the school webite.

Expanded Visual Calculation Policy

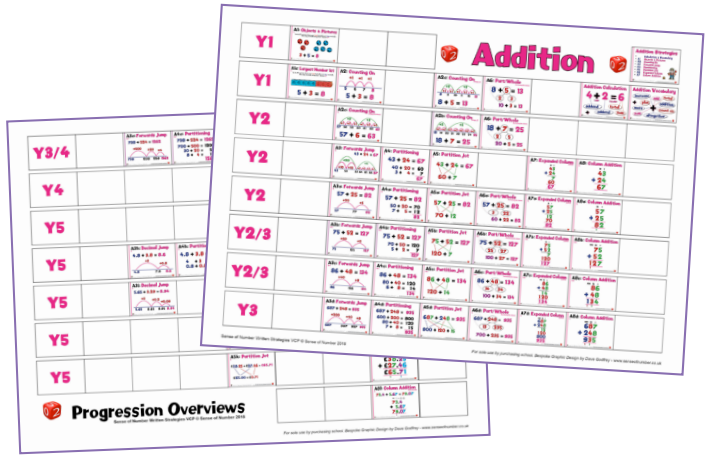
The Expanded Visual Calculation Policy helps children and teaching staff achieve mastery of all aspects of calculation. It contains the following three documents:

Concrete & Pictorial VCP



92 A3 wallcharts showing the range of models and images that help children to understand and master calculation strategies.

Written Strategies VCP



348 A4 posters showing the progression of written strategies (from Y1 to Y6) for all 4 operations in line with the National Curriculum.

Mental Strategies VCP

230 A4 posters showing the progression of mental strategies (from Y1 to Y6) for all 4 operations in line with the National Curriculum.

Poster Guide

Expanded Visual Calc. Policy

Code	Section	Concrete & Pictorial (92 A3 Wallcharts)		Written VCP (348 A4 Posters)		Mental VCP (228 A4 Posters)	
		Number of Wallcharts	Wallchart Numbers	No. of Posters	Poster Numbers	No. of Posters	Poster Numbers
	Policy Introduction Slides	4	1-4	4	1-4	4	1-4
	Introductory Posters	3	5-7	9	5-13		
	Operation Overviews	4	8-11	13	14-26	8	5-12
C	Counting Policy			15	27-41		
A	Addition	20	12-31	62	42-103		
MA	Mental Addition					57	13-69
S	Subtraction	27	1-27	66	104-169		
MS	Mental Subtraction					63	70-132
M	*Multiplication	20	1-20	51	170-220		
MM	Mental Multiplication					47	133-182
D	*Division	15	1-15	71	221-291		
MD	Mental Division					39	183-228
	*Multiplication Tables			22	292-313		
	Alternative layouts (Column & Number Lines)			35	314-348		

*** Contains some posters which have both 'multiplied by' and 'groups of' options**

MC RaPa CoODa NumFa

14 

MC = Manipulate Calculation

22 

Ra = Round and Adjust

30 

Pa = Partitioning

38 

CoO = Counting On

54 

Da = Double and Adjust

62 

NumFa = Number Facts

6 Cool Strategies for Mental Addition!

MA

MC: Manipulate the Calculation

35 + 19 = 54

-1 +1

34 + 20 = 54

Ra: Round & Adjust

35 + 19 = 54

35 + 20 - 1

55 - 1 = 54

Pa: Partitioning

35 + 82 = 117

110 + 7 = 117

CoO(1): Counting On Ones

8 + 6 = 14

+2 +4

8 10 14

CoO(2): Counting On Tens

35 + 20 = 55

+20

35 55

Da: Double & Adjust

35 + 36 = 71

35 1

70 + 1 = 71

NumFa: Number Facts (Spotting Bonds)

35 + 95 = 130

30 + 100

MC RaPa CoODa NumFa

- MC = Manipulate Calculation
- Ra = Round and Adjust
- Pa = Partitioning
- CoO = Counting On
- Da = Double and Adjust
- NumFa = Number Facts

6 Cool Strategies for Mental Addition!

MC: Manipulate the Calculation

16 + 9 = 25

16 15 1 9 1 10

15 + 10

Ra: Round & Adjust

16 + 9 = 25

+10 -1

16 26 25

Pa: Partitioning

43 + 21 = 64

CoO(1): Counting On Ones

+2 +4

8 + 6 = 14

CoO(2): Counting On Tens

35 + 20 = 55

+10 +10

35 45 55

Da: Double & Adjust

7 + 8 = 15

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

NumFa: Number Facts (Spotting Bonds)

3 + 4 + 7 = 14

Y1

MC: Manipulate the Calculation

7 + 9 = 16

-1 +1

6 + 10 = 16

Ra: Round & Adjust

7 + 9 = 16

7 + 10 - 1

17 - 1 = 16

Pa: Partitioning

12 + 5 = 19

10 + 7 = 19

CoO(1): Counting On Ones

8 + 6 = 14

+2 +4

8 10 14

CoO(2): Counting On Tens

57 + 10 = 67

+10

57 67

Da: Double & Adjust

5 + 6 = 11

5 1

10 + 1 = 11

NumFa: Number Facts (Spotting Bonds)

3 + 4 + 7 = 14

10 + 4

Y2

MC: Manipulate the Calculation

45 + 19 = 64

-1 +1

44 + 20 = 64

Ra: Round & Adjust

45 + 19 = 64

45 + 20 - 1

65 - 1 = 64

Pa: Partitioning

43 + 21 = 64

60 + 4 = 64

CoO(1): Counting On Ones

78 + 7 = 85

+2 +5

78 80 85

CoO(2): Counting On Tens

58 + 40 = 98

+40

58 98

Da: Double & Adjust

7 + 8 = 15

7 1

14 + 1 = 15

NumFa: Number Facts (Spotting Bonds)

13 + 4 + 7 + 16 = 40

20 + 20

Y3

MC: Manipulate the Calculation

45 + 97 = 142

-3 +3

42 + 100 = 142

Ra: Round & Adjust

45 + 97 = 142

45 + 100 - 3

145 - 3 = 142

Pa: Partitioning

57 + 25 = 82

70 + 12 = 82

CoO(1): Counting On Tens

80 + 50 = 130

+20 +50

80 100 130

CoO(2): Counting On Hundreds

534 + 300 = 834

+300

534 834

Da: Double & Adjust

16 + 17 = 33

16 1

32 + 1 = 33

NumFa: Number Facts (Spotting Bonds)

42 + 16 + 28 + 54 = 140

70 + 70

Y4

MC: Manipulate the Calculation

345 + 298 = 643

-2 +2

343 + 300 = 643

Ra: Round & Adjust

345 + 298 = 643

345 + 300 - 2

645 - 2 = 643

Pa: Partitioning

648 + 231 = 879

800 + 70 + 9 = 879

CoO(1): Counting On Tens

780 + 60 = 840

+20 +40

780 800 840

CoO(2): Counting On Thousands

6583 + 3000 = 9583

+3000

6583 9583

Da: Double & Adjust

45 + 47 = 92

45 2

90 + 2 = 92

NumFa: Number Facts (Spotting Bonds)

42 + 26 + 98 + 14 = 180

140 + 40

Y5

MC: Manipulate the Calculation

4645 + 1996 = 6641

-4 +4

4641 + 2000 = 6641

Ra: Round & Adjust

4645 + 1996 = 6641

4645 + 2000 - 4

6645 - 4 = 6641

Pa: Partitioning

526 + 258 = 784

700 + 70 + 14 = 784

CoO(1): Counting On Hundreds

2800 + 500 = 3300

+200 +300

2800 3000 3300

CoO(2): Counting On Thousands

7583 + 5000 = 12583

+5000

7583 12583

Da: Double & Adjust

125 + 127 = 252

125 2

250 + 2 = 252

NumFa: Number Facts (Spotting Bonds)

£4.56 + £3.27 + £1.44 + £1.03 = £10.30

£6.00 + £4.30

Y6

MC: Manipulate the Calculation

4.5 + 1.9 = 6.4

-0.1 +0.1

4.4 + 2 = 6.4

Ra: Round & Adjust

4.5 + 1.9 = 6.4

4.5 + 2 - 0.1

6.5 - 0.1 = 6.4

Pa: Partitioning

5.7 + 2.5 = 8.2

7 + 1.2 = 8.2

CoO(1): Counting On Tenths

6.7 + 0.8 = 7.5

+0.3 +0.5

6.7 7 7.5

CoO(2): Counting On Millions

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

+4,000,000

5,763,947 9,763,947

Da: Double & Adjust

4.5 + 4.7 = 9.2

4.5 0.2

9 + 0.2 = 9.2

NumFa: Number Facts (Spotting Bonds)

4.2 + 1.6 + 2.8 + 5.4 = 14

7 + 7

MC RaPa CoOCoB NumFa

71  **MC = Manipulate Calculation**

79  **Ra = Round and Adjust**

87  **Pa = Partitioning**

95  **CoO = Counting On**

110  **CoB = Counting Back**

125  **NumFa = Number Facts**

6 Cool Strategies for Mental Subtraction!

	MC: Manipulate the Calculation (Same Difference!)	Ra: Round & Adjust	Pa: Partitioning	CoO(1): Counting On Small Difference	CoO(2): Counting On Jumps	CoB(1): Counting Back	CoB(2): Counting Back Jumps	NumFa: Number Facts
MS	84 - 29 = 55 +1 +1 85 - 30 = 55	84 - 29 = 55 84 - 30 + 1 54 + 1 = 55	63 - 35 = 28 -33 -2 63 30 28	61 - 58 = 3 +3 58 61	40 - 28 = 12 +2 +10 28 30 40	68 - 20 = 48 48 68 -20	86 - 12 = 74 74 76 86 -2 -10	61 - 41 = 20 41 + 20 = 61
MC = Manipulate Calculation Ra = Round and Adjust Pa = Partitioning CoO = Counting On CoB = Counting Back NumFa = Number Facts 6 Cool Strategies for Mental Subtraction!	14 - 9 = 5 +5 +5 9 14 10 15 14 - 9 = 15 - 10 (14 + 1) - (9 + 1)	24 - 9 = 15 -10 +1 24 14 15	63 - 35 = 28 28 30 63 -2 -33	12 - 8 = 4 12 9 4	40 - 28 = 12 +2 +10 28 30 40	68 - 20 = 48 68 48 -20	86 - 12 = 74 86 74 -10 -2	61 - 41 = 20 41 + 20 = 61
Y1	14 - 9 = 5 +1 +1 15 - 10 = 5	14 - 9 = 5 14 - 10 + 1 4 + 1 = 5	23 - 8 = 15 -3 -5 23 20 15	12 - 8 = 4 +4 8 12		15 - 4 = 11 11 15 -4		19 - 9 = 10 9 + 10 = 19
Y2	84 - 29 = 55 +1 +1 85 - 30 = 55	84 - 29 = 55 84 - 30 + 1 54 + 1 = 55	63 - 35 = 28 -33 -2 63 30 28	61 - 58 = 3 +3 58 61	40 - 28 = 12 +2 +10 28 30 40 +10 +2 28 38 40	68 - 20 = 48 48 68 -20	86 - 12 = 74 74 76 86 -2 -10	61 - 41 = 20 41 + 20 = 61
Y3	463 - 97 = 366 +3 +3 466 - 100 = 366	463 - 97 = 366 463 - 100 + 3 363 + 3 = 366	123 - 28 = 95 -23 -5 123 100 95	302 - 297 = 5 +5 297 302	61 - 37 = 24 +3 +21 37 40 61 +20 +4 37 57 61	378 - 50 = 328 328 378 -50	89 - 34 = 55 55 59 89 -4 -30	103 - 53 = 50 53 + 50 = 103
Y4	876 - 298 = 578 +2 +2 878 - 300 = 578	876 - 298 = 578 876 - 300 + 2 576 + 2 = 578	132 - 58 = 74 -52 -6 132 80 74	1003 - 998 = 5 +5 998 1003	324 - 280 = 44 +20 +24 280 300 324	768 - 200 = 568 568 768 -200	578 - 45 = 533 533 538 578 -5 -40	847 - 447 = 400 447 + 400 = 847
Y5	5864 - 2996 = 2868 +4 +4 5868 - 3000 = 2868	5864 - 2996 = 2868 5864 - 3000 + 4 2864 + 4 = 2868	750 - 372 = 378 -350 -22 750 400 378	8.3 - 7.9 = 0.4 +0.4 7.9 8.3	1204 - 950 = 254 +50 +204 950 1000 1204	7291 - 2000 = 5291 5291 7291 -2000	8.6 - 4.1 = 4.5 4.5 4.6 8.6 -0.1 -4	1006 - 506 = 500 506 + 500 = 1006
Y6	6.4 - 1.9 = 4.5 +0.1 +0.1 6.5 - 2 = 4.5	6.4 - 1.9 = 4.5 6.4 - 2 + 0.1 4.4 + 0.1 = 4.5	8.3 - 5.7 = 2.6 -5.3 -0.4 8.3 3 2.6	£12.02 - £11.98 = 4p +4p £11.98 £12.02	12.4 - 9.8 = 2.6 +0.2 +2.4 9.8 10 12.4	86374 - 20000 = 66374 66374 86374 -20000	£65.87 - £30.24 = £35.63 £35.63 £35.87 £65.87 -24p -£30	13.2 - 9.2 = 4 9.2 + 4 = 13.2

MC RaPa CoODo NumFa

134  **MC = Manipulate Calculation**

140  **Ra = Round and Adjust**

145  **Pa = Partitioning**

151  **CoO = Counting On**

156  **Do = Doubling**

171  **NumFa = Number Facts**

6 Cool Strategies for Mental Multiplication

MM

MC: Manipulate the Calculation

16 x 3 = 48

÷2 x2

8 x 6 = 48

Ra: Round & Adjust

19 x 4 = 76

(20 x 4) - (1 x 4)

80 - 4 = 76

Pa: Partitioning

15 x 5 = 75

50 + 25 = 75

(10 x 5) (5 x 5)

CoO: Counting On (In Multiples)

+5 +5 +5

0 5 10 15

5 x 3 = 5 + 5 + 5 = 15

Do(1): Doubling

20 + 14 = 34

Double 17 = 34

(15 + 2)

30 + 4 = 34

Do(2): Doubling Table Facts

8 x 6 = 48

(4 x 2)

4 x 6 = 24 x2

8 x 6 = 48

NumFa(1): Number Facts (Table Facts)

30 x 4 = 120

3 x 4 = 12

NumFa(2): Number Facts (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 *

MC RaPa CoODo NumFa

134 MC = Manipulate Calculation

140 Ra = Round and Adjust

145 Pa = Partitioning

151 CoO = Counting On

156 Do = Doubling

171 NumFa = Number Facts

6 Cool Strategies for Mental Multiplication

MC: Manipulate the Calculation

27 x 3 = 81

÷3 x3

9 x 9 = 81

Ra: Round & Adjust

49 x 3 = 147

(50 x 3) - (1 x 3)

150 - 3 = 147

Pa: Partitioning

24 x 3 = 72

60 + 12 = 72

(20 x 3) (4 x 3)

CoO: Counting On (In Multiples)

+4 +4 +4 +4 +4 +4

0 4 8 12 16 20 24

4 x 6 = 4 + 4 + 4 + 4 + 4 + 4 = 24

Do(1): Doubling

60 + 14 = 74

Double 37 = 74

(35 + 2)

70 + 4 = 74

Do(2): Doubling Table Facts

12 x 7 = 84

(6 x 2)

6 x 7 = 42 x2

12 x 7 = 84

NumFa(1): Number Facts (Table Facts)

70 x 4 = 280

7 x 4 = 28

NumFa(2): Number Facts (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 *

MC: Manipulate the Calculation

45 x 14 = 630

x2 ÷2

90 x 7 = 630

Ra: Round & Adjust

198 x 4 = 792

(200 x 4) - (2 x 4)

800 - 8 = 792

Pa: Partitioning

37 x 4 = 148

120 + 28 = 148

(30 x 4) (7 x 4)

CoO: Counting On (In Multiples)

+7 +7 +7 +7

0 7 14 21 28

7 x 4 = 7 + 7 + 7 + 7 = 28

Do(1): Doubling

140 + 16 = 156

Double 78 = 156

(75 + 3)

150 + 6 = 156

Do(2): Doubling Table Facts

16 x 7 = 112

(8 x 2)

8 x 7 = 56 x2

16 x 7 = 112

NumFa(1): Number Facts (Table Facts)

120 x 3 = 360

12 x 3 = 36

NumFa(2): Number Facts (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

MC: Manipulate the Calculation

36 x 25 = 900

÷4 x4

9 x 100 = 900

Ra: Round & Adjust

3.9 x 5 = 19.5

(4 x 5) - (0.1 x 5)

20 - 0.5 = 19.5

Pa: Partitioning

126 x 6 = 756

600 + 120 + 36 = 756

(100 x 6) (20 x 6) (6 x 6)

CoO: Counting On (In Multiples)

+30 +30 +30 +30

0 30 60 90 120

30 x 4 = 30 + 30 + 30 + 30 = 120

Do(1): Doubling

Double 340 = 680

600 + 80 = 680

Do(2): Doubling Table Facts

22 x 12 = 264

(11 x 2)

11 x 12 = 132 x2

22 x 12 = 264

NumFa(1): Number Facts (Table Facts)

60 x 90 = 5400

6 x 9 = 54

NumFa(1): Number Facts (Table Facts)

60 x 90 = 5400

6 x 9 = 54

MC: Manipulate the Calculation

26 x 32 = 832

x4 ÷4

104 x 8 = 832

Ra: Round & Adjust

£5.99 x 6 = £35.94

(£6 x 6) - (1p x 6)

£36 - 6p = £35.94

Pa: Partitioning

4.3 x 8 = 34.4

32 + 2.4 = 34.4

(4 x 8) (0.3 x 8)

CoO: Counting On (In Multiples)

+2.5 +2.5 +2.5 +2.5

0 2.5 5 7.5 10

2.5 x 4 = 2.5 + 2.5 + 2.5 + 2.5 = 10

Do(1): Doubling

800 + 160 = 960

Double 480 = 960

(450 + 30)

900 + 60 = 960

Do(2): Doubling Table Facts

140 x 6 = 840

(11 x 2)

70 x 6 = 420 x2

140 x 6 = 840

NumFa(1): Number Facts (Table Facts)

0.7 x 4 = 2.8

7 x 4 = 28

NumFa(3): Number Facts (Factorising)

18 x 9

2 x 9 x 9

2 x 81 = 162

MC: Manipulate the Calculation

52 x 24 = 1248

x4 ÷4

208 x 6 = 1248

Pa: Partitioning

2.13 x 3 = 6.39

6 + 0.3 + 0.09 = 6.39

(2 x 3) (0.1 x 3) (0.03 x 3)

Do(1): Doubling

400 + 140 + 16 = 556

Double 278 = 556

(250 + 28)

500 + 28 = 556

Do(3): Doubling Up

17 x 4 = 68

Double 17 = 34 (17 x 2)

Double 34 = 68 (17 x 4)

NumFa(1): Number Facts (Table Facts)

0.6 x 0.9 = 0.54

6 x 9 = 54

NumFa(3): Number Facts (Factorising)

24 x 35

6 x 4 x 5 x 7

20 x 42 = 840

Do(1): Doubling

Double 3.7 = 7.4

6 + 1.4 = 7.4

Do(3): Doubling Up

36 x 8 = 288

Double 36 = 72 (36 x 2)

Double 72 = 144 (36 x 4)

Double 144 = 288 (36 x 8)

Do(3): 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)

Progression Overviews

Laceby Acres Academy

MC RaPa CoOHa NumFa

184 

MC = Manipulate Calculation

190 

Ra = Round and Adjust

195 

Pa = Partitioning (Find the Hunk)

201 

CoO = Counting On

206 

Ha = Halving

217 

NumFa = Number Facts

6 Cool Strategies for Mental Division!

MD

MC: Manipulate the Calculation

140 ÷ 20 = 7

÷10 ÷10

14 ÷ 2 = 7

Ra: Round & Adjust

95 ÷ 5 = 19

(100 ÷ 5) - (5 ÷ 5)

20 - 1 = 19

Pa: Partitioning

72 ÷ 4 = 18

40 + 32 ÷ 4

10 + 8 = 18

CoO: Counting On

+5 +5 +5

0 5 10 15

15 ÷ 5 = 3 (5 + 5 + 5 = 15)

Ha(1): Halving

Half of 58 (50)

25 + 4 = 29

Ha(2): Halve & Halve Again

84 ÷ 4 = 21

Half of 84 = 42 (84 ÷ 2)

Half of 42 = 21 (84 ÷ 4)

NumFa(1): Number Facts

35 ÷ 5 = 7

5 x 7 = 35

NumFa(2): Number Facts

Half of 12 is equivalent to 12 ÷ 2

$\frac{1}{2}$ of 12 = 12 ÷ 2

MC RaPa CoOHa NumFa

- MC = Manipulate Calculation
- Ra = Round and Adjust
- Pa = Partitioning (Find the Hunk)
- CoO = Counting On
- Ha = Halving
- NumFa = Number Facts

6 Cool Strategies for Mental Division!

MC: Manipulate the Calculation

1200 ÷ 400 = 3

÷100 ÷100

12 ÷ 4 = 3

Ra: Round & Adjust

87 ÷ 3 = 29

(90 ÷ 3) - (3 ÷ 3)

30 - 1 = 29

Pa: Partitioning

65 ÷ 4 = 16r1

40 + 25 ÷ 4

10 + 6r1 = 16r1

CoO: Counting On

+4 +4 +4 +4 +4 +4

0 4 8 12 16 20 24

24 ÷ 4 = 6 (4 + 4 + 4 + 4 + 4 + 4 = 24)

Ha(1): Halving

Half of 92 (80 + 12)

40 + 6 = 46

Half of 92

45 + 1 = 46

Ha(2): Halve & Halve Again

128 ÷ 4 = 32

Half of 128 = 64 (128 ÷ 2)

Half of 64 = 32 (128 ÷ 4)

NumFa(1): Number Facts

56 ÷ 7 = 8

7 x 8 = 56

NumFa(2): Number Facts

$\frac{1}{4}$ of 20 = 20 ÷ 4 = 5

MC: Manipulate the Calculation

162 ÷ 18 = 9

÷2 ÷2

81 ÷ 9 = 9

Ra: Round & Adjust

192 ÷ 4 = 48

(200 ÷ 4) - (8 ÷ 4)

50 - 2 = 48

Pa: Partitioning

136 ÷ 4 = 34

120 + 16 ÷ 4

30 + 4 = 34

CoO: Counting On

+7 +7 +7 +7

0 7 14 21 28

28 ÷ 7 = 4 (7 + 7 + 7 + 7 = 28)

Ha(1): Halving

Half of 326 (162 and)

160 + 3 = 163

Half of 326

150 + 10 + 3 = 163

Ha(2): Halve & Halve Again

360 ÷ 8 = 45

Half of 360 = 180 (360 ÷ 2)

Half of 180 = 90 (360 ÷ 4)

Half of 90 = 45 (360 ÷ 8)

NumFa(1): Number Facts

48 ÷ 12 = 4

12 x 4 = 48

NumFa(2): Number Facts

$\frac{1}{8}$ of 24 = 24 ÷ 8 = 3

MC: Manipulate the Calculation

18 ÷ 1.5 = 12

x2 x2

36 ÷ 3 = 12

Ra: Round & Adjust

792 ÷ 8 = 99

(800 ÷ 8) - (8 ÷ 8)

100 - 1 = 99

Pa: Partitioning

394 ÷ 6 = 65r4

360 + 34 ÷ 6

60 + 5r4 = 65r4

CoO: Counting On

+30 +30 +30 +30

0 30 60 90 120

120 ÷ 30 = 4 (30 + 30 + 30 + 30 = 120)

Ha(1): Halving

Half of 5.84

2.5 + 0.4 + 0.02

= 2.92

Ha(2): Halve & Halve Again

5000 ÷ 8 = 625

Half of 5000 = 2500 (5000 ÷ 2)

Half of 2500 = 1250 (5000 ÷ 4)

Half of 1250 = 625 (5000 ÷ 8)

NumFa(1): Number Facts

360 ÷ 9 = 40

9 x 4 = 36

9 x 40 = 360

NumFa(2): Number Facts

$\frac{1}{4}$ of 3 = 3 ÷ 4 = $\frac{3}{4}$

MC: Manipulate the Calculation

9.3 ÷ 0.3 = 31

x10 x10

93 ÷ 3 = 31

Ra: Round & Adjust

2994 ÷ 3 = 998

(3000 ÷ 3) - (6 ÷ 3)

1000 - 2 = 998

Pa: Partitioning

536 ÷ 4 = 134

400 + 120 + 16 ÷ 4

100 + 30 + 4 = 134

CoO: Counting On

+2.5 +2.5 +2.5 +2.5

0 2.5 5 7.5 10

10 ÷ 2.5 = 4 (2.5 + 2.5 + 2.5 + 2.5 = 10)

Ha(1): Halving

Half of 34.72

17 + 0.36

= 17.36

NumFa(1): Number Facts

2800 ÷ 7 = 400

7 x 4 = 28

7 x 400 = 2800

NumFa(2): Number Facts

$\frac{1}{4}$ of 9 = 9 ÷ 4 = $\frac{9}{4}$ = $2\frac{1}{4}$

(9 quarters = 2 and a quarter)

MC: Manipulate the Calculation

6.25 ÷ 0.25 = 25

x4 x4

25 ÷ 1 = 25

Pa: Partitioning

18 ÷ 1.5 = 12

15 + 3 ÷ 1.5

10 + 2 = 12

NumFa(1): Number Facts

3.2 ÷ 4 = 0.8

8 x 4 = 32

0.8 x 4 = 3.2

NumFa(2): Number Facts

$\frac{1}{5}$ of 17 = 17 ÷ 5 = $\frac{17}{5}$ = $3\frac{2}{5}$ (3.4)

(17 fifths = 3 wholes and 2 fifths)

NumFa(2): Number Facts

$\frac{1}{12}$ of 9 = 9 ÷ 12 = $\frac{9}{12}$ = $\frac{3}{4}$ (0.75)

(9 twelfths = 3 quarters)

Progression Overviews

Laceby Acres Academy

MC RaPa CoODa NumFa

14 

MC = Manipulate Calculation

22 

Ra = Round and Adjust

30 

Pa = Partitioning

38 

CoO = Counting On

54 

Da = Double and Adjust

62 

NumFa = Number Facts

6 Cool Strategies for Mental Addition!

MC: Manipulate the Calculation

MC RaPa CoODa NumFa

$$35 + 19 = 54$$

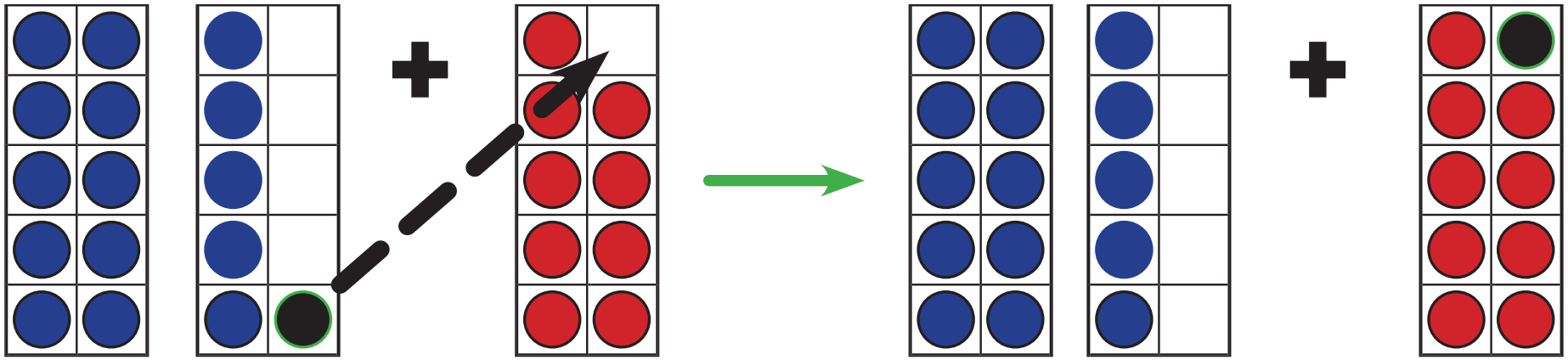
-1 +1

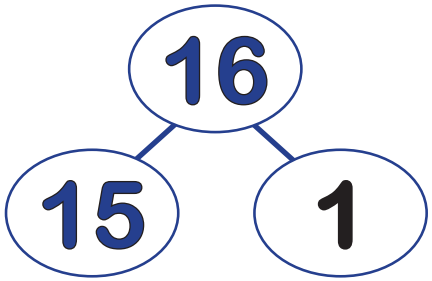
$$34 + 20 = 54$$

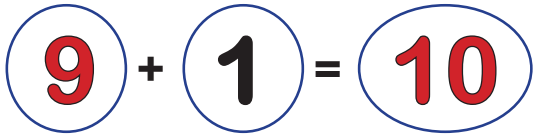
MC: Manipulate the Calculation

MC RaPa CoODa NumFa
Visualisation

16 + 9 = 25







15 + 10

MC: Manipulate the Calculation

MC RaPa CoODa NumFa

1

$$7 + 9 = 16$$

-1 +1

$$6 + 10 = 16$$

MC: Manipulate the Calculation

MC RaPa CoODa NumFa

2

$$45 + 19 = 64$$

-1 +1

$$44 + 20 = 64$$

MC: Manipulate the Calculation

MC RaPa CoODa NumFa

3

$$45 + 97 = 142$$

-3 +3

$$42 + 100 = 142$$

MC: Manipulate the Calculation

MC RaPa CoODa NumFa

4

$$345 + 298 = 643$$

-2 +2

$$343 + 300 = 643$$

MC: Manipulate the Calculation

MC RaPa CoODa NumFa

5

$$4645 + 1996 = 6641$$

-4 +4

$$4641 + 2000 = 6641$$

MC: Manipulate the Calculation

MC RaPa CoODa NumFa

6

$$4.5 + 1.9 = 6.4$$

-0.1 +0.1

$$4.4 + 2 = 6.4$$

Ra: Round & Adjust

MC RaPa CoODa NumFa

$$35 + 19 = 54$$

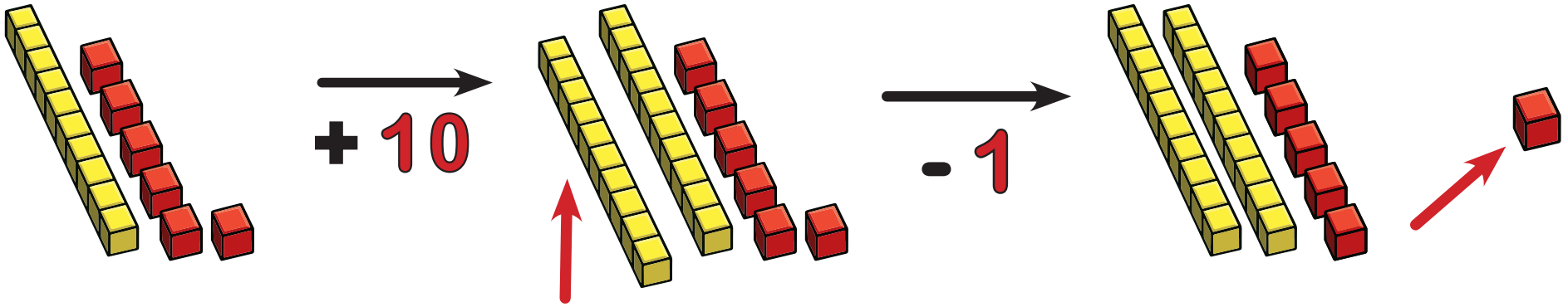
$$35 + 20 - 1$$

$$55 - 1 = 54$$

Ra: Round & Adjust

MC RaPa CoODa NumFa
Visualisation

16 + 9 = 25



16 26 25

Ra: Round & Adjust

MC RaPa CoODa NumFa

1

$$7 + 9 = 16$$

$$7 + 10 - 1$$

$$17 - 1 = 16$$

Ra: Round & Adjust

MC RaPa CoODa NumFa

2

$$45 + 19 = 64$$

$$45 + 20 - 1$$

$$65 - 1 = 64$$

Ra: Round & Adjust

MC RaPa CoODa NumFa

3

$$45 + 97 = 142$$

$$45 + 100 - 3$$

$$145 - 3 = 142$$

Ra: Round & Adjust

MC RaPa CoODa NumFa

4

$$345 + 298 = 643$$

$$345 + 300 - 2$$

$$645 - 2 = 643$$

Ra: Round & Adjust

MC RaPa CoODa NumFa

5

$$4645 + 1996 = 6641$$

$$4645 + 2000 - 4$$

$$6645 - 4 = 6641$$

Ra: Round & Adjust

MC RaPa CoODa NumFa

6

$$4.5 + 1.9 = 6.4$$

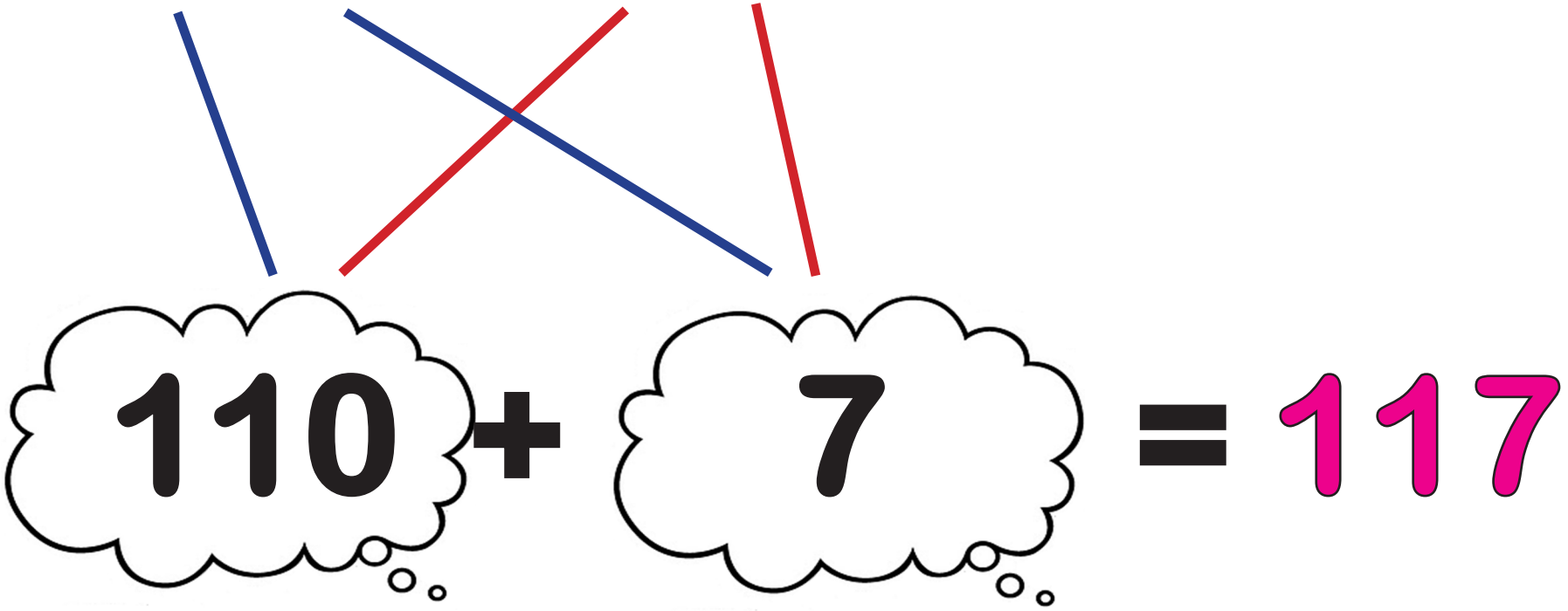
$$4.5 + 2 - 0.1$$

$$6.5 - 0.1 = 6.4$$

Pa: Partitioning

MC RaPa CoODa NumFa

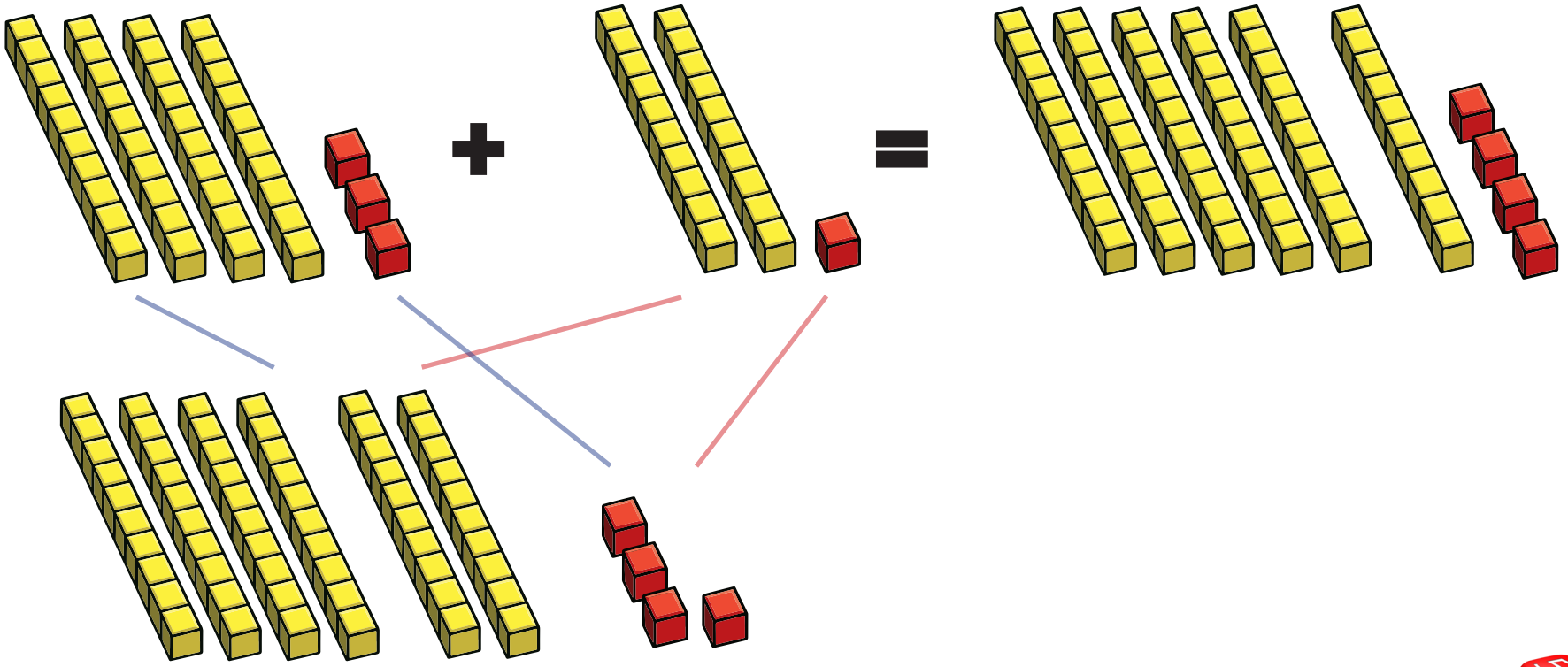
35 + 82 = 117



Pa: Partitioning

MC RaPa CoODa NumFa
Visualisation

43 + 21 = 64

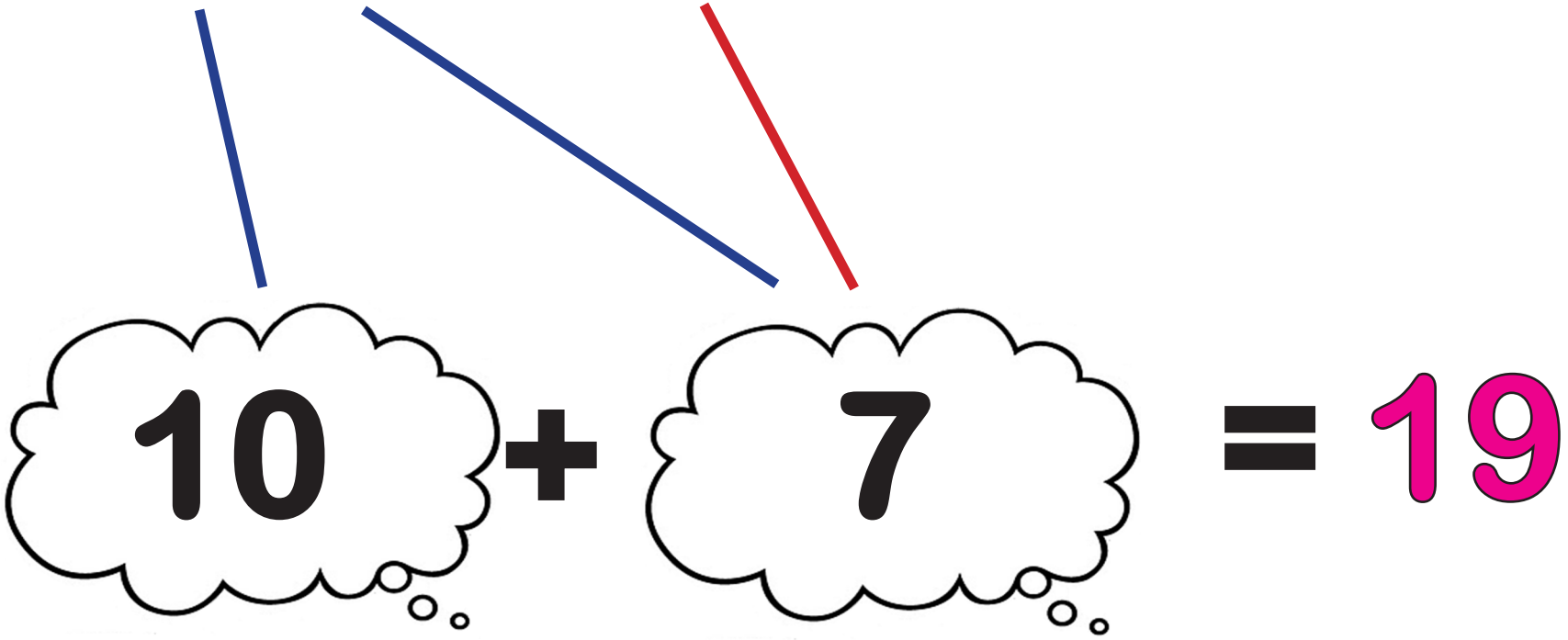


Pa: Partitioning

MC RaPa CoODa NumFa

1

$$12 + 5 = 19$$

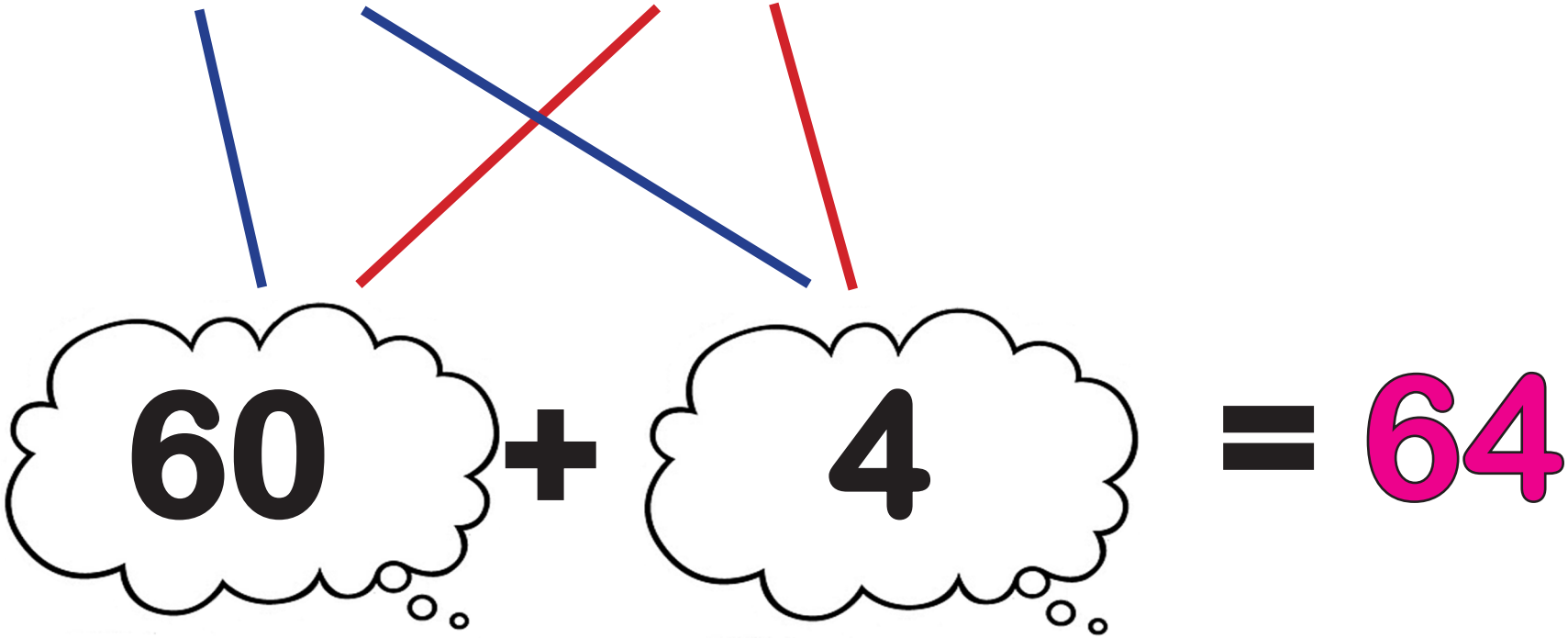


Pa: Partitioning

MC RaPa CoODa NumFa

2

43 + 21 = 64

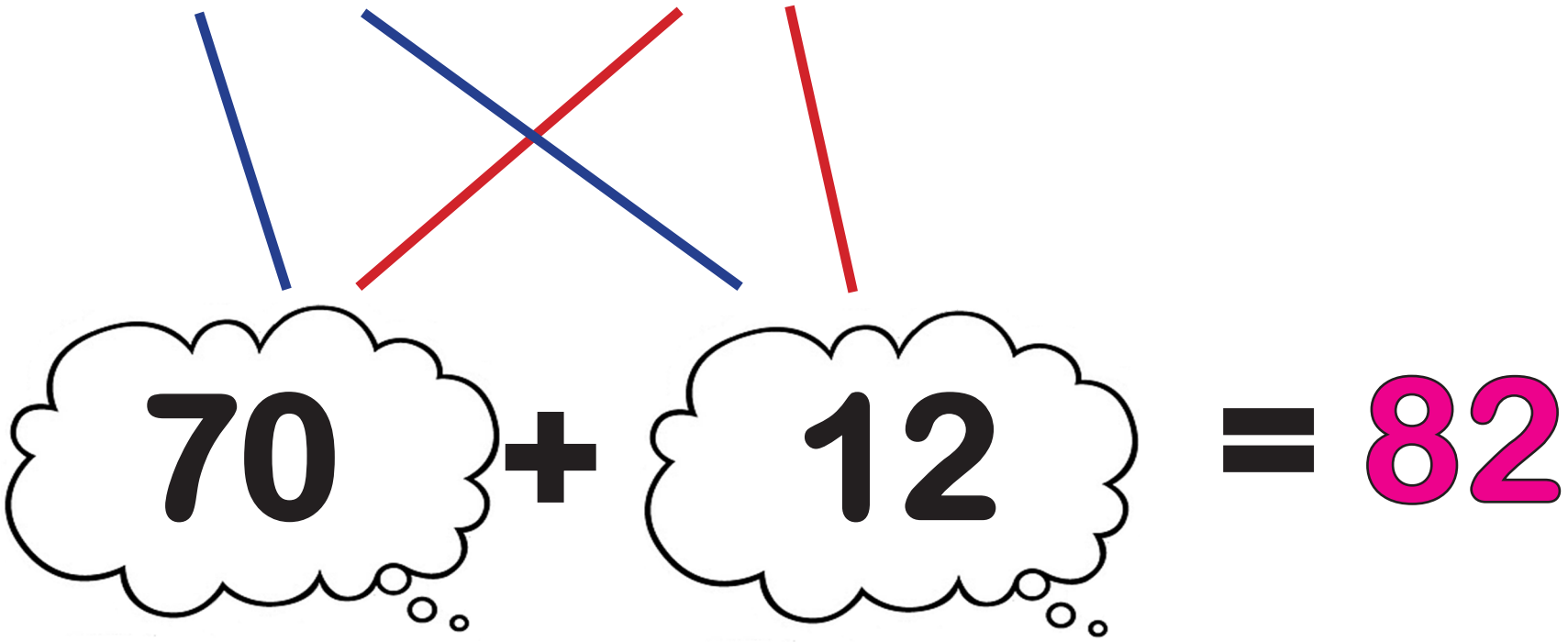


Pa: Partitioning

MC RaPa CoODa NumFa

3

57 + 25 = 82

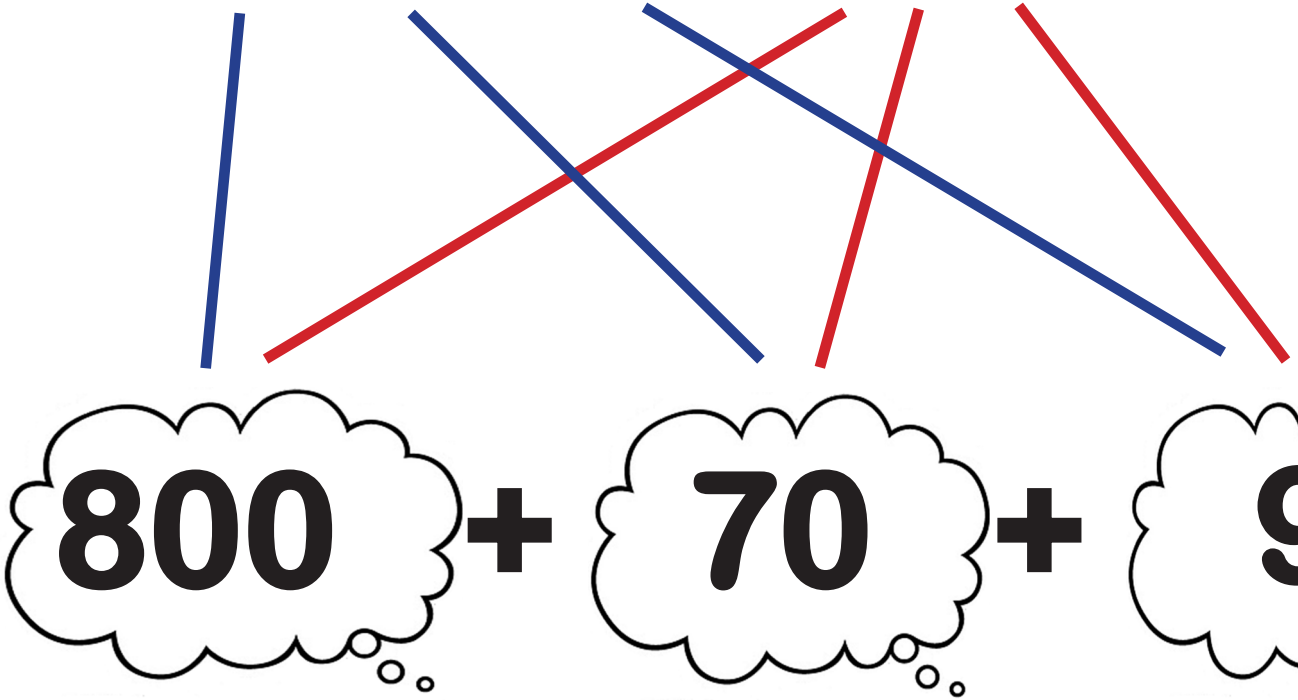


Pa: Partitioning

MC RaPa CoODa NumFa

4

648 + 231 = 879

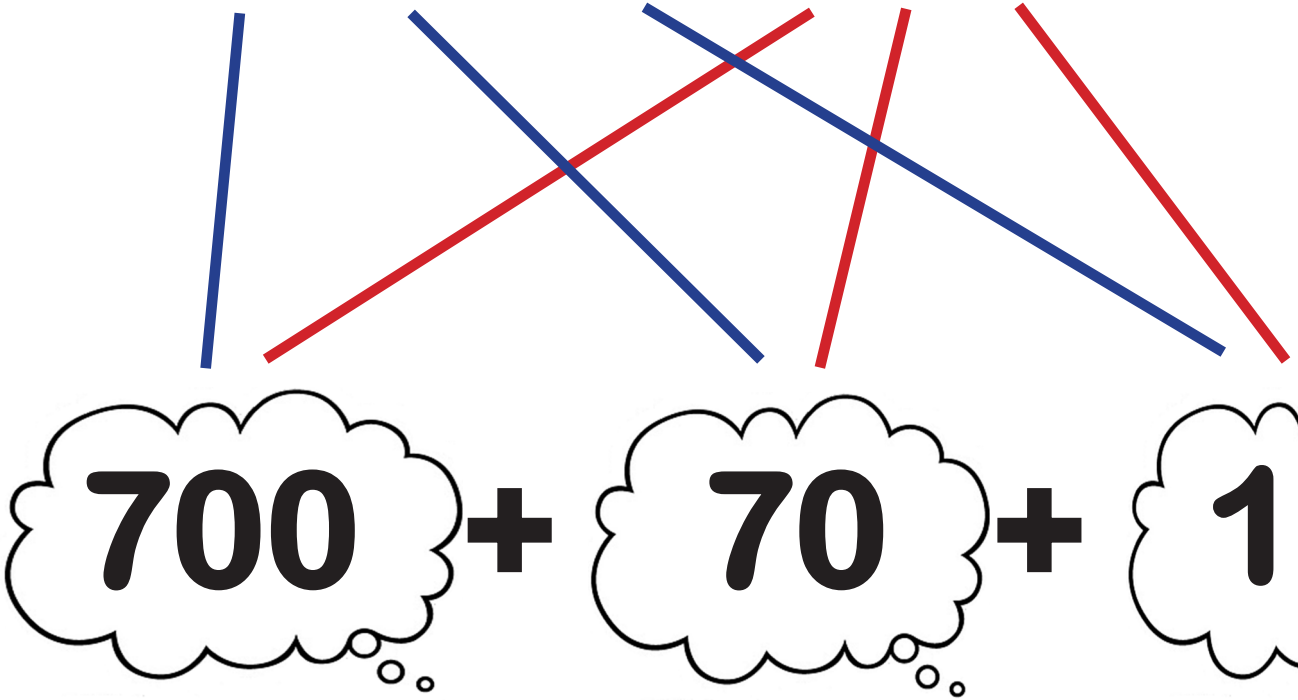


Pa: Partitioning

MC RaPa CoODa NumFa

5

526 + 258 = 784

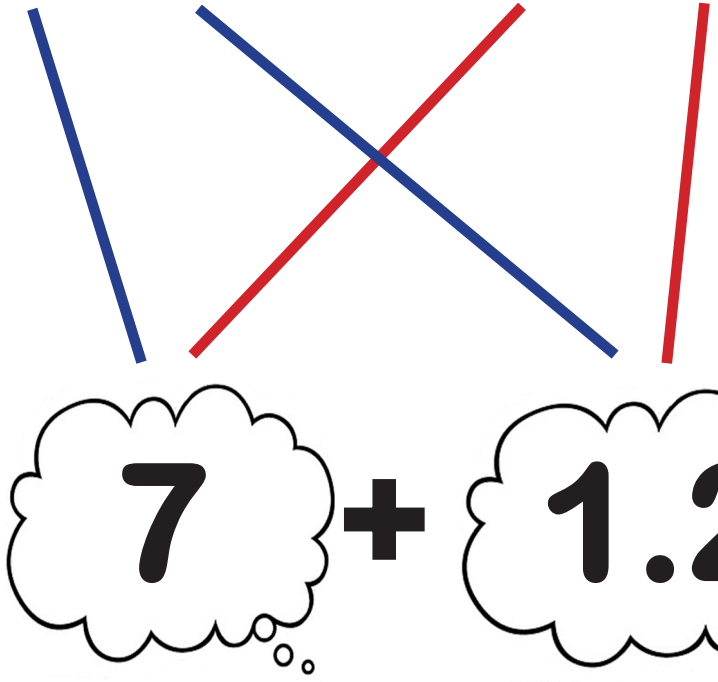


Pa: Partitioning

MC RaPa CoODa NumFa

6

$$5.7 + 2.5 = 8.2$$



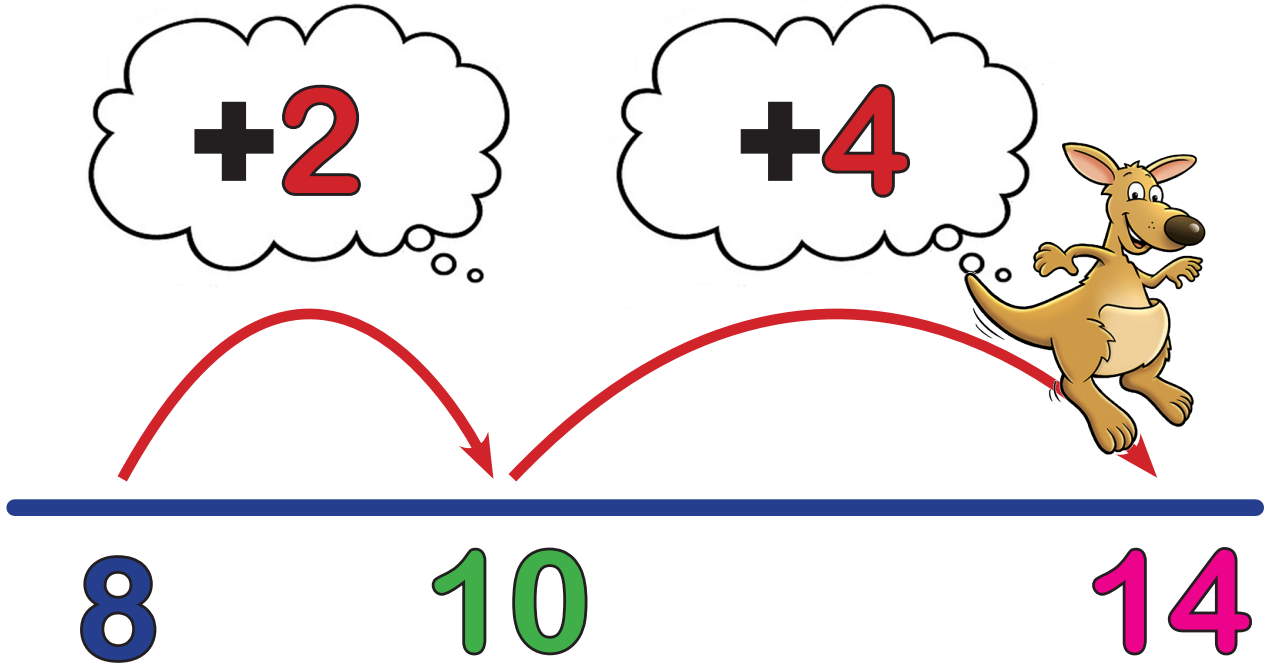
$= 8.2$

CoO(1): Counting On

MC RaPa CoODa NumFa

Ones

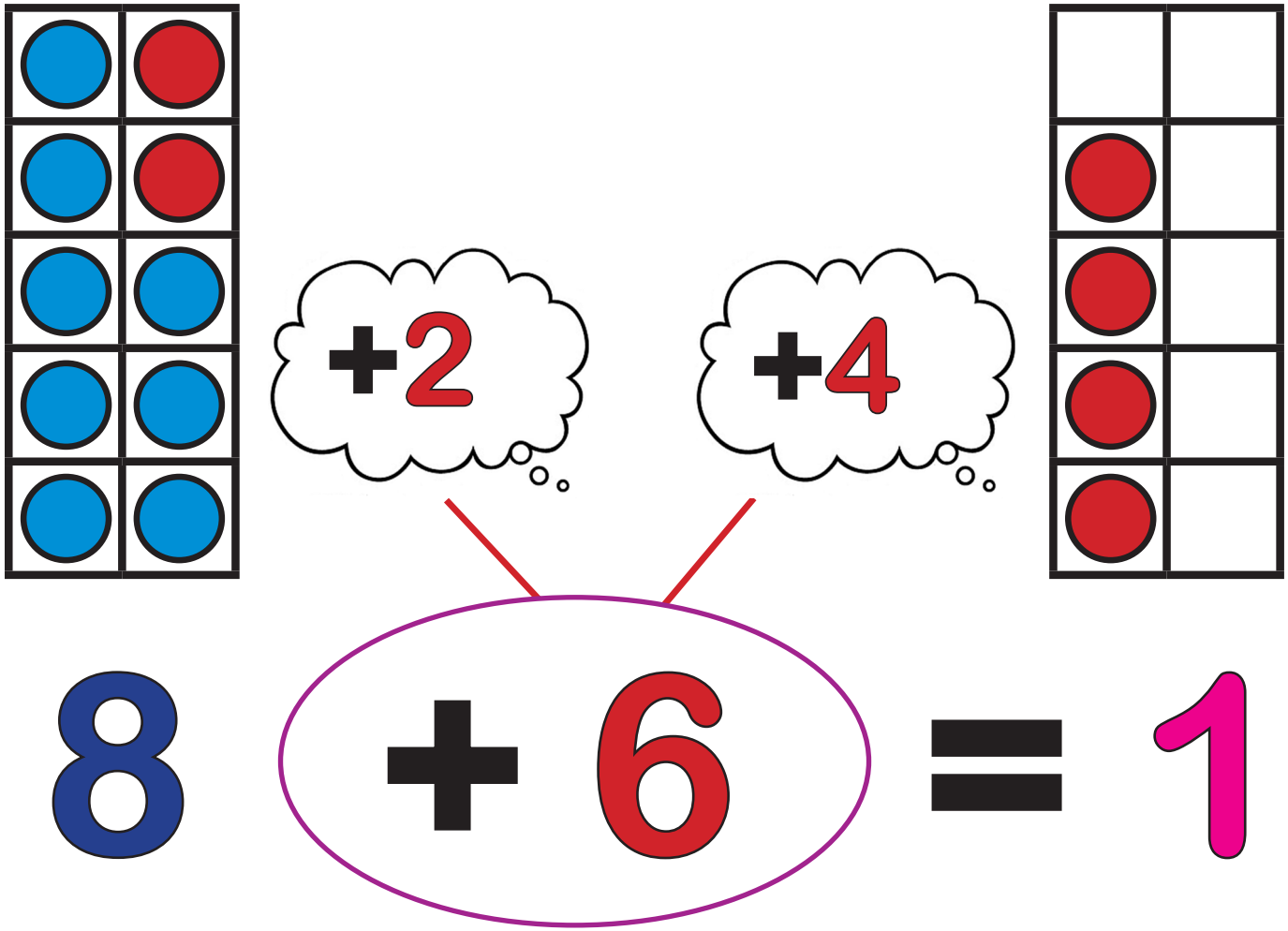
8 + 6 = 14



CoO(1): Counting On

MC RaPa CoODa NumFa
Visualisation

Ones



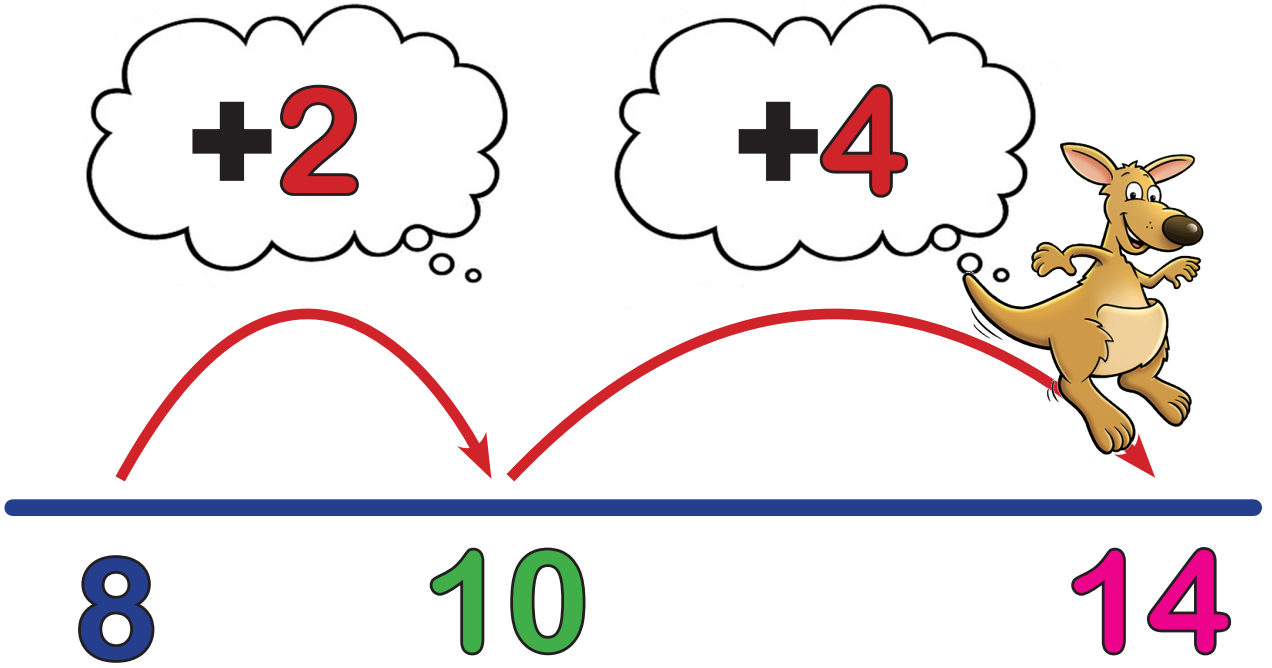
CoO(1): Counting On

MC RaPa CoODa NumFa

1

Ones

8 + 6 = 14



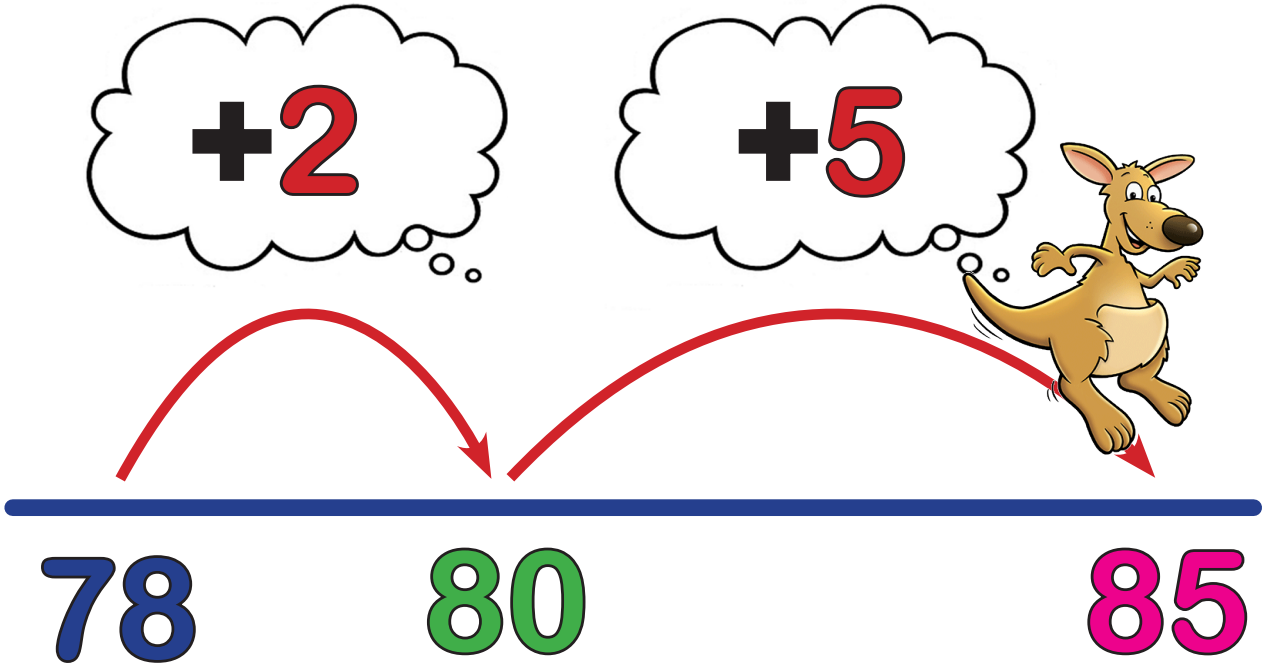
CoO(1): Counting On

MC RaPa CoODa NumFa

2

Ones

78 + 7 = 85



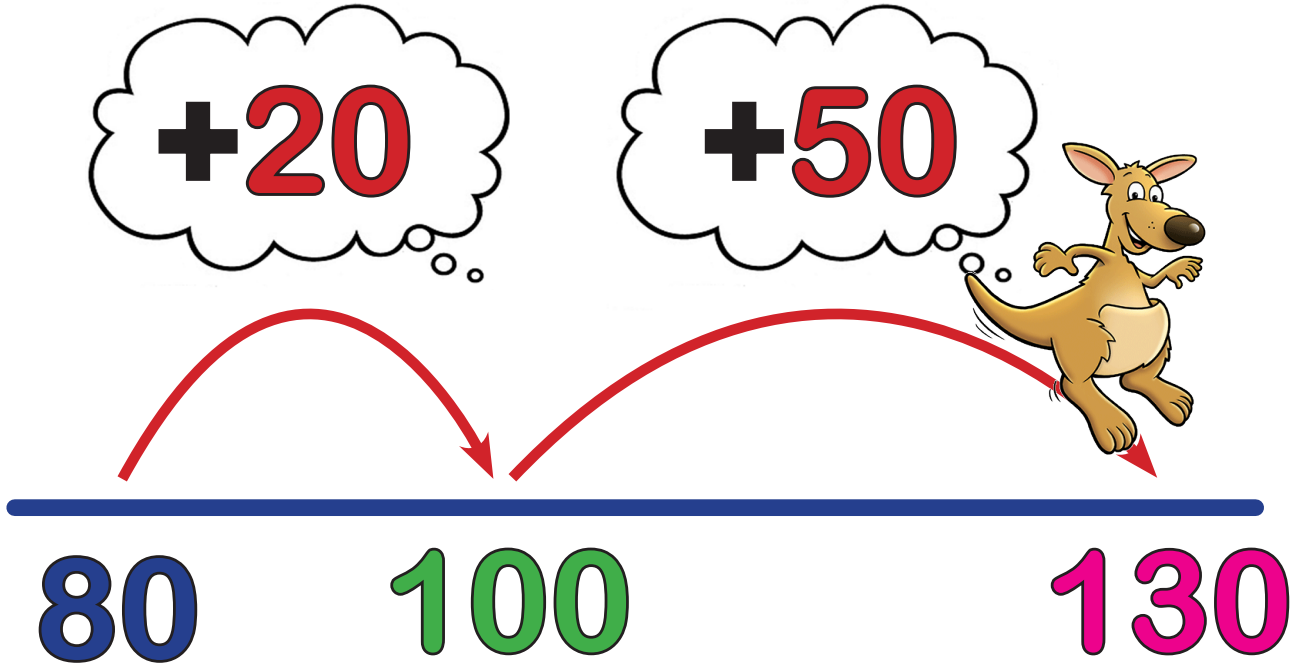
CoO(1): Counting On

MC RaPa CoODa NumFa

3

Tens

80 + 50 = 130



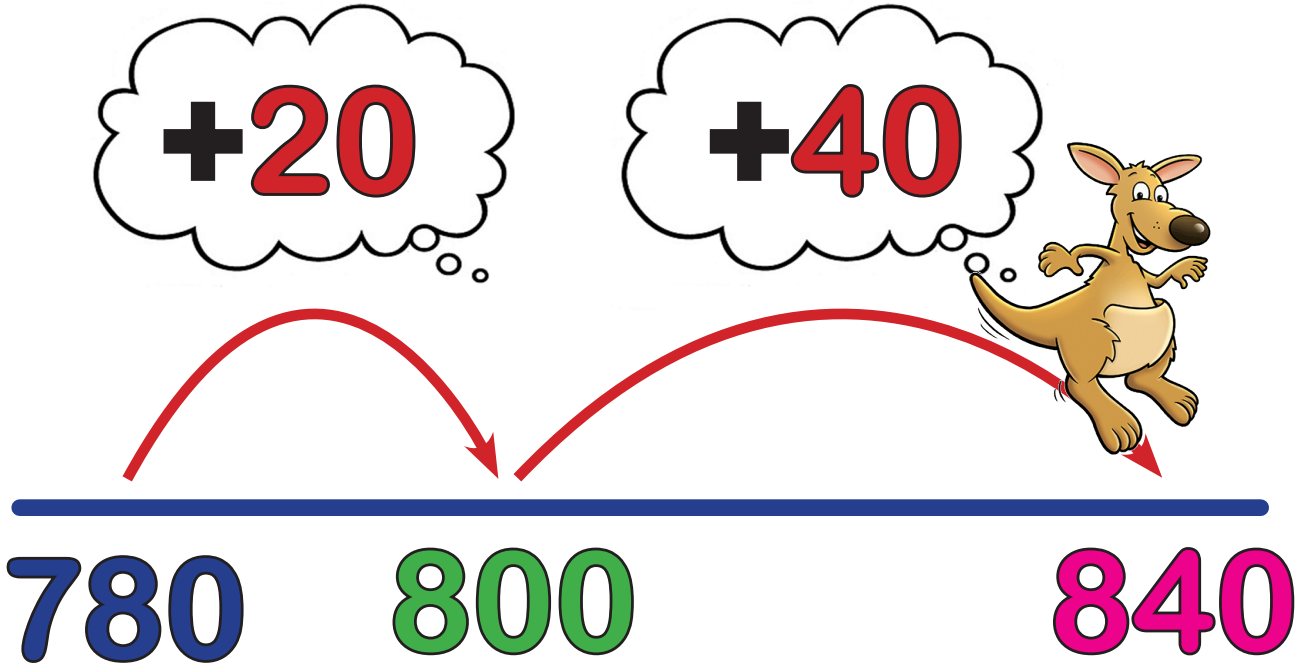
CoO(1): Counting On

MC RaPa CoODa NumFa

4

Tens

780 + 60 = 840

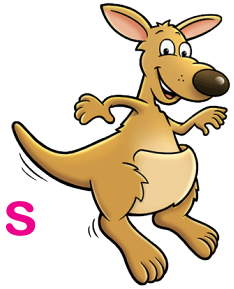


CoO(1): Counting On

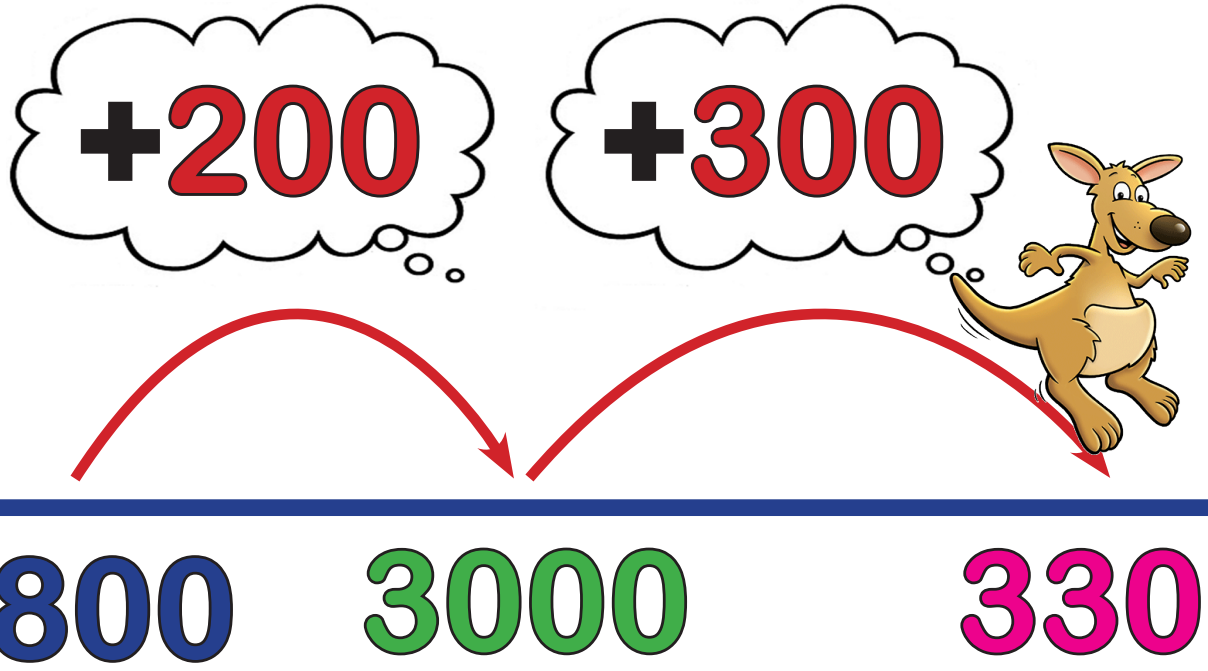
MC RaPa CoODa NumFa

5

Hundreds



2800 + 500 = 3300



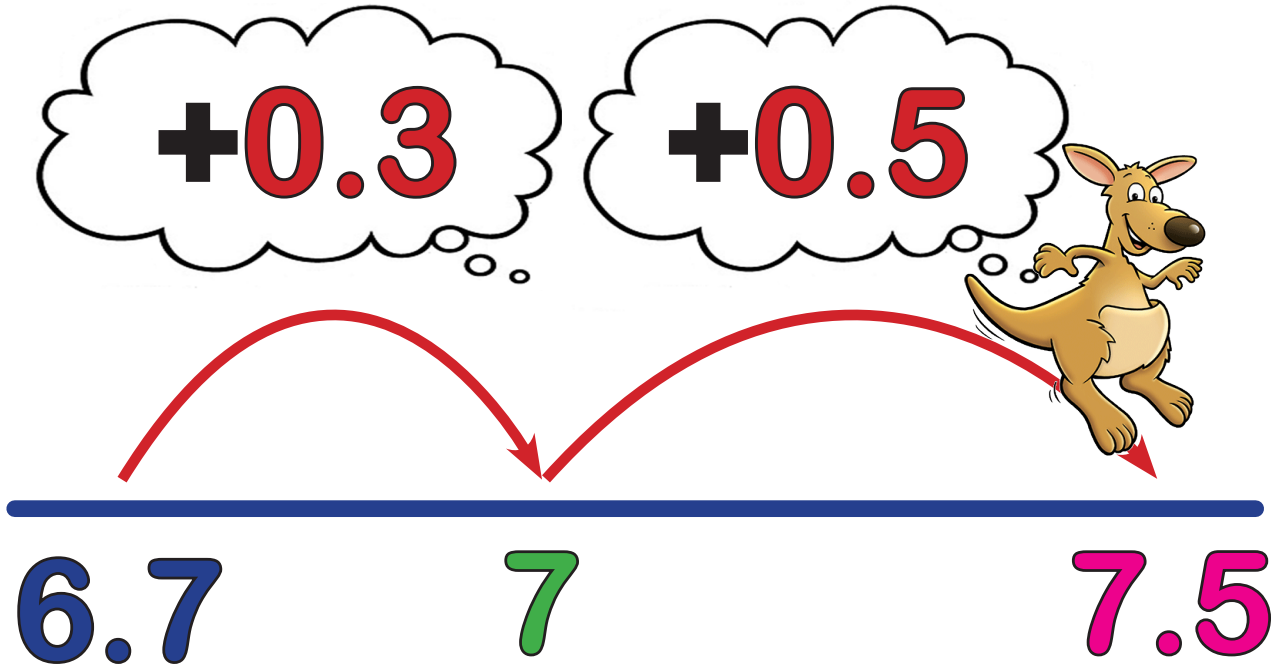
CoO(1): Counting On

MC RaPa CoODa NumFa

6

Tenths

6.7 + 0.8 = 7.5



CoO(2): Counting On

MC RaPa CoODa NumFa

Tens

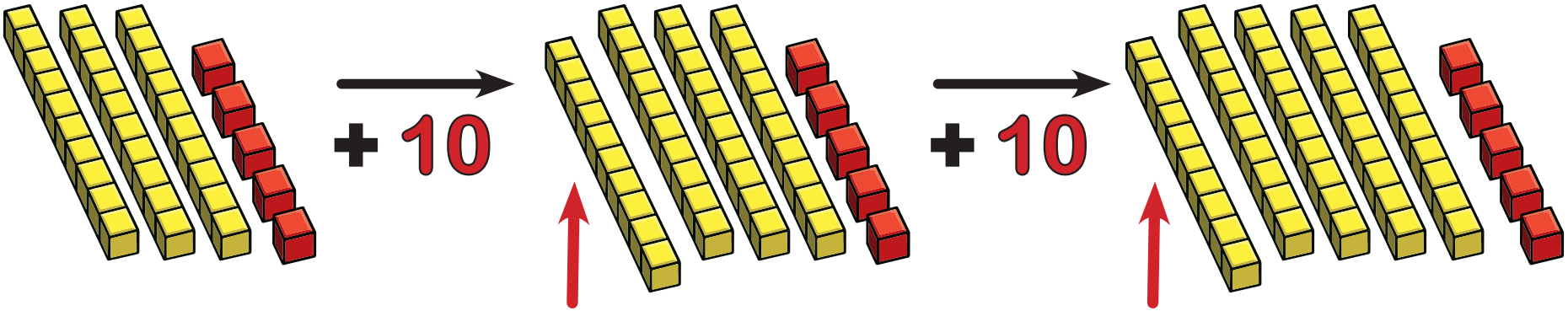
35 + 20 = 55

CoO(2): Counting On

MC RaPa CoODa NumFa
Visualisation

Tens

35 + 20 = 55

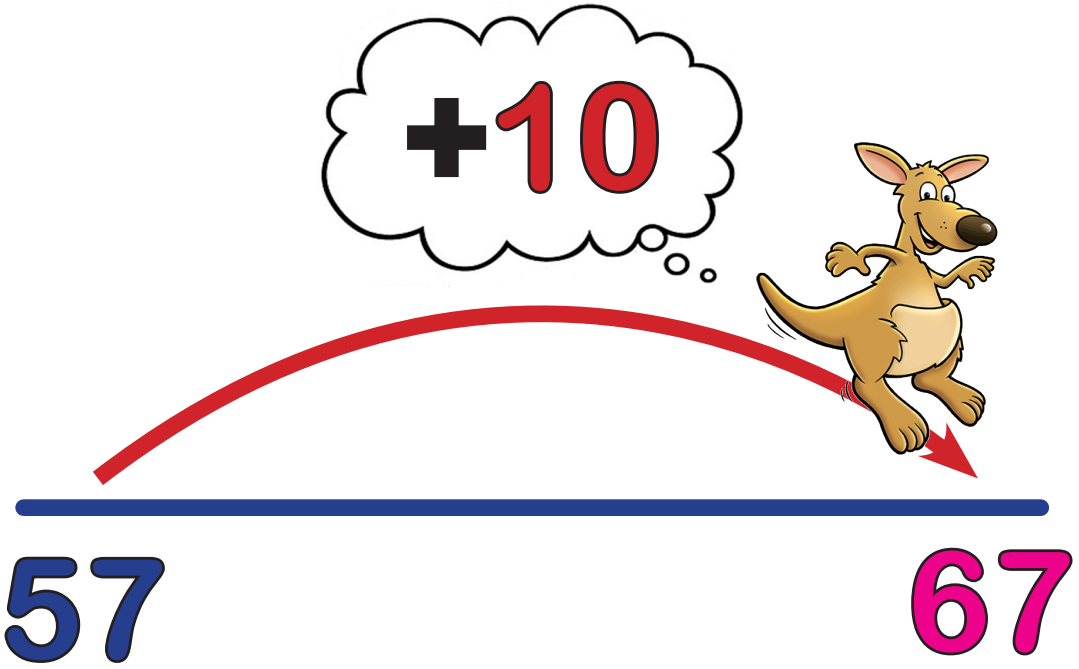


CoO(2): Counting On

MC RaPa CoODa NumFa 1

Tens

$$57 + 10 = 67$$

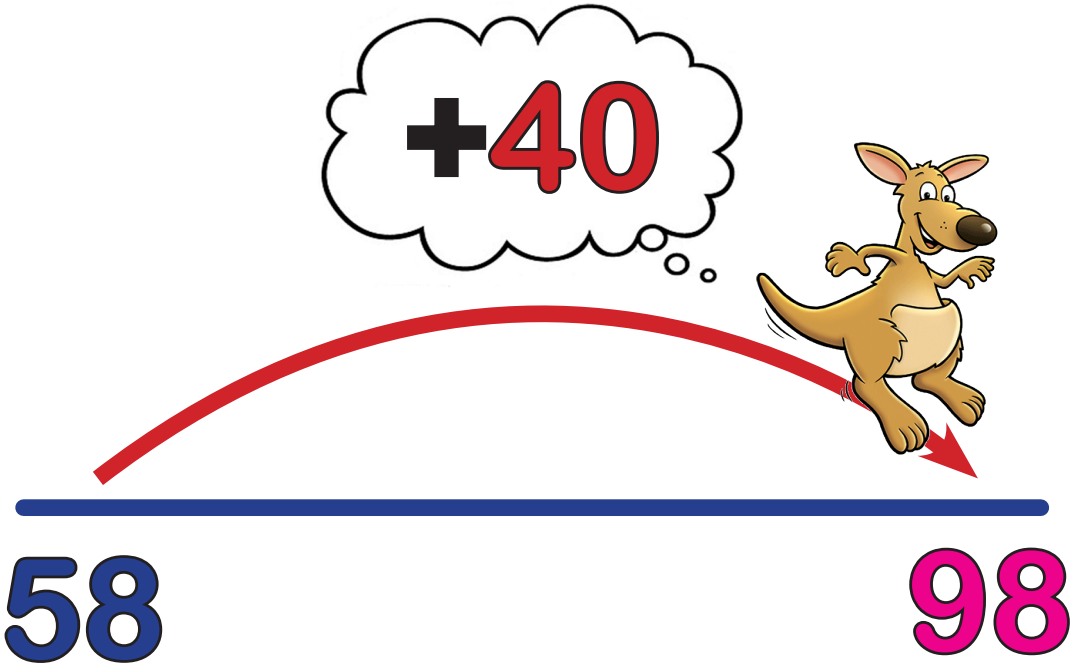


CoO(2): Counting On

MC RaPa CoODa NumFa
2

Tens

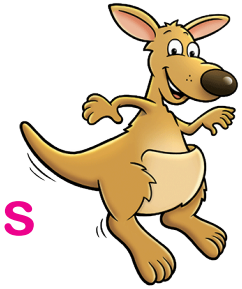
58 + 40 = 98



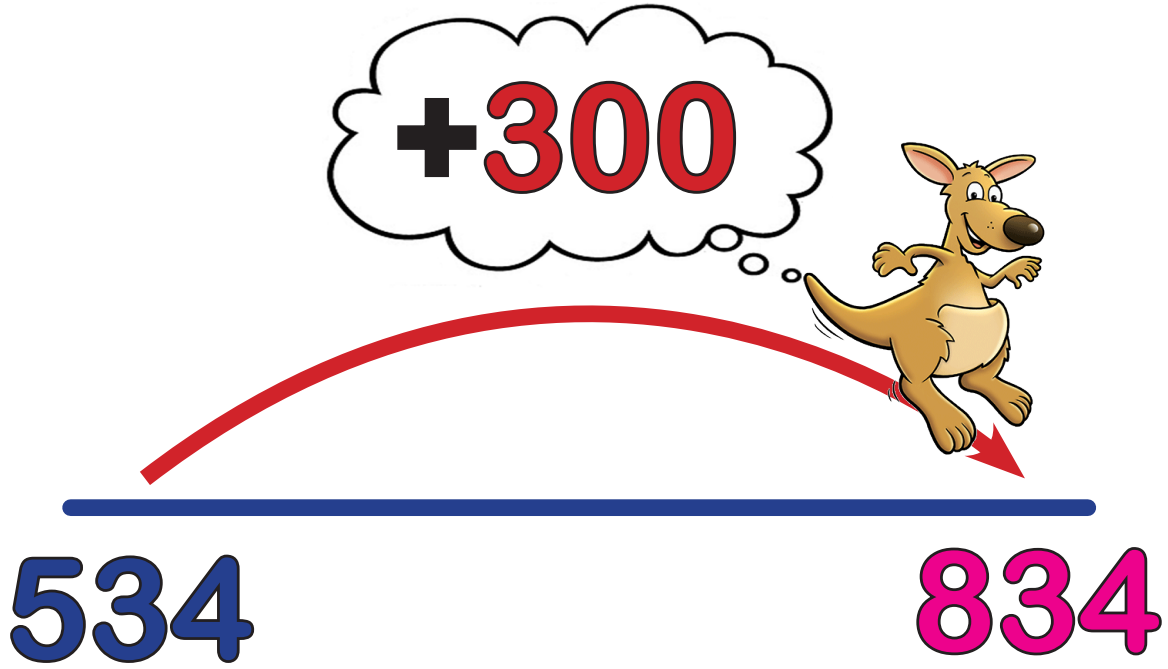
CoO(2): Counting On

MC RaPa CoODa NumFa
3

Hundreds



534 + 300 = 834

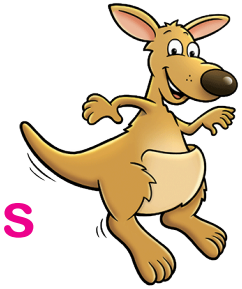


CoO(2): Counting On

MC RaPa CoODa NumFa

4

Thousands



6583 + 3000 = 9583

6583 9583

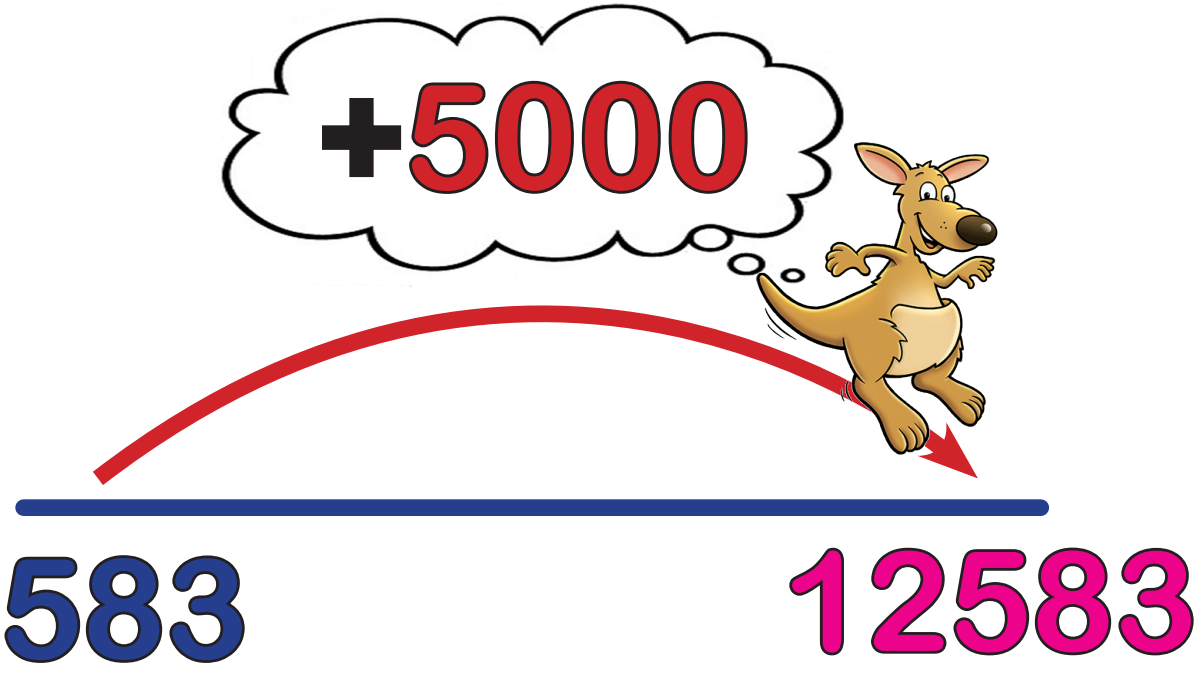
CoO(2): Counting On

MC RaPa CoODa NumFa

5

Thousands

7583 + 5000 = 12583



CoO(2): Counting On

MC RaPa CoODa NumFa

6

Millions

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

5,763,947 9,763,947

Da: Double & Adjust

MC RaPa CoODa NumFa

35 + 36 = 71

35

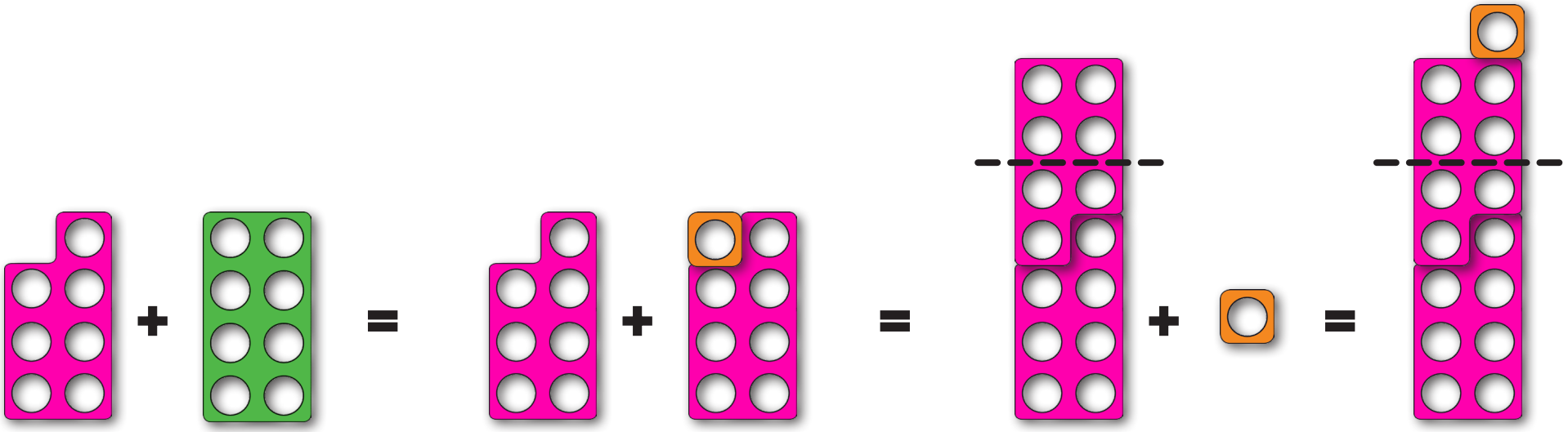
1

70 + 1 = 71

Da: Double & Adjust

MC RaPa CoODa NumFa
Visualisation

7 + 8 = 15

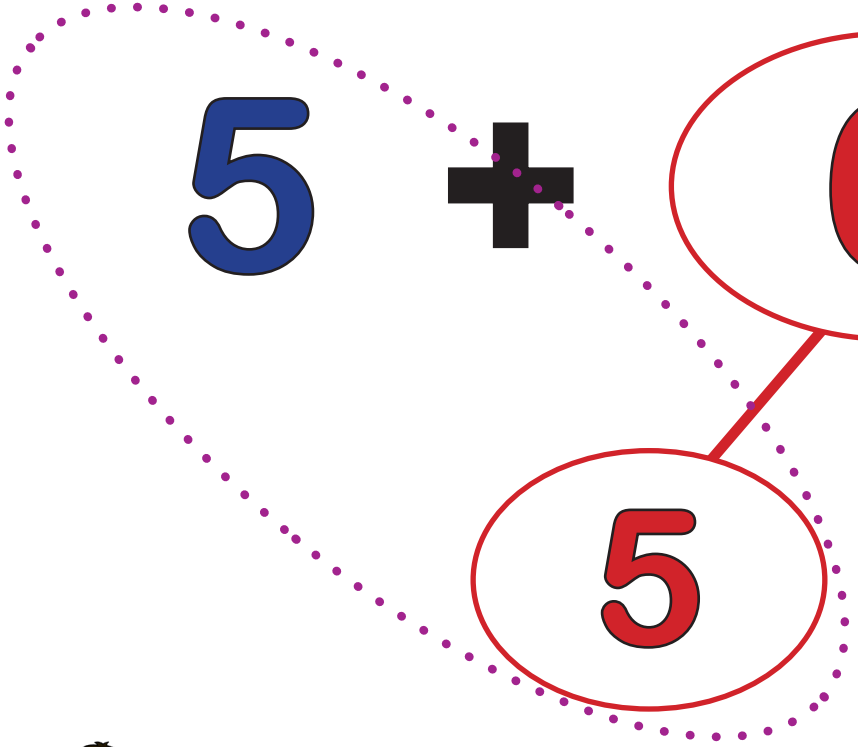


7 + 8 = 7 + 7 + 1 = 14 + 1 = 15

Da: Double & Adjust

MC RaPa CoODa NumFa

1



10 + 1 = 11

Da: Double & Adjust

MC RaPa CoODa NumFa

2

$7 + 8 = 15$

- 8
  - 7
  - 1

$14 + 1 = 15$

Da: Double & Adjust

MC RaPa CoODa NumFa

3

16 + 17 = 33

16

1

32 + 1 = 33

Da: Double & Adjust

MC RaPa CoODa NumFa

4

45 + 47 = 92

45

2

90 + 2 = 92

Da: Double & Adjust

MC RaPa CoODa NumFa

5

125 + 127 = 252

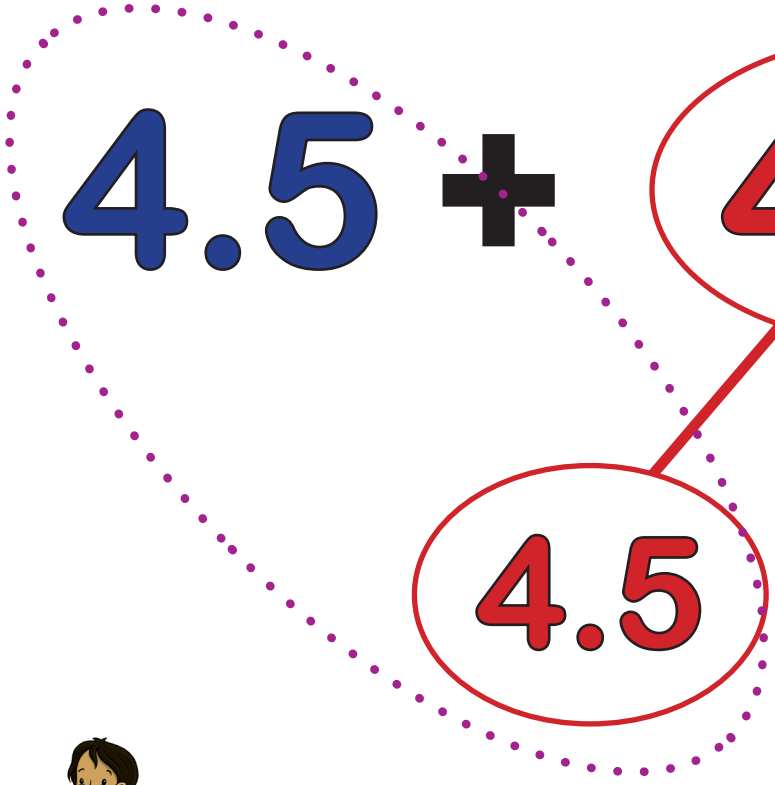
125 2

250 + 2 = 252

Da: Double & Adjust

MC RaPa CoODa NumFa

6



9 + 0.2 = 9.2

NumFa: Number Facts

MC RaPa CoODa NumFa

(Spotting Bonds)

$$35 + 95 = 130$$

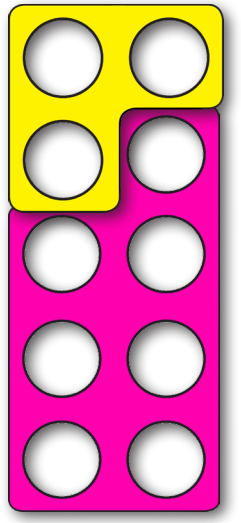
$$30 + 100$$

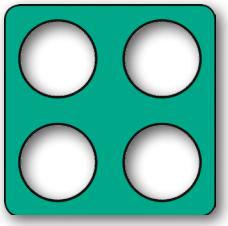
NumFa: Number Facts

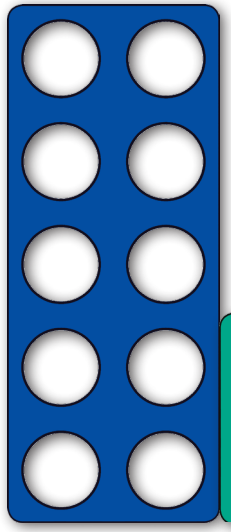
MC RaPa CoODa NumFa
Visualisation

(Spotting Bonds)

$$3 + 4 + 7 = 14$$







NumFa: Number Facts

MC RaPa CoODa NumFa

1

(Spotting Bonds)

$$3 + 4 + 7 = 14$$

$$10 + 4$$

NumFa: Number Facts

MC RaPa CoODa NumFa

2

(Spotting Bonds)

$$13 + 4 + 7 + 16 = 40$$

$$20 + 20$$

NumFa: Number Facts

MC RaPa CoODa NumFa

3

(Spotting Bonds)

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

$$70 + 70$$

NumFa: Number Facts

MC RaPa CoODa NumFa

4

(Spotting Bonds)

$$42 + 26 + 98 + 14 = 180$$

$$140 + 40$$

NumFa: Number Facts

MC RaPa CoODa NumFa

5

(Spotting Bonds)

£4.56 + £3.27 + £1.44 + £1.03 = £10.30

£6.00 + £4.30

NumFa: Number Facts

MC RaPa CoODa NumFa

6

(Spotting Bonds)

$$4.2 + 1.6 + 2.8 + 5.4 = 14$$

$$7 + 7$$

MC RaPa CoOCoB NumFa

71  **MC = Manipulate Calculation**

79  **Ra = Round and Adjust**

87  **Pa = Partitioning**

95  **CoO = Counting On**

110  **CoB = Counting Back**

125  **NumFa = Number Facts**

6 Cool Strategies for Mental Subtraction!

MC: Manipulate the Calculation

MC RaPa CoOCoB NumFa

(Same Difference!)

$$84 - 29 = 55$$

+1 +1

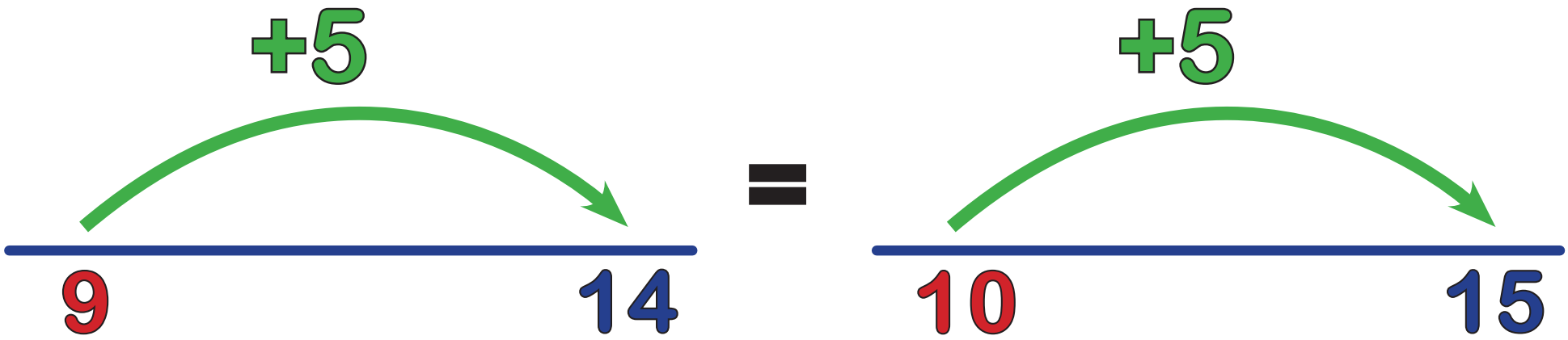
$$85 - 30 = 55$$

MC: Manipulate the Calculation

MC RaPa CoOCoB NumFa
Visualisation

(Same Difference!)

14 - 9 = 5



14 - 9 = 15 - 10

(14 + 1) - (9 + 1)

MC: Manipulate the Calculation

MC RaPa CoOCoB NumFa 1

(Same Difference!)

$$14 - 9 = 5$$

+1 +1

$$15 - 10 = 5$$

MC: Manipulate the Calculation

MC RaPa CoOCoB NumFa
2

(Same Difference!)

$$84 - 29 = 55$$

+1 +1

$$85 - 30 = 55$$

MC: Manipulate the Calculation

MC RaPa CoOCoB NumFa
3

(Same Difference!)

463 - 97 = 366

+3 +3

466 - 100 = 366

MC: Manipulate the Calculation

MC RaPa CoOCoB NumFa
4

(Same Difference!)

876 - 298 = 578

+2 +2

878 - 300 = 578

MC: Manipulate the Calculation

MC RaPa CoOCoB NumFa

5

(Same Difference!)

$$5864 - 2996 = 2868$$

+4 +4

$$5868 - 3000 = 2868$$

MC: Manipulate the Calculation

MC RaPa CoOCoB NumFa

6

(Same Difference!)

$$6.4 - 1.9 = 4.5$$

+0.1 +0.1

$$6.5 - 2 = 4.5$$

Ra: Round & Adjust

MC RaPa CoOCoB NumFa

$$84 - 29 = 55$$

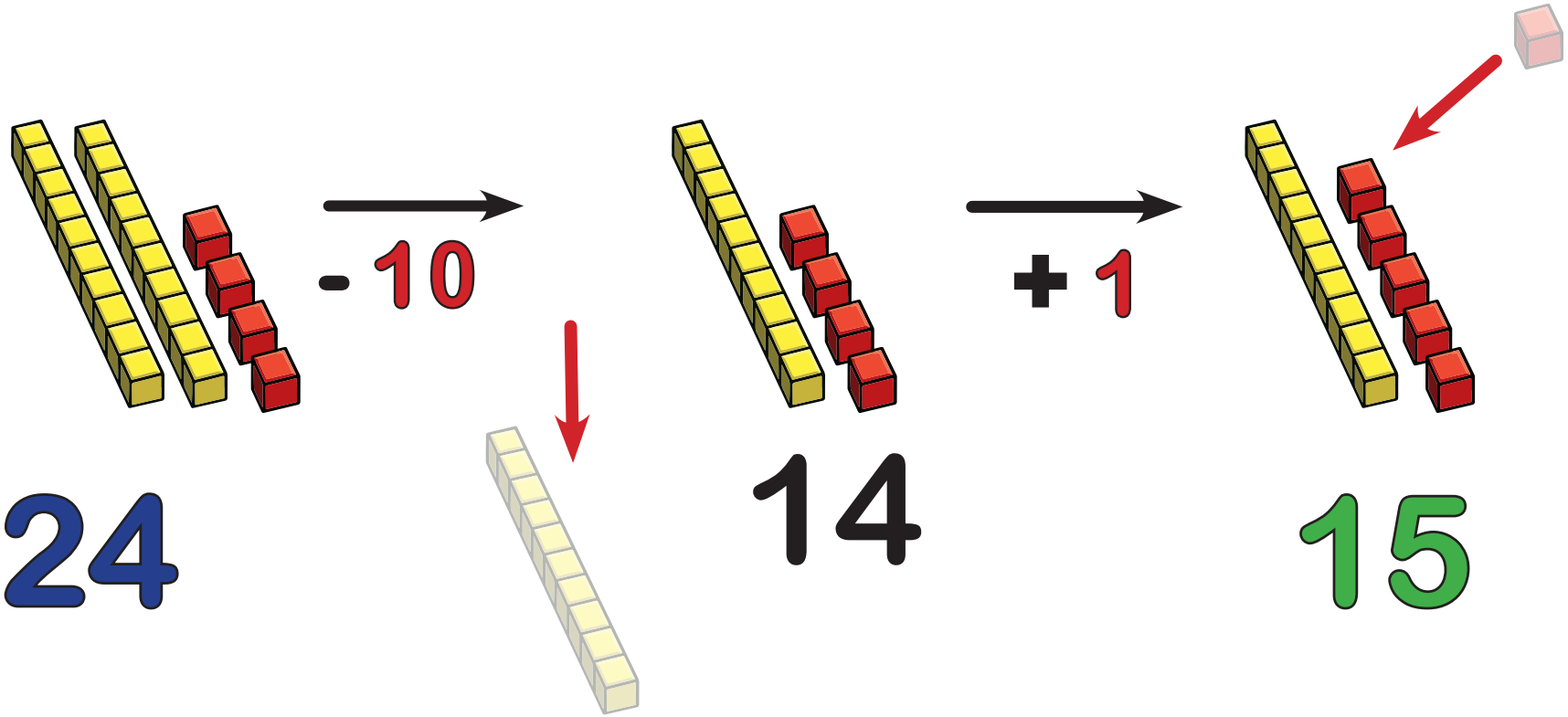
$$84 - 30 + 1$$

$$54 + 1 = 55$$

Ra: Round & Adjust

MC RaPa CoOCoB NumFa
Visualisation

24 - 9 = 15



Ra: Round & Adjust

MC RaPa CoOCoB NumFa

1

$$14 - 9 = 5$$

$$14 - 10 + 1$$

$$4 + 1 = 5$$

Ra: Round & Adjust

MC RaPa CoOCoB NumFa

2

$$84 - 29 = 55$$

$$84 - 30 + 1$$

$$54 + 1 = 55$$

Ra: Round & Adjust

MC RaPa CoOCoB NumFa

3

$$463 - 97 = 366$$

$$463 - 100 + 3$$

$$363 + 3 = 366$$

Ra: Round & Adjust

MC RaPa CoOCoB NumFa

4

$$876 - 298 = 578$$

$$876 - 300 + 2$$

$$576 + 2 = 578$$

Ra: Round & Adjust

MC RaPa CoOCoB NumFa

5

$$5864 - 2996 = 2868$$

$$5864 - 3000 + 4$$

$$2864 + 4 = 2868$$

Ra: Round & Adjust

MC RaPa CoOCoB NumFa

6

$$6.4 - 1.9 = 4.5$$

$$6.4 - 2 + 0.1$$

$$4.4 + 0.1 = 4.5$$

Pa: Partitioning

MC RaPa CoOCoB NumFa

$$63 - 35 = 28$$

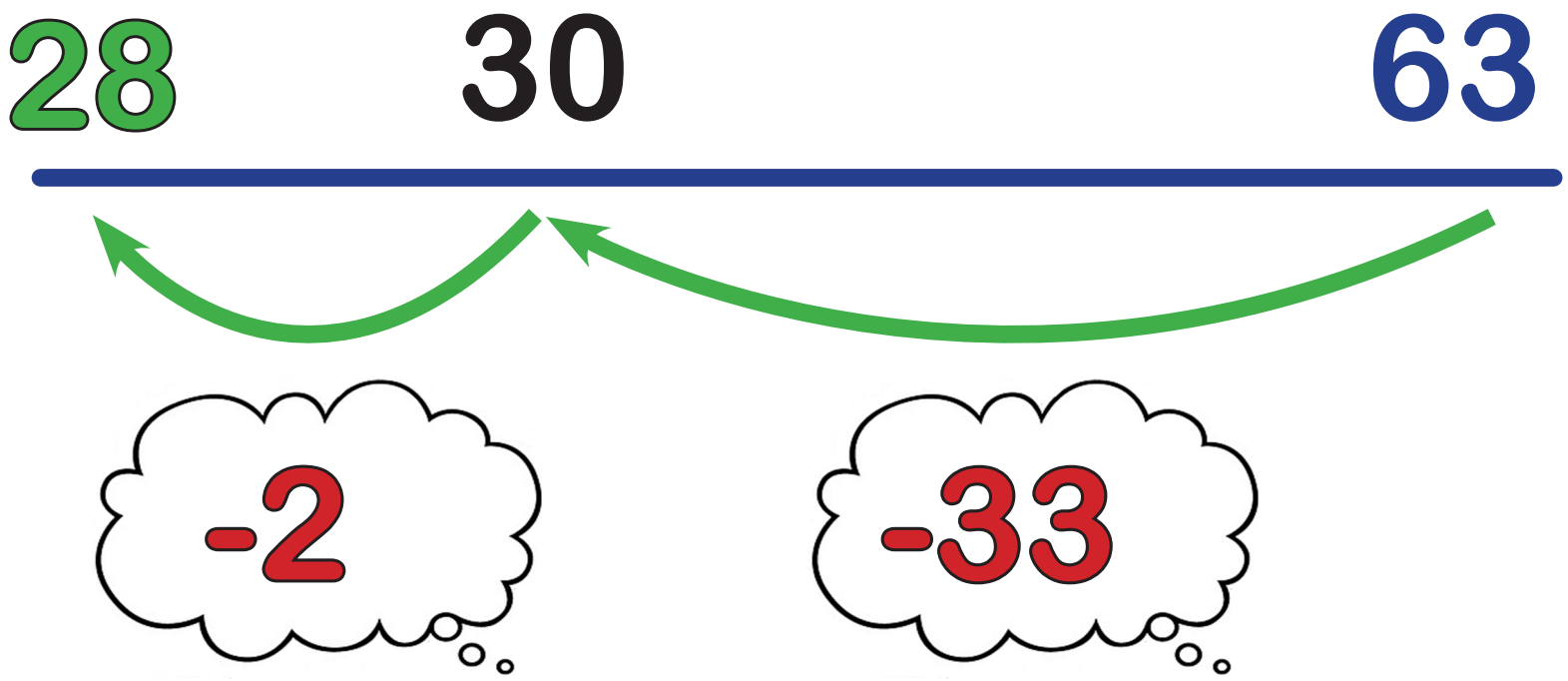
$$- 33 \quad - 2$$

63 → 30 → 28

Pa: Partitioning

MC RaPa CoOCoB NumFa
Visualisation

63 - 35 = 28



Pa: Partitioning

MC RaPa CoOCoB NumFa

1

$$23 - 8 = 15$$

$$-3 \qquad -5$$

23 20 15

Pa: Partitioning

MC RaPa CoOCoB NumFa

2

$$63 - 35 = 28$$

$$- 33 \quad - 2$$

63 | 30 | 28

Pa: Partitioning

MC RaPa CoOCoB NumFa

3

$$123 - 28 = 95$$

$$28 = 23 - 5$$

123

100

95

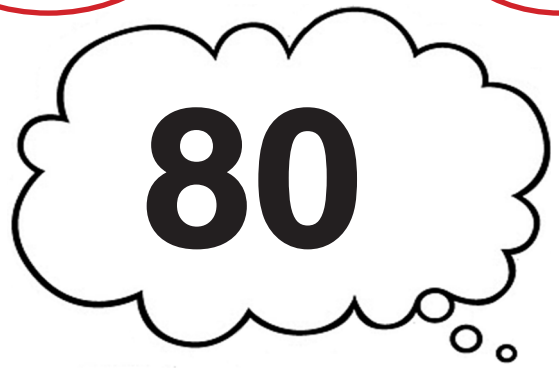
Pa: Partitioning

MC RaPa CoOCoB NumFa

4

$$132 - 58 = 74$$

$$- 52 \quad - 6$$



Pa: Partitioning

MC RaPa CoOCoB NumFa

5

$$750 - 372 = 378$$

$$- 350 \quad - 22$$

750

400

378

Pa: Partitioning

MC RaPa CoOCoB NumFa

6

$$8.3 - 5.7 = 2.6$$

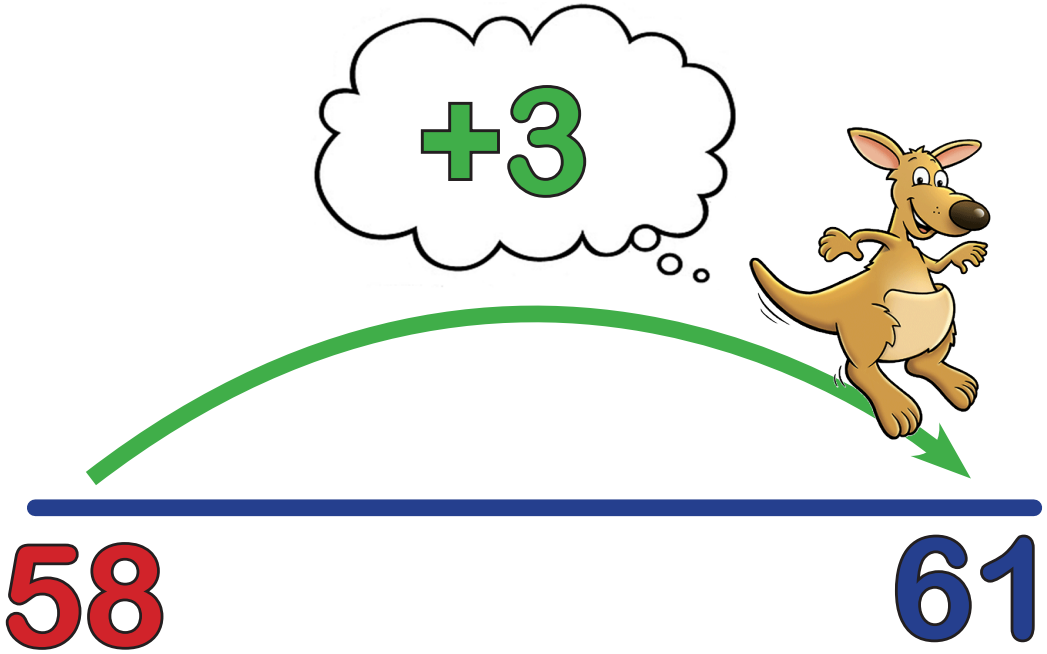
$$- 5.3 \quad - 0.4$$

CoO(1): Counting On

MC RaPa CoOCoB NumFa 2

Small Difference

61 - 58 = 3

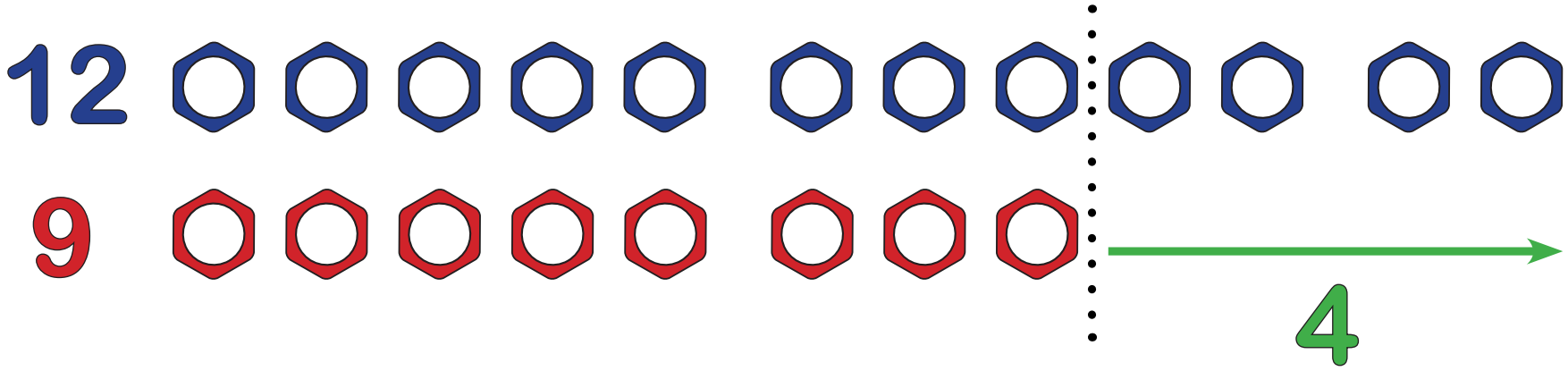


CoO(1): Counting On

MC RaPa CoOCoB NumFa
Visualisation

Small Difference

$$12 - 8 = 4$$

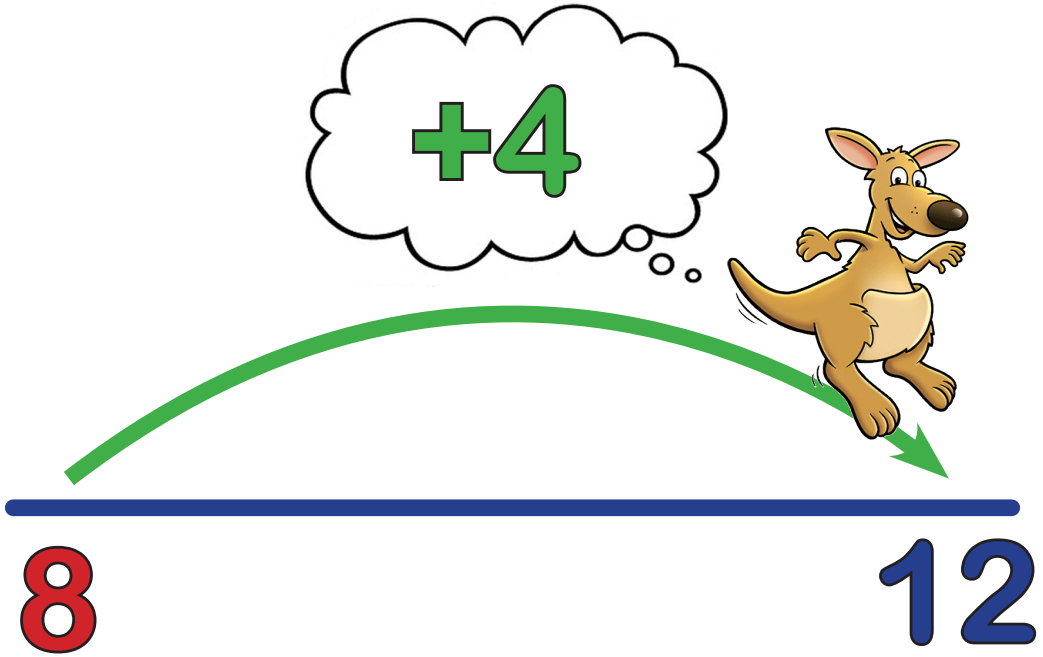


CoO(1): Counting On

Small Difference

MC RaPa CoOCoB NumFa 1

$$12 - 8 = 4$$

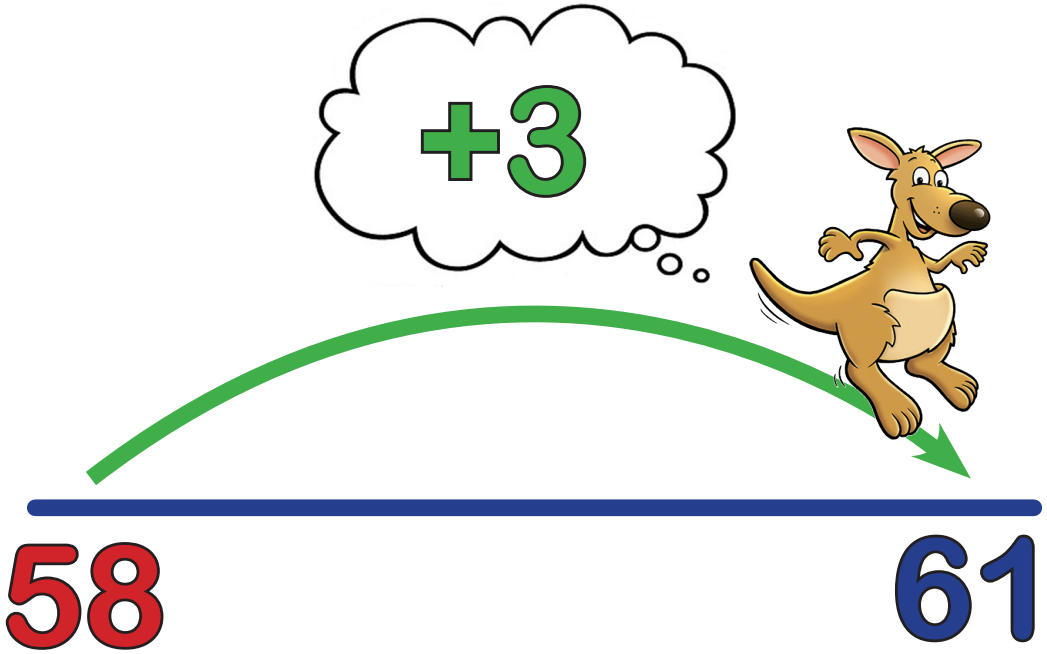


CoO(1): Counting On

MC RaPa CoOCoB NumFa 2

Small Difference

61 - 58 = 3

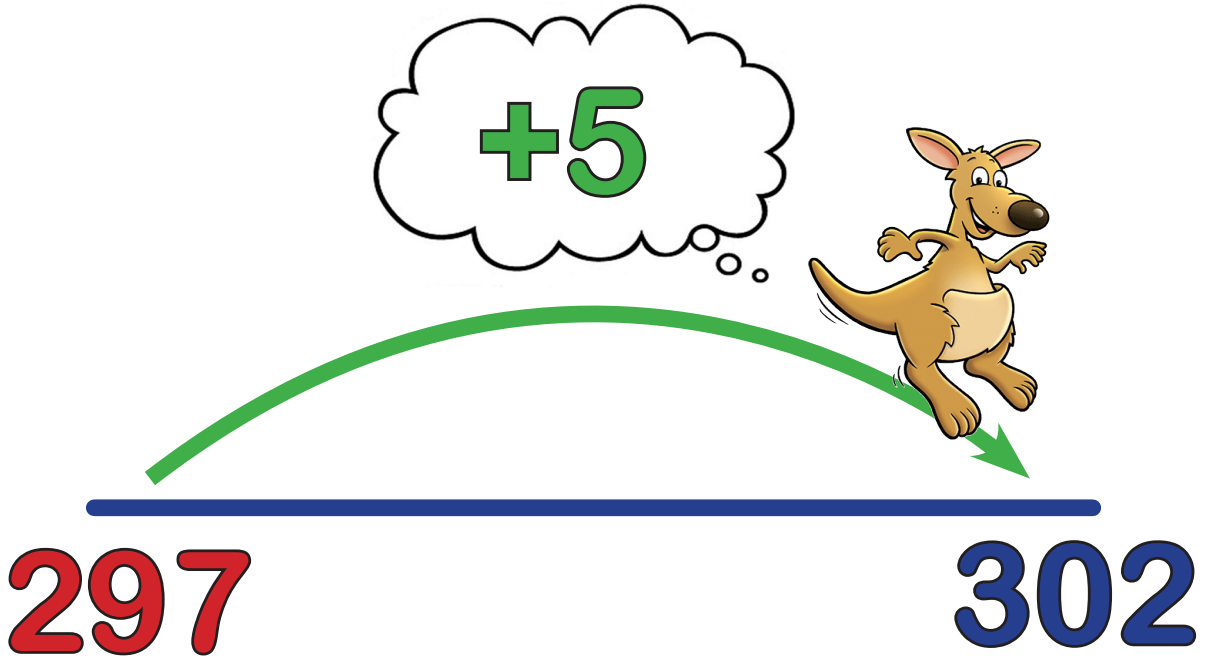


CoO(1): Counting On

MC RaPa CoOCoB NumFa 3

Small Difference

302 - 297 = 5

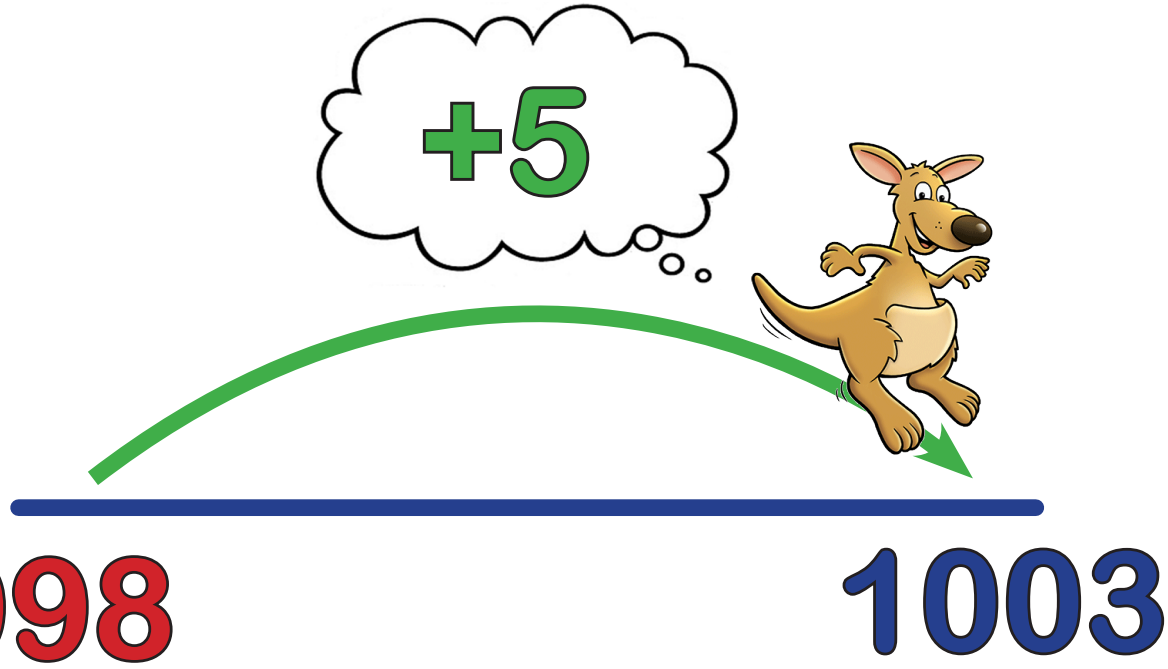


CoO(1): Counting On

MC RaPa CoOCoB NumFa
4

Small Difference

$$1003 - 998 = 5$$

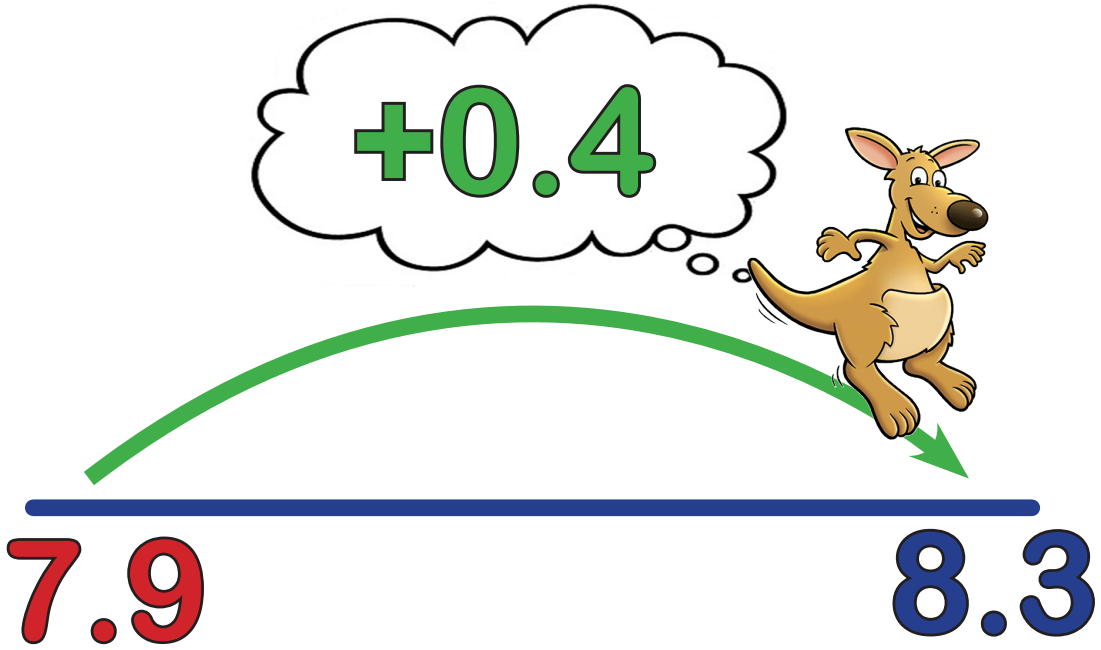


CoO(1): Counting On

MC RaPa CoOCoB NumFa 5

Small Difference

8.3 - 7.9 = 0.4



CoO(1): Counting On

MC RaPa CoOCoB NumFa

6

Small Difference

£12.02 - £11.98 = 4p

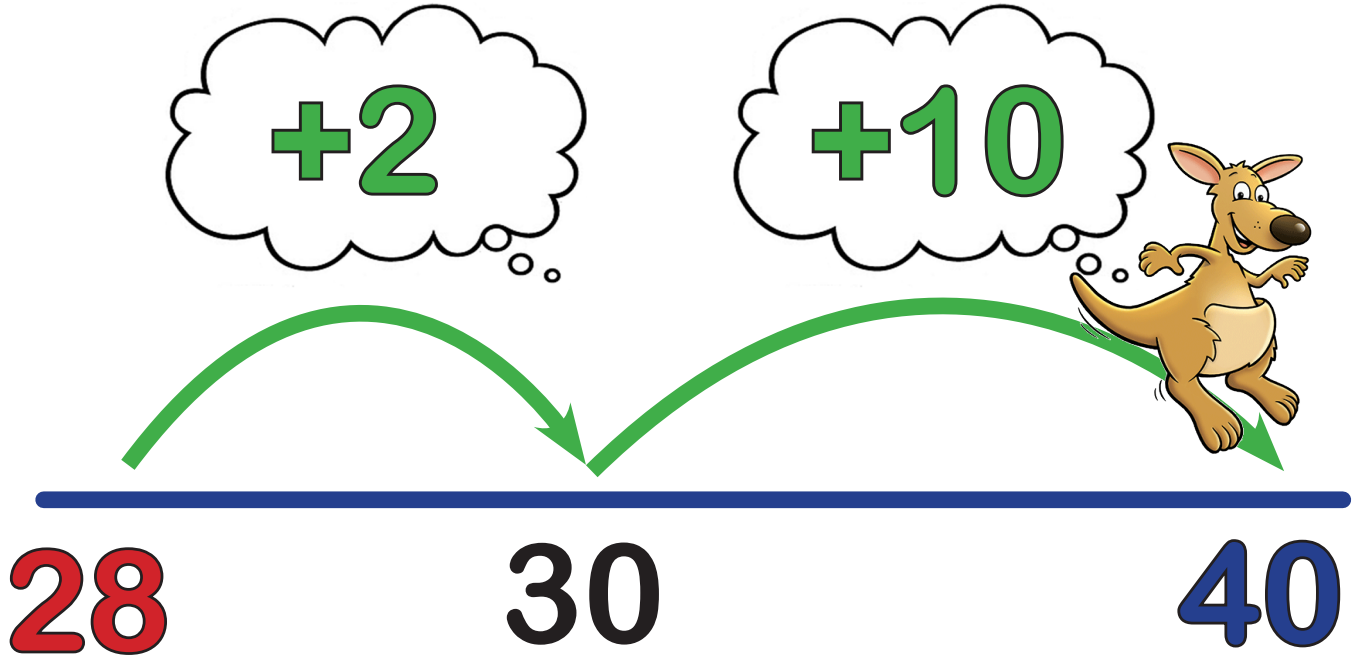
£11.98 £12.02

CoO(2): Counting On

MC RaPa CoOCoB NumFa

Jumps

40 - 28 = 12

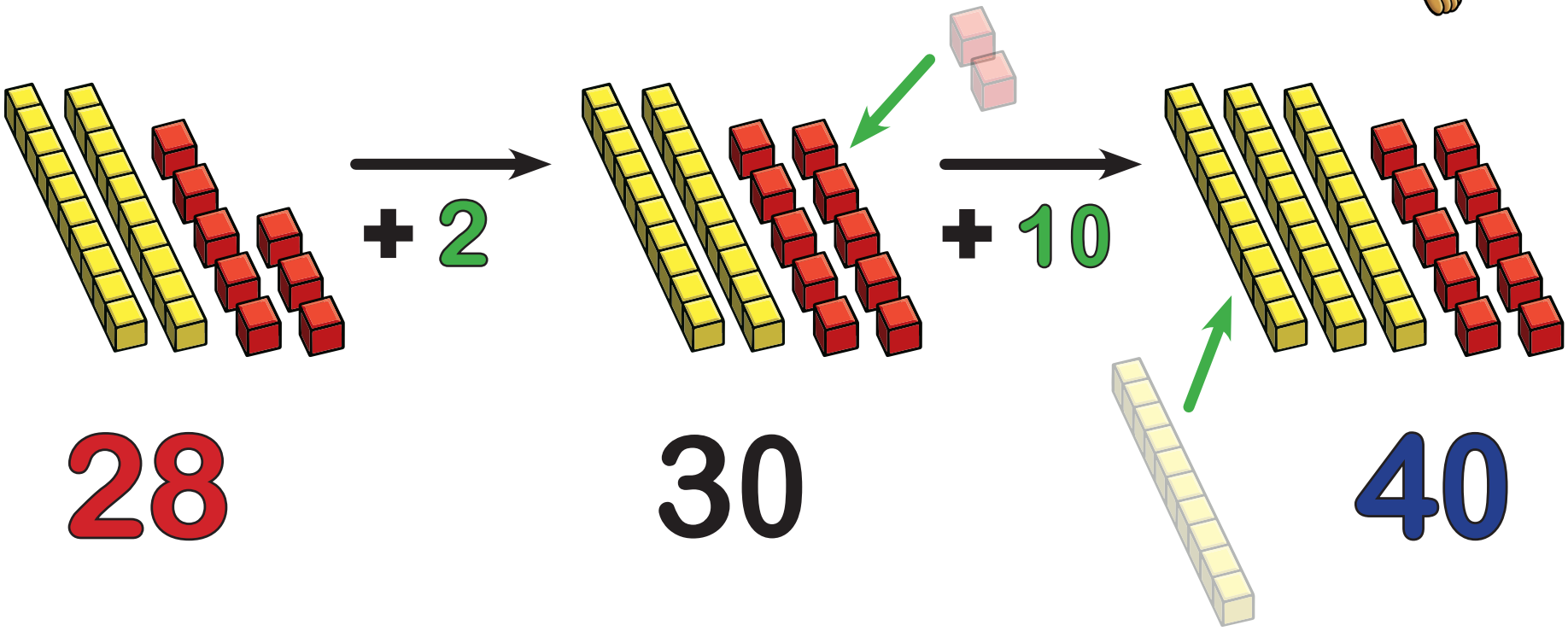


CoO(2): Counting On

MC RaPa CoOCoB NumFa
Visualisation

Jumps

40 - 28 = 12

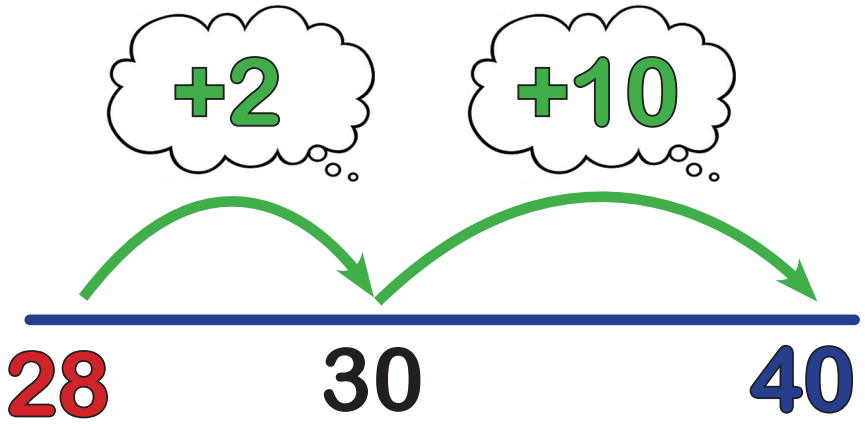


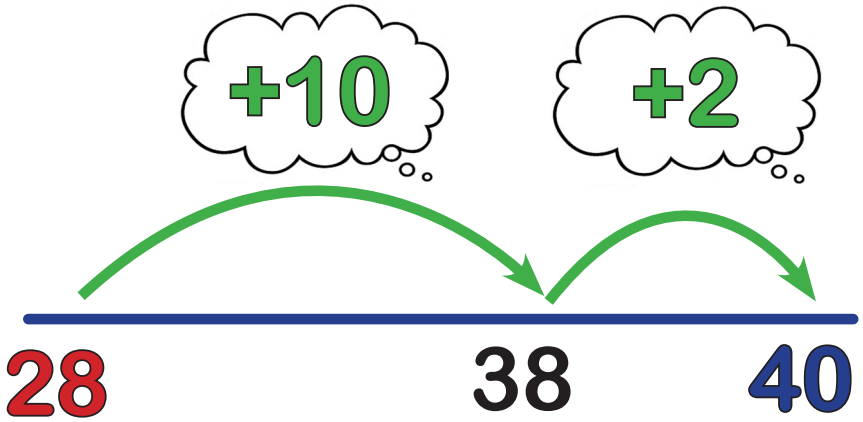
CoO(2): Counting On

MC RaPa CoOCoB NumFa 2

Jumps

40 - 28 = 12



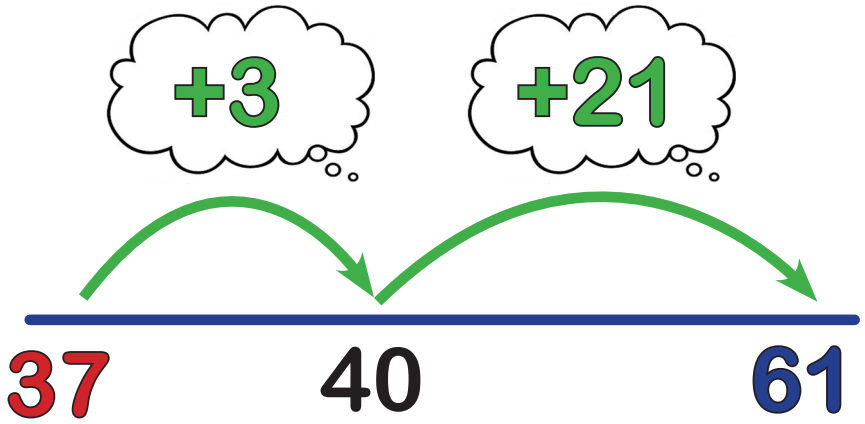


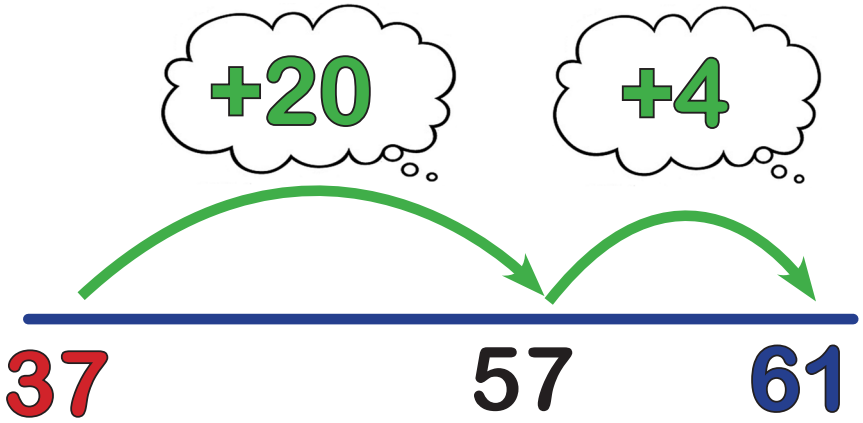
CoO(2): Counting On

MC RaPa CoOCoB NumFa 3

Jumps

61 - 37 = 24



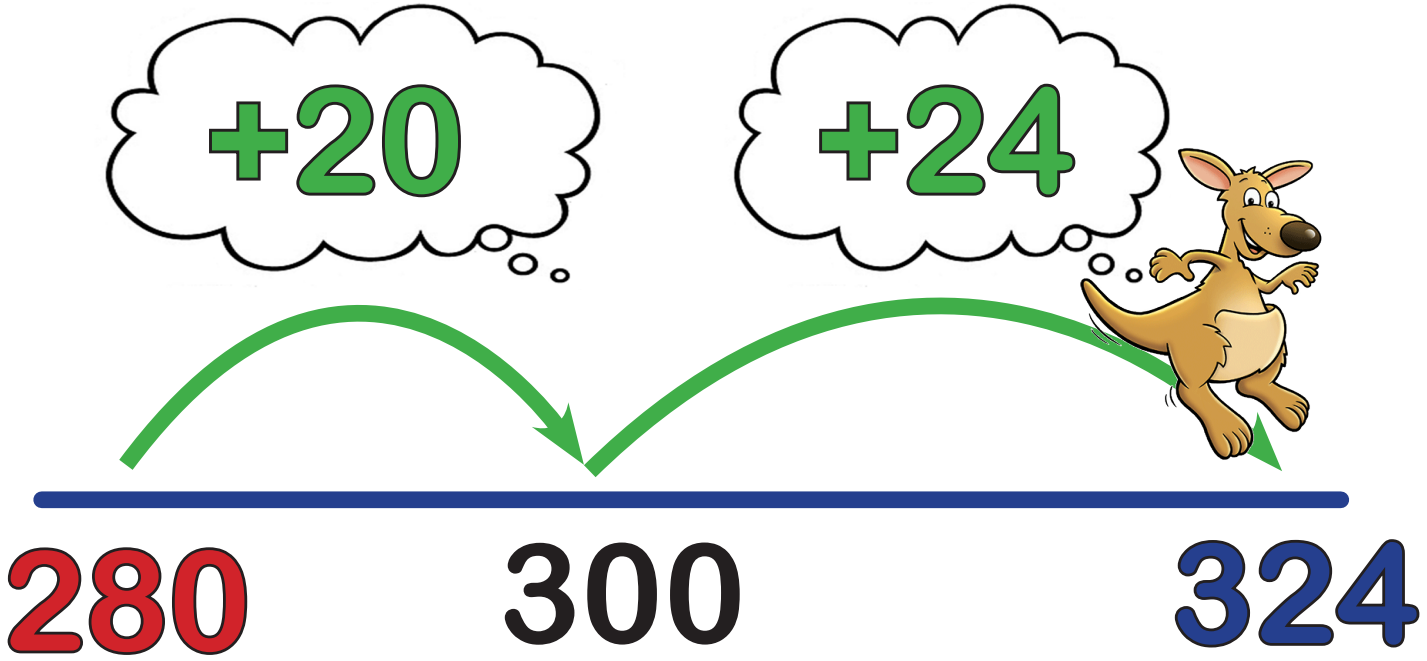


CoO(2): Counting On

MC RaPa CoOCoB NumFa
4

Jumps

324 - 280 = 44

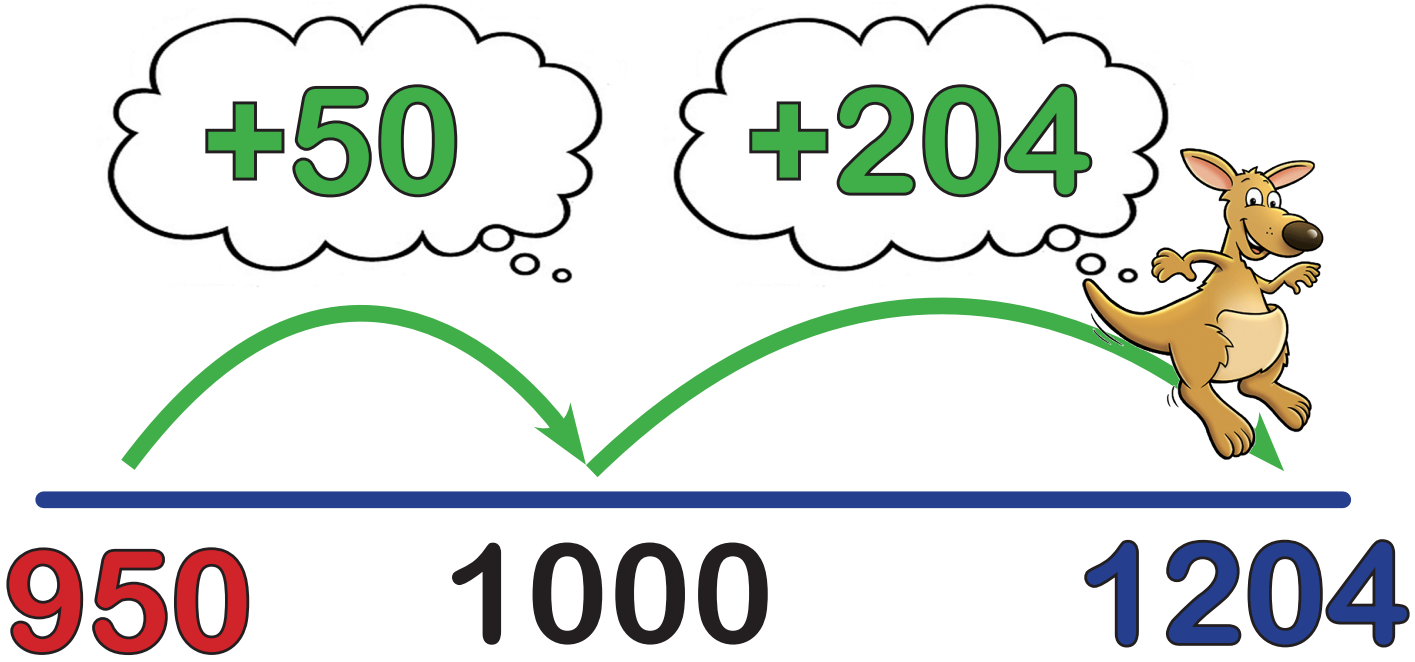


CoO(2): Counting On

MC RaPa CoOCoB NumFa 5

Jumps

1204 - 950 = 254



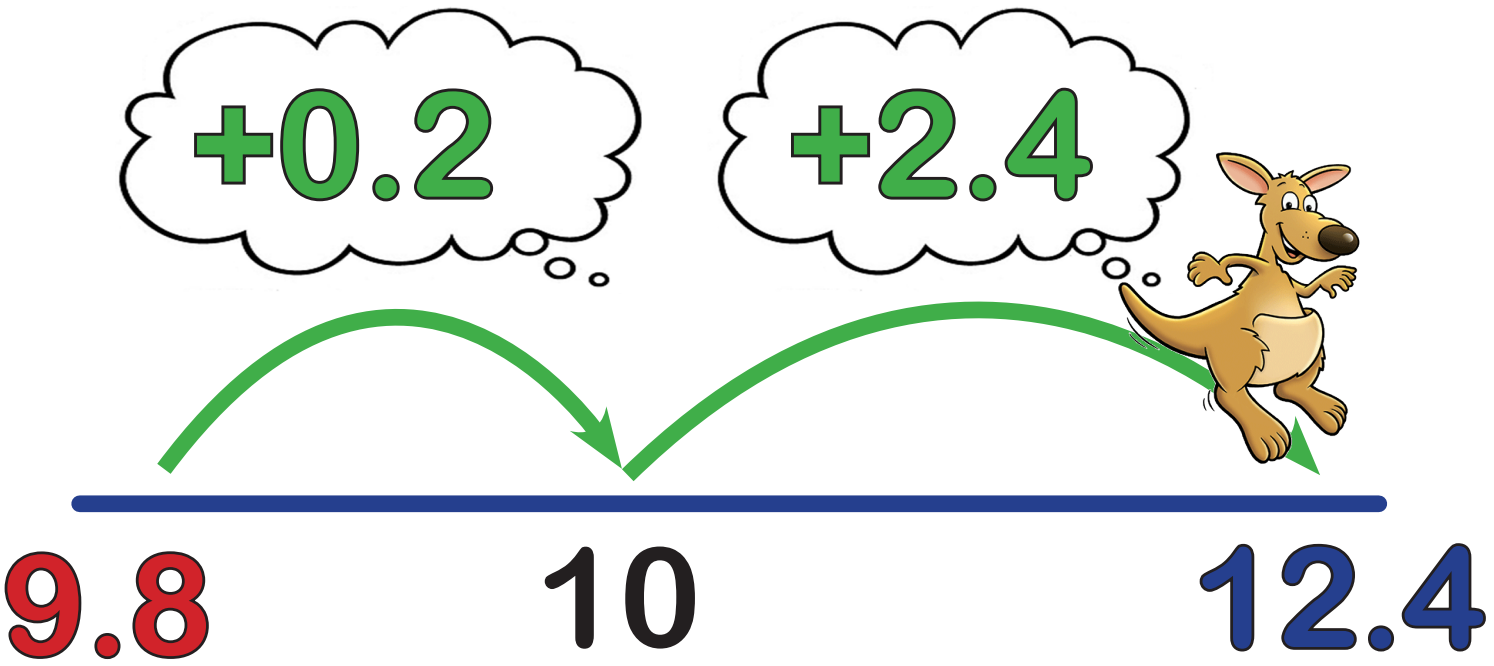
CoO(2): Counting On

MC RaPa CoOCoB NumFa

6

Jumps

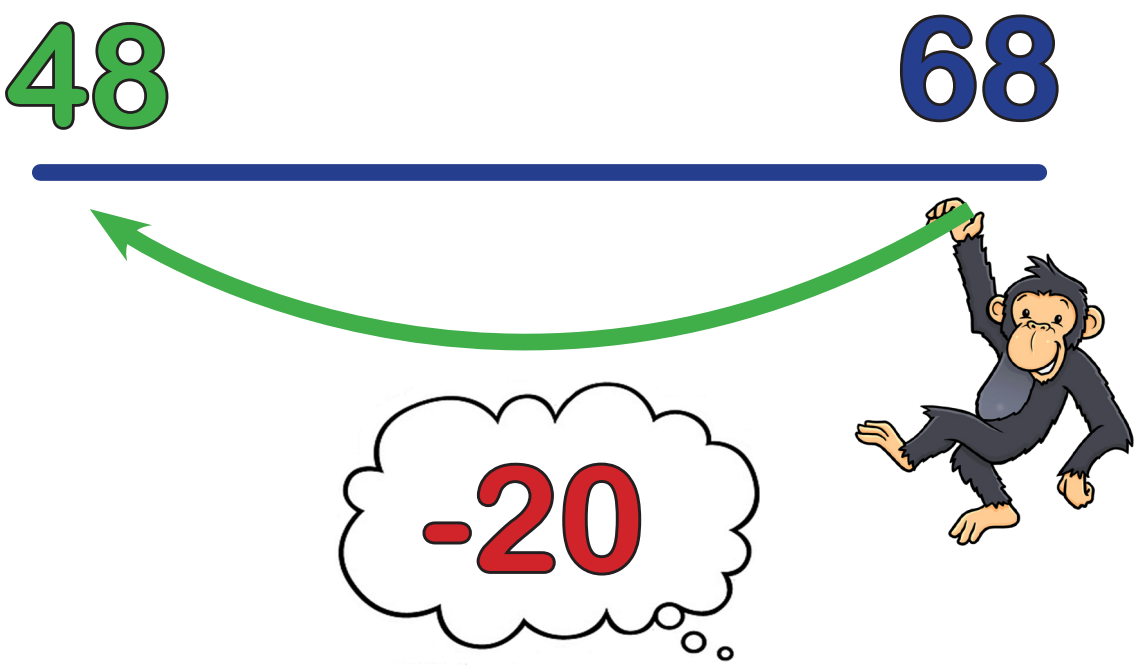
12.4 - 9.8 = 2.6



CoB(1): Counting Back

MC RaPa CoOCoB NumFa

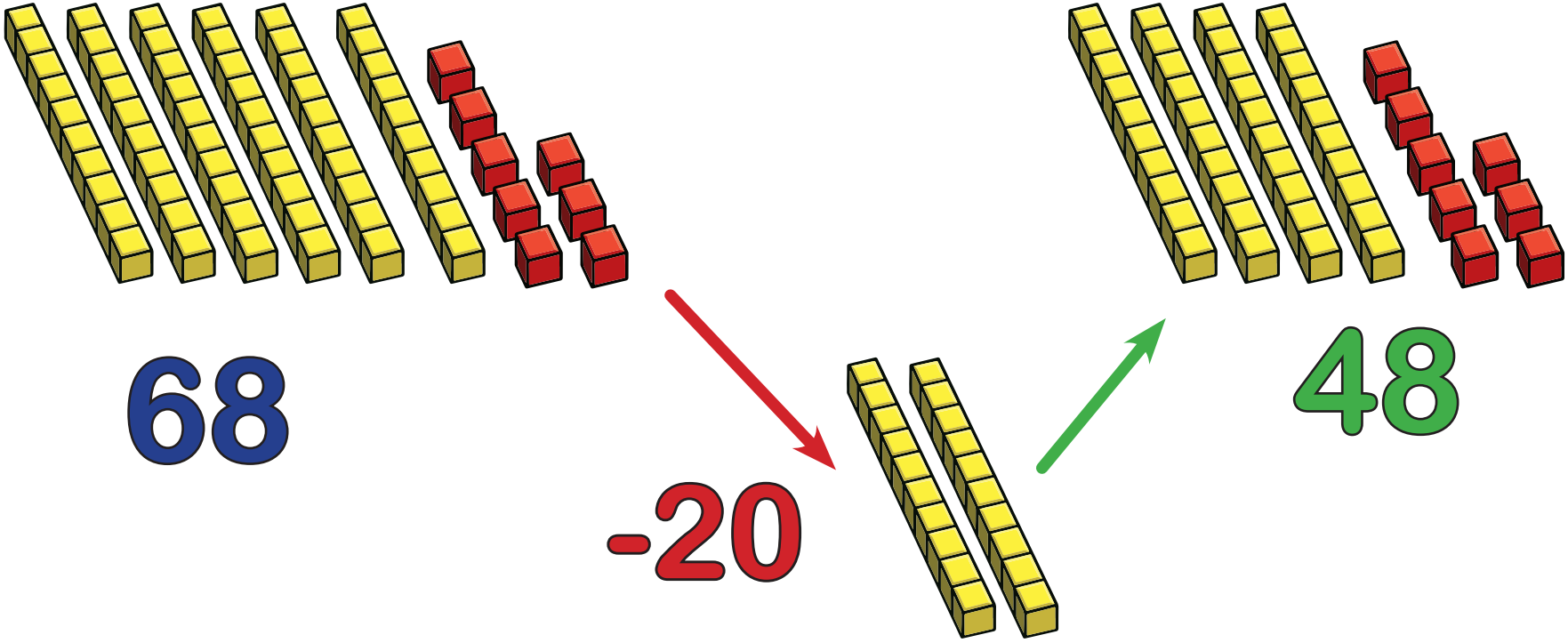
68 - 20 = 48



CoB(1): Counting Back

MC RaPa CoOCoB NumFa
Visualisation

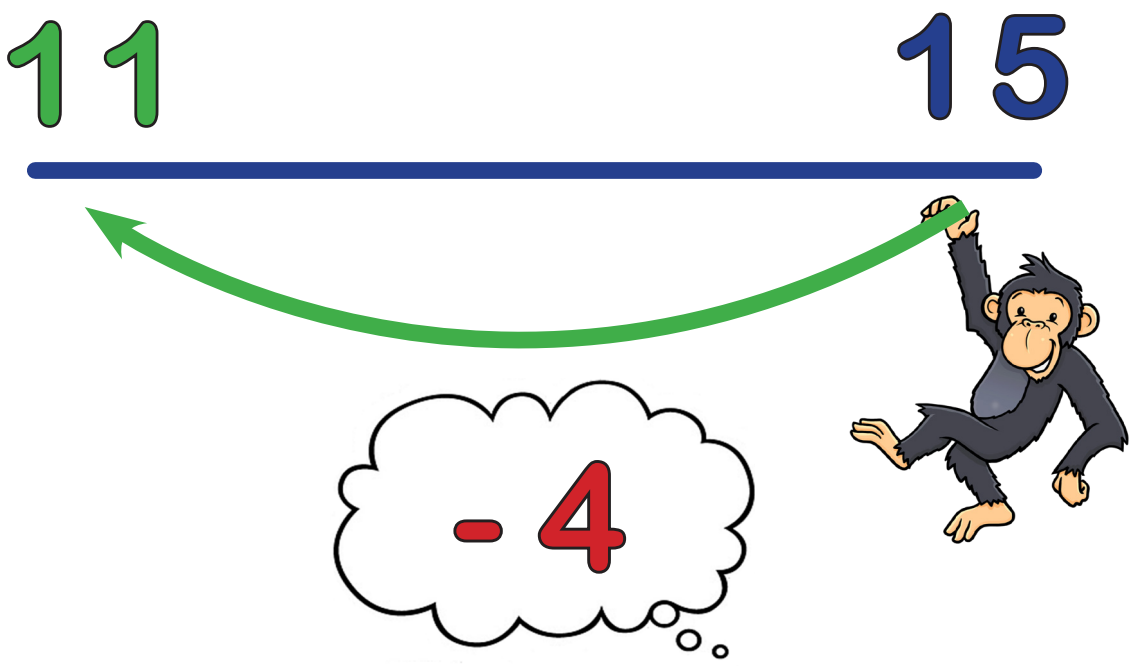
68 - 20 = 48



CoB(1): Counting Back

MC RaPa CoOCoB NumFa 1

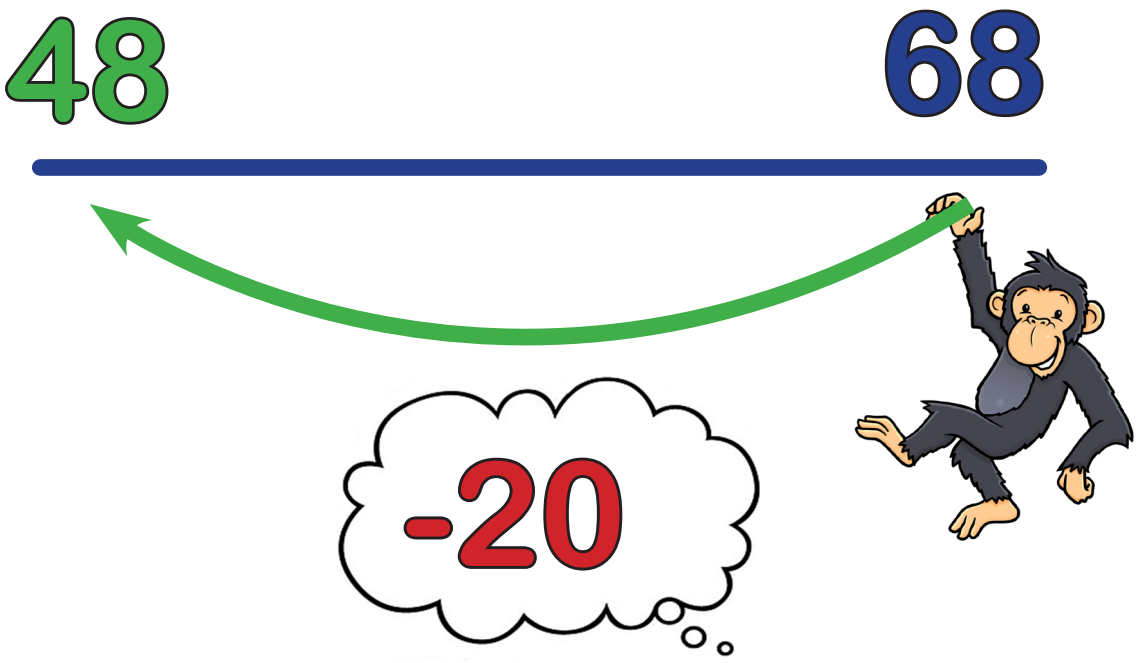
15 - 4 = 11



CoB(1): Counting Back

MC RaPa CoOCoB NumFa 2

68 - 20 = 48



CoB(1): Counting Back

MC RaPa CoOCoB NumFa 3

378 - 50 = 328

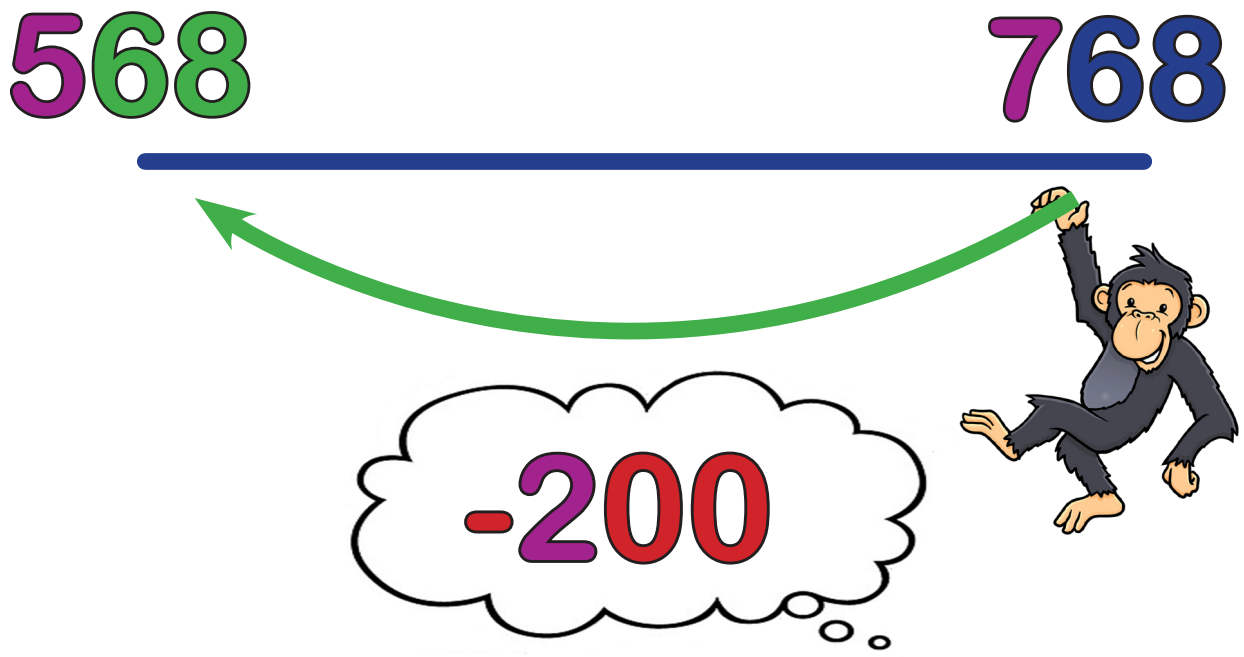
328 378

CoB(1): Counting Back

MC RaPa CoOCoB NumFa

4

768 - 200 = 568



CoB(1): Counting Back

MC RaPa CoOCoB NumFa

5

7291 - 2000 = 5291

5291 7291

-2000

CoB(1): Counting Back

MC RaPa CoOCoB NumFa 6

86374 - 20000 = 66374

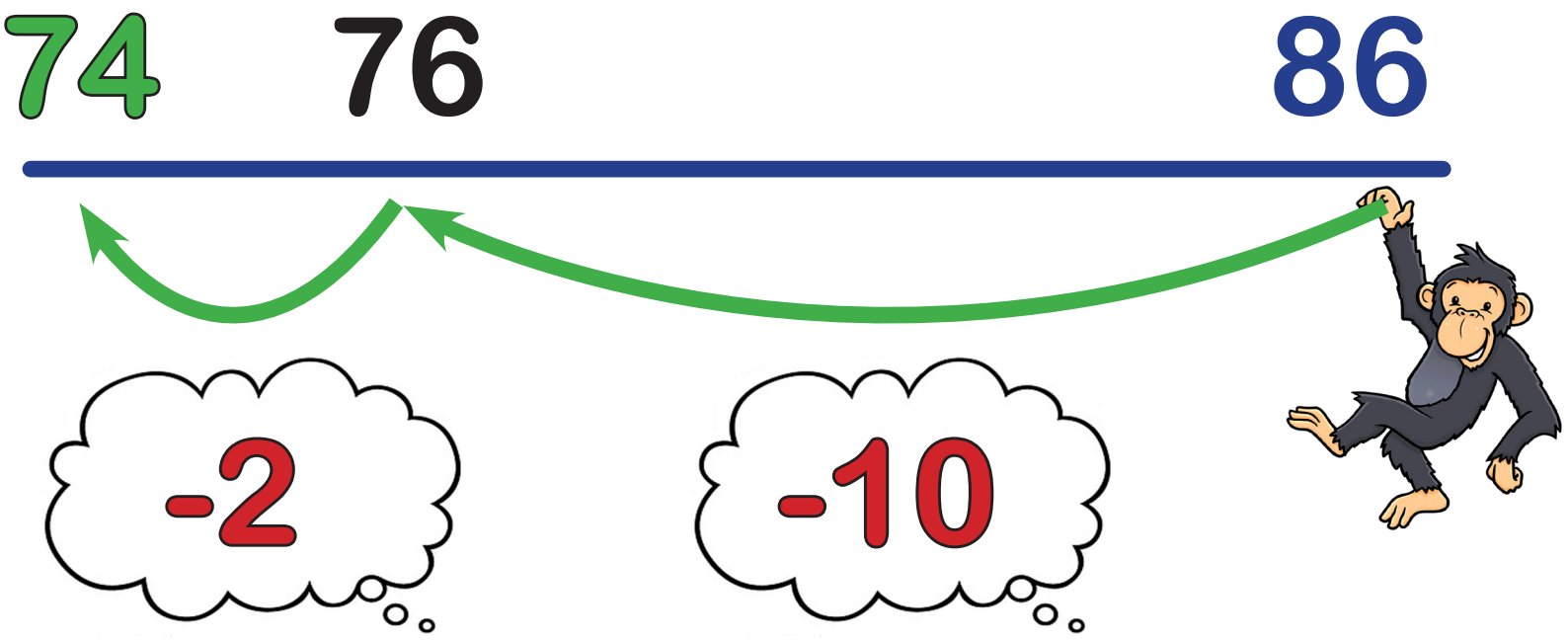
66374 86374

CoB(2): Counting Back

MC RaPa CoOCoB NumFa

Jumps

86 - 12 = 74

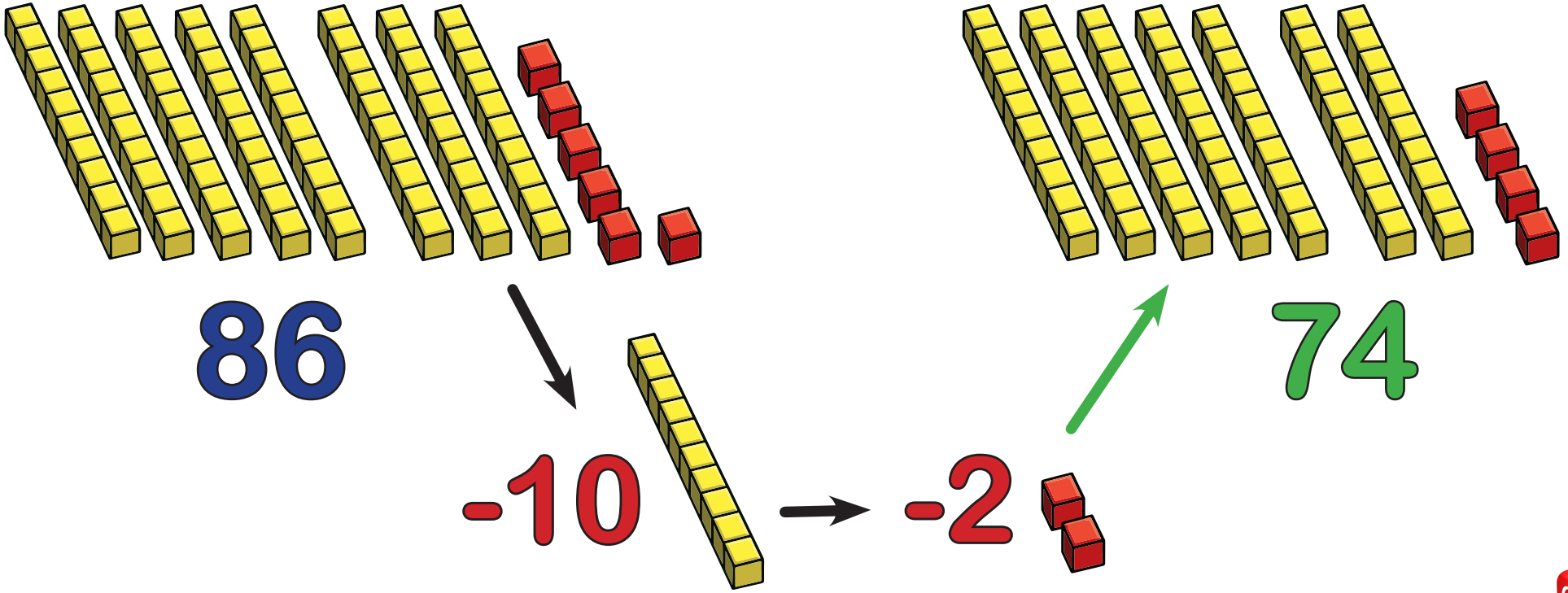


CoB(2): Counting Back

MC RaPa CoOCoB NumFa
Visualisation

Jumps

86 - 12 = 74

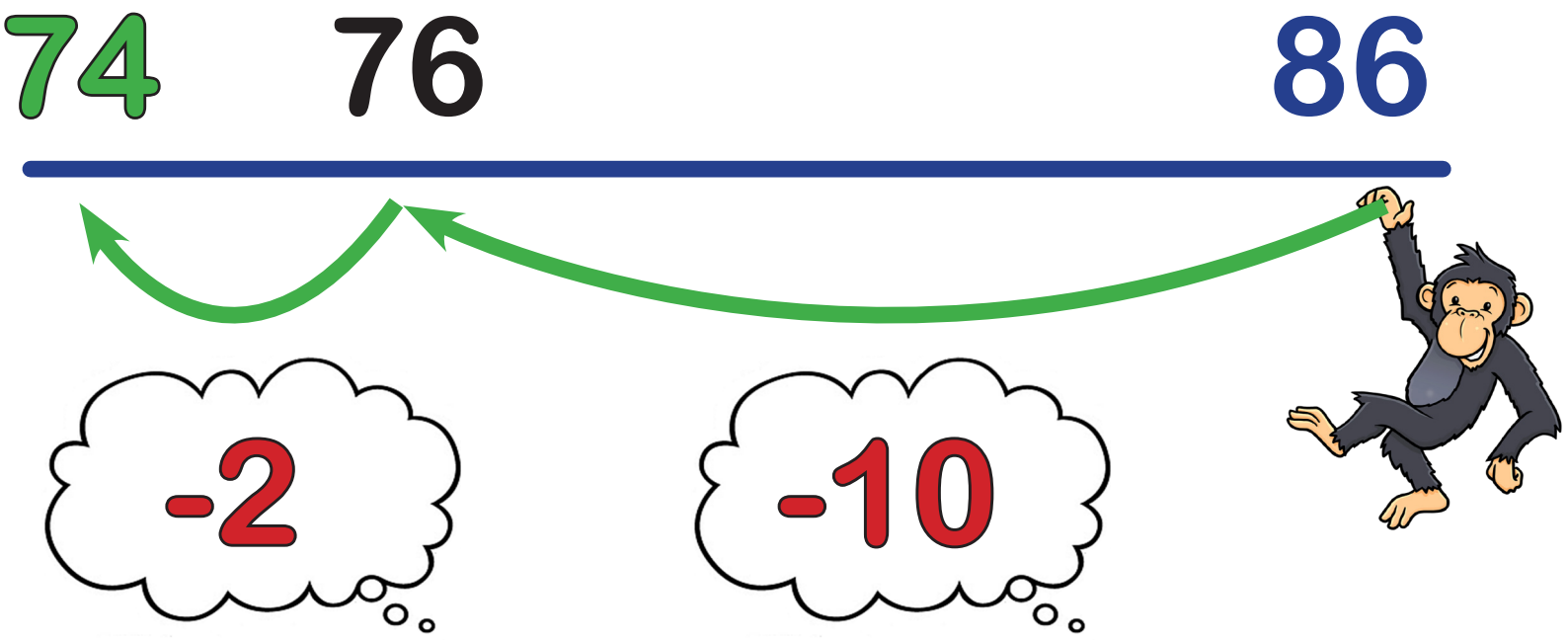


CoB(2): Counting Back

MC RaPa CoOCoB NumFa 2

Jumps

86 - 12 = 74

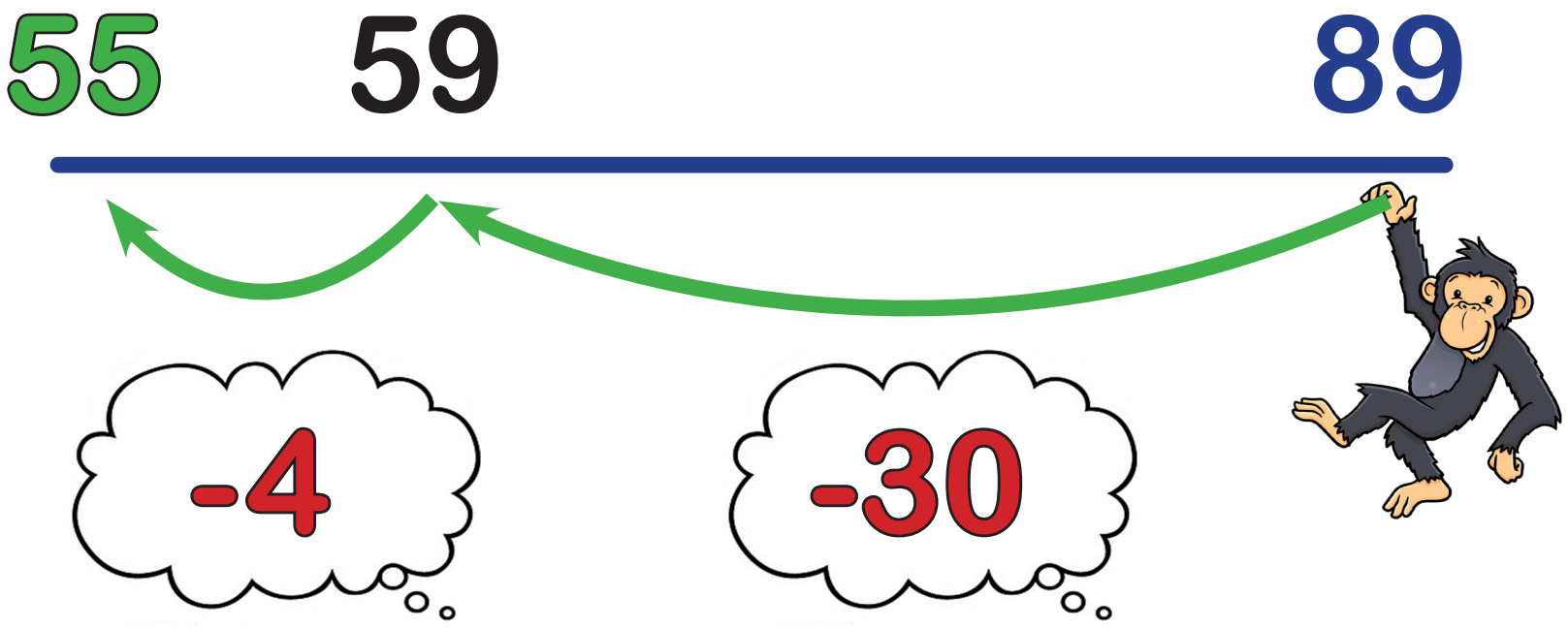


CoB(2): Counting Back

MC RaPa CoOCoB NumFa 3

Jumps

89 - 34 = 55



CoB(2): Counting Back

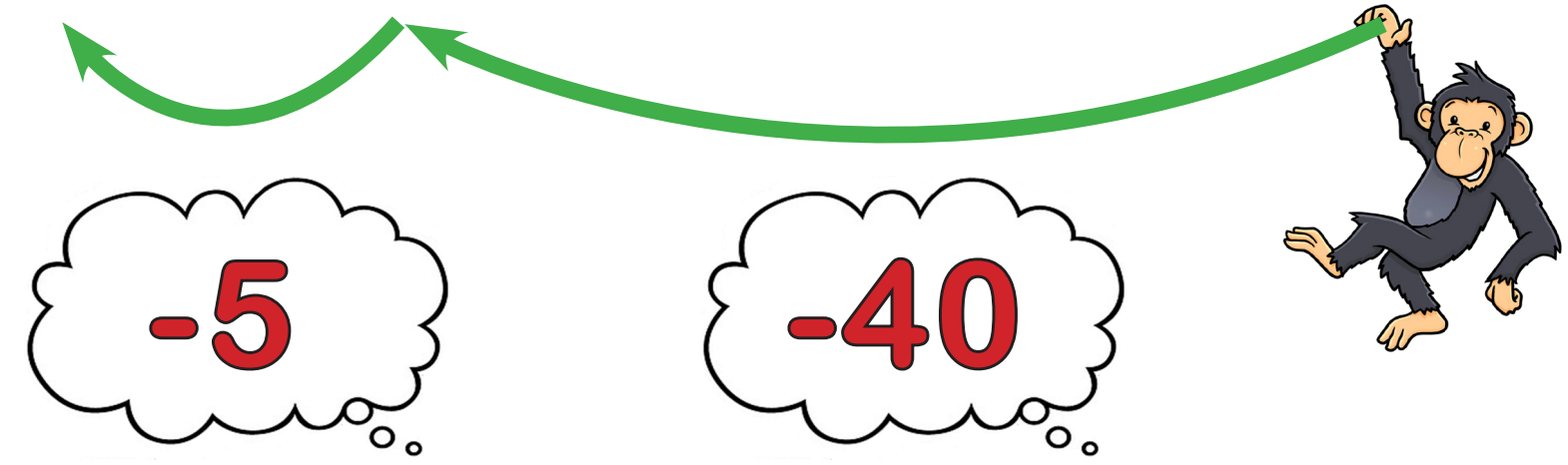
MC RaPa CoOCoB NumFa

4

Jumps

578 - 45 = 533

533 538 578



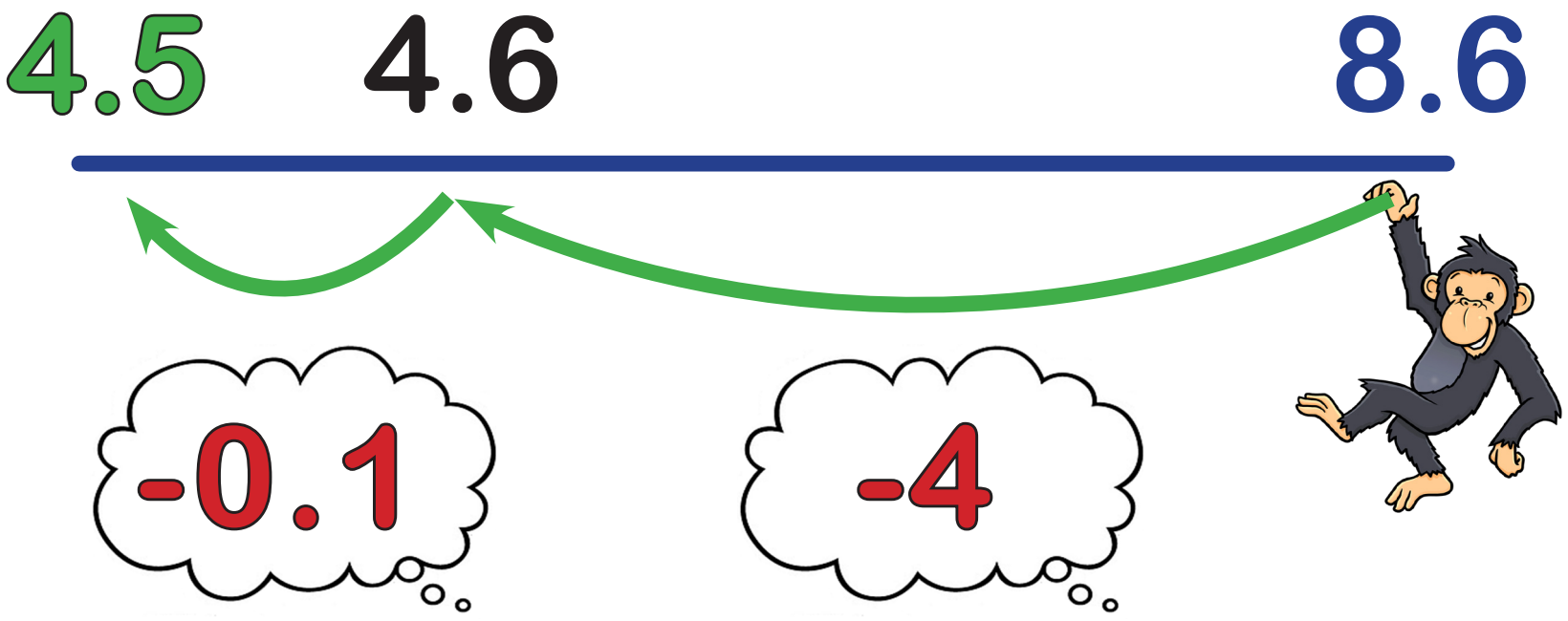
CoB(2): Counting Back

MC RaPa CoOCoB NumFa

5

Jumps

8.6 - 4.1 = 4.5



CoB(2): Counting Back

MC RaPa CoOCoB NumFa 6

Jumps

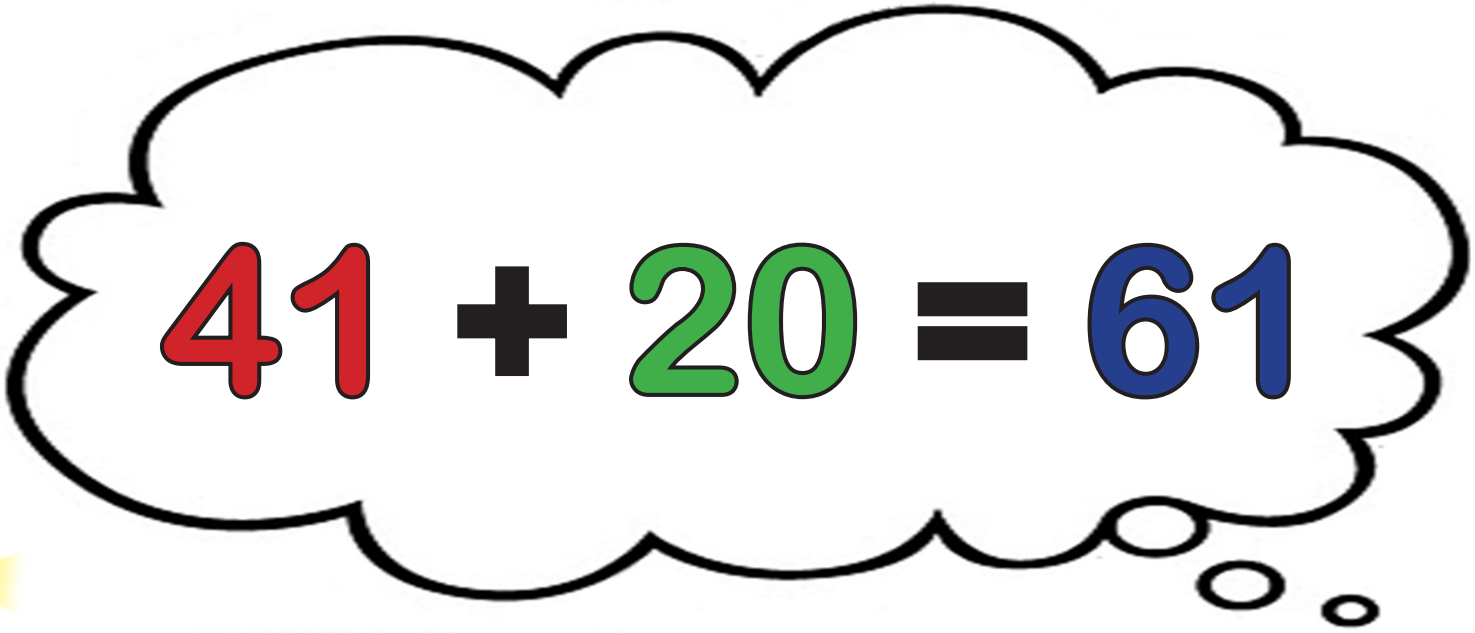
£65.87 - £30.24 = £35.63

£35.63 £35.87 £65.87

NumFa: Number Facts

MC RaPa CoOCoB NumFa

61 - 41 = 20



NumFa: Number Facts

MC RaPa CoOCoB NumFa
Visualisation

61 - 41 = 20

41 + 20 = 61

40	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

NumFa: Number Facts

MC RaPa CoOCoB NumFa

1

$$19 - 9 = 10$$

$$9 + 10 = 19$$

NumFa: Number Facts

MC RaPa CoOCoB NumFa

2

61 - 41 = 20

41 + 20 = 61

NumFa: Number Facts

MC RaPa CoOCoB NumFa

3

$$103 - 53 = 50$$

$$53 + 50 = 103$$

NumFa: Number Facts

MC RaPa CoOCoB NumFa

4

847 - 447 = 400

447 + 400 = 847

NumFa: Number Facts

MC RaPa CoOCoB NumFa

5

1006 - 506 = 500

506 + 500 = 1006

NumFa: Number Facts

MC RaPa CoOCoB NumFa

6

$$13.2 - 9.2 = 4$$

$$9.2 + 4 = 13.2$$

MC RaPa CoODo NumFa

134  **MC = Manipulate Calculation**

140  **Ra = Round and Adjust**

145  **Pa = Partitioning**

151  **CoO = Counting On**

156  **Do = Doubling**

171  **NumFa = Number Facts**

6 Cool Strategies for Mental Multiplication

MC: Manipulate the Calculation

MC RaPa CoODo NumFa

4

$$16 \times 3 = 48$$

÷2 x2

$$8 \times 6 = 48$$

MC: Manipulate the Calculation

MC RaPa CoODo NumFa

4/5

$$27 \times 3 = 81$$

÷3 ÷3

x3 x3

$$9 \times 9 = 81$$

MC: Manipulate the Calculation

MC RaPa CoODo NumFa

5

$$45 \times 14 = 630$$

x2 ÷2

$$90 \times 7 = 630$$

MC: Manipulate the Calculation

MC RaPa CoODo NumFa

5/6

$$36 \times 25 = 900$$

÷4 x4

$$9 \times 100 = 900$$

MC: Manipulate the Calculation

MC RaPa CoODo NumFa

6

$$26 \times 32 = 832$$

x4 ÷4

$$104 \times 8 = 832$$

MC: Manipulate the Calculation

MC RaPa CoODo NumFa

6

$$52 \times 24 = 1248$$

x4 ÷4

$$208 \times 6 = 1248$$

Ra: Round & Adjust

MC RaPa CoODo NumFa

3

$$19 \times 4 = 76$$

$$(20 \times 4) - (1 \times 4)$$

$$80 - 4 = 76$$

Ra: Round & Adjust

MC RaPa CoODo NumFa

4

49 x 3 = 147

(50 x 3) - (1 x 3)

150 - 3 = 147

Ra: Round & Adjust

MC RaPa CoODo NumFa

5

$$198 \times 4 = 792$$

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

$$800 - 8 = 792$$

Ra: Round & Adjust

MC RaPa CoODo NumFa

5/6

$$3.9 \times 5 = 19.5$$

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

$$20 - 0.5 = 19.5$$

Ra: Round & Adjust

MC RaPa CoODo NumFa

6

£5.99 x 6 = £35.94

(£6 x 6) - (1p x 6)

£36 - 6p = £35.94

Pa: Partitioning

MC RaPa CoODo NumFa

3

15 x 5 = 75

50 + 25 = 75

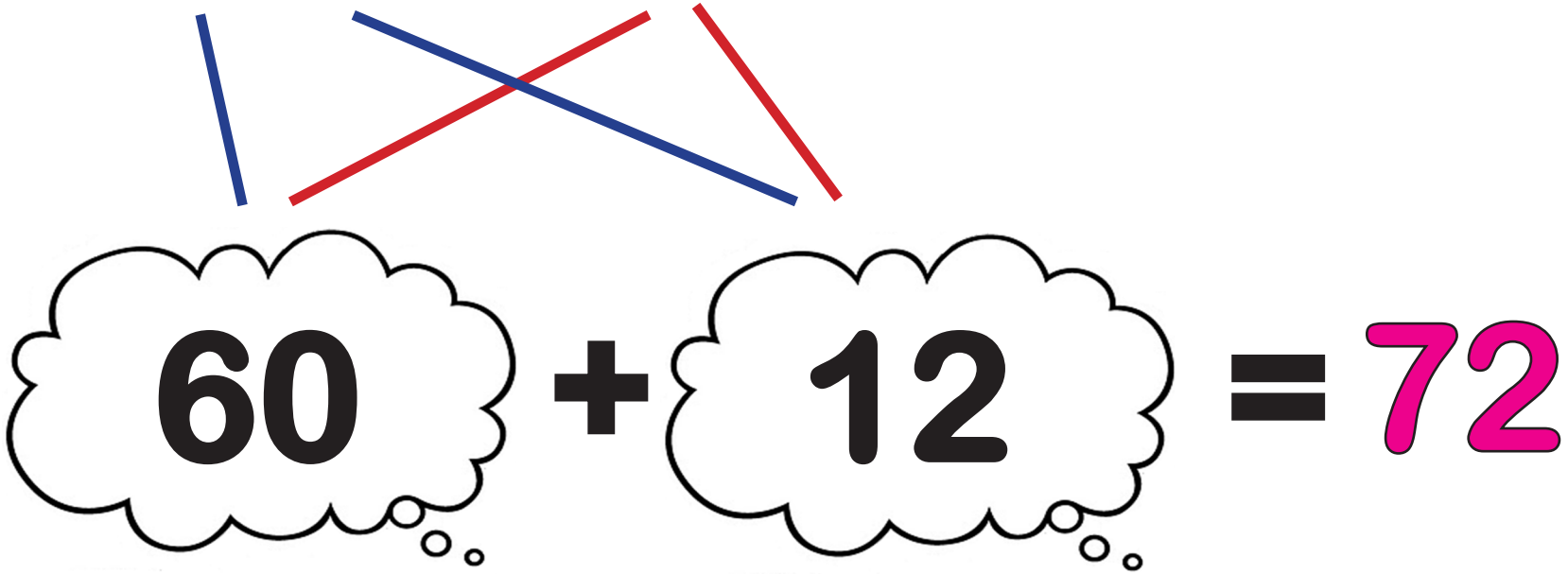
(10 x 5) (5 x 5)

Pa: Partitioning

MC RaPa CoODo NumFa

4

24 x 3 = 72

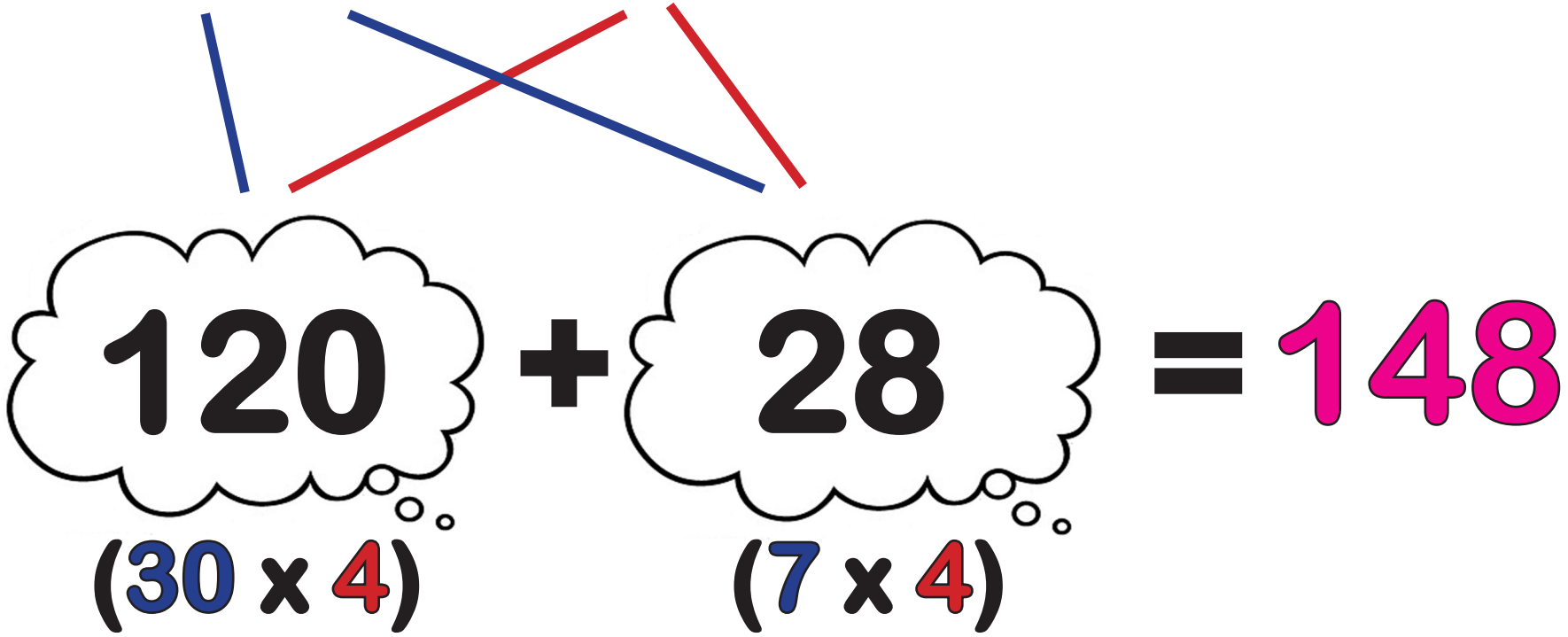


Pa: Partitioning

MC RaPa CoODo NumFa

4/5

37 x 4 = 148



Pa: Partitioning

MC RaPa CoODo NumFa

5

126 x 6 = 756

600 + 120 + 36 = 756

(100 x 6) (20 x 6) (6 x 6)

Pa: Partitioning

MC RaPa CoODo NumFa

6

$$4.3 \times 8 = 34.4$$

$$32 + 2.4 = 34.4$$

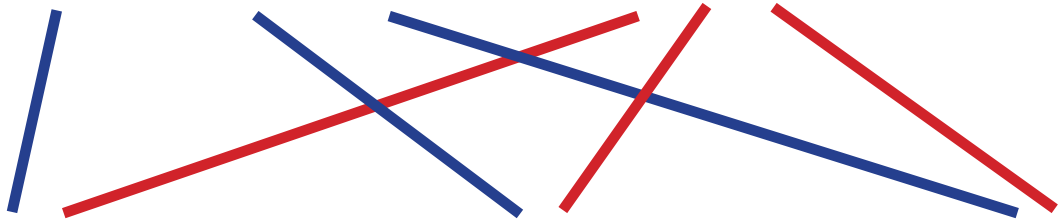
(4×8) (0.3×8)

Pa: Partitioning

MC RaPa CoODo NumFa

6

2.13 x 3 = 6.39



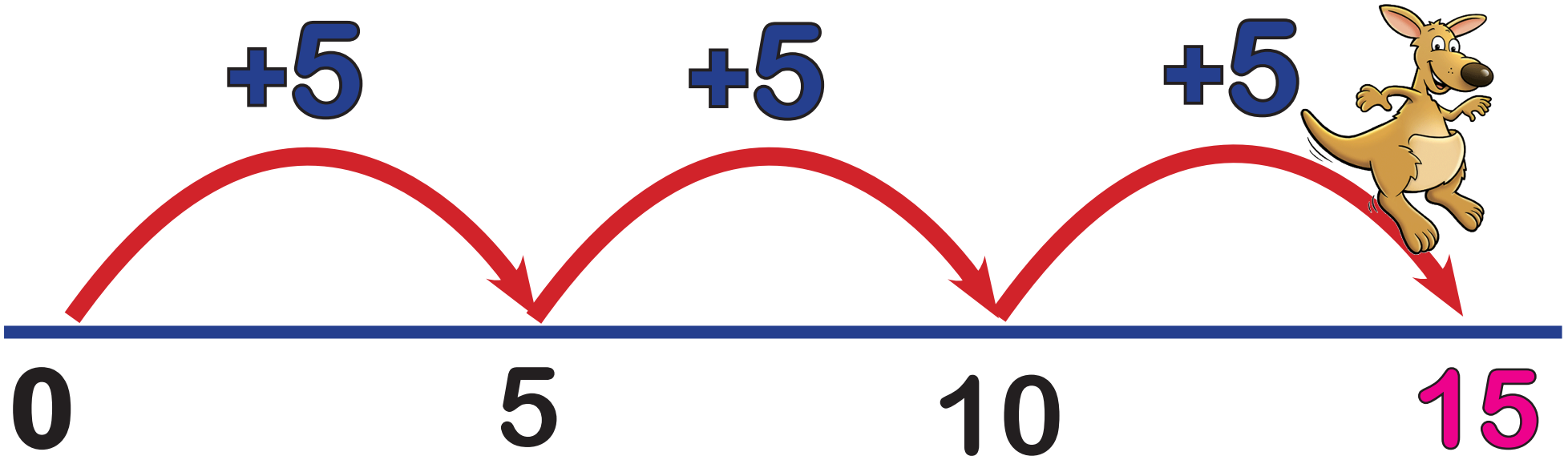
6 + 0.3 + 0.09 = 6.39

(2 x 3) (0.1 x 3) (0.03 x 3)

CoO: Counting On

MC RaPa CoODo NumFa
2

(In Multiples)



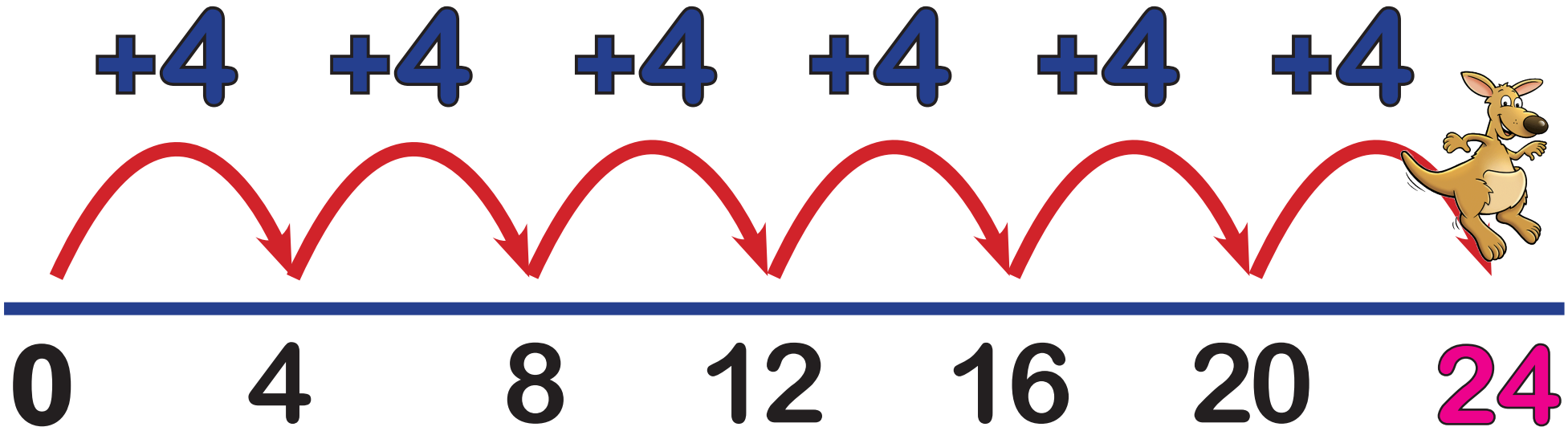
$5 \times 3 = 5 + 5 + 5 = 15$

CoO: Counting On

MC RaPa CoODo NumFa

3

(In Multiples)



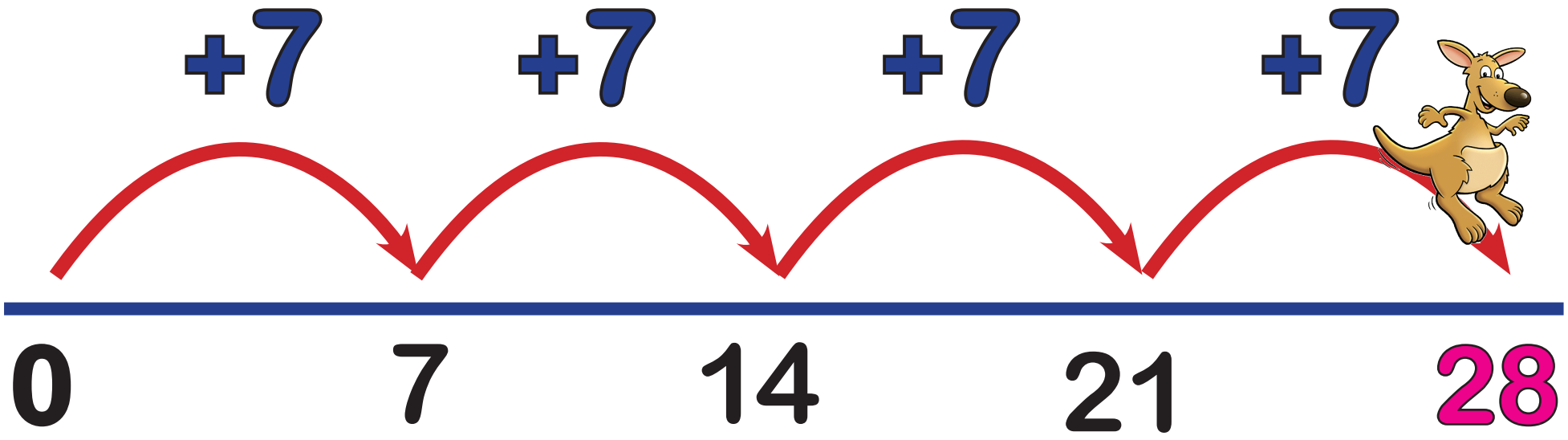
$4 \times 6 = 4 + 4 + 4 + 4 + 4 + 4 = 24$

CoO: Counting On

MC RaPa CoODo NumFa

4

(In Multiples)



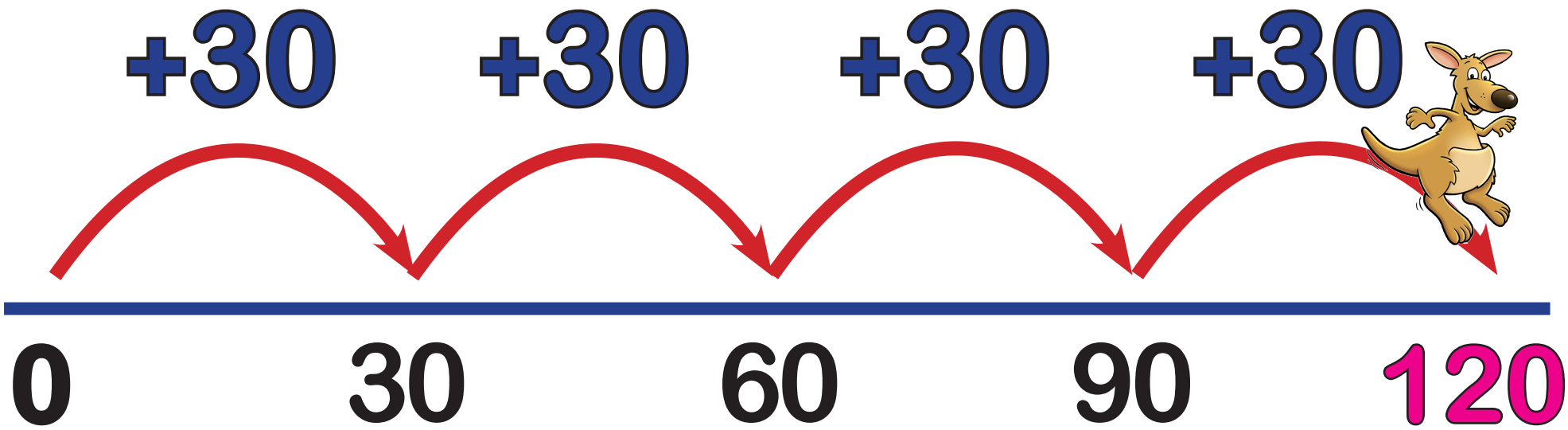
$7 \times 4 = 7 + 7 + 7 + 7 = 28$

CoO: Counting On

MC RaPa CoODo NumFa

5

(In Multiples)



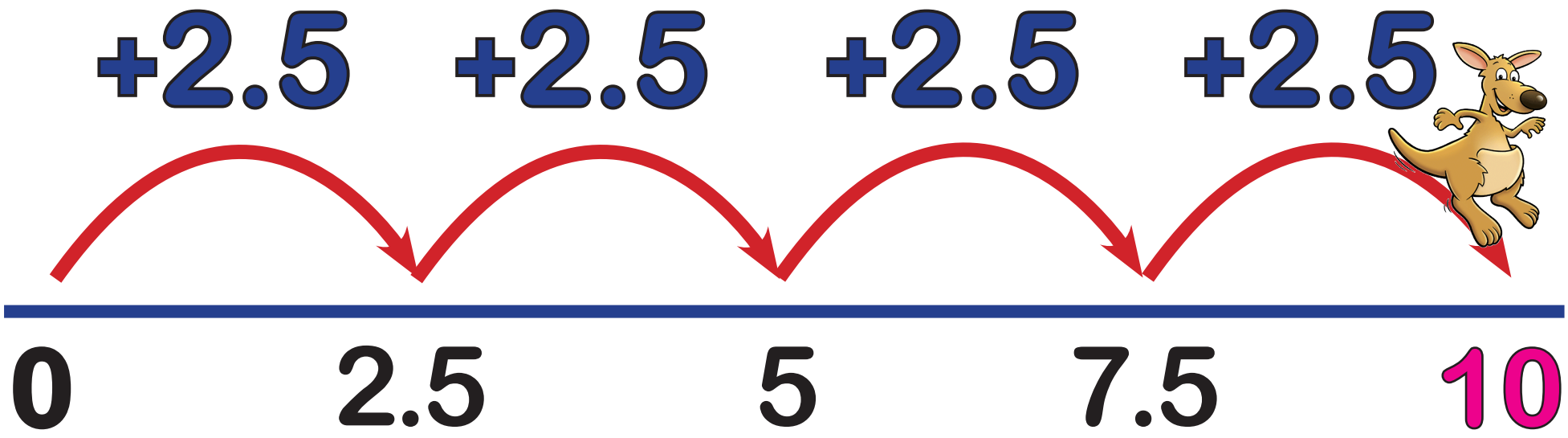
$30 \times 4 = 30 + 30 + 30 + 30 = 120$

CoO: Counting On

MC RaPa CoODo NumFa

6

(In Multiples)



$2.5 \times 4 = 2.5 + 2.5 + 2.5 + 2.5 = 10$

Do(1): Doubling

MC RaPa CoODo NumFa 2

$$20 + 14 = 34$$

Double 17 = 34

(15 + 2)

$$30 + 4 = 34$$

Do(1): Doubling

MC RaPa CoODo NumFa

3

60 + 14 = 74

Double 37 = 74

(35 + 2)

70 + 4 = 74

Do(1): Doubling

MC RaPa CoODo NumFa

4

140 + 16 = 156

Double 78 = 156

(75 + 3)

150 + 6 = 156

Do(1): Doubling

MC RaPa CoODo NumFa

4

Double 340 = 680

600 + 80 = 680

Do(1): Doubling

MC RaPa CoODo NumFa

4/5

800 + 160 = 960

Double 480 = 960

(450 + 30)

900 + 60 = 960

Do(1): Doubling

MC RaPa CoODo NumFa

5

400 + 140 + 16 = 556

Double 278 = 556

(250 + 28)

500 + 28 = 556

Do(1): Doubling

MC RaPa CoODo NumFa

6

Double 3.7 = 7.4

6 + 1.4 = 7.4

Do(2): Doubling Table Facts

MC RaPa CoODo NumFa

3

$$8 \times 6 = 48$$

(4 x 2)

$$4 \times 6 = 24$$

↓ ↓ x 2

$$8 \times 6 = 48$$

Do(2): Doubling Table Facts

MC RaPa CoODo NumFa

4

$12 \times 7 = 84$

(6 x 2)

$6 \times 7 = 42$

↓ ↓ x 2

$12 \times 7 = 84$

Do(2): Doubling Table Facts

MC RaPa CoODo NumFa

5

$16 \times 7 = 112$

(8 x 2)

$8 \times 7 = 56$

↓ ↓ x 2

$16 \times 7 = 112$

Do(2): Doubling Table Facts

MC RaPa CoODo NumFa

5/6

22 x 12 = 264

(11 x 2)

11 x 12 = 132

↓ ↓ x 2

22 x 12 = 264

Do(2): Doubling Table Facts

MC RaPa CoODo NumFa

6

$$140 \times 6 = 840$$

(11 x 2)

$$70 \times 6 = 420$$

x 2

$$140 \times 6 = 840$$

Do(3): Doubling Up

MC RaPa CoODo NumFa

3/4

17 x 4 = 68

Double 17 = 34 (17 x 2)

Double 34 = 68 (17 x 4)

Do(3): Doubling Up

MC RaPa CoODo NumFa
5

36 x 8 = 288

Double 36 = 72 (36 x 2)

Double 72 = 144 (36 x 4)

Double 144 = 288 (36 x 8)

Do(3): Doubling Up

MC RaPa CoODo NumFa
6

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)

NumFa(1): Number Facts

MC RaPa CoODo NumFa

3/4

(Table Facts)

$$30 \times 4 = 120$$

$$3 \times 4 = 12$$

NumFa(1): Number Facts

MC RaPa CoODo NumFa
4

(Table Facts)

$$70 \times 4 = 280$$

$$7 \times 4 = 28$$

NumFa(1): Number Facts

MC RaPa CoODo NumFa
4

(Table Facts)

$$120 \times 3 = 360$$

$$12 \times 3 = 36$$

NumFa(1): Number Facts

MC RaPa CoODo NumFa
5

(Table Facts)

60 x 90 = 5400

6 x 9 = 54

NumFa(1): Number Facts

MC RaPa CoODo NumFa

5/6

(Table Facts)

$$0.7 \times 4 = 2.8$$

$$7 \times 4 = 28$$

NumFa(1): Number Facts

MC RaPa CoODo NumFa
6

(Table Facts)

$$0.6 \times 0.9 = 0.54$$

$$6 \times 9 = 54$$

NumFa(2): Number Facts

MC RaPa CoODo NumFa

5

(Re-ordering)

$(9 \times 2) \times 5$

$18 \times 5 = 90$

$(9 \times 5) \times 2$

$45 \times 2 = 90$

$(2 \times 5) \times 9$

$10 \times 9 = 90$

NumFa(2): Number Facts

MC RaPa CoODo NumFa

5/6

(Re-ordering)

$(7 \times 4) \times 5$

$28 \times 5 = 140$

$(7 \times 5) \times 4$

$35 \times 4 = 140$

$(4 \times 5) \times 7$

$20 \times 7 = 140$

NumFa(2): Number Facts

MC RaPa CoODo NumFa 6

(Re-ordering)

$(9 \times 8) \times 6$

$72 \times 6 = 432$

$(9 \times 6) \times 8$

$54 \times 8 = 432$ *

$(8 \times 6) \times 9$

$48 \times 9 = 432$

NumFa(3): Number Facts

MC RaPa CoODo NumFa
5

(Factorising)

$$18 \times 9$$

$$2 \times 9 \times 9$$

$$2 \times 81 = 162$$

NumFa(3): Number Facts

MC RaPa CoODo NumFa
6

(Factorising)

32 x 15

4 x 8 x 5 x 3

40 x 12 = 480

NumFa(3): Number Facts

MC RaPa CoODo NumFa
6

(Factorising)

24 x 35

6 x 4 x 5 x 7

20 x 42 = 840

MC RaPa CoOHa NumFa

184 

MC = Manipulate Calculation

190 

Ra = Round and Adjust

195 

Pa = Partitioning (Find the Hunk)

201 

CoO = Counting On

206 

Ha = Halving

217 

NumFa = Number Facts

6 Cool Strategies for Mental Division!

MC: Manipulate the Calculation

MC RaPa CoOHa NumFa

3

$$140 \div 20 = 7$$

÷10 ÷10

$$14 \div 2 = 7$$

MC: Manipulate the Calculation

MC RaPa CoOHa NumFa

4

$$1200 \div 400 = 3$$

÷100 ÷100

$$12 \div 4 = 3$$

MC: Manipulate the Calculation

MC RaPa CoOHa NumFa

5

$$162 \div 18 = 9$$

÷2 ÷2

$$81 \div 9 = 9$$

MC: Manipulate the Calculation

MC RaPa CoOHa NumFa

6

$$18 \div 1.5 = 12$$

x2 x2

$$36 \div 3 = 12$$

MC: Manipulate the Calculation

MC RaPa CoOHa NumFa

6

$$9.3 \div 0.3 = 31$$

x10 x10

$$93 \div 3 = 31$$

MC: Manipulate the Calculation

MC RaPa CoOHa NumFa

6

$$6.25 \div 0.25 = 25$$

x4 x4

$$25 \div 1 = 25$$

Ra: Round & Adjust

MC RaPa CoOHa NumFa

3/4

$$95 \div 5 = 19$$

$$(100 \div 5) - (5 \div 5)$$

$$20 - 1 = 19$$

Ra: Round & Adjust

MC RaPa CoOHa NumFa

4

$$87 \div 3 = 29$$

$$(90 \div 3) - (3 \div 3)$$

$$30 - 1 = 29$$

Ra: Round & Adjust

MC RaPa CoOHa NumFa

4/5

$$192 \div 4 = 48$$

$$(200 \div 4) - (8 \div 4)$$

$$50 - 2 = 48$$

Ra: Round & Adjust

MC RaPa CoOHa NumFa

4/5

$$792 \div 8 = 99$$

$$(800 \div 8) - (8 \div 8)$$

$$100 - 1 = 99$$

Ra: Round & Adjust

MC RaPa CoOHa NumFa

5/6

$$2994 \div 3 = 998$$

$$(3000 \div 3) - (6 \div 3)$$

$$1000 - 2 = 998$$

Pa: Partitioning

MC RaPa CoOHa NumFa

4

72 ÷ 4 = 18

40 + 32

÷ 4

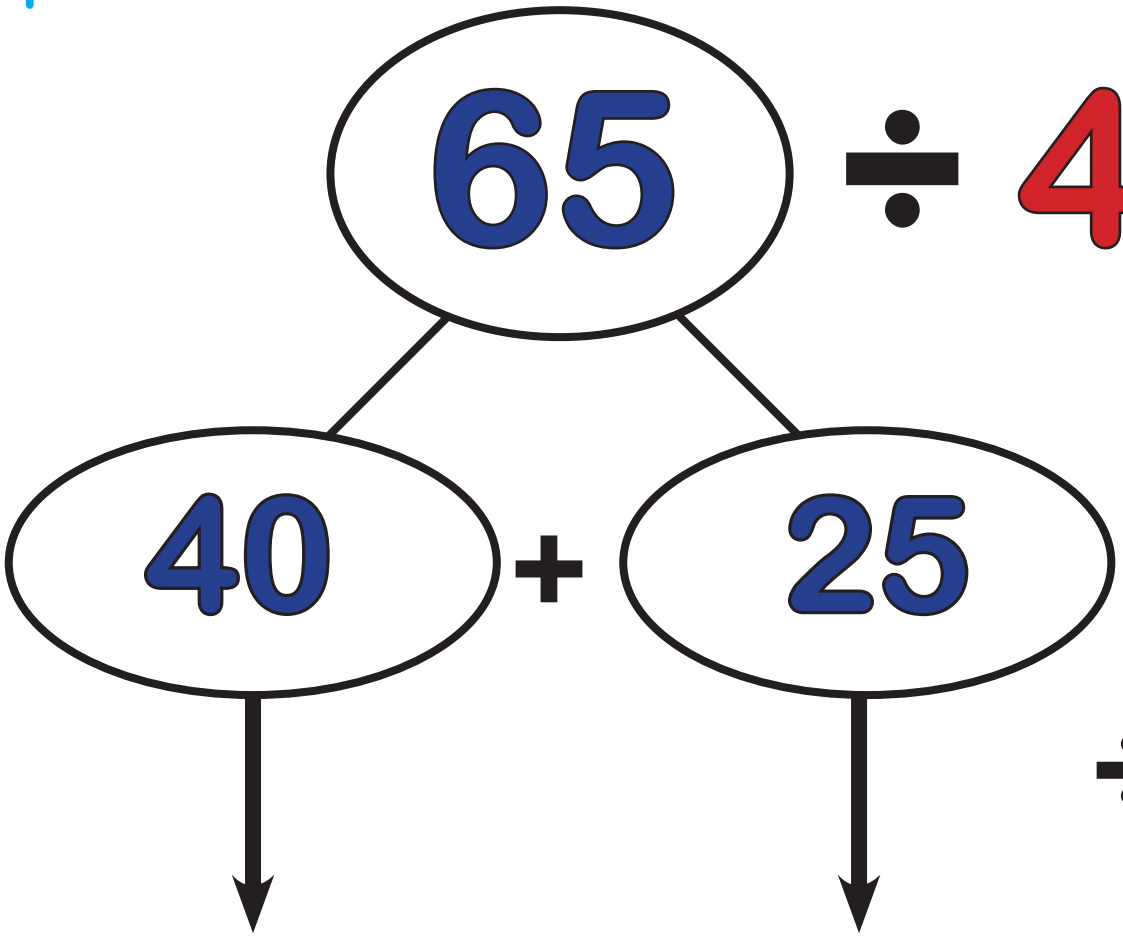
10 + 8 = 18

Pa: Partitioning

MC RaPa CoOHa NumFa

4

65 ÷ 4 = 16r1



Pa: Partitioning

MC RaPa CoOHa NumFa

4/5

136 ÷ 4 = 34

120 + 16

÷ 4

30 + 4 = 34

Pa: Partitioning

MC RaPa CoOHa NumFa

5

394 ÷ 6 = 65r4

360 + 34

÷ 6

60 + 5r4 = 65r4

Pa: Partitioning

MC RaPa CoOHa NumFa

5

536 ÷ 4 = 134

400 + 120 + 16

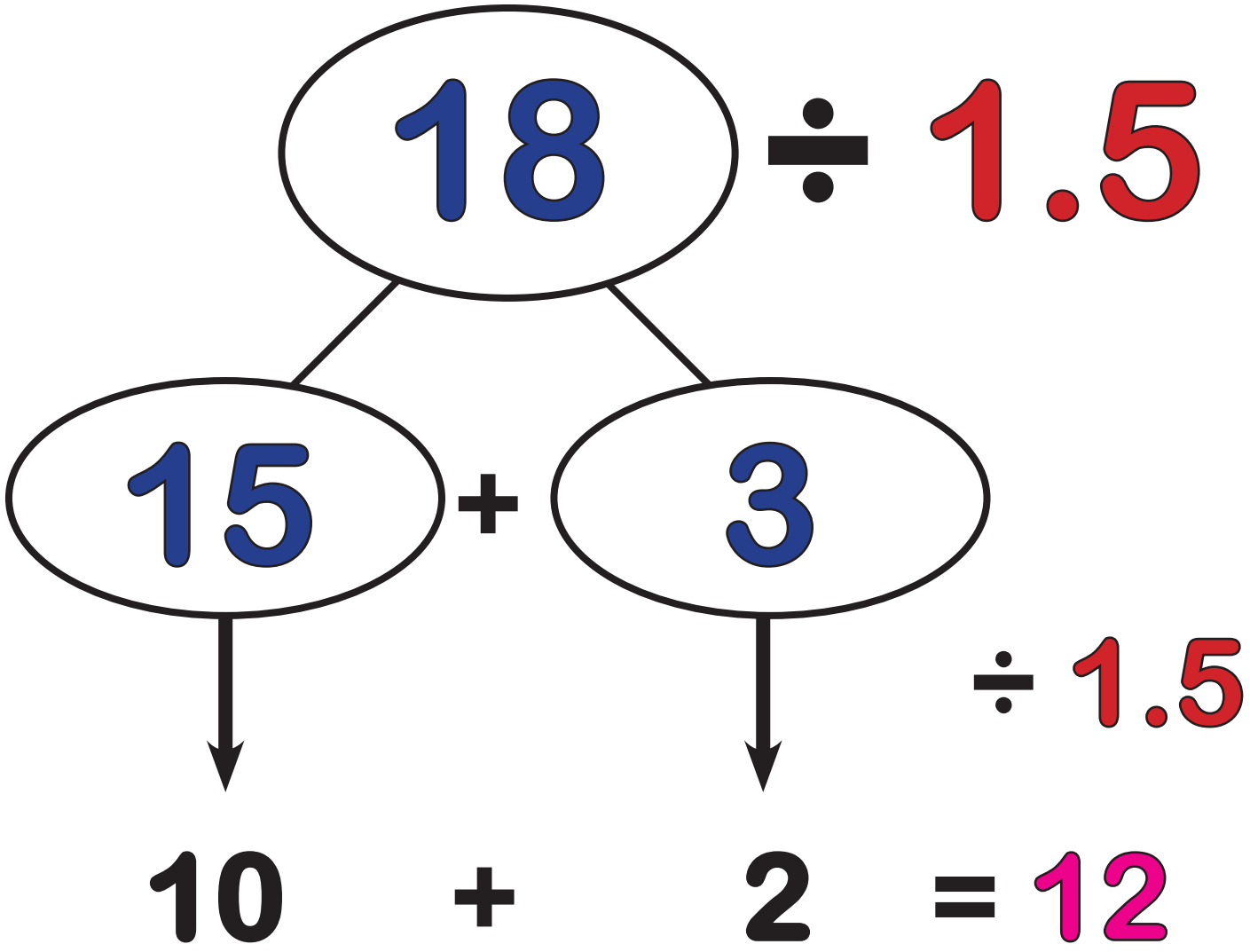
÷ 4

100 + 30 + 4 = 134

Pa: Partitioning

MC RaPa CoOHa NumFa

6

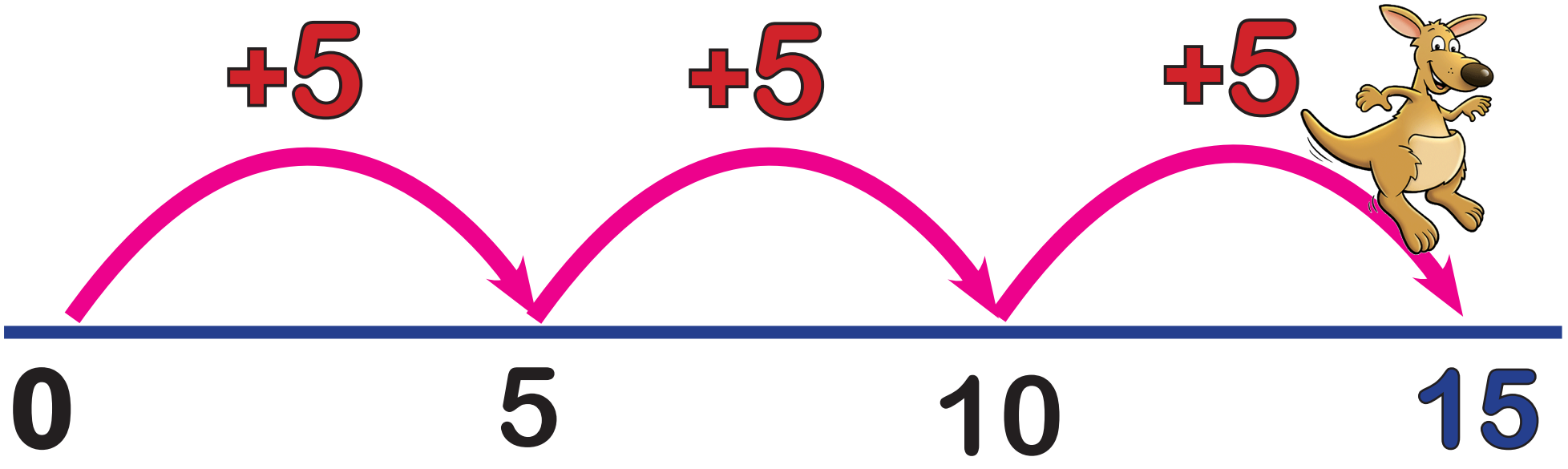


CoO: Counting On

MC RaPa CoOHa NumFa

2

(In Multiples of the Divisor)



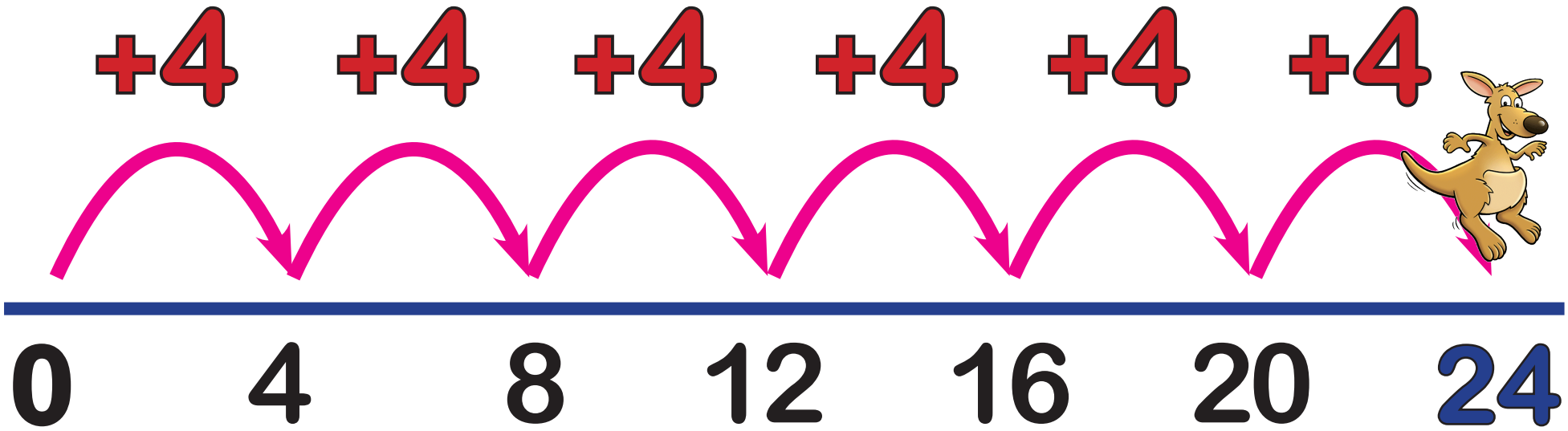
15 ÷ 5 = 3 (5 + 5 + 5 = 15)

CoO: Counting On

MC RaPa CoOHa NumFa

3

(In Multiples of the Divisor)



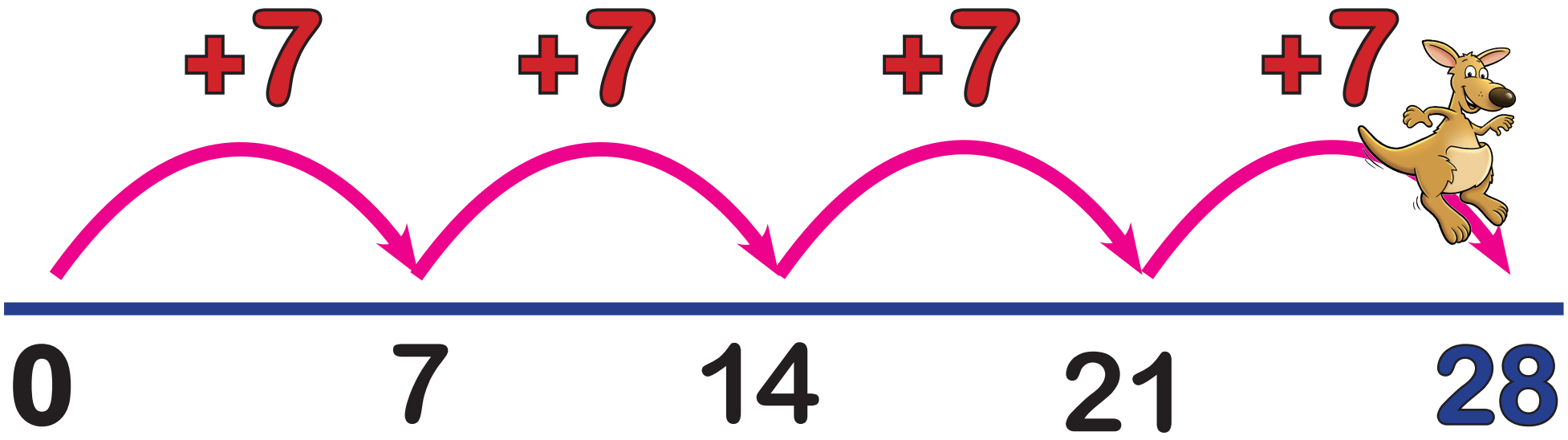
24 ÷ 4 = 6 (4 + 4 + 4 + 4 + 4 + 4 = 24)

CoO: Counting On

MC RaPa CoOHa NumFa

4

(In Multiples of the Divisor)



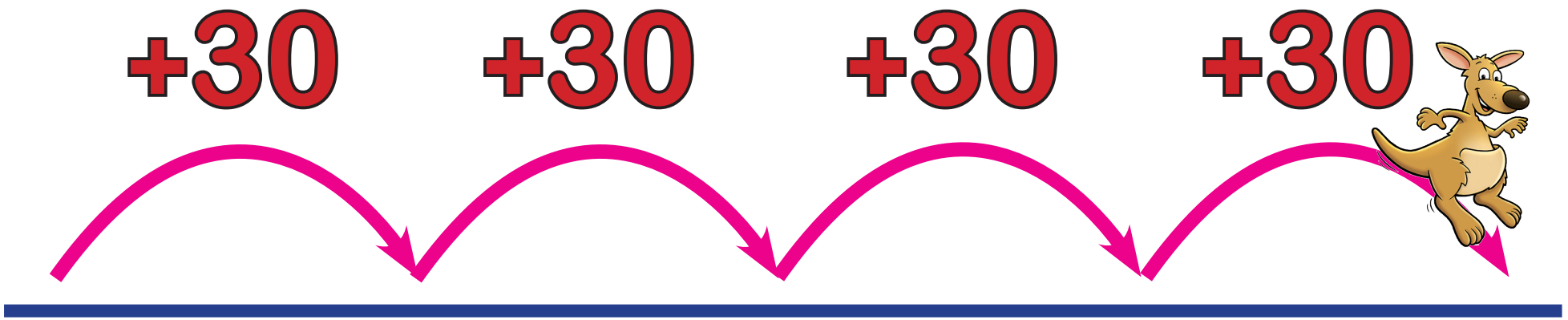
28 ÷ 7 = 4 (7 + 7 + 7 + 7 = 28)

CoO: Counting On

MC RaPa CoOHa NumFa

5

(In Multiples of the Divisor)



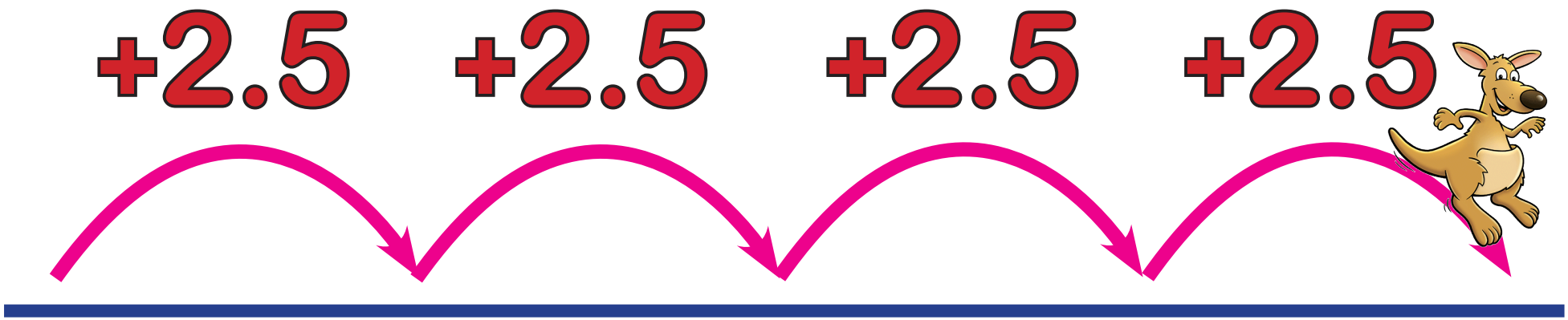
120 ÷ 30 = 4 (30 + 30 + 30 + 30 = 120)

CoO: Counting On

MC RaPa CoOHa NumFa

6

(In Multiples of the Divisor)



10 ÷ 2.5 = 4 (2.5 + 2.5 + 2.5 + 2.5 = 10)

Ha(1): Halving

MC FraPa JuHa NumFa

2

(20)

Half of 26

10 + 3 = 13

Ha(1): Halving

MC FraPa JuHa NumFa

3

(50)

Half of 58

25 + 4 = 29

Ha(1): Halving

MC FraPa JuHa NumFa

4

(80 + 12)

Half of 92

40 + 6 = 46

Half of 92

45 + 1 = 46

Ha(1): Halving

MC FraPa JuHa NumFa

5

Half of 326

(32 tens)

160 + 3 = 163

Half of 326

150 + 10 + 3 = 163

Ha(1): Halving

MC FraPa JuHa NumFa

6

Half of 5.84

2.5 + 0.4 + 0.02

= 2.92

Ha(1): Halving

MC FraPa JuHa NumFa

6

Half of 34.72

17 + 0.36

= 17.36

Ha(2): Halve & Halve Again

MC FraPa JuHa NumFa
3

(finding a quarter)

84 ÷ 4 = 21

Half of 84 = 42 (84 ÷ 2)

Half of 42 = 21 (84 ÷ 4)

Ha(2): Halve & Halve Again

MC FraPa JuHa NumFa
4

(finding a quarter)

128 ÷ 4 = 32

Half of 128 = 64 (128 ÷ 2)

Half of 64 = 32 (128 ÷ 4)

Ha(2): Halve & Halve & Halve

MC FraPa JuHa NumFa 5

(finding an eighth)

360 ÷ 8 = 45

Half of 360 = 180 (360 ÷ 2)

Half of 180 = 90 (360 ÷ 4)

Half of 90 = 45 (360 ÷ 8)

Ha(2): Halve & Halve & Halve

MC FraPa JuHa NumFa

6

5000 ÷ 8 = 625

Half of 5000 = 2500 (5000 ÷ 2)

Half of 2500 = 1250 (5000 ÷ 4)

Half of 1250 = 625 (5000 ÷ 8)

NumFa(1): Number Facts

MC FraPa JuHa NumFa

3

$$35 \div 5 = 7$$

$$5 \times 7 = 35$$

NumFa(1): Number Facts

MC FraPa JuHa NumFa

4

$$56 \div 7 = 8$$

$$7 \times 8 = 56$$

NumFa(1): Number Facts

MC FraPa JuHa NumFa

4

$$48 \div 12 = 4$$

$$12 \times 4 = 48$$

NumFa(1): Number Facts

MC FraPa JuHa NumFa

4/5

$$360 \div 9 = 40$$

$$9 \times 4 = 36$$

$$9 \times 40 = 360$$

NumFa(1): Number Facts

MC FraPa JuHa NumFa

5

2800 ÷ 7 = 400

$7 \times 4 = 28$

$7 \times 400 = 2800$

NumFa(1): Number Facts

MC FraPa JuHa NumFa

6

$$3.2 \div 4 = 0.8$$

$$8 \times 4 = 32$$

$$0.8 \times 4 = 3.2$$

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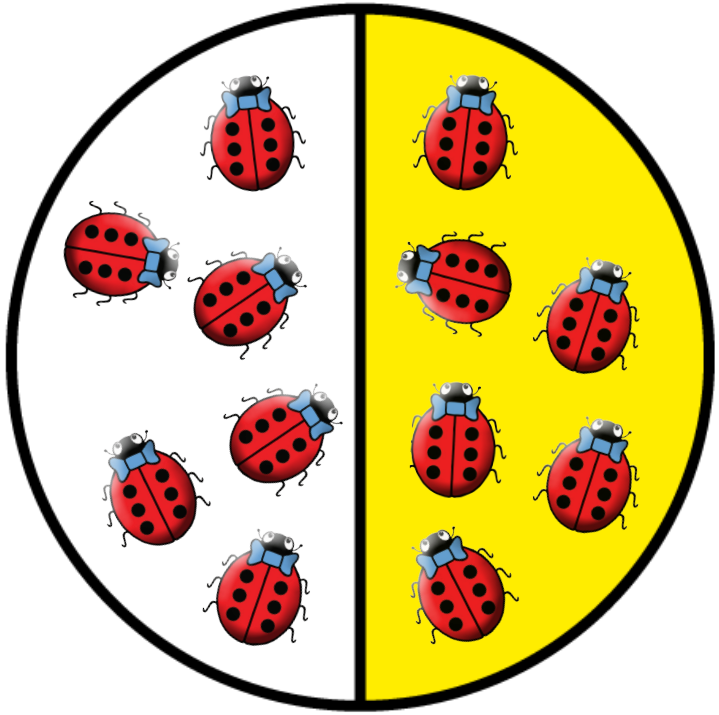
NumFa(2): Number Facts

1

Division as a Fraction

Half of 12 is equivalent to 12 ÷ 2



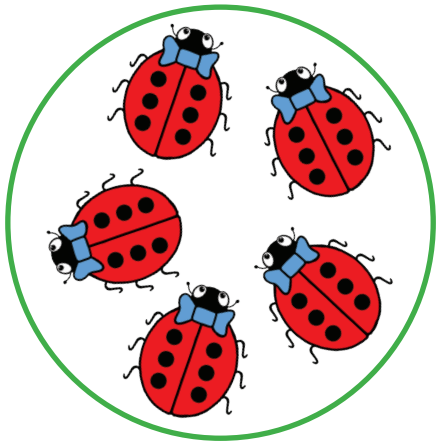
$\frac{1}{2}$ of 12 = 12 ÷ 2

NumFa(2): Number Facts

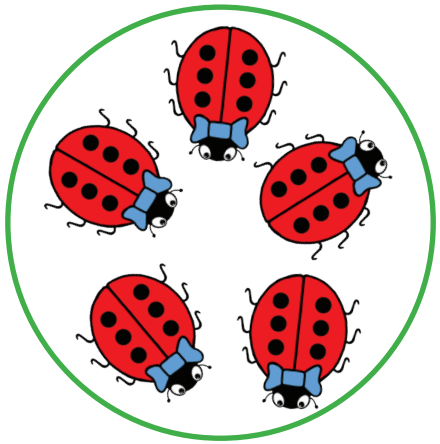
MC FraPa JuHa NumFa
3

Division as a Fraction

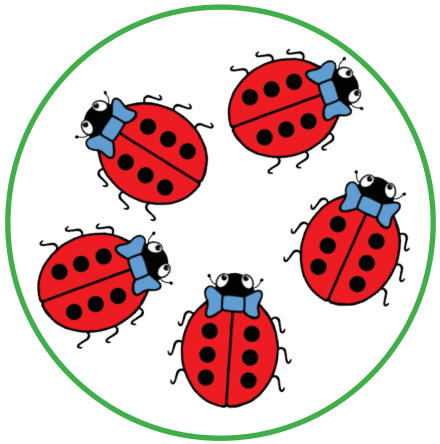
$\frac{1}{4}$ of 20 = 20 ÷ 4 = 5



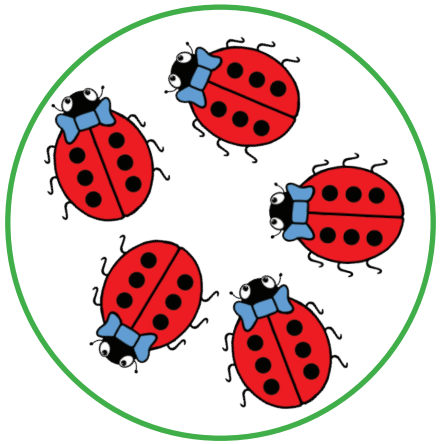
$\frac{1}{4}$



$\frac{1}{4}$



$\frac{1}{4}$



$\frac{1}{4}$

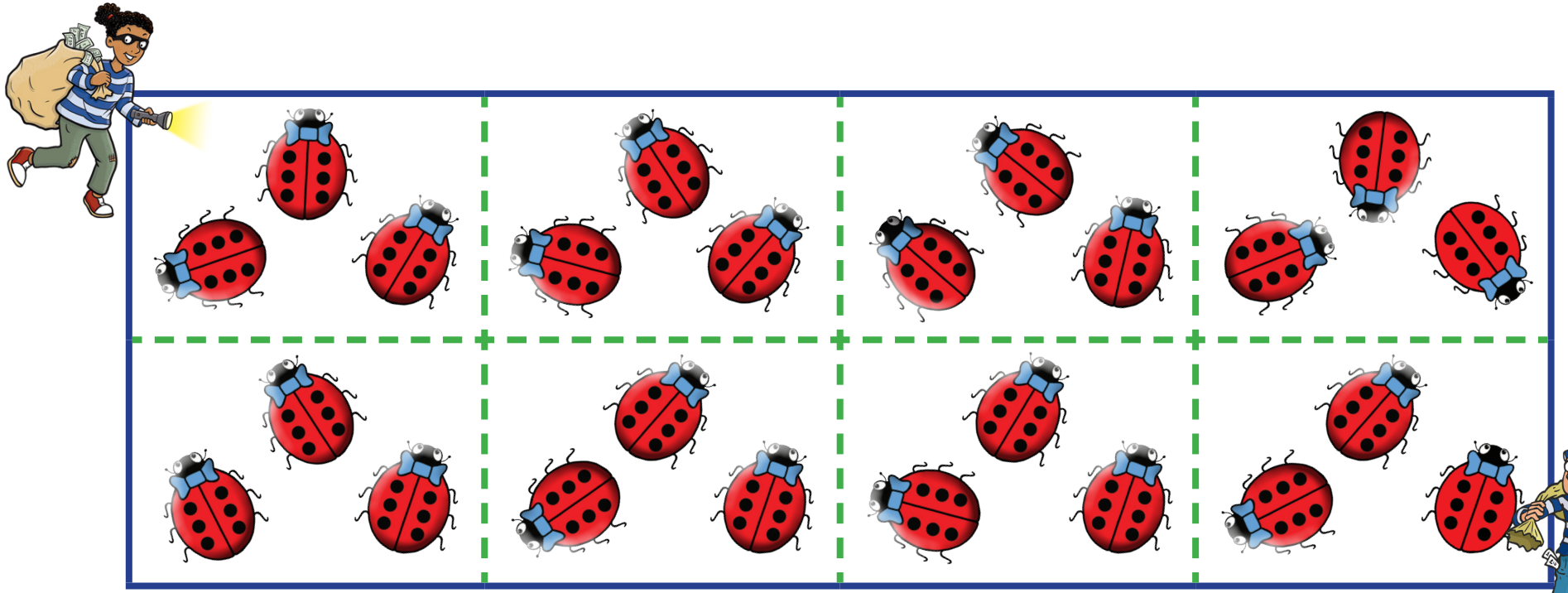
NumFa(2): Number Facts

MC FraPa JuHa NumFa

4

Division as a Fraction

$$\frac{1}{8} \text{ of } 24 = 24 \div 8 = 3$$



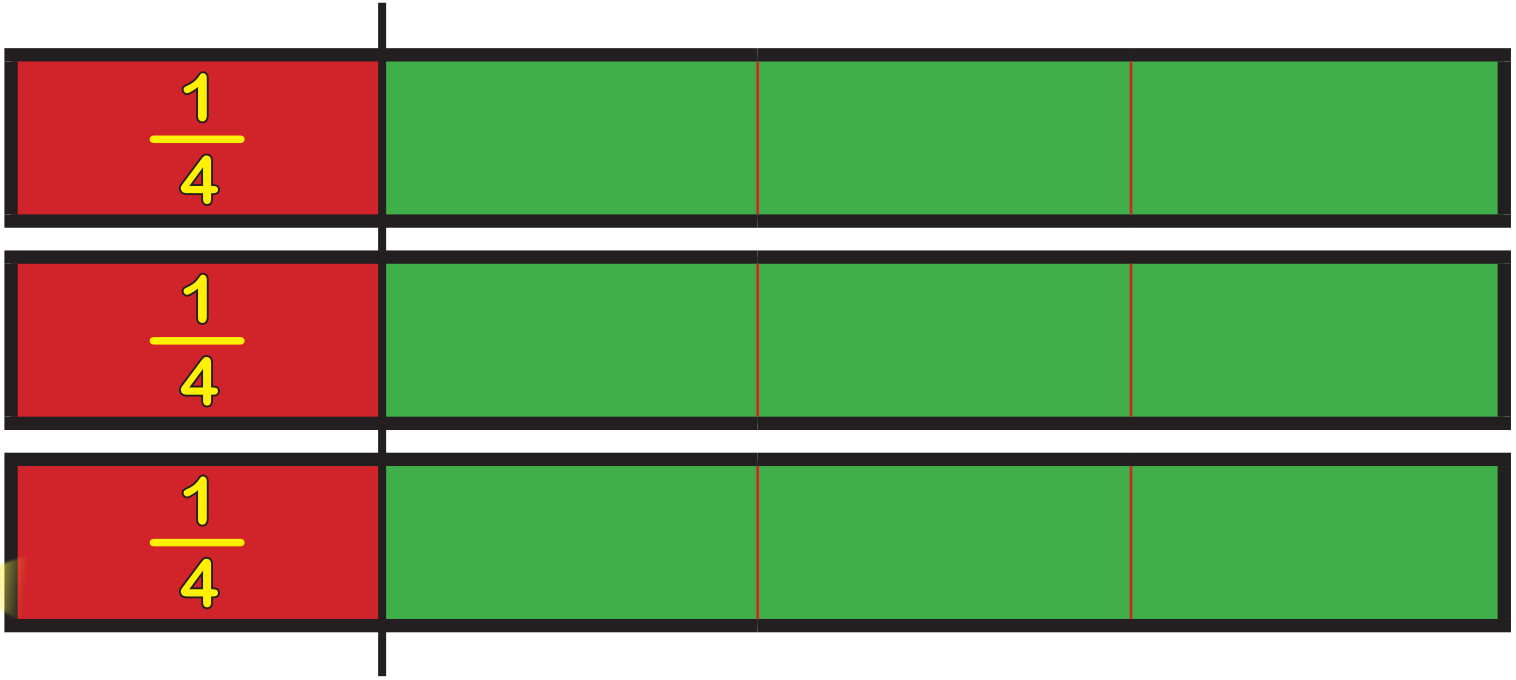
NumFa(2): Number Facts

MC FraPa JuHa NumFa

4/5

Division as a Fraction

$$\frac{1}{4} \text{ of } 3 = 3 \div 4 = \frac{3}{4}$$

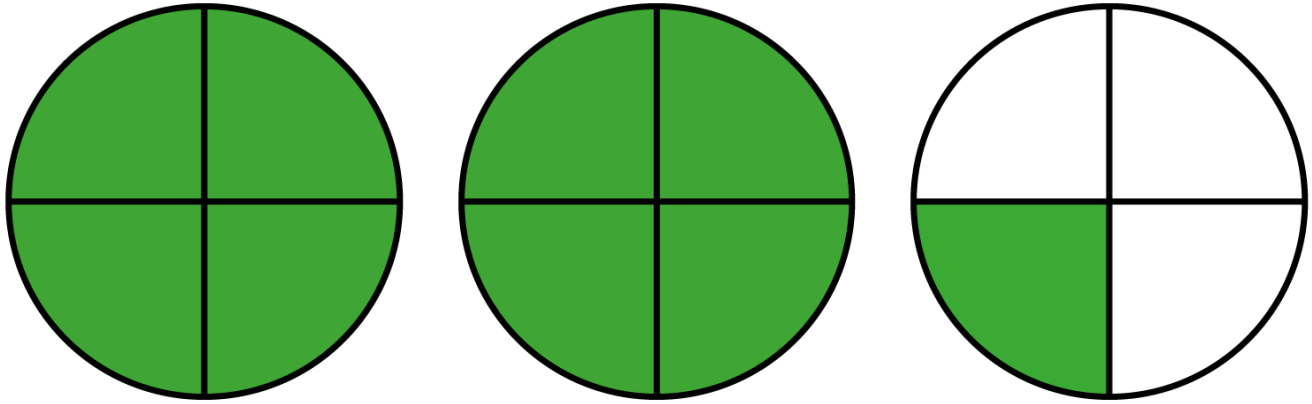


NumFa(2): Number Facts

MC FraPa JuHa NumFa
5

Division as a Fraction

$$\frac{1}{4} \text{ of } 9 = 9 \div 4 = \frac{9}{4} = 2\frac{1}{4}$$



(9 quarters = 2 and a quarter)

NumFa(2): Number Facts

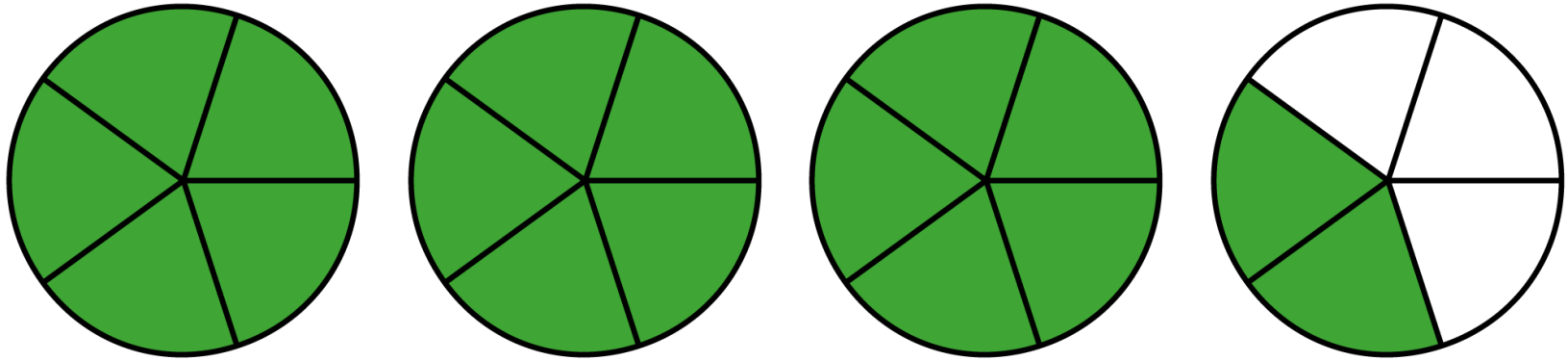
MC FraPa JuHa NumFa

6

Division as a Fraction

$$\frac{1}{5} \text{ of } 17 = 17 \div 5 = \frac{17}{5} = 3\frac{2}{5}$$

(3.4)



(17 fifths = 3 wholes and 2 fifths)

NumFa(2): Number Facts

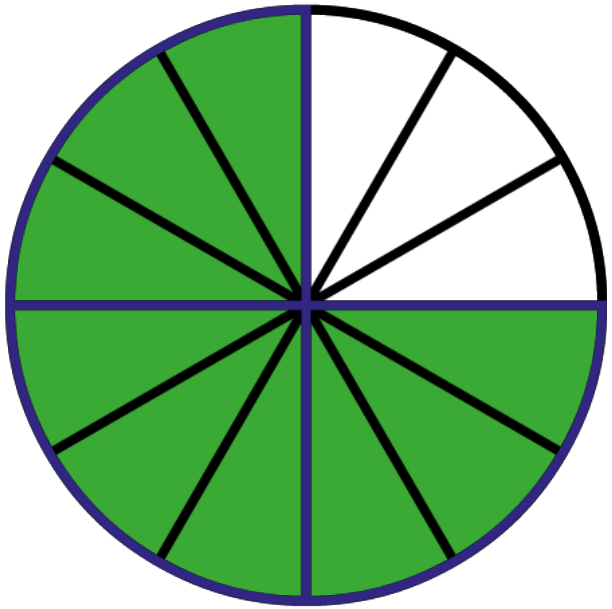
MC FraPa JuHa NumFa

6

Division as a Fraction

$$\frac{1}{12} \text{ of } 9 = 9 \div 12 = \frac{9}{12} = \frac{3}{4}$$

(0.75)



(9 twelfths = 3 quarters)

Ha(2): Halve & Halve & Halve

MC FraPa JuHa NumFa 6

(finding an eighth)

20 ÷ 8 = 2.5

Half of 20 = 10 (20 ÷ 2)

Half of 10 = 5 (20 ÷ 4)

Half of 5 = 2.5 (20 ÷ 8)

Ha(2): Halve & Halve & Halve

MC FraPa JuHa NumFa
6

(finding an eighth)

90 ÷ 8 = 11.25

Half of 90 = 45 (90 ÷ 2)

Half of 45 = 22.5 (90 ÷ 4)

Half of 22.5 = 11.25 (90 ÷ 8)