Sense of Number

Papa Titioning's

Models and Images

Calculation Wallcharts

Blanford Mere Primary School

June 2015

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

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'A picture is worth 1000 words!'

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Guide to using Papa Titioning's Models and Images Calculation Wallcharts

Wallchart Listing

Page		
3:	Basic Addition	(11 + 5 = 16)
4:	2-Digit Addition	(43 + 24 = 67)
5:	3-Digit Addition	(385 + 247 = 632)
6:	Basic Subtraction	(12 - 7 = 5)
7:	2-Digit Subtraction	(73 - 47 = 25) & (87 - 23 = 64)
8:	3-Digit Subtraction	(331 - 146 = 185)
9:	Basic Multipication	(5 x 4 = 20)
10:	2-Digit Multipication	(15 x 5 = 75)
11:	Basic Division	(20 ÷ 5 = 4)
12:	Basic Division - Remainders	(23 ÷ 5 = 4r3)
13:	2-Digit Division	(74 ÷ 4 = 18)
14:	3-Digit Division 1	(136 ÷ 4 = 34)
15:	3-Digit Division 2	(536 ÷ 4 = 134)
16:	Models of Calculation	

Papa Titioning's Calculation Wallcharts provide a visual representation of the Models and Images that help children understand and develop their skills in calculation. They are in line with progressions found in Domains 2: Addition and Subtraction and Domain 3: Multiplication and Division of the new National Curriculum. They are the ideal accompanyment to the SoN Visual Calculation Policy.

A school branded VPVP is pdf document created by Dave Godfrey for individual schools to which the school logo and school name are added in the footer of each slide.

Typical uses:

Classroom: The slides are printed out (e.g. A4/A3) and the appropriate slides are displayed within classrooms 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 how models and images are used in the teaching of Calculation within school.

Website: Screen grabs from the VPVP are securely inserted onto a school's maths webpages.

(Please note: the VPVP should not be made available for download on the school website.)

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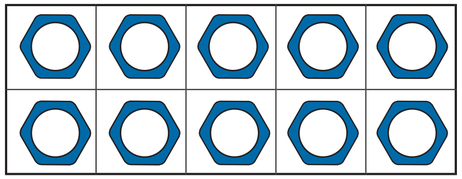
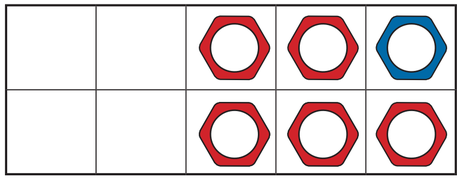
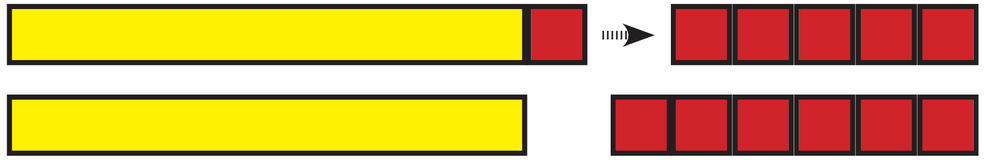
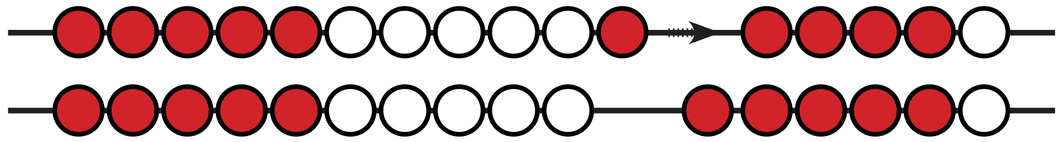
Papa T's Basic Addition Wallchart



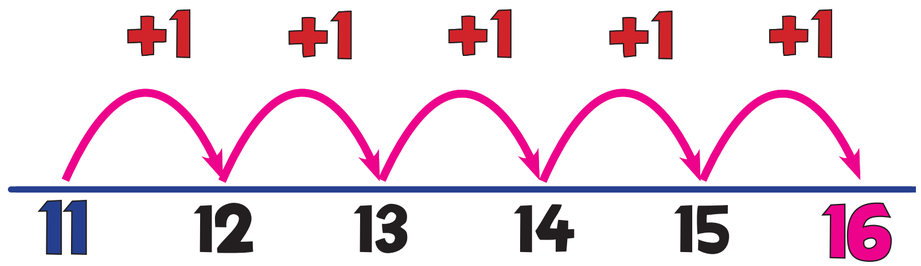




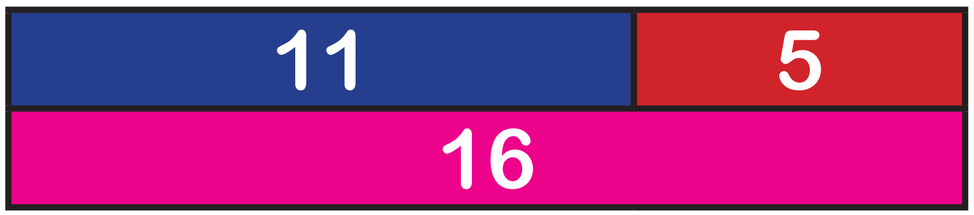
11 + 5 = 10 + 6 = 16

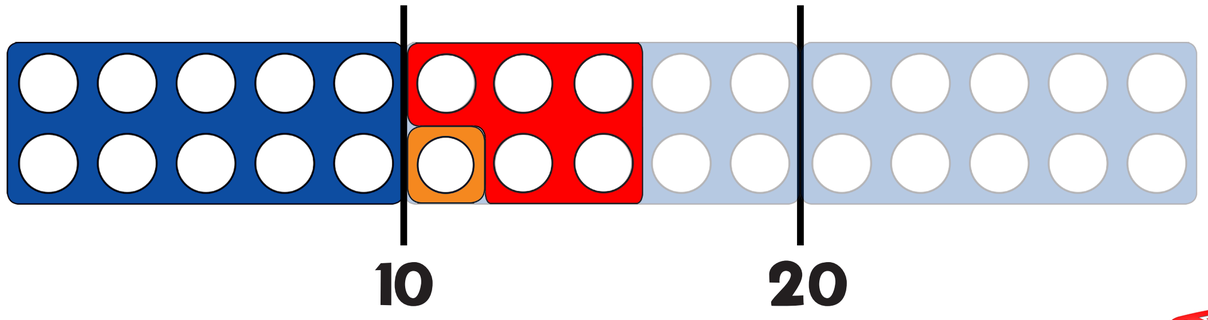


11 + 5 = 16



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40





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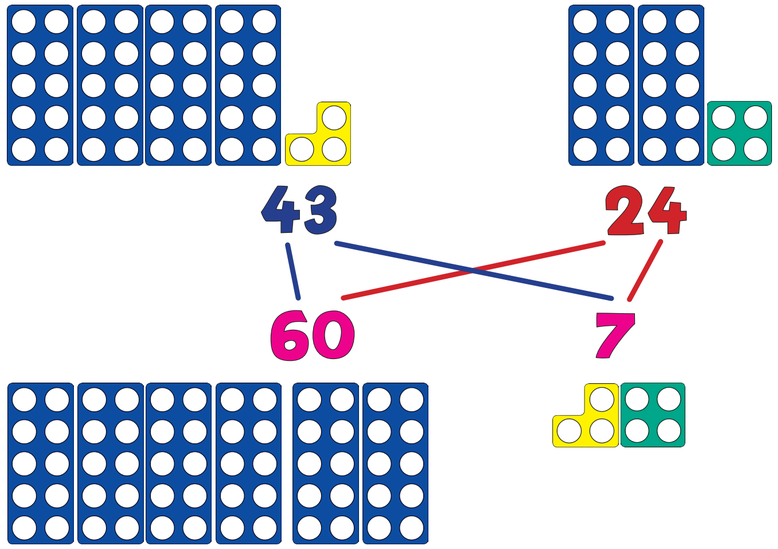
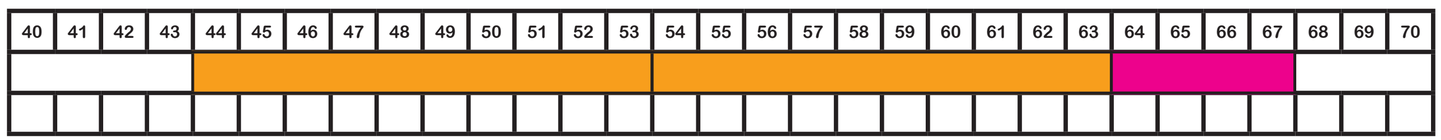
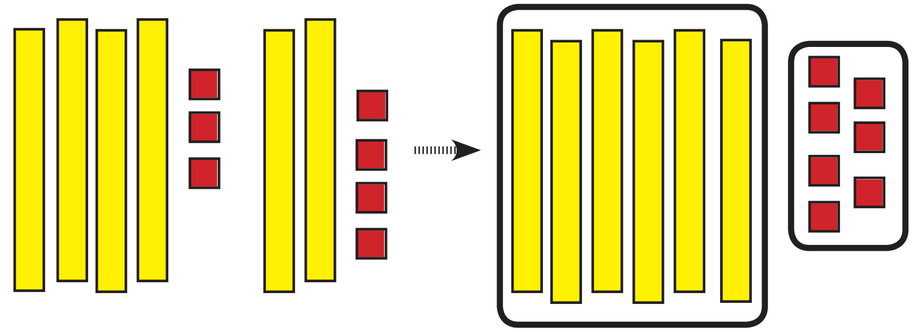
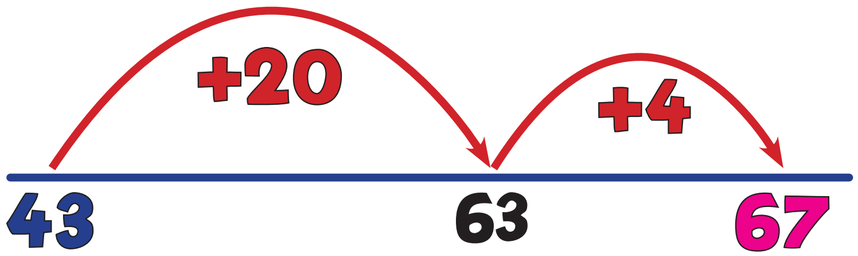
Papa T's 2-Digit Addition Wallchart

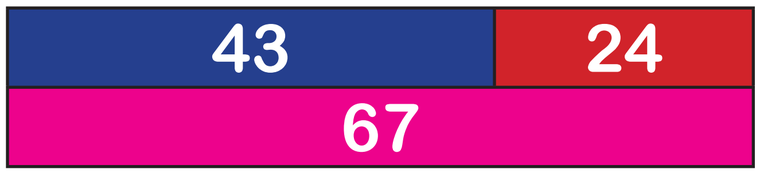




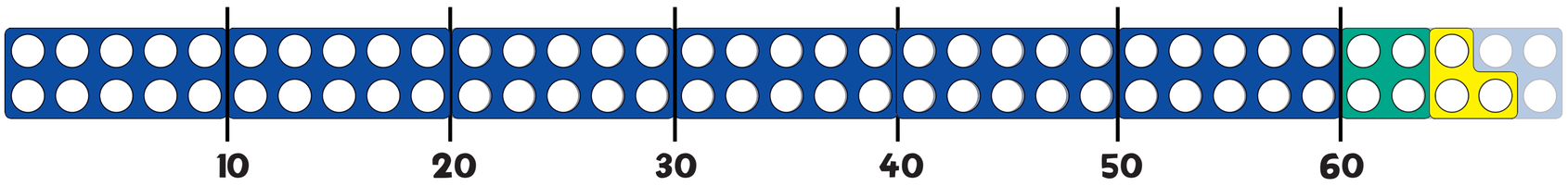


43 + 24 = 67





1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	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
71	72	73	74	75	76	77	78	79	80



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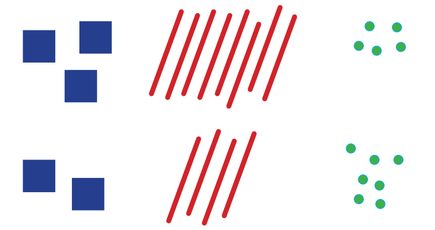
Papa T's 3-Digit Addition Wallchart

1

100	10	1
3	8	5
+ 2	4	7

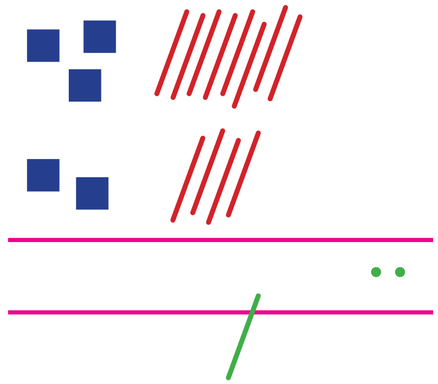
Hundreds Tens Ones



2

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

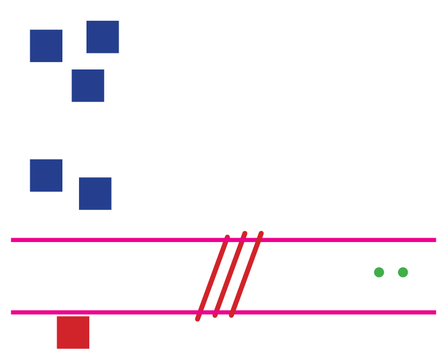
Hundreds Tens Ones



3

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

Hundreds Tens Ones

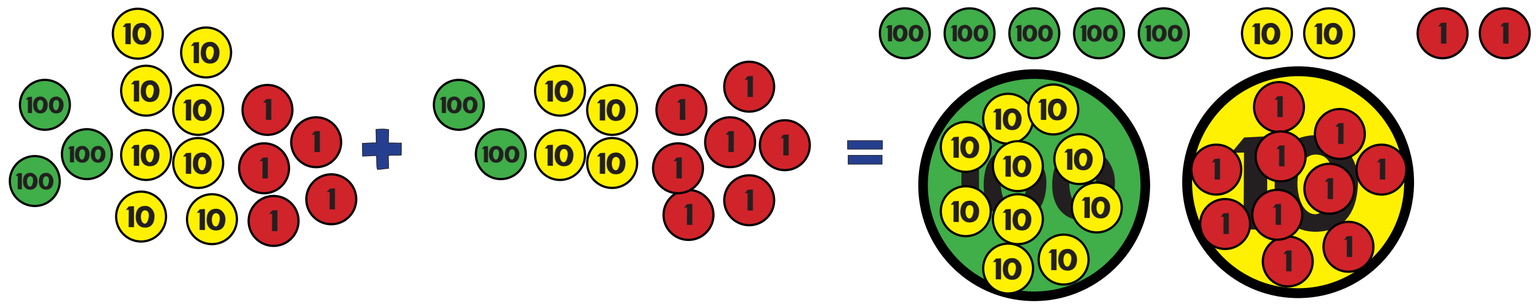


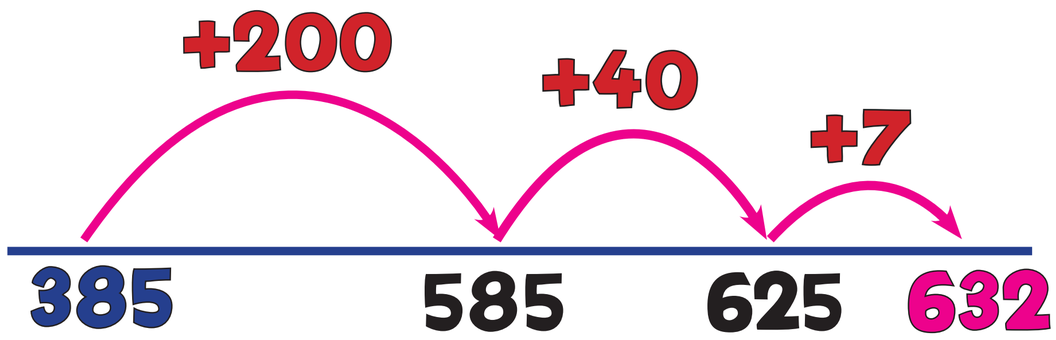
4

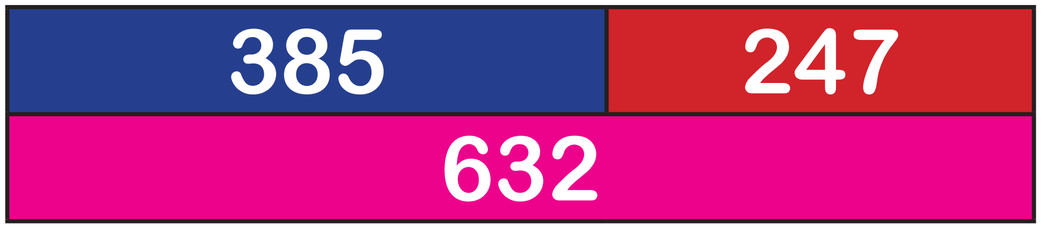
100	10	1
3	8	5
+ 2	4	7
6	3	2
1	1	

Hundreds Tens Ones

385 + 247 = 632







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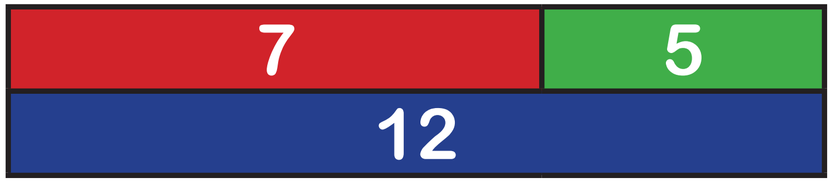
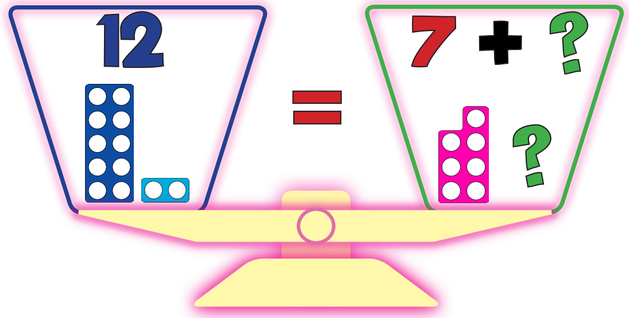
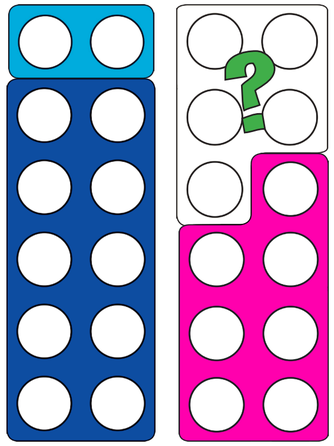
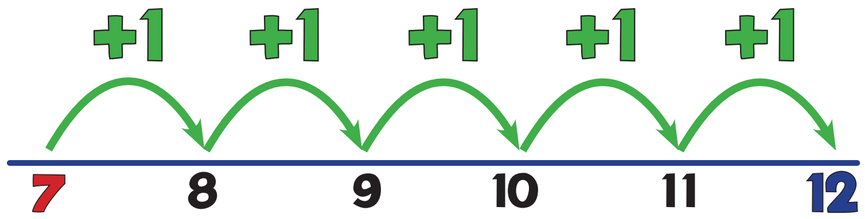
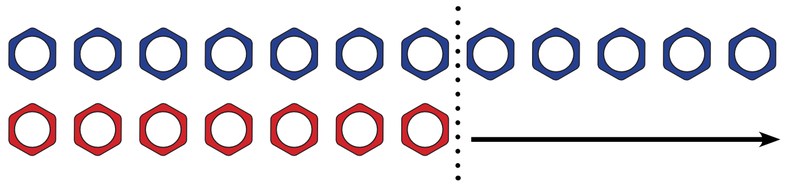
Papa T's Basic Subtraction Wallchart







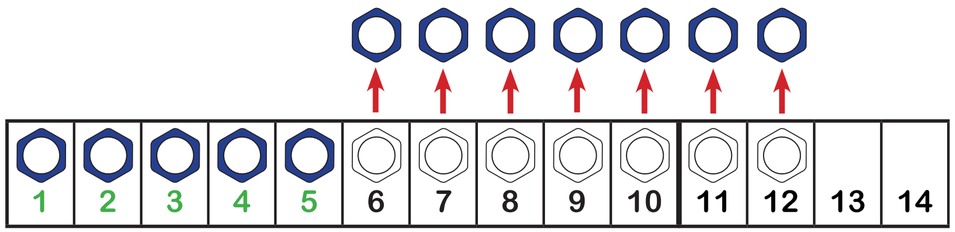


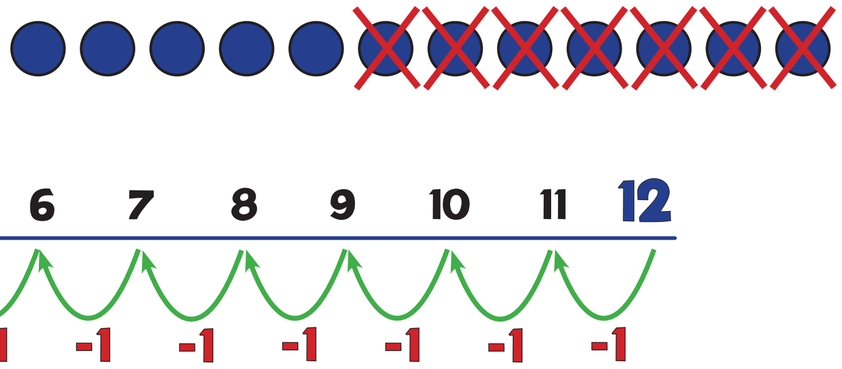


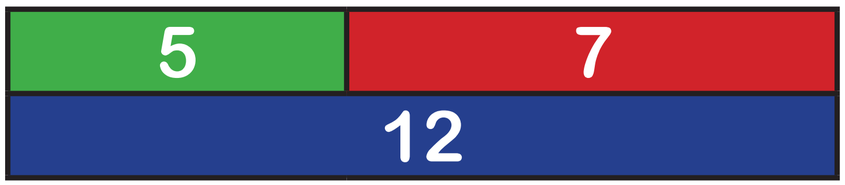
Count Back!

12 - 7 = 5

Count On!







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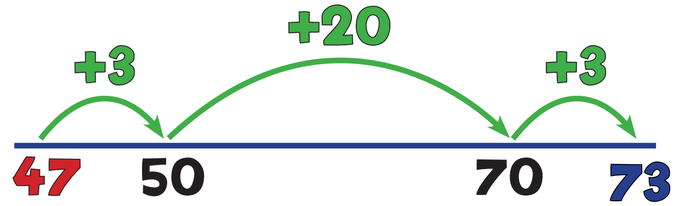
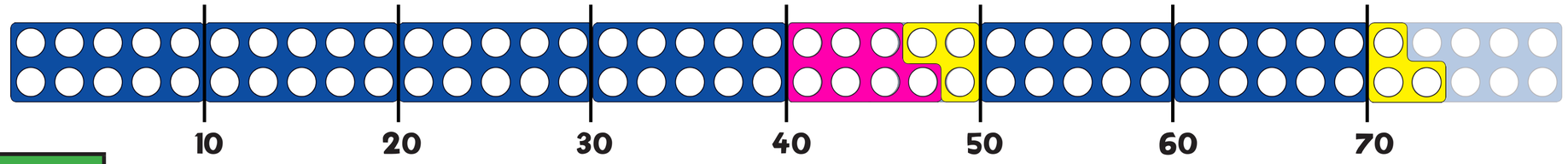
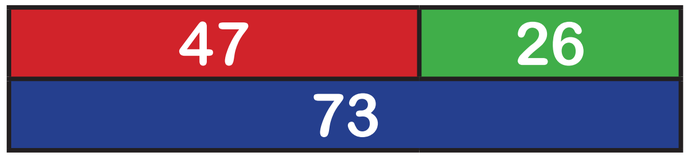
Papa T's 2-Digit Subtraction Wallchart

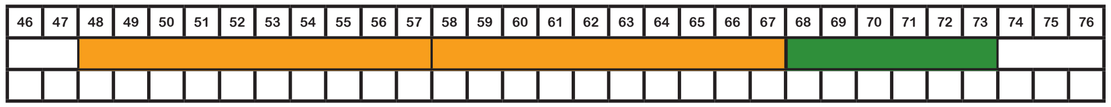
73 - 47 = 26

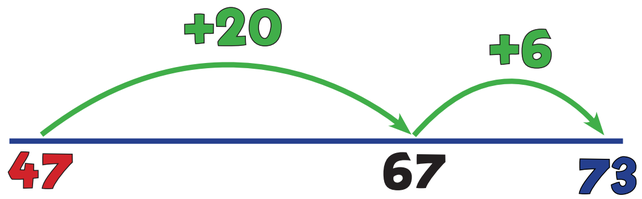
Count On!







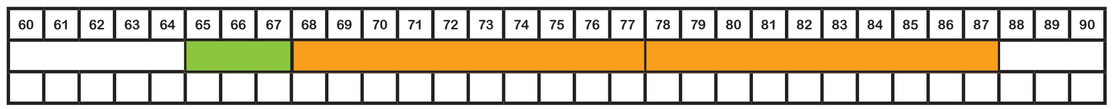


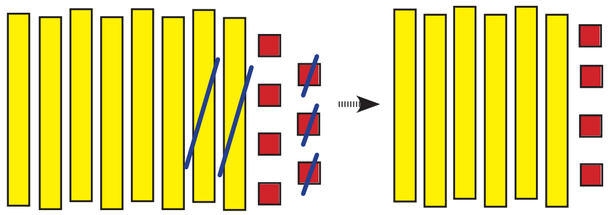


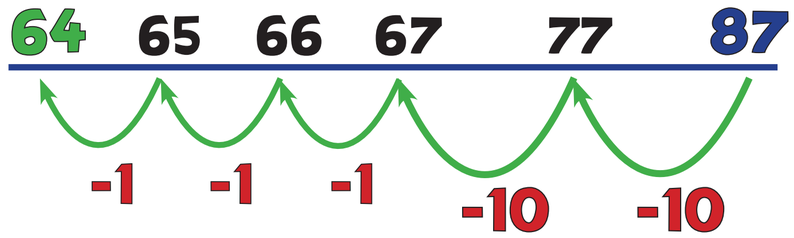
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90

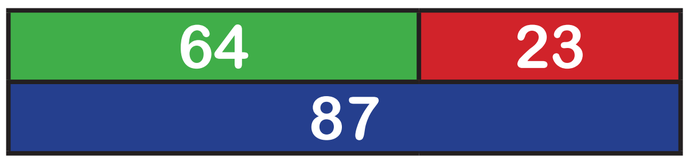
Count Back!

87 - 23 = 64









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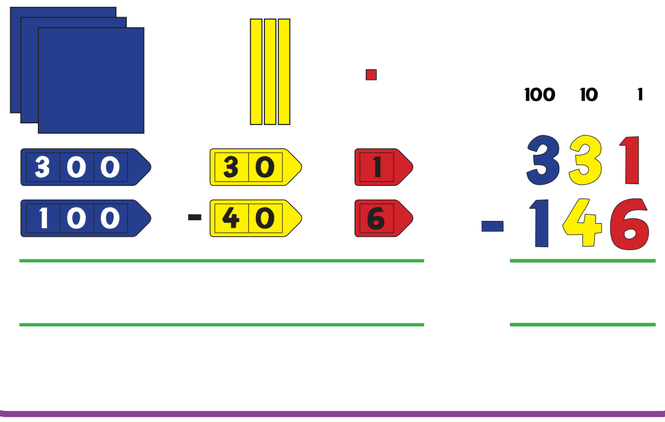
Papa T's 3-Digit Subtraction Wallchart

1



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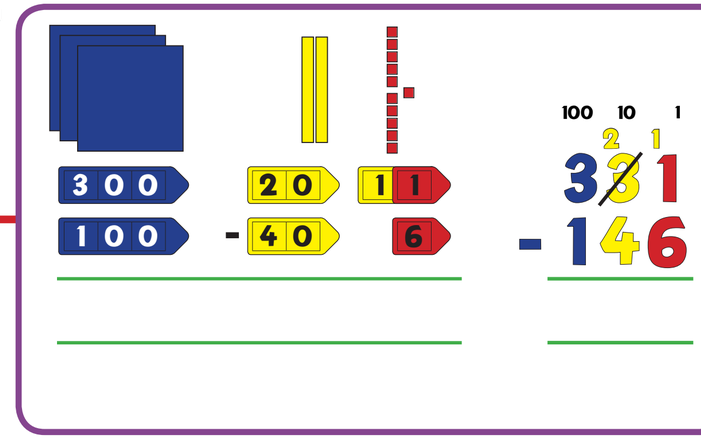

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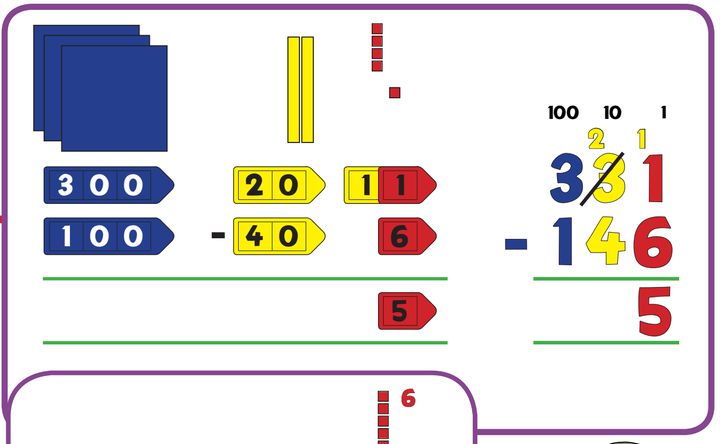
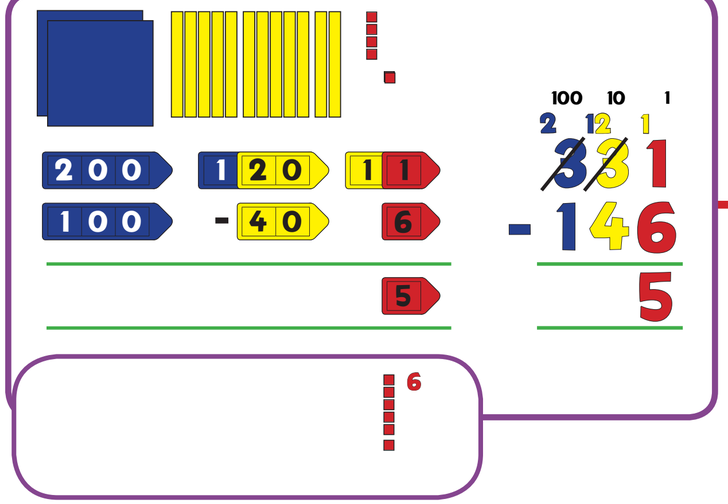


331 - 146 = 185

4



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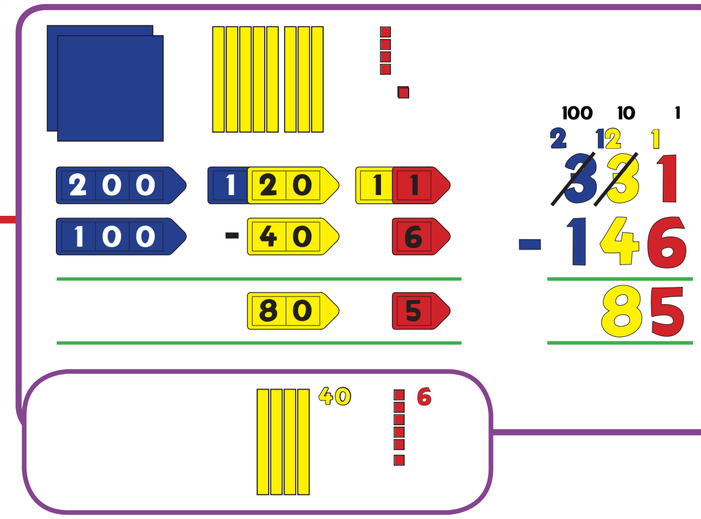
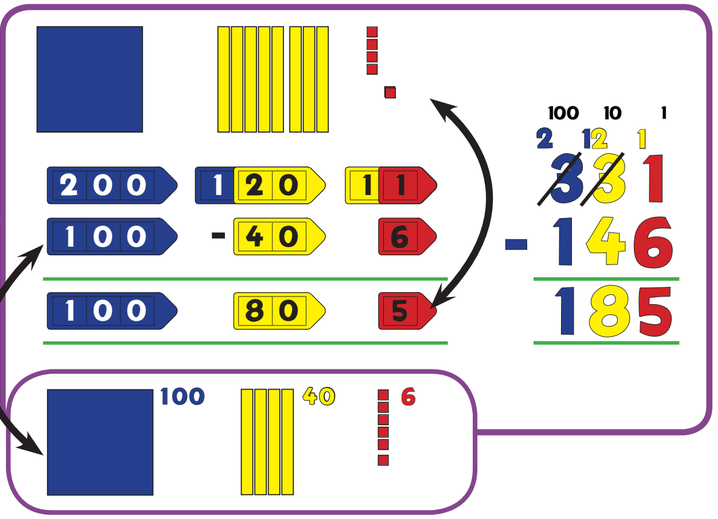
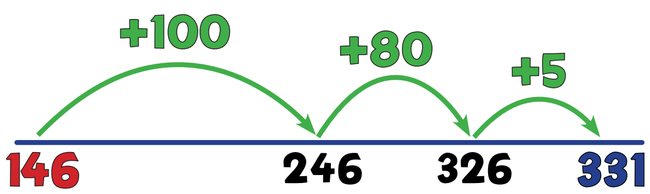
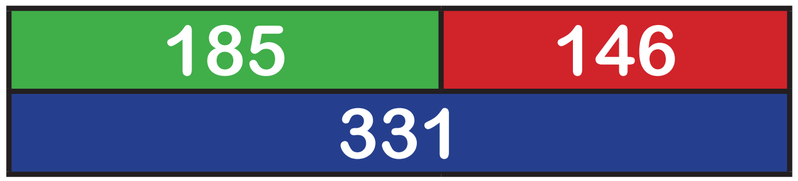
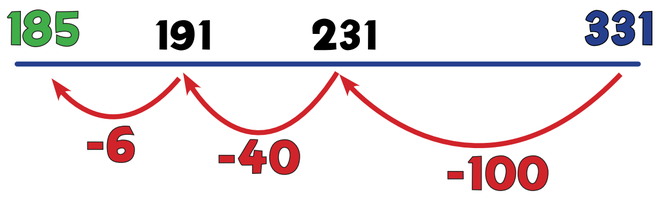


6









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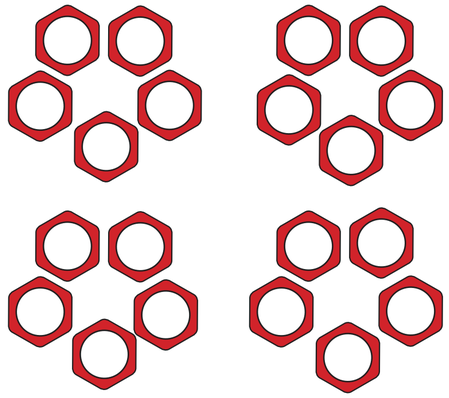
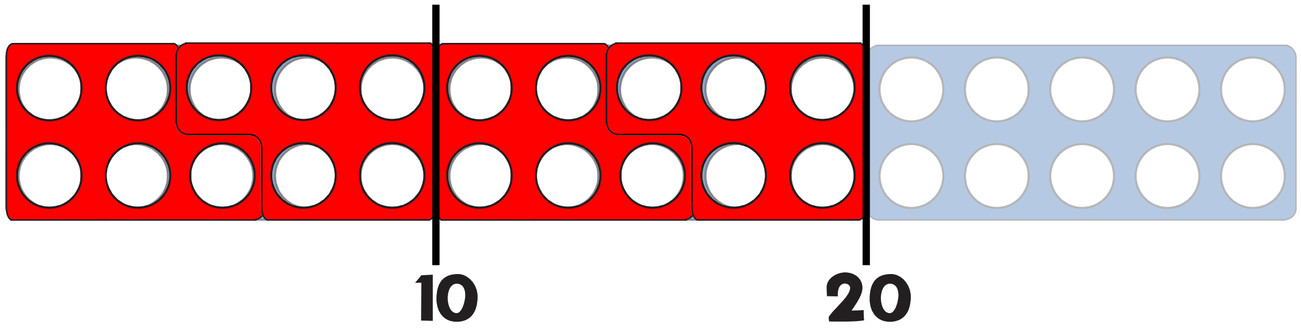
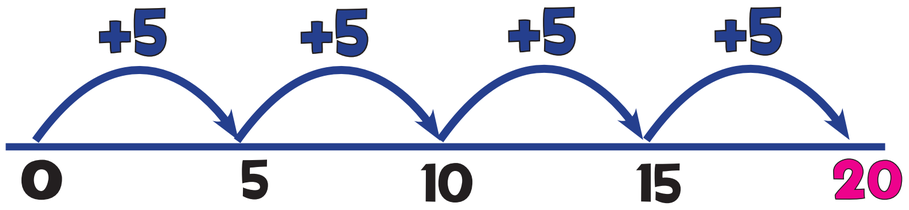
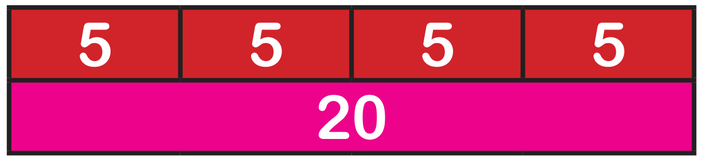
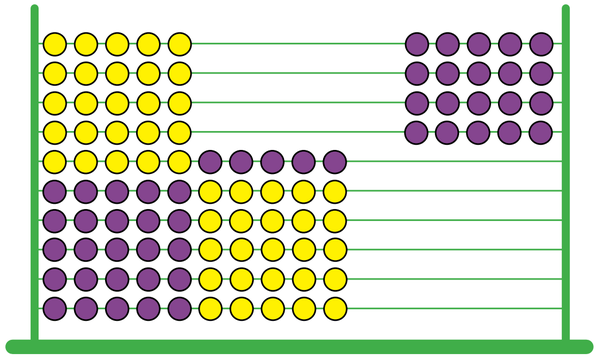
Papa T's Basic Multiplication Wallchart











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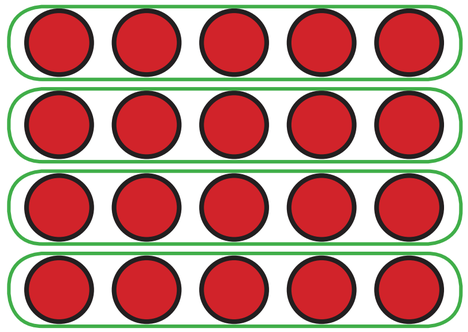
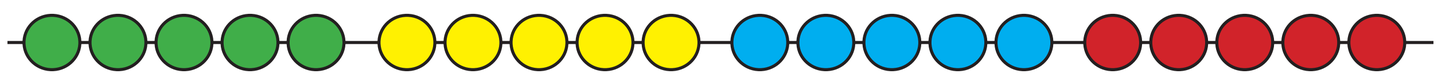


"5 multiplied by 4" "5 times 4"



$$5 \times 4 = 5 + 5 + 5 + 5 = 20$$

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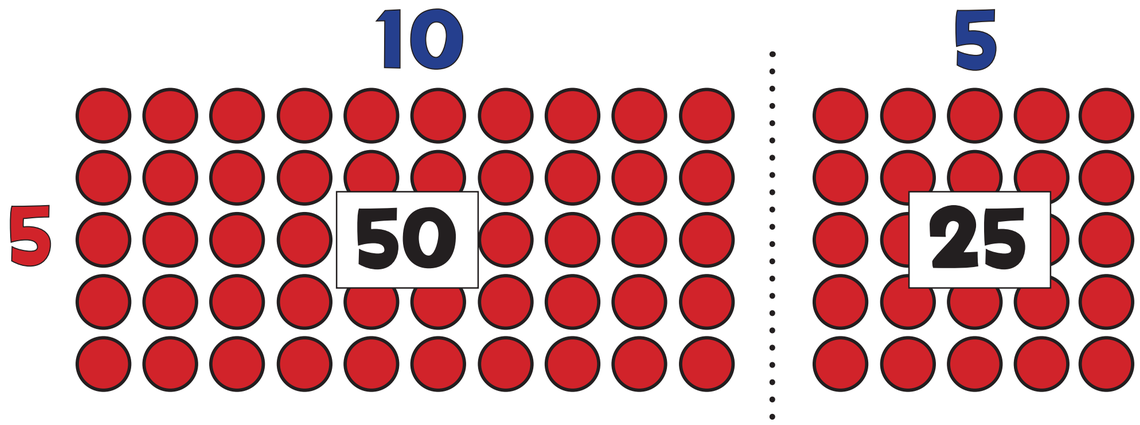
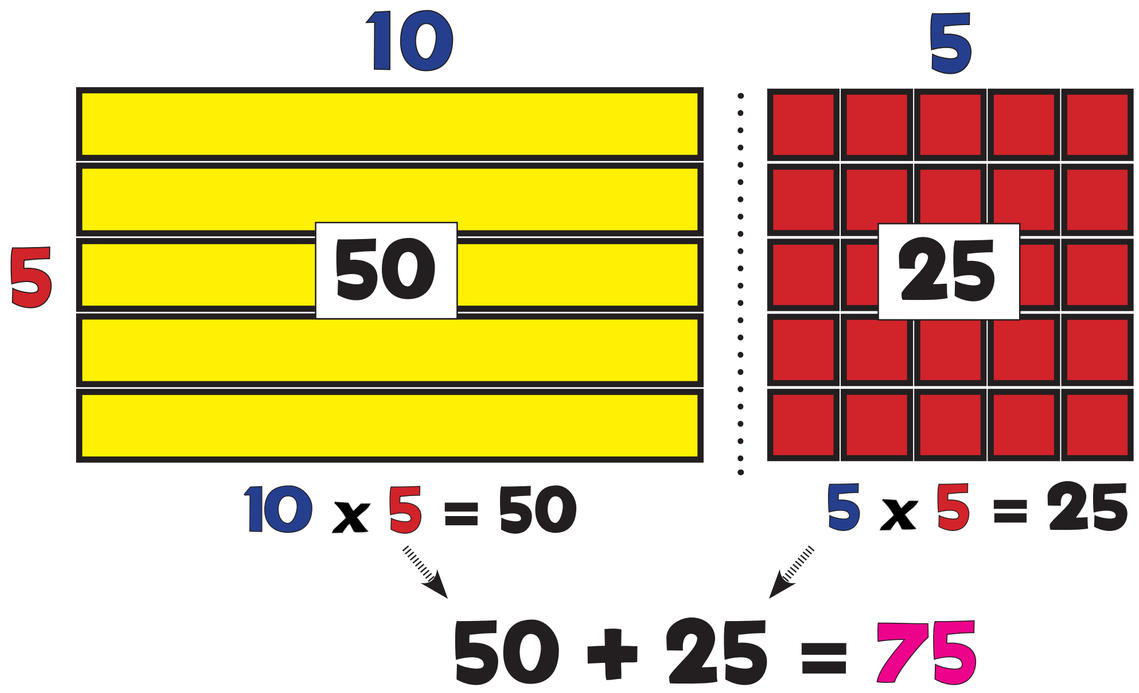
Papa T's 2-Digit Multiplication Wallchart

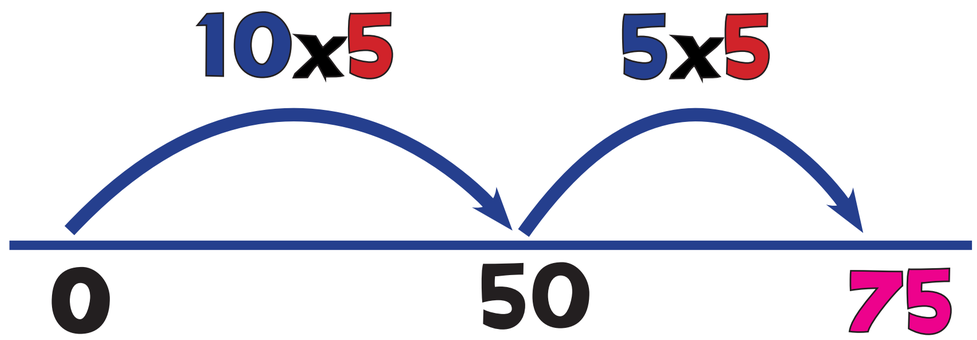


x	10	5
5	50	25

50 + 25 = 75



15 x 5 = 75



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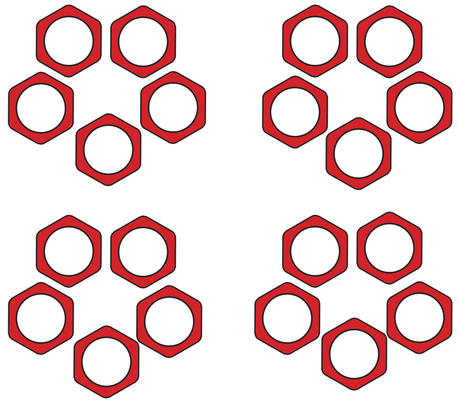
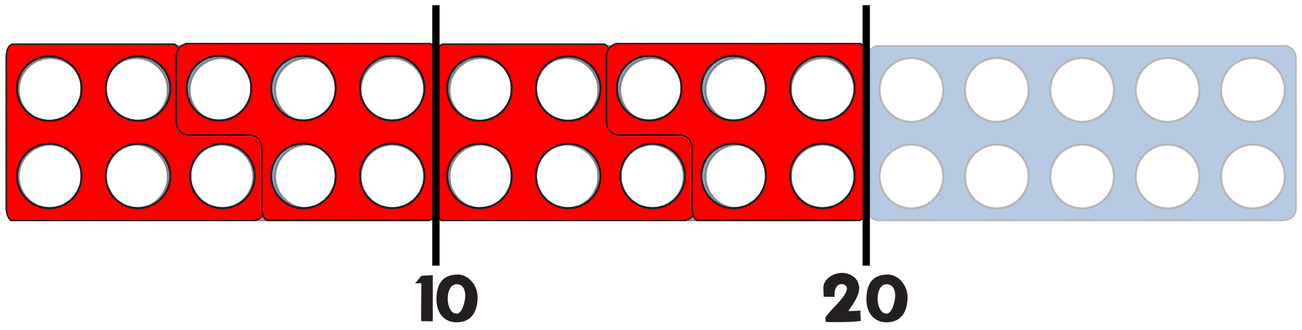
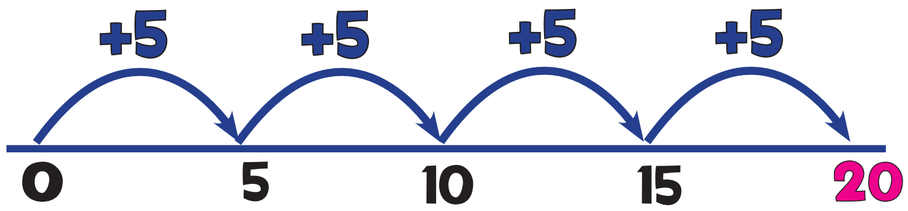
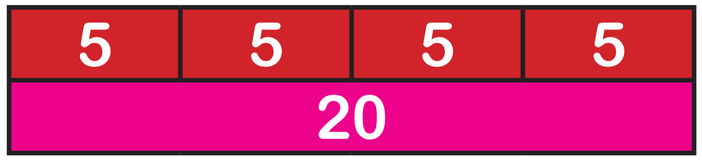
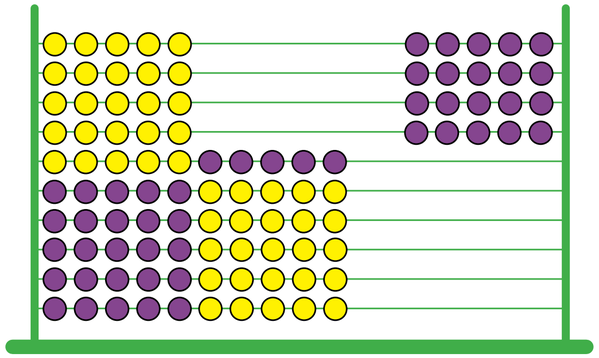
Papa T's Basic Division Wallchart



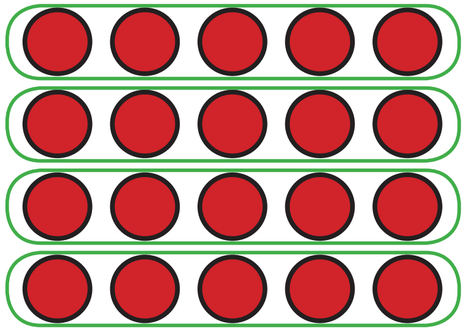








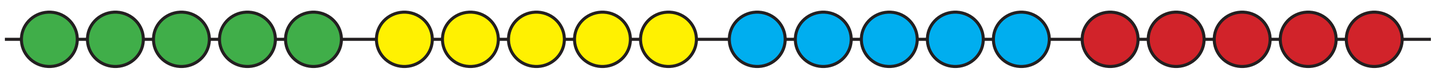
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30



20 ÷ 5 = 4

"How many 5 in 20?"

"20 dividied by 5"



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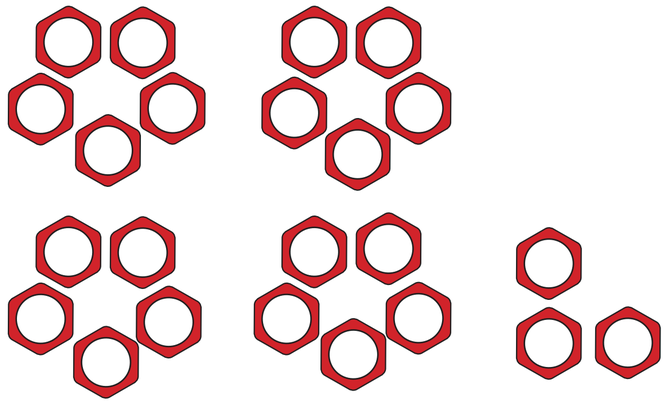
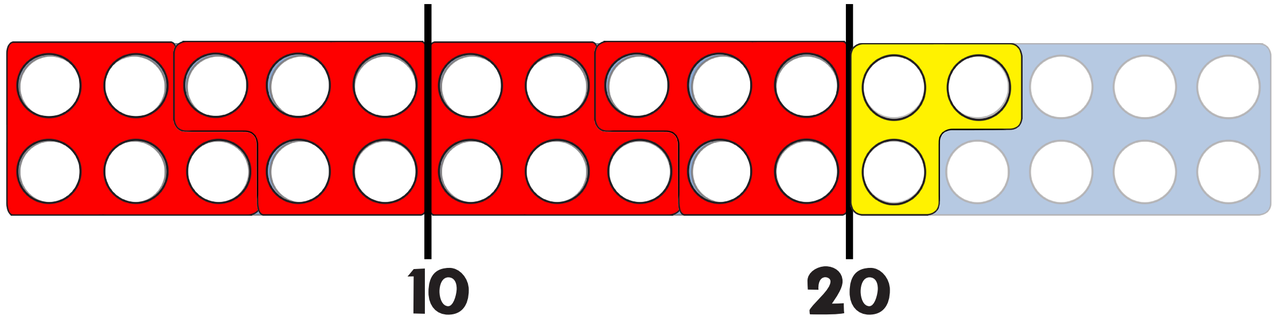
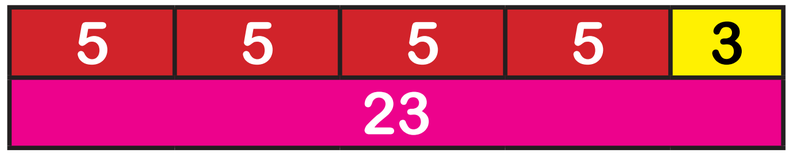
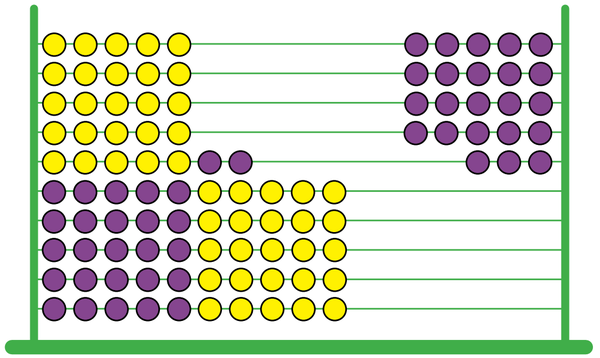
Papa T's Basic Division Wallchart

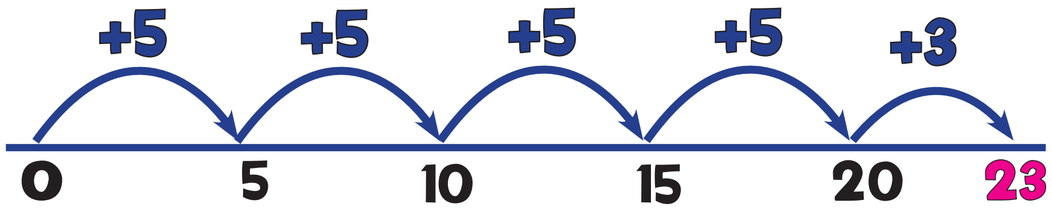
Remainders



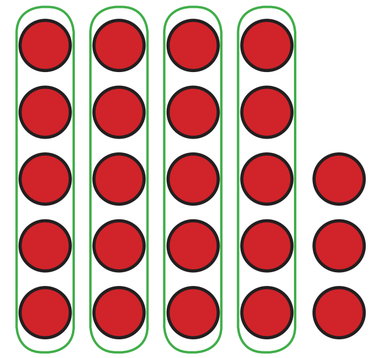








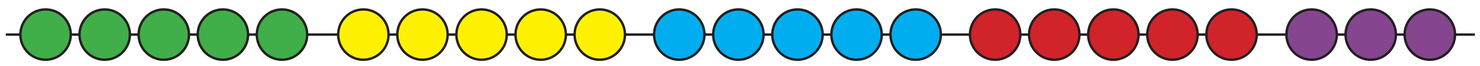
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30



$$23 \div 5 = 4r3$$

"How many 5 in 23?"

"23 dividied by 5"



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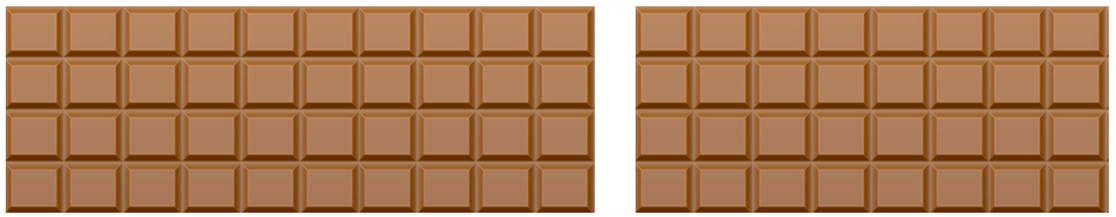
Papa T's 2-Digit Division Wallchart



40 + 32

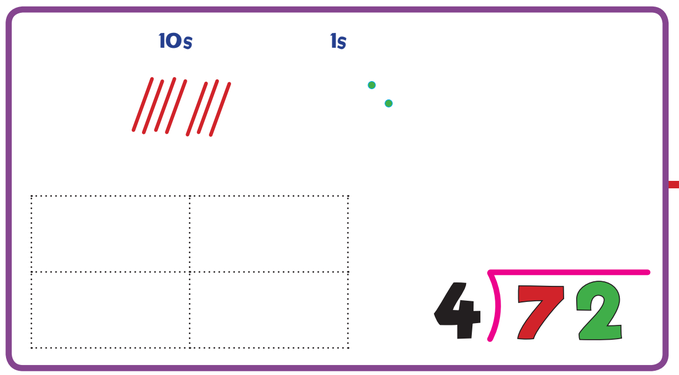
↓ ↓ ÷ 4

10 + 8 = 18

72 ÷ 4 = 18

÷	?	?
4	40	32

1



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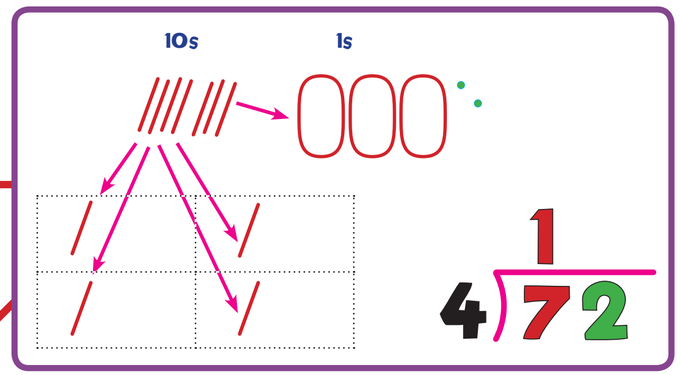

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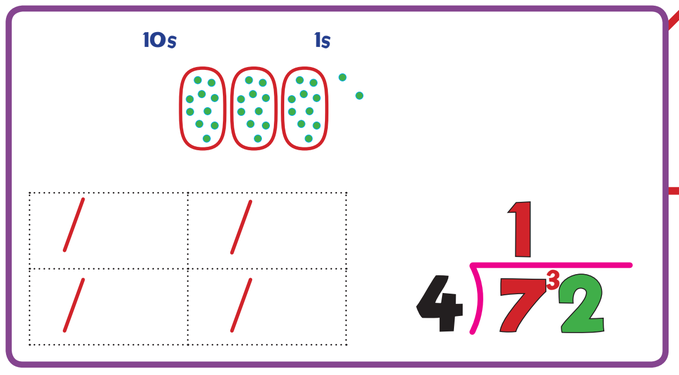

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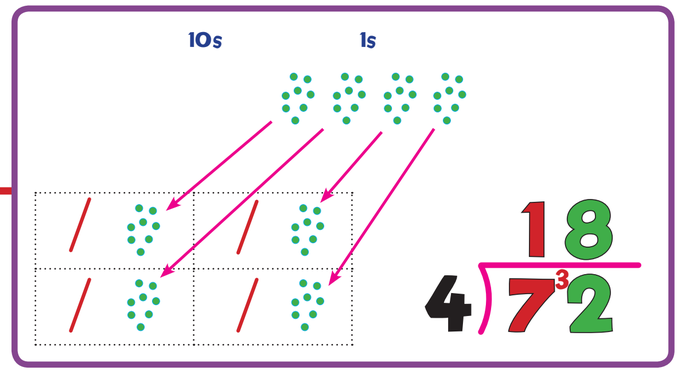

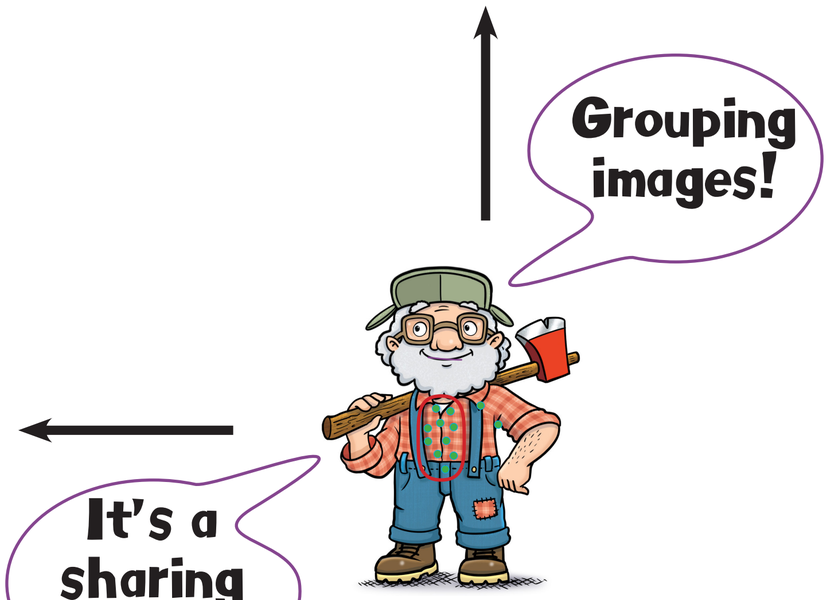

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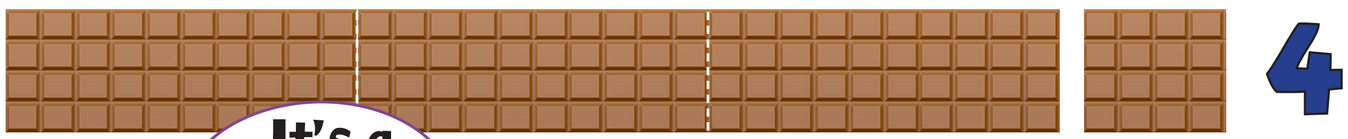
Papa T's 3-Digit Division Wallchart 1



120 + 16

÷ 4

30 + 4 = 34

136 ÷ 4 = 34

1

100s 10s 1s

■ /// ⁘

$4\overline{)136}$

2

100s 10s 1s

■ → ▭ /// ⁘

$4\overline{)136}$

3

100s 10s 1s

▭ /// ⁘

$4\overline{)136}$

4

100s 10s 1s

//// //// //// //// / → ▯ ⁘

$\begin{array}{r} 3 \\ 4\overline{)136} \end{array}$

5

100s 10s 1s

/// /// /// /// ▯ ⁘

$\begin{array}{r} 3 \\ 4\overline{)136} \end{array}$

6

100s 10s 1s

/// /// /// /// ⁘ ⁘ ⁘ ⁘ ⁘

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

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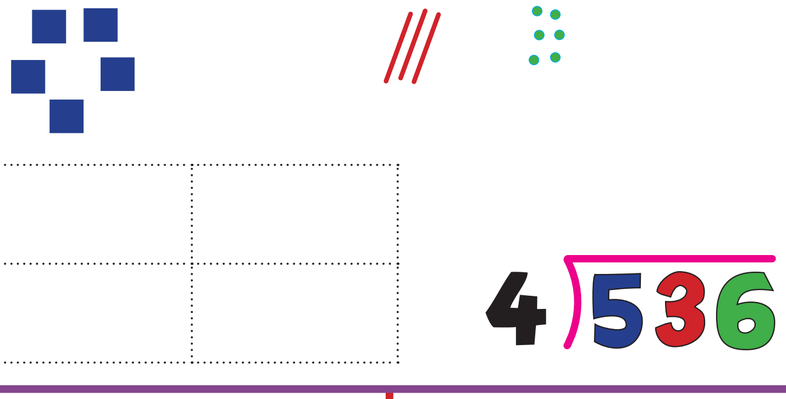
Papa T's 3-Digit Division Wallchart 2

1



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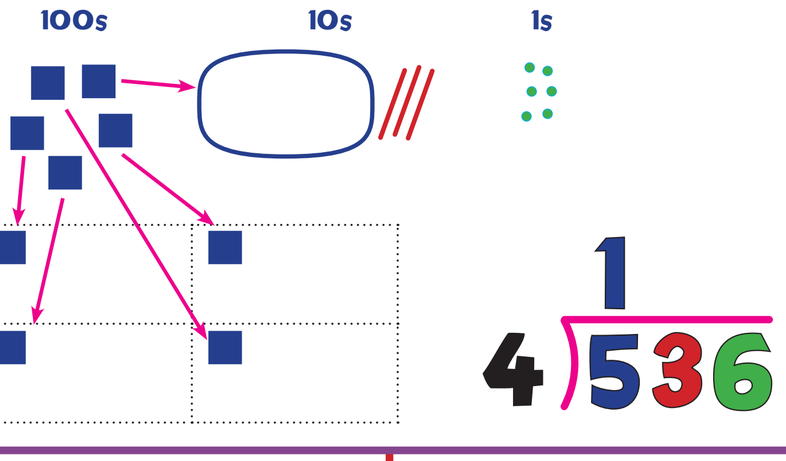

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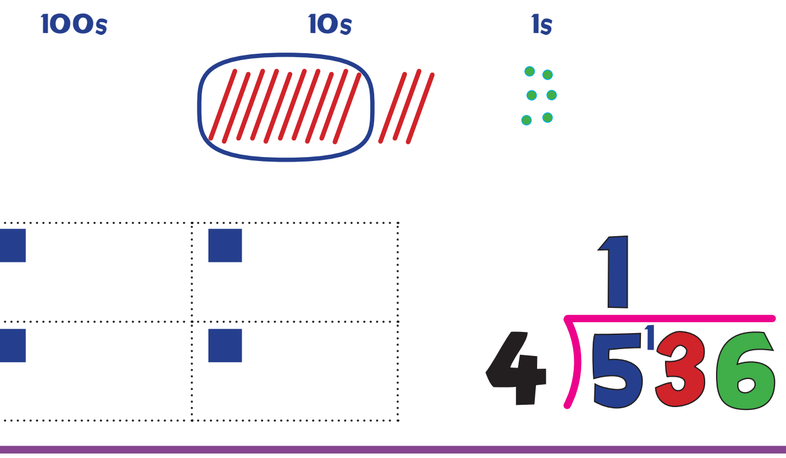

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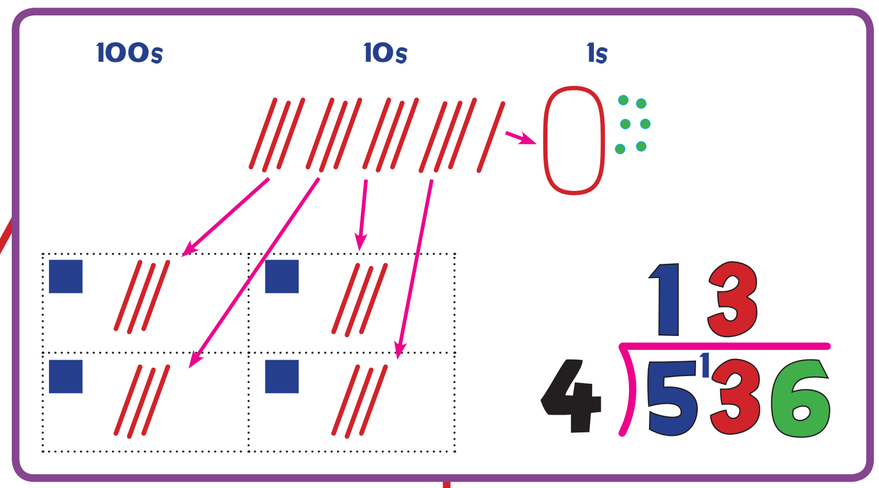

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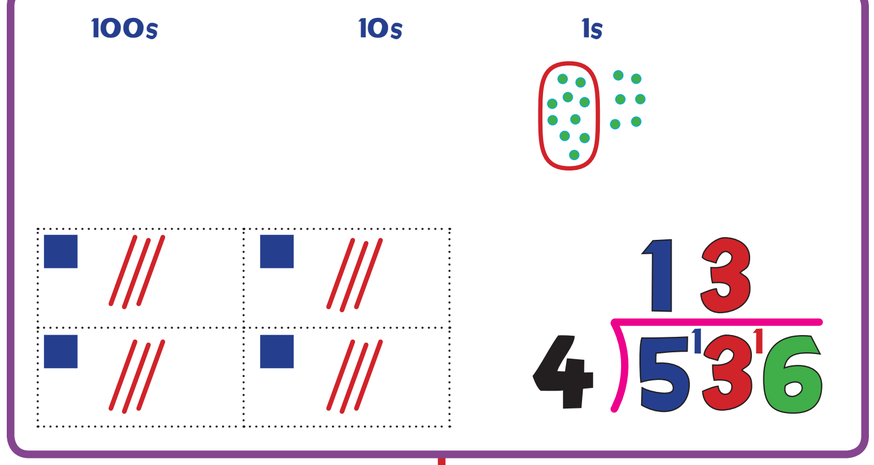
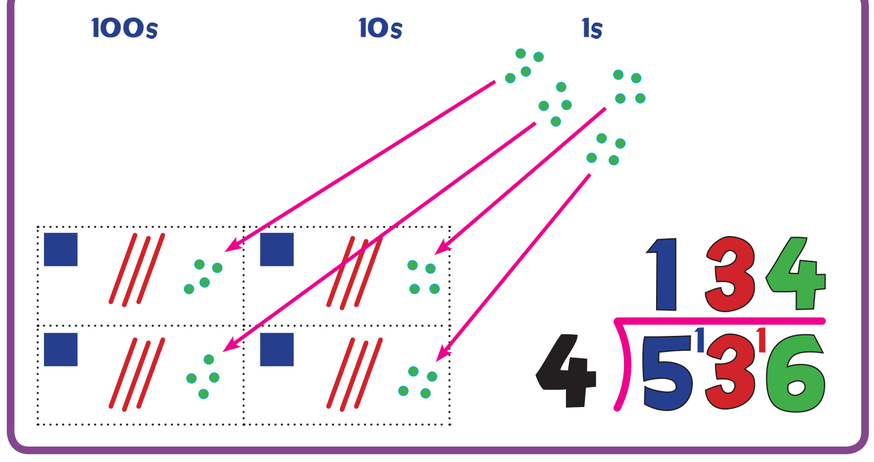


6



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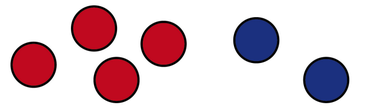
Papa T's Models of Calculation!

+ Addition +

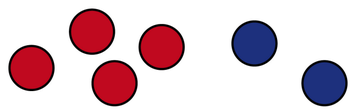
A: Aggregation



Combining two sets of objects and counting all method!

"If I have 4 red counters and 2 blue, how many altogether?" "6"

A: Augmentation



Adding to a set (counting on method)

"If I have 4 red counters and then add 2 more, how many in total?" "6"

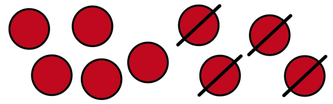
How many all together?

If I added more ... or counted on ...

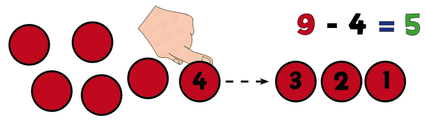
− Subtraction −

S: Take Away/Reduction

Count Back

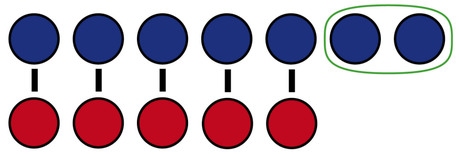


"Count out the first number and then remove or take away the second number. How many are left. e.g. 9 - 4?"



S: Comparison/Inverse of Add

Count On



7 - 5 = 2

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

If I took away ... or counted back ...

The difference between ...

X Multiplication X

M: Repeated Addition

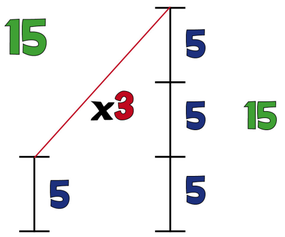
(Groups)

5 x 3 = 5 + 5 + 5 = 15

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

M: Scaling

5 x 3 = 15



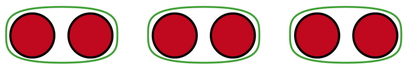
"5 multiplied by 3" means "5, 3 times as big"

What is 5 multiplied by 3?

What is 5, 3 times as big?

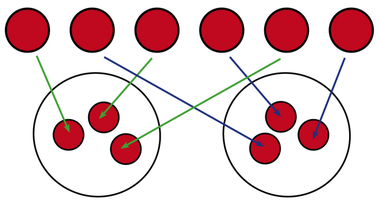
÷ Division ÷

D: Grouping



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

D: Sharing



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

How many groups of 2 in 6?

If I share 6 equally by 2 ...

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