

# MC RaPa CoDa Numbo

- 14 **MA1** **MC** = Manipulate Calculation
- 22 **MA2** **Ra** = Round and Adjust
- 30 **MA3** **Pa** = Partitioning
- 38 **MA4** **Co** = Counting On
- 52 **MA5** **Da** = Double and Adjust
- 60 **MA6** **Numbo** = Number Bonds



## 6 Cool Strategies for Mental Addition!



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<h1>MA</h1>	<b>MA1: Manipulate Calculation</b> $45 + 39 = 84$  $44 + 40 = 84$	<b>MA2: Round &amp; Adjust</b> $45 + 39 = 84$ $45 + 40 - 1 = 84$ $85 - 1 = 84$	<b>MA3: Partitioning</b> $45 + 82 = 127$  $120 + 7 = 127$	<b>MA4: Counting On</b> $45 + 20 = 65$  $45 + 20 = 65$		<b>MA5: Double &amp; Adjust</b> $45 + 46 = 91$  $90 + 1 = 91$	<b>MA6: Number Bonds</b> $45 + 95 = 140$  $40 + 100 = 140$
<b>MC RaPa CoDa Numbo</b> - MA1 MC = Manipulate Calculation - MA2 Ra = Round and Adjust - MA3 Pa = Partitioning - MA4 Co = Counting On - MA5 Da = Double and Adjust - MA6 Numbo = Number Bonds 5 Cool Strategies for Mental Addition!	<b>MA1: Manipulate Calculation</b> $16 + 9 = 25$  $15 + 10 = 25$	<b>MA2: Round &amp; Adjust</b> $45 + 9 = 54$  $45 + 10 = 55$ $55 - 1 = 54$	<b>MA3: Partitioning</b> $43 + 21 = 64$  $40 + 20 + 3 + 1 = 64$	<b>MA4: Counting On</b> $45 + 20 = 65$  $45 + 20 = 65$		<b>MA5: Double &amp; Adjust</b> $7 + 8 = 15$  $7 + 7 = 14$ $14 + 1 = 15$	<b>MA6: Number Bonds</b> $3 + 4 + 7 = 14$  $3 + 4 = 7$ $7 + 7 = 14$
<h1>Y1</h1>	<b>MA1: Manipulate Calculation</b> $16 + 9 = 25$  $15 + 10 = 25$	<b>MA2: Round &amp; Adjust</b> $45 + 9 = 54$ $45 + 10 - 1 = 54$ $55 - 1 = 54$	<b>MA3: Partitioning</b> $8 + 6 = 14$  $8 + 2 + 4 = 14$	<b>MA4a: Counting On</b> $12 + 5 = 17$  $12 + 5 = 17$	<b>MA4b: Counting On</b> $57 + 10 = 67$  $57 + 10 = 67$	<b>MA5: Double &amp; Adjust</b> $5 + 6 = 11$  $10 + 1 = 11$	<b>MA6: Number Bonds</b>  $0 + 10 = 10$ $1 + 9 = 10$ $2 + 8 = 10$ $3 + 7 = 10$ $4 + 6 = 10$ $5 + 5 = 10$ $6 + 4 = 10$ $7 + 3 = 10$ $8 + 2 = 10$ $9 + 1 = 10$ $10 + 0 = 10$
<h1>Y2</h1>	<b>MA1: Manipulate Calculation</b> $45 + 19 = 64$  $44 + 20 = 64$	<b>MA2: Round &amp; Adjust</b> $45 + 19 = 64$ $45 + 20 - 1 = 64$ $65 - 1 = 64$	<b>MA3: Partitioning</b> $43 + 21 = 64$  $60 + 4 = 64$	<b>MA4a: Counting On</b> $78 + 7 = 85$  $78 + 7 = 85$	<b>MA4b: Counting On</b> $58 + 40 = 98$  $58 + 40 = 98$	<b>MA5: Double &amp; Adjust</b> $7 + 8 = 15$  $14 + 1 = 15$	<b>MA6: Number Bonds</b> $3 + 4 + 7 = 14$  $10 + 4 = 14$
<h1>Y3</h1>	<b>MA1: Manipulate Calculation</b> $45 + 97 = 142$  $42 + 100 = 142$	<b>MA2: Round &amp; Adjust</b> $45 + 97 = 142$ $45 + 100 - 3 = 142$ $145 - 3 = 142$	<b>MA1: Partitioning</b> $57 + 25 = 82$  $70 + 12 = 82$	<b>MA4a: Counting On</b> $85 + 50 = 135$  $85 + 50 = 135$	<b>MA4b: Counting On</b> $534 + 300 = 834$  $534 + 300 = 834$	<b>MA5: Double &amp; Adjust</b> $16 + 17 = 33$  $32 + 1 = 33$	<b>MA6: Number Bonds</b> $43 + 9 + 7 + 21 = 80$  $50 + 30 = 80$
<h1>Y4</h1>	<b>MA1: Manipulate Calculation</b> $345 + 298 = 643$  $343 + 300 = 643$	<b>MA2: Round &amp; Adjust</b> $345 + 298 = 643$ $345 + 300 - 2 = 643$ $645 - 2 = 643$	<b>MA1: Partitioning</b> $648 + 231 = 879$  $800 + 70 + 9 = 879$	<b>MA4a: Counting On</b> $784 + 60 = 844$  $784 + 60 = 844$	<b>MA4b: Counting On</b> $4837 + 3000 = 7837$  $4837 + 3000 = 7837$	<b>MA5: Double &amp; Adjust</b> $37 + 38 = 75$  $74 + 1 = 75$	<b>MA6: Number Bonds</b> $42 + 16 + 28 + 54 = 140$  $70 + 70 = 140$
<h1>Y5</h1>	<b>MA1: Manipulate Calculation</b> $4645 + 1996 = 6641$  $4641 + 2000 = 6641$	<b>MA2: Round &amp; Adjust</b> $4645 + 1996 = 6641$ $4645 + 2000 - 4 = 6641$ $6645 - 4 = 6641$	<b>MA3: Partitioning</b> $576 + 258 = 834$  $700 + 120 + 14 = 834$	<b>MA4a: Counting On</b> $837 + 500 = 1337$  $837 + 500 = 1337$	<b>MA4b: Counting On</b> $7583 + 5000 = 12583$  $7583 + 5000 = 12583$	<b>MA5: Double &amp; Adjust</b> $125 + 127 = 252$  $250 + 2 = 252$	<b>MA6: Number Bonds</b> $£4.56 + £3.27 + £1.44 = £9.27$  $£6.00 + £3.27 = £9.27$
<h1>Y6</h1>	<b>MA1: Manipulate Calculation</b> $45.2 + 49.9 = 95.1$  $45.1 + 50 = 95.1$	<b>MA2: Round &amp; Adjust</b> $45.2 + 49.9 = 95.1$ $45.2 + 50 - 0.1 = 95.1$ $95.2 - 0.1 = 95.1$	<b>MA3: Partitioning</b> $4.73 + 2.21 = 6.94$  $6 + 0.9 + 0.04 = 6.94$	<b>MA4a: Counting On</b> $43,826 + 30,000 = 73,826$  $43,826 + 30,000 = 73,826$	<b>MA4b: Counting On</b> $5,763,947 + 4,000,000 = 9,763,947$  $5,763,947 + 4,000,000 = 9,763,947$	<b>MA5: Double &amp; Adjust</b> $4.5 + 4.7 = 9.2$  $9 + 0.2 = 9.2$	<b>MA6: Number Bonds</b> $24.25 + 31.63 + 21.75 = 77.63$  $46 + 31.63 = 77.63$

# MA1: Manipulate Calculation



MC RaPa CoDa Numbo

$$45 + 39 = 84$$

$$44$$

$$1$$

$$44 + 40 = 84$$

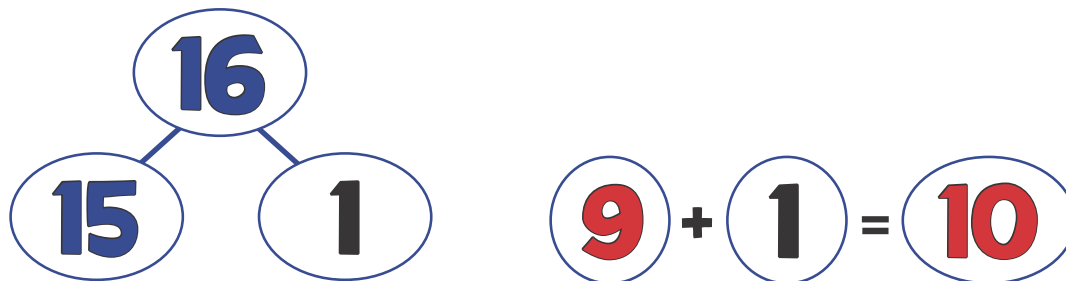
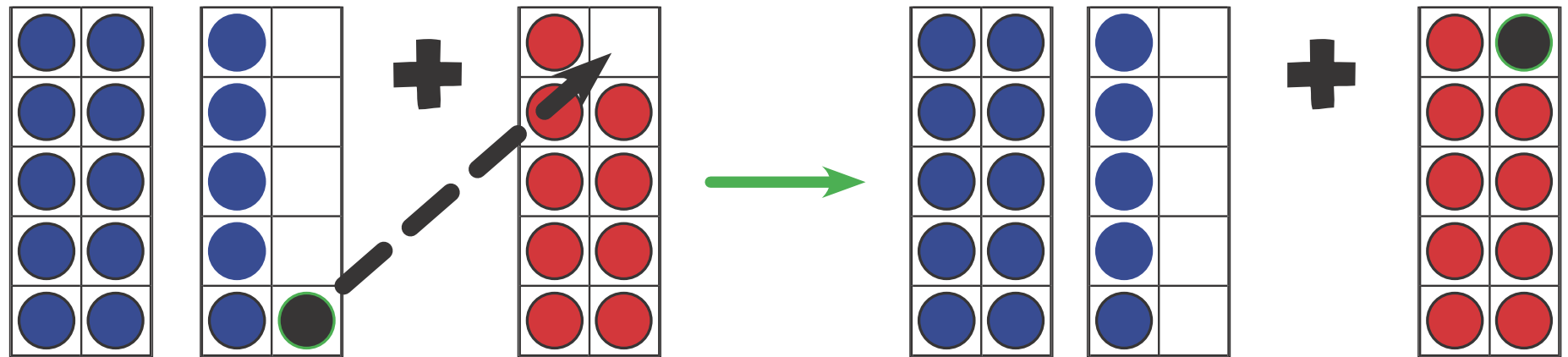


# MA1: Manipulate Calculation



MC RaPa CoDa Numbo  
Visualisation

$$16 + 9 = 25$$



$$15 + 10 = 25$$



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# MA1: Manipulate Calculation



MC RaPa CoDa Numbo

1

$$16 + 9 = 25$$

Diagram illustrating the calculation strategy for  $16 + 9 = 25$ . The number 16 is broken down into 15 and 1. The 15 is circled in blue, and the 1 is circled in green. A dashed purple line connects the 15 and the 1 to the 10 in the second equation,  $15 + 10 = 25$ , showing the strategy of adding 10 to 15 to get 25.

$$15 + 10 = 25$$



# MA1: Manipulate Calculation



MC RaPa CoDa Numbo

2

$$45 + 19 = 64$$

44

1

$$44 + 20 = 64$$



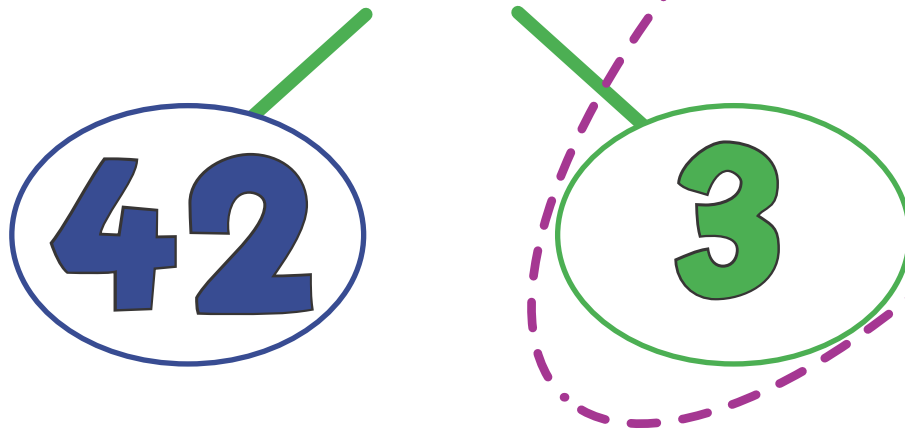
# MA1: Manipulate Calculation



MC RaPa CoDa Numbo

3

$$45 + 97 = 142$$



$$42 + 100 = 142$$



# MA1: Manipulate Calculation



MC RaPa CoDa Numbo

4

$$345 + 298 = 643$$

343

2

$$343 + 300 = 643$$





# MA1: Manipulate Calculation



MC RaPa CoDa Numbo

5

$$4645 + 1996 = 6641$$

4641

4

$$4641 + 2000 = 6641$$



# MA1: Manipulate Calculation



MC RaPa CoDa Numbo

6

$$45.2 + 49.9 = 95.1$$

$$45.1$$

$$0.1$$

$$45.1 + 50 = 95.1$$



# MA2: Round & Adjust



MC RaPa CoDa Numbo

$$45 + 39 = 84$$

$$45 + 40 - 1$$

$$85 - 1 = 84$$

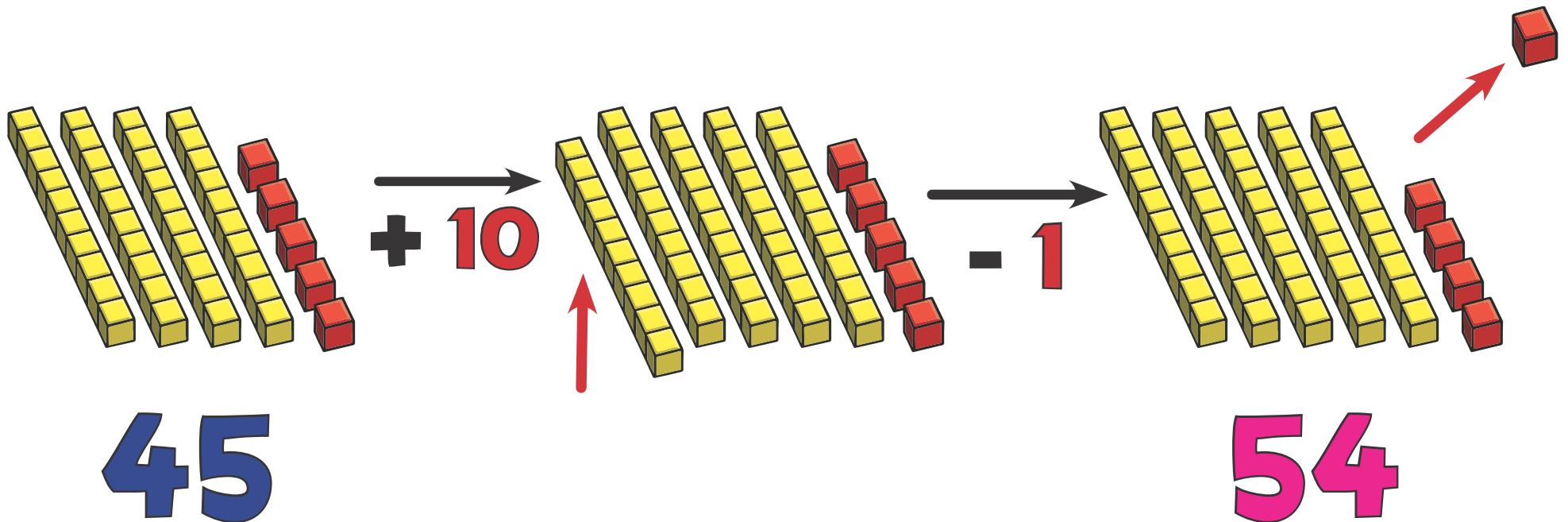


# MA2: Round & Adjust



MC RaPa CoDa Numbo  
Visualisation

$$45 + 9 = 54$$



# MA2: Round & Adjust



MC RaPa CoDa Numbo

1

$$45 + 9 = 54$$

$$45 + 10 - 1 =$$

$$55 - 1 = 54$$





# MA2: Round & Adjust



MC RaPa CoDa Numbo

2

$$45 + 19 = 64$$

$$45 + 20 - 1$$

$$65 - 1 = 64$$



# MA2: Round & Adjust



MC RaPa CoDa Numbo

3

$$45 + 97 = 142$$

$$45 + 100 - 3$$

$$145 - 3 = 142$$



# MA2: Round & Adjust



MC RaPa CoDa Numbo

4

$$345 + 298 = 643$$

$$345 + 300 - 2$$

$$645 - 2 = 643$$



# MA2: Round & Adjust



$$4645 + 1996 = 6641$$

$$4645 + 2000 - 4$$

$$6645 - 4 = 6641$$



# MA2: Round & Adjust



MC RaPa CoDa Numbo

6

$$45.2 + 49.9 = 95.1$$

$$45.2 + 50 - 0.1$$

$$95.2 - 0.1 = 95.1$$





# MA3: Partitioning



MC RaPa CoDa Numbo

$$45 + 82 = 127$$

$$120 + 7 = 127$$



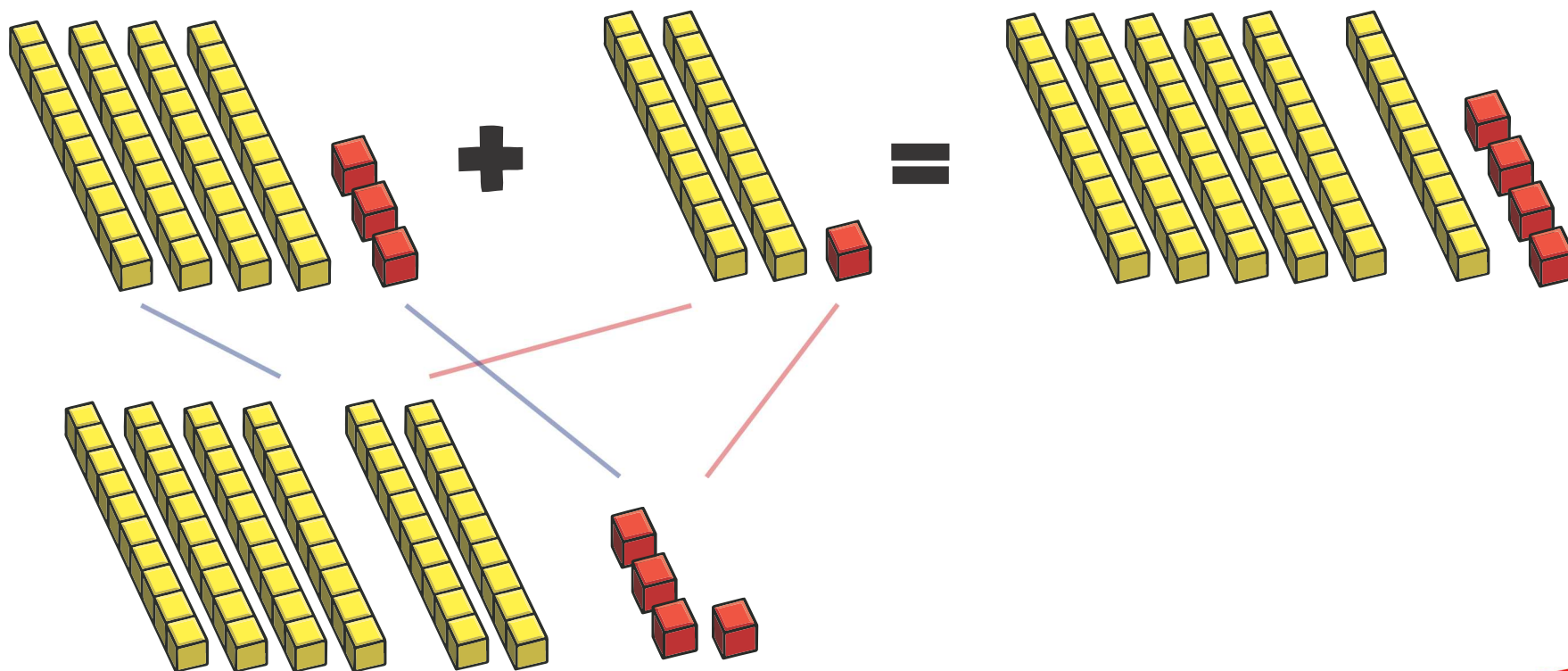
# MA3: Partitioning



MC RaPa CoDa Numbo  
Visualisation

Visualisation

$$43 + 21 = 64$$



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# MA3: Partitioning



MC RaPa CoDa Numbo

1

$$8 + 6 = 14$$

$$\begin{array}{c} 8 \\ | \\ \text{8} \end{array} + \begin{array}{c} 6 \\ / \quad \backslash \\ \text{2} \quad \text{4} \end{array} = 14$$



# MA3: Partitioning



MC RaPa CoDa Numbo

2

$$43 + 21 = 64$$

$$60 + 4 = 64$$



# MA3: Partitioning



MC RaPa CoDa Numbo

3

$$57 + 25 = 82$$

$$70 + 12 = 82$$





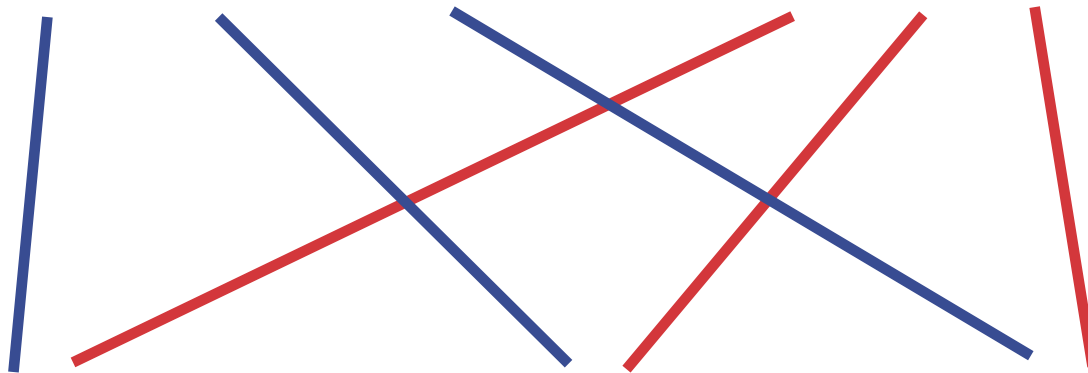
# MA3: Partitioning



MC RaPa CoDa Numbo

4

$$648 + 231 = 879$$



$$800 + 70 + 9 = 879$$



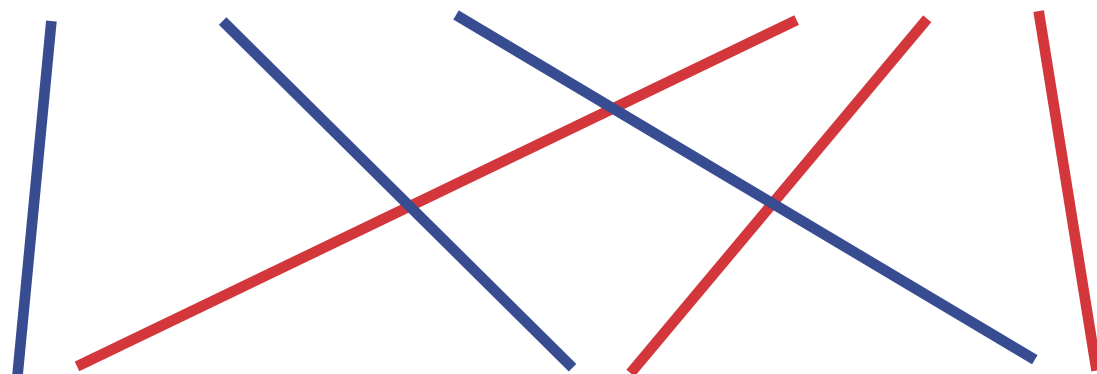
# MA3: Partitioning



MC RaPa CoDa Numbo

5

$$576 + 258 = 834$$



$$700 + 120 + 14 = 834$$



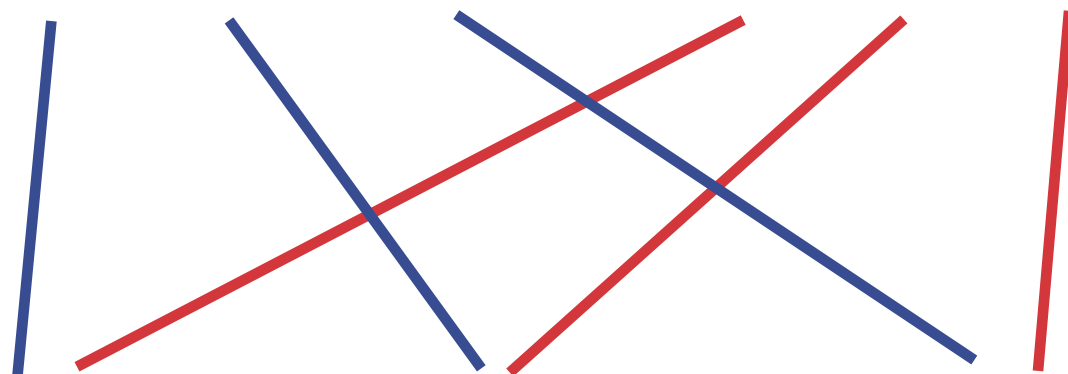
# MA3: Partitioning



MC RaPa CoDa Numbo

6

$$4.73 + 2.21 = 6.94$$



$$6 + 0.9 + 0.04 = 6.94$$

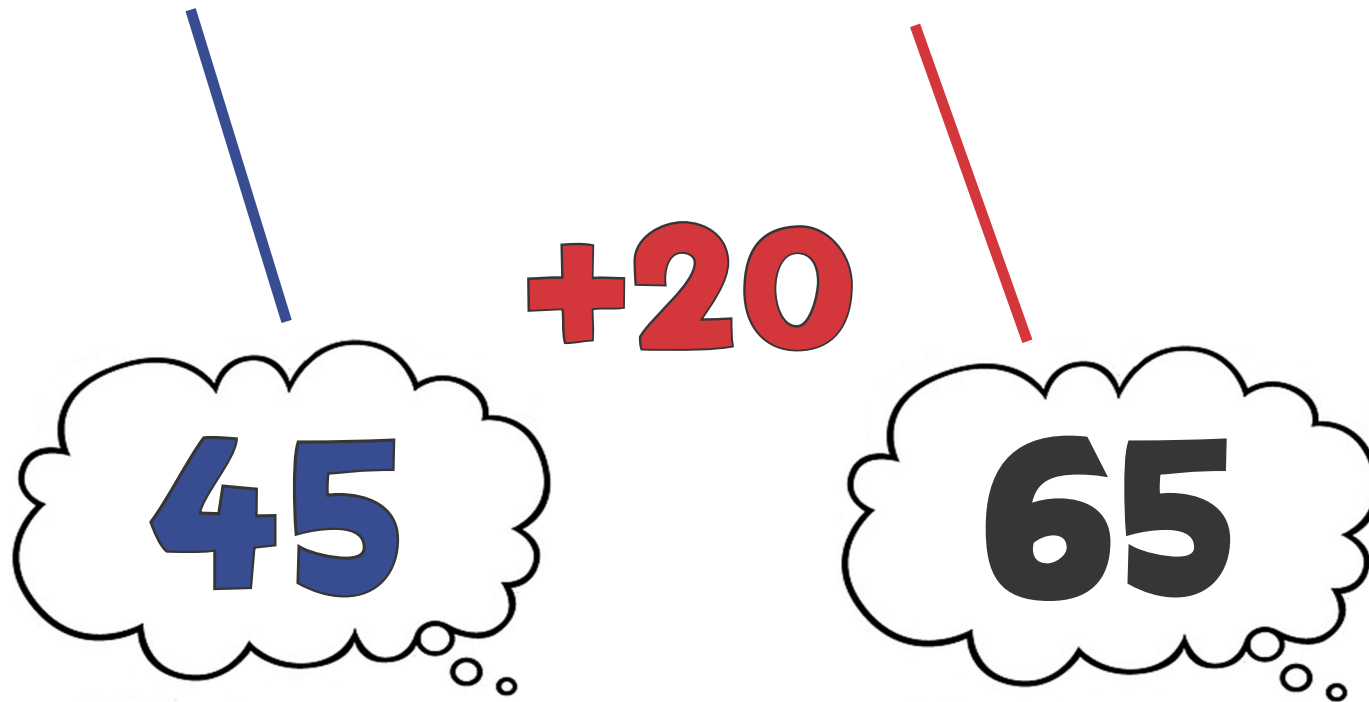


# MA4: Counting On



MC RaPa CoDa Numbo

$$45 + 20 = 65$$

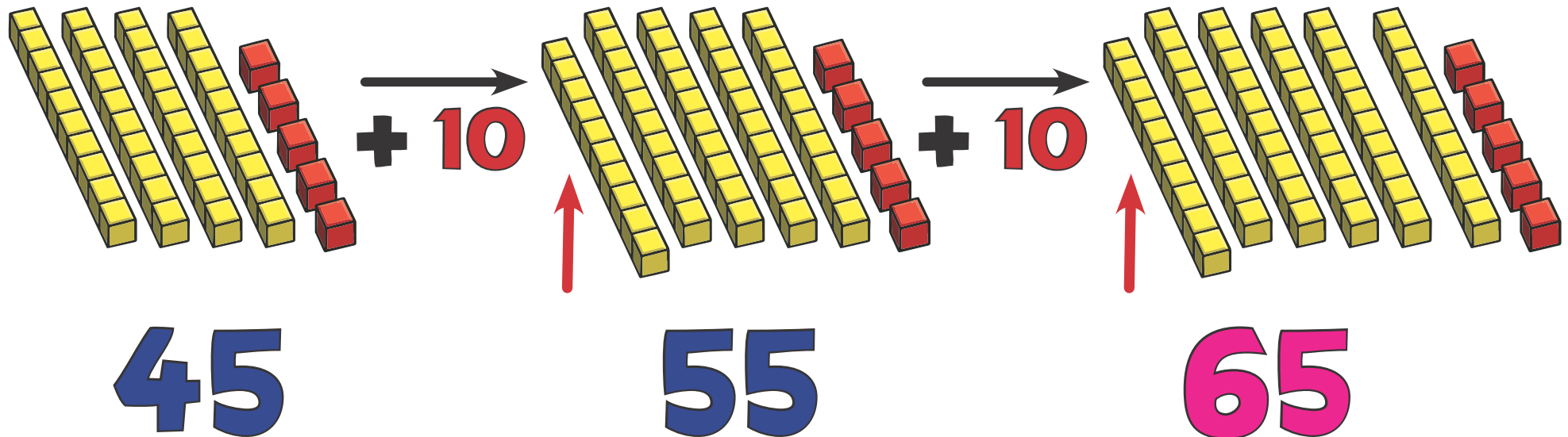


# MA4: Counting On



MC RaPa CoDa Numbo  
Visualisation

$$45 + 20 = 65$$





# MA4a: Counting On



MC RaPa CoDa Numbo

1

Ones

$$12 + 5 = 17$$



+5



# MA4b: Counting On



MC RaPa CoDa Numbo

1

Tens

$$57 + 10 = 67$$



+10



# MA4a: Counting On



MC RaPa CoDa Numbo

2

Ones

$$78 + 7 = 85$$



+7



# MA4b: Counting On

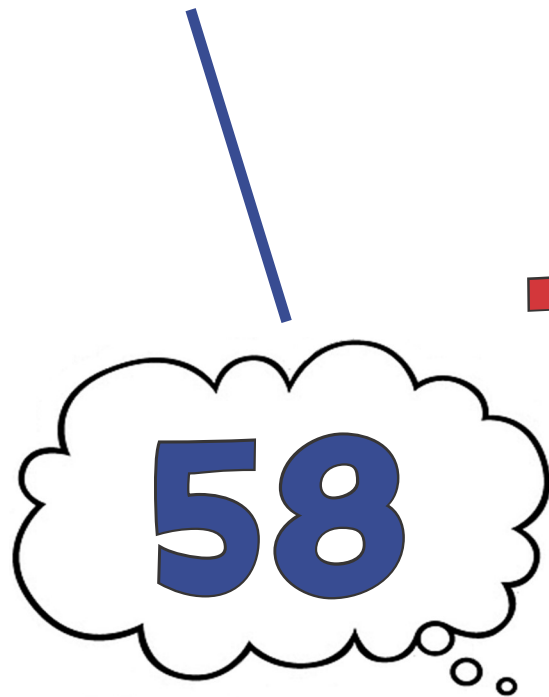


MC RaPa CoDa Numbo

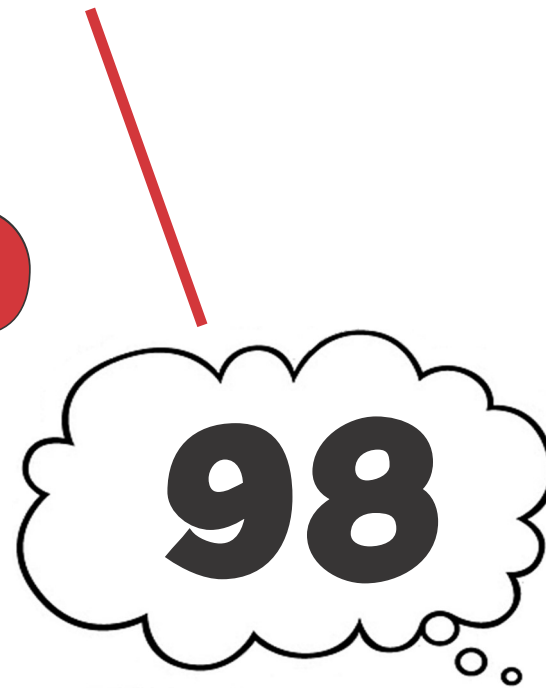
2

Tens

$$58 + 40 = 98$$



+40



# MA4a: Counting On

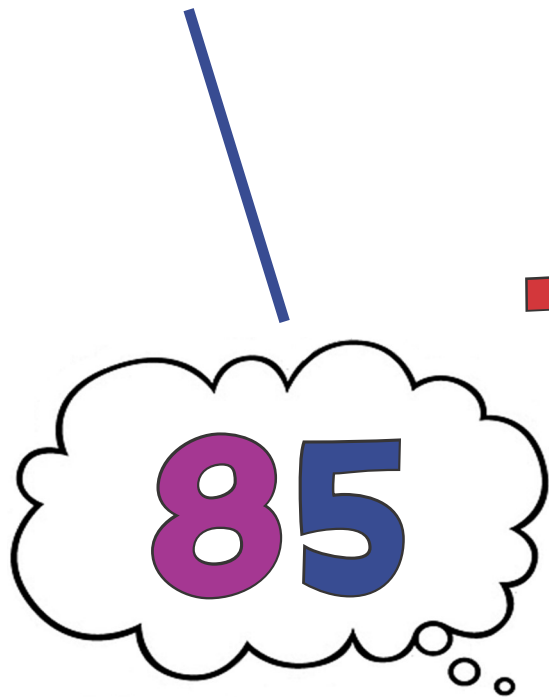
Tens



MC RaPa CoDa Numbo

3

$$85 + 50 = 135$$



+50

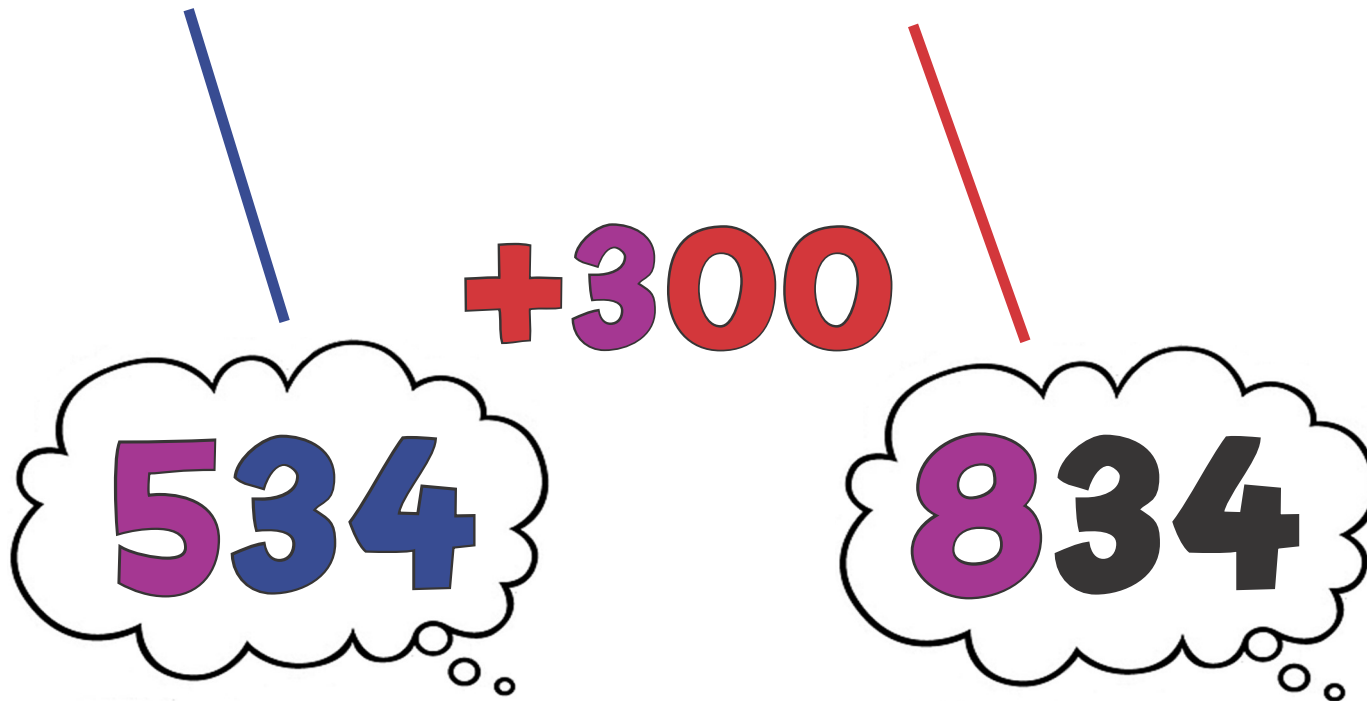


# MA4b: Counting On

MC RaPa CoDa Numbo  
3

Hundreds

$$534 + 300 = 834$$



# MA4a: Counting On

MC RaPa CoDa Numbo  
4 Tens

$$784 + 60 = 844$$

784

+60

844



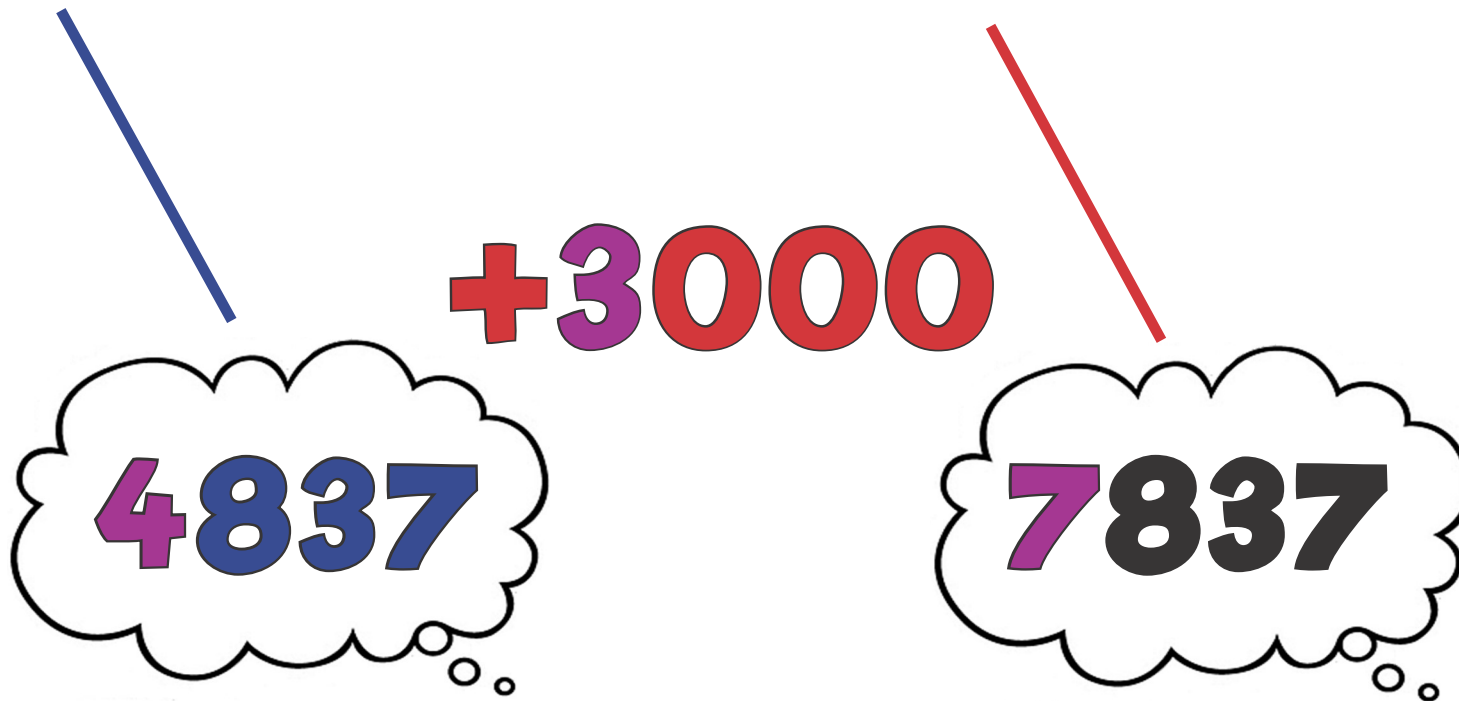


# MA4b: Counting On

MC RaPa CoDa Numbo  
4

Hundreds

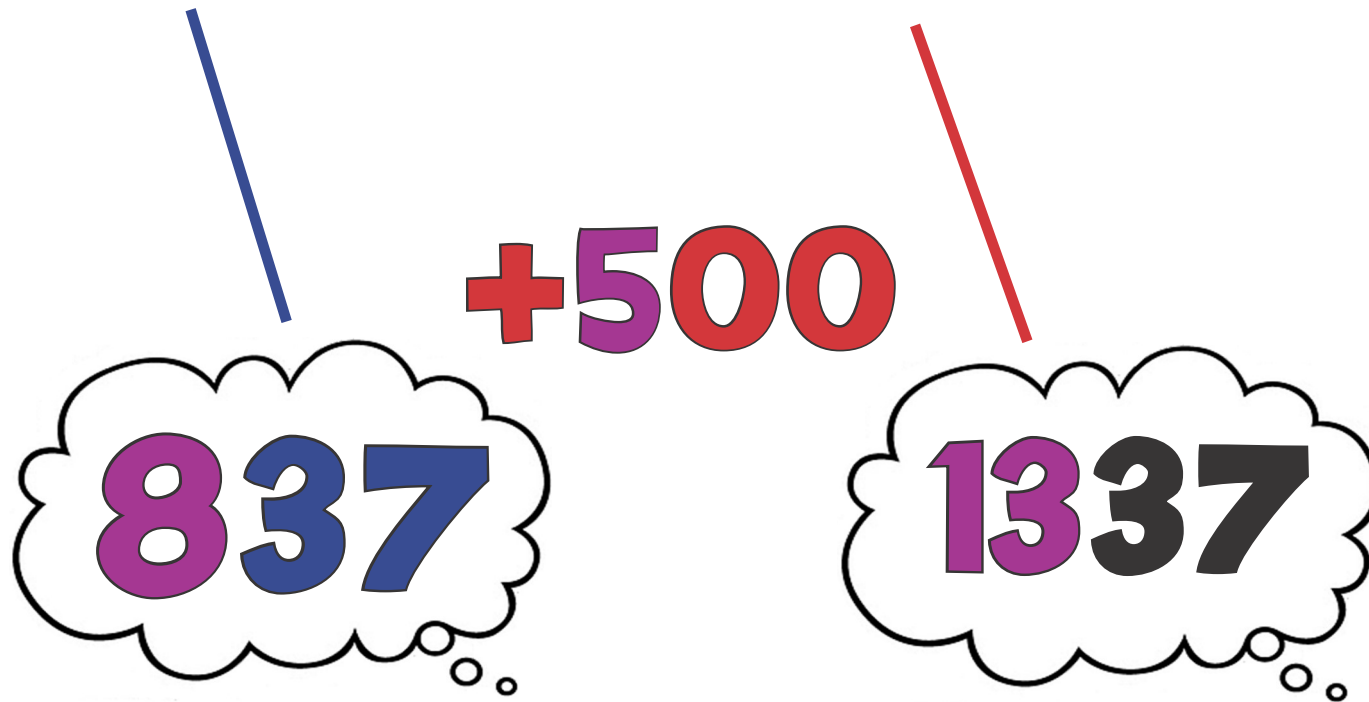
$$4837 + 3000 = 7837$$



# MA4a: Counting On

MC RaPa CoDa Numbo  
5  
Hundreds

$$837 + 500 = 1337$$



# MA4b: Counting On

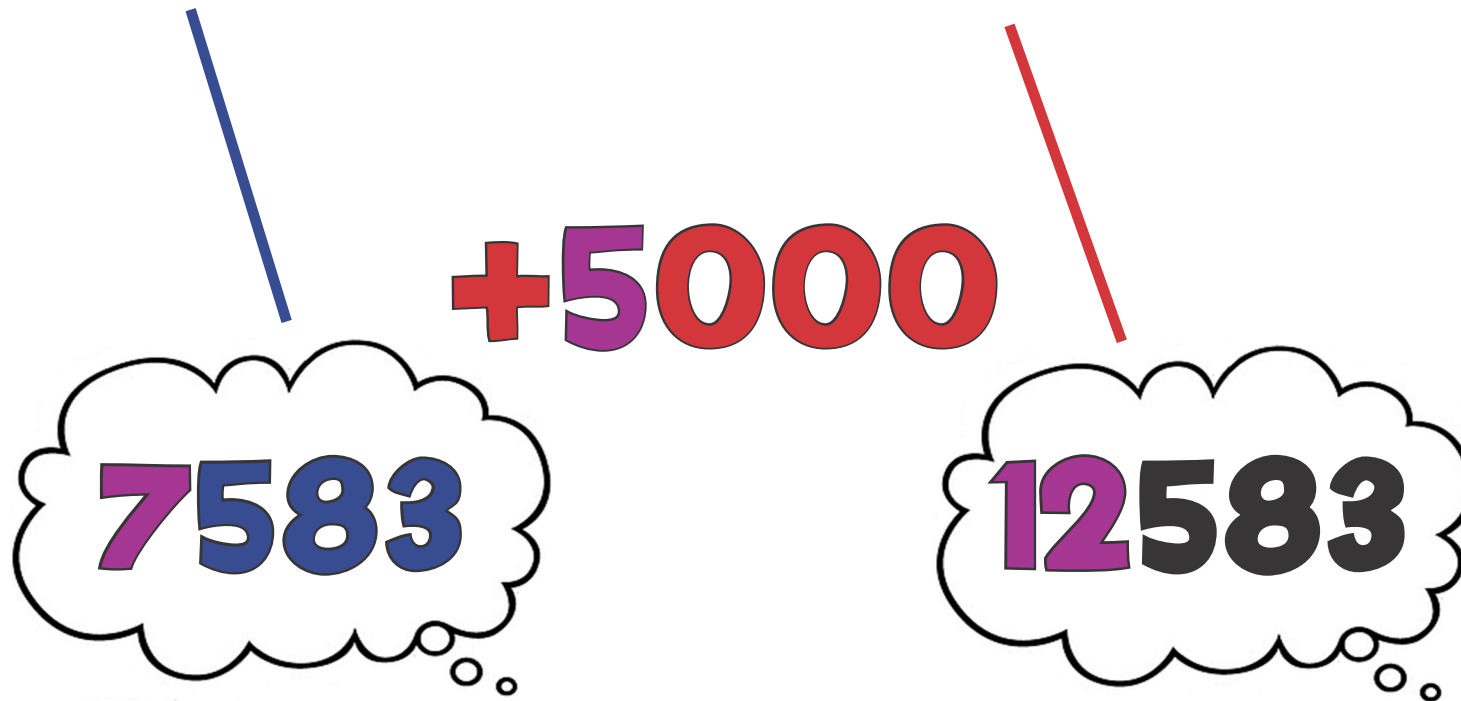
Thousands



MC RaPa CoDa Numbo

5

$$7583 + 5000 = 12583$$



# MA4a: Counting On



MC RaPa CoDa Numbo

6

Ten Thousands

$$43,826 + 30,000 = 73,826$$

+30,000



# MA4b: Counting On

MC RaPa CoDa Numbo  
6 Millions

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

+4,000,000

5,763,947

9,763,947



# MA5: Double & Adjust



MC RaPa CoDa Numbo

$$45 + 46 = 91$$

Diagram illustrating the 'Double & Adjust' strategy for the calculation  $45 + 46 = 91$ . The number 45 is shown in blue. The number 46 is shown in red and circled. A dashed purple line connects the 45 and the 46. Below the 46, the number 45 is shown in red and circled. Below the 45, the number 1 is shown in red and circled. This indicates that 46 is being treated as 45 + 1.

$$90 + 1 = 91$$

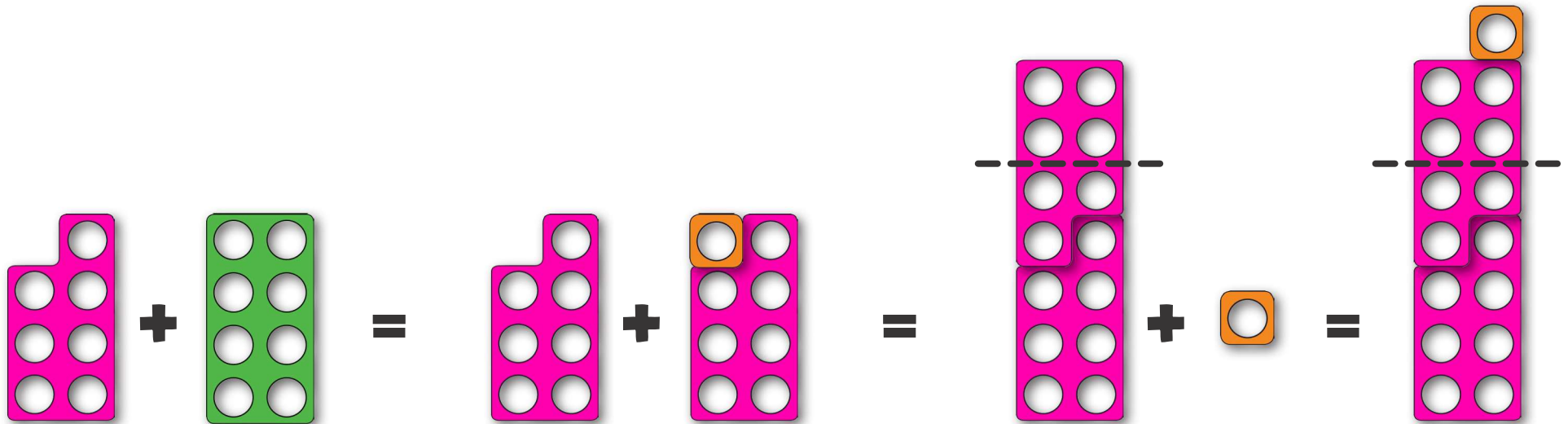


# MA5: Double & Adjust



MC RaPa CoDa Numbo  
Visualisation

$$7 + 8 = 15$$



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



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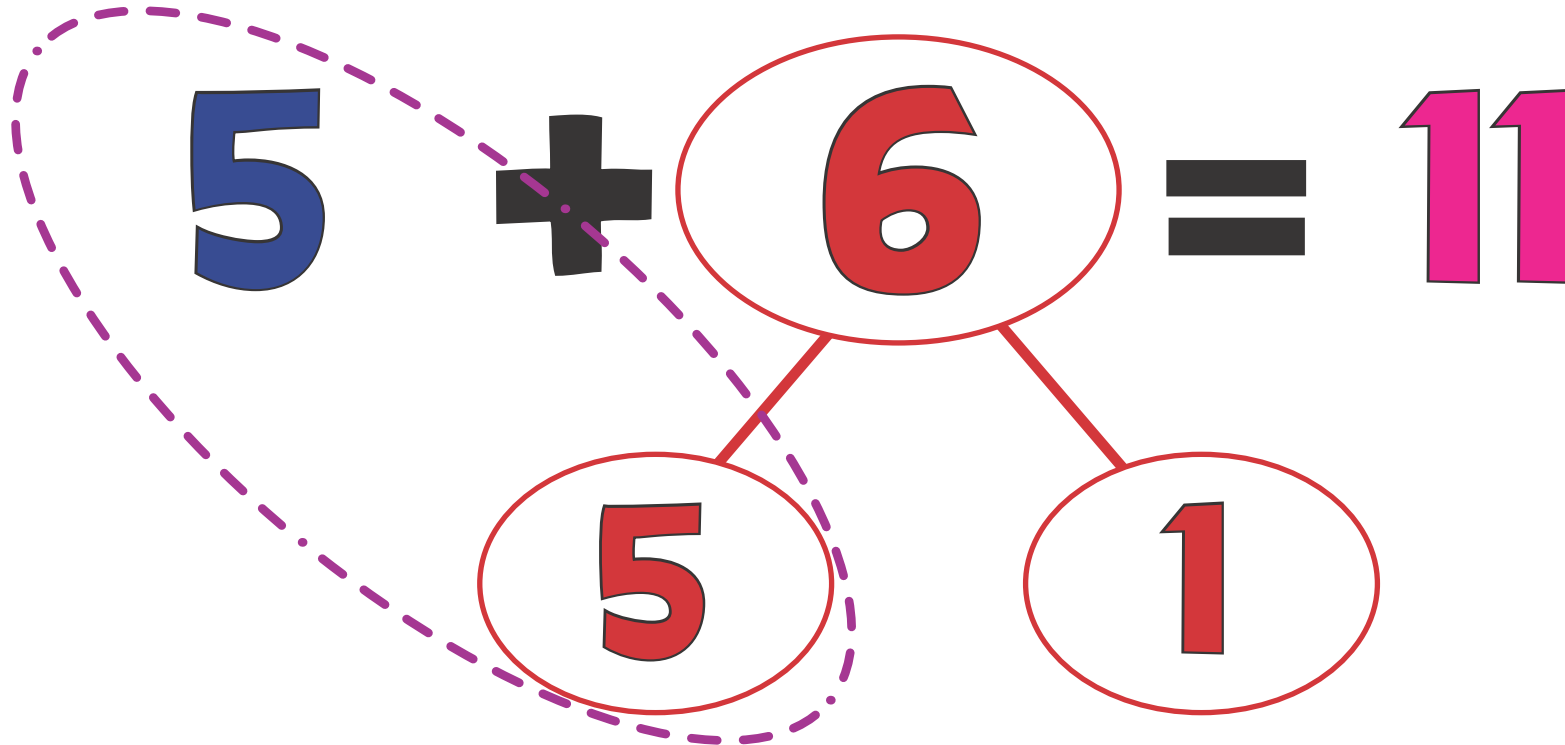


# MA5: Double & Adjust



MC RaPa CoDa Numbo

1

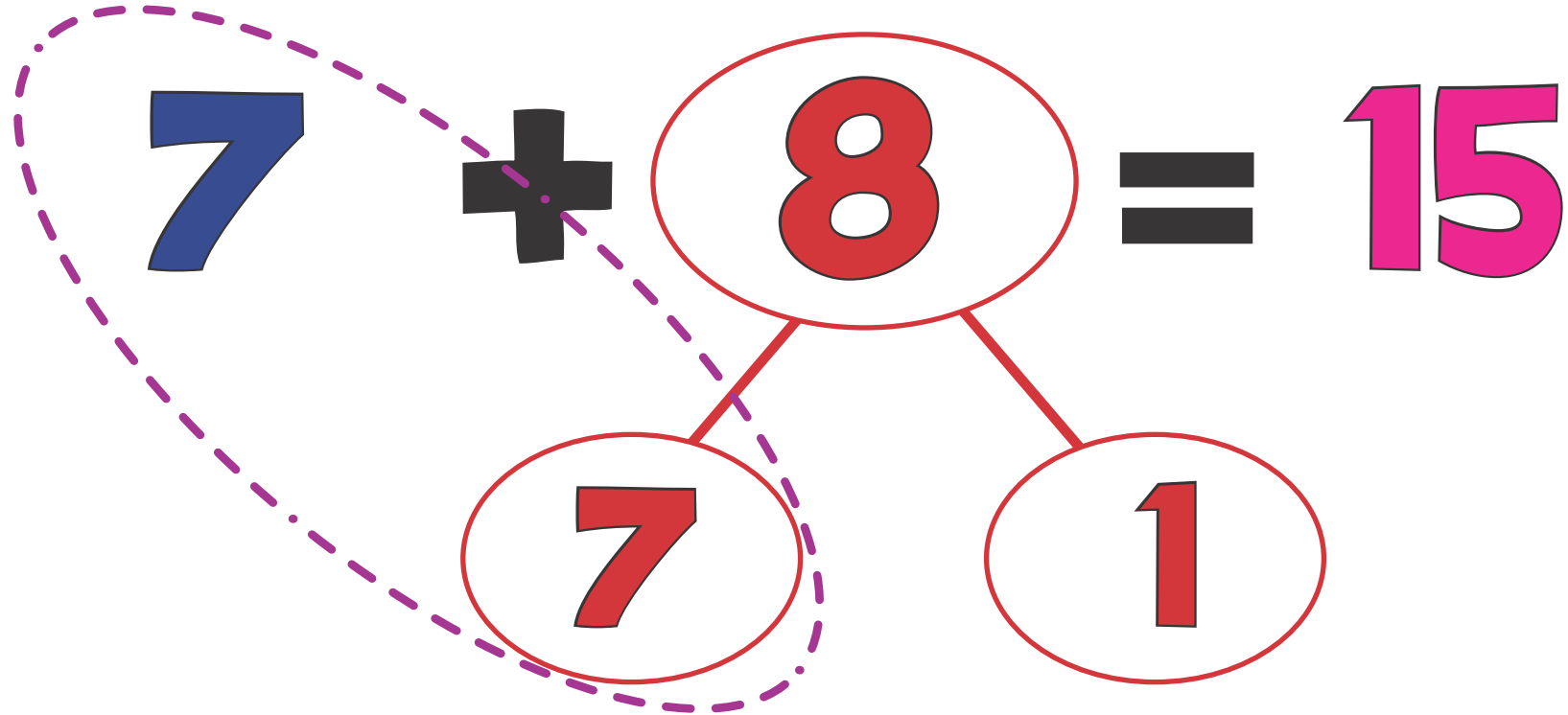


# MA5: Double & Adjust



MC RaPa CoDa Numbo

2



$$14 + 1 = 15$$

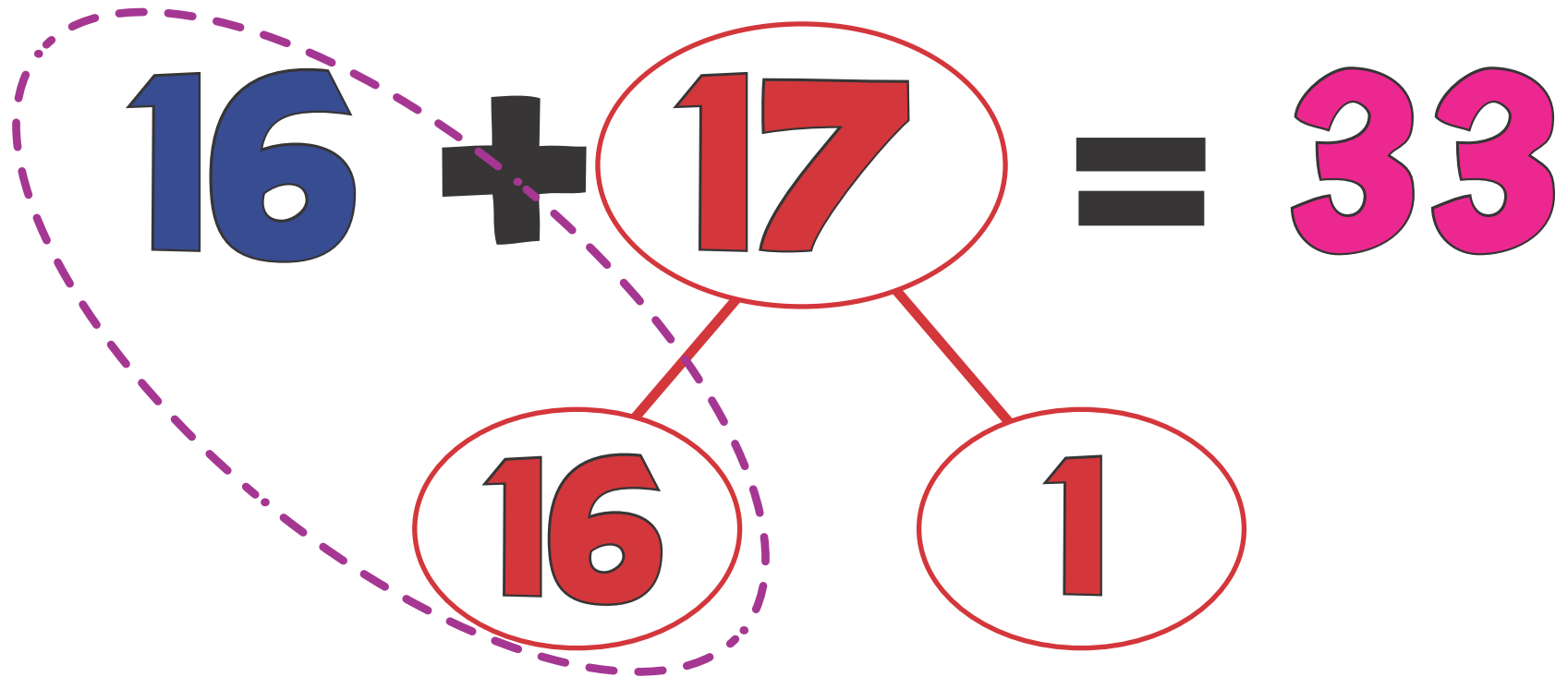


# MA5: Double & Adjust



MC RaPa CoDa Numbo

3



$$32 + 1 = 33$$



# MA5: Double & Adjust



MC RaPa CoDa Numbo

4

$$37 + 38 = 75$$

Diagram illustrating the 'Double & Adjust' strategy for the addition  $37 + 38 = 75$ . The number 38 is circled in red. A dashed purple line connects 37 to a circled 37. A solid red line connects the circled 38 to a circled 1. This shows the process of doubling 37 to 74 and then adding 1 to reach 75.

$$74 + 1 = 75$$



# MA5: Double & Adjust



MC RaPa CoDa Numbo

5

$$125 + 127 = 252$$

125

2

$$250 + 2 = 252$$



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# MA5: Double & Adjust



MC RaPa CoDa Numbo

6

$$4.5 + 4.7 = 9.2$$

Diagram illustrating the double and adjust strategy for adding 4.5 and 4.7. A dashed purple oval encircles the 4.5 and the plus sign. A red oval encircles the 4.7. Two red lines connect the 4.7 oval to two separate red ovals below it, containing 4.5 and 0.2. This shows 4.7 being split into 4.5 and 0.2 to be added to the original 4.5.

$$9 + 0.2 = 9.2$$



# MA6: Number Bonds



MC RaPa CoDa Numbo

$$45 + 95 = 140$$

$$40 + 100 = 140$$



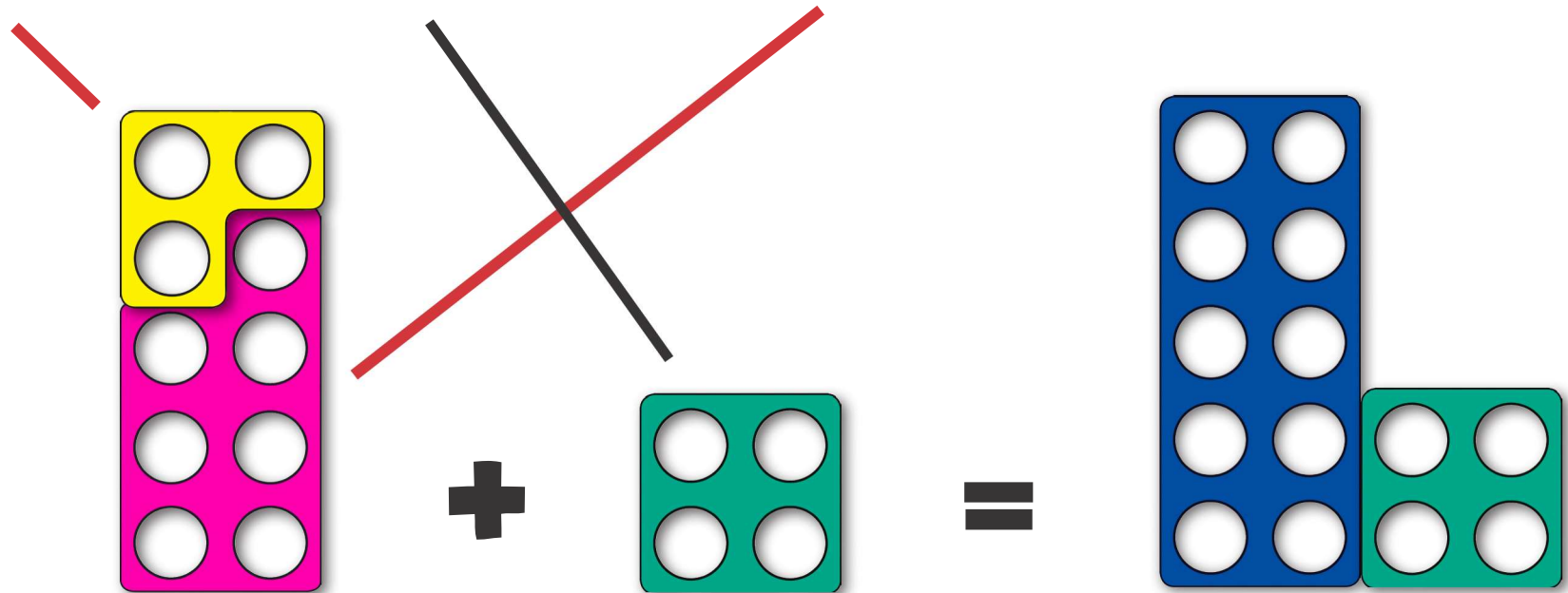


# MA6: Number Bonds



MC RaPa CoDa Numbo  
Visualisation

$$3 + 4 + 7 = 14$$



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# MA6: Number Bonds



MC RaPa CoDa Numbo

1

Learn Bonds

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

$$0 + 10 = 10$$

$$1 + 9 = 10$$

$$2 + 8 = 10$$

$$3 + 7 = 10$$

$$4 + 6 = 10$$

$$5 + 5 = 10$$

$$6 + 4 = 10$$

$$7 + 3 = 10$$

$$8 + 2 = 10$$

$$9 + 1 = 10$$

$$10 + 0 = 10$$



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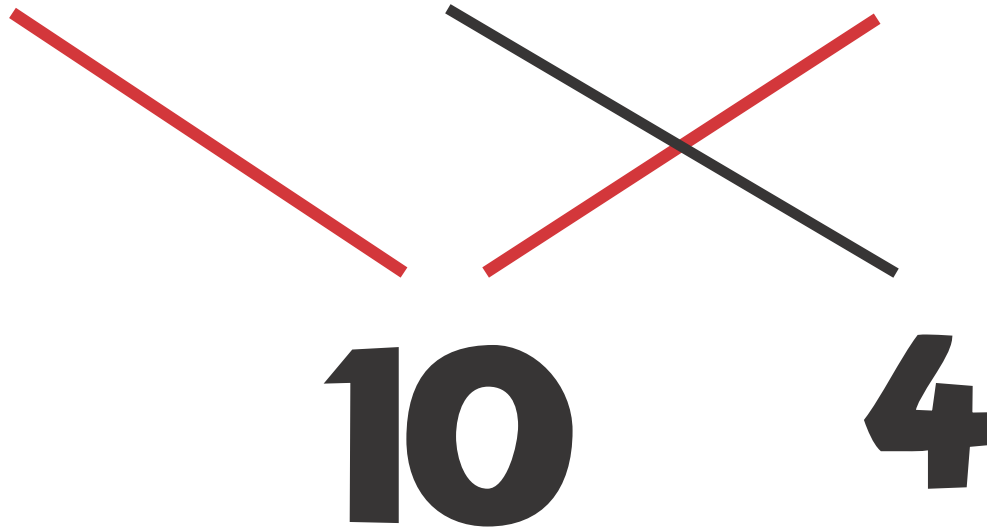
# MA6: Number Bonds



MC RaPa CoDa Numbo

2

$$3 + 4 + 7 = 14$$



# MA6: Number Bonds



MC RaPa CoDa Numbo

3

$$43 + 9 + 7 + 21 = 80$$

50

30



# MA6: Number Bonds



MC RaPa CoDa Numbo

4

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

70

70



# MA6: Number Bonds



MC RaPa CoDa Numbo

5

$$£4.56 + £3.27 + £1.44 = £9.27$$

£6.00

£3.27



# MA6: Number Bonds



MC RaPa CoDa Numbo

6

$$24.25 + 31.63 + 21.75 = 77.63$$

46

31.63

