# Number Talks Strategies Year 4

Addition Strategies

Place Value and Known Facts

Adding 1, 10, 100 or 1000 to a 3 or 4 digit number. Use of part whole models and place value charts to show addition where no boundaries crossed:
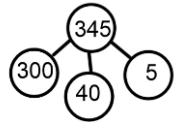
826 = 800 + __ + 6
435 + 30 =
40 + 100 =
__ = 6000 + 90
789 + 100 =

Part Whole Model/ PV Chart
Partition numbers to see which part will change following the calculation. Also, partition in as many ways as you can, or give part whole with one of the parts missing.
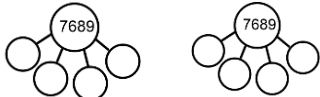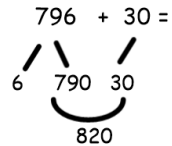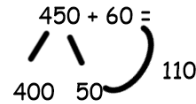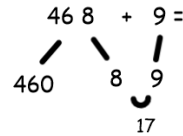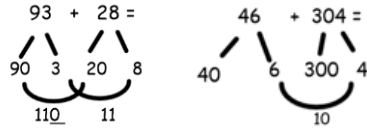

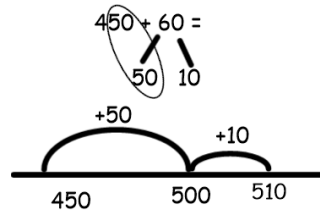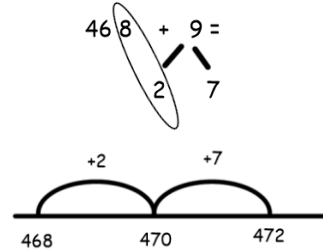*345 + 10 =*

OR

h	t	o
3	4	5

Partitioning

Involves number bonds, doubles, near doubles bridging strategies.

93 + 28 =

46 + 304 =

46 8 + 9 =

450 + 60 =

796 + 30 =

275 + 82 =

Bridging

46 8 + 9 =

450 + 60 =

790 + 30 =

790 + 30 =
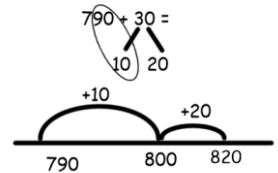
Compensations/Adjustment (Manipulation of Numbers)
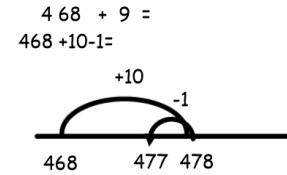
4 68 + 9 =
468 +10-1=

OR

468 + 9 =
Mentally move one from 468 to 9, so *467+10*.

___ = 97+ 136
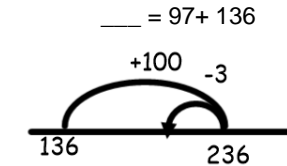
39 + 673 = __

Also include:
+199, +999, +£1.99 etc
Examples where need to *adjust by 3,4, 5 etc. (e.g. 457 + 95).*

Manipulation:

Column Methods

___= 936 + 285

___ = 8275 + 82

707 + 1818 =

Missing Number Problems/ What is My Mistake?'
E.g.

Include these questions and use part whole model and PV grid to show exchange alongside column method.

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<u>Complements</u>
Include revision of complements to 100 and how these relate to complements to 1000.
E.g. 56+___= 100
    56<u>0</u>+___=100<u>0</u>.
(56 tens +__tens = 100 tens).
And how they relate to complements to multiples of 100.
E.g.

| | 8 | | + | | 8 | = | 200 |

(Also, link to complements to 1 with tenths when decimals taught).

<u>Unitising</u>
Use of unitising language where boundaries crossed:

396 + 10 =
     ╱ ╲
39<u>0</u>   6

(39 tens +10 =40
tens= 40<u>0</u>)

987+100 =

<u>Number Sequences</u>

4856, 4956, ___, ___ etc

<u>Explore Addition/Subtraction Relationships (inverse)</u>

___ + 5 = 341

(341)
○   (5)

341
5
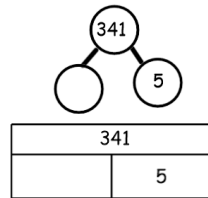
Write an inverse calculation to check a column addition.

Mentally move one digit to calculate
39 +___=___+ 40
248 + ___ = 46 + 247

796 + 30 =
800 + 30 - 4 =
<u>OR</u> mentally move 4 to make
800 + 26 =

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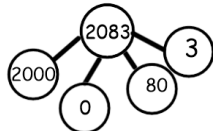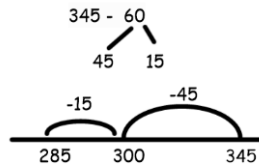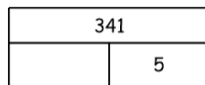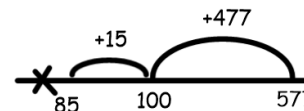| Subtraction Strategies					
Place Value/ Known Facts/ Partitioning	**Partitioning** Including halving/near halves	**Bridging**	**Difference/Comparison/ Counting on**	**Compensations/ Adjustment (Manipulation of Numbers)**	**Column Methods**
Subtracting 1s, 10s, 100s or 1000s from a 3 or 4 digit number. Use of part whole models and place value charts to show where no boundaries crossed and also explore relationships:	87 - 65 =	468 - 9		468 - 9	*4912 – 824 =*
	80 7	8 1		+1 -10	*7064 – 502 =*
	-60 -5	-1 -8		459 458 468	___ = 5776 - 855
Part Whole Model/ PV Chart *435 – 30 =*		459 460 468		**Constant Difference** Discussion point as it works in a different way to addition. The difference between 21 and 29 is the same as the difference between 20 and 28 so 29 – 21 = 28 - 20.	___ = 577 - 85
435 / 400 5 / 30	345 - 60	345 - 60	345 - 60		___ = 912 - 824
	300 45	45 15	345		
And place value chart.	300 - 60 =	-15 -45	60		
Unitising Use of unitising language where boundaries crossed:	240 + 45	285 300 345		20 21 28 29	**Missing Number Problems/ What is My Mistake?'** Include these questions and use part whole model and PV grid to show exchange alongside column method.
2083 - 300 =		**Explore Addition/Subtraction Relationships (inverse)** ___ + 5 = 341 Explore parts and whole relationship on bar model or part whole then solve.	+40 +245	*5000 - 2356* as formal method can be difficult, so make equivalent calculation, 4999 – 2355 =	
2083 / 2000 3 / 80 / 0	7064 - 502 =		60 100 345		
	7000 64	341			
2000=300= 20 hundreds -3 hundreds.	-500 -2	5	___ = 577 – 85		
		-4 -1	+15 +477		
		336 340 341	85 100 577		
			___ = 912 – 824		
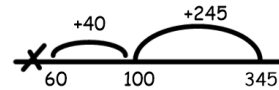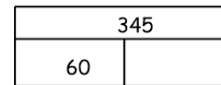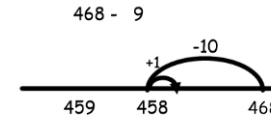
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Explore Relationships ___ **- 10 = 298** ___ **- 100 = 305** <table><tr><td colspan="2">?</td></tr><tr><td>1059</td><td>100</td></tr></table>	4 - 1.15 / \ 1 0.15 Write an inverse calculation to check a subtraction.		***602 - ___ = 594*** Explore parts and whole on bar model, then use number line or mental method to count up. +6 +2 594 600 602		
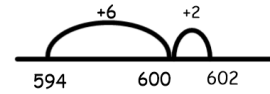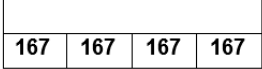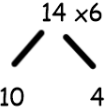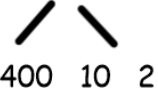
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Multiplication Strategies

| Place Value and Known Facts (Also see Scaling)	Doubles/Halving/Tripling	Partitioning (Distributive Law)	Scaling and Associated Language	Associative Law	Written Methods
213 x 0 = **1 x 314 =** PV Counters Use PV counters (tens) to show relationship between 3x4, 3x40 and 30x4. Link to scaling – make 3x4 ten times greater. **30 x 4 =** **30 x 40 =** **5 x 70 =** **50 x 70** Unitising 3<u>00</u>x4, 3<u>000</u> x4. Revise regularly known facts within 100 and links to 1000. ___x2=100. ___x4=100. ___x5=100.	2 × 45 → 40, 5 **167 x 4** [bar model: 167	167	167	167] 334 334 668 Or partition and x all parts by 4). Tripling 8 × 33 → 30, 3 Triple 8 by doubling then adding one more (or use known facts). 8 x 3 = 24 80 x 3 = 240, so 264. <u>OR</u> 33 x 2 x 2 x 2 (associative law) – doubling, doubling, doubling again. **16 x 8 =** double 8x8. **71 x 8** Find 71 x 4 and double it (show relationship between x4 and x8 on bar model). Find x 20 by doubling x10, x 5 by halving x 10. Explore Relationships E.g. **x2, x4/ x4,x8/ x5,x10** E.g. Explore ways to find 6 x 4 **3 x 8 =** **14 x 3 = ___ x 6** etc.	**14 x 6 =** 14 ×6 → 10, 4 **14 x 6 = __ x 6 +__ x 6** Compensation **9 x 41 =** Use counting stick or draw number line and show 10 x 41 then subtract 1 x 41	Across tables, use language of scaling. 3x10 means 10 lots of 3 or 3 ten times. Show both on part whole and bar models and number lines (See Times table Programme of Study). **Make 45 twice as big** **Make 45 four times larger** **Make 45 eight times larger** **41 x 10 =** **41 x 100 =** **101 x 10 =** PV Counters Use PV chart and counters to show making each counter ten times its value (x 100 = x 10, then x 10). 10 ×412 → 400, 10, 2	**5 x 4 x 10 =** (See Times Table Programme of Study for example of visuals) **30 x 4 =** **3x10x4=** **50 x 7 =** **10 x 5 x7 =** Explore visually how 3 x 40 = 3 x 10 x 4. Scale up to 3x400=3x100x4.	**879 x 3** **418 x 6** **541 x 8** **3468 x 6** **836 x 7**

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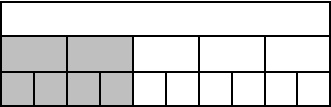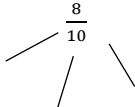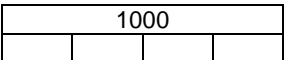
Division Strategies					
Place Value and Known Facts	**Halving/Halving Again**	**Partitioning**	**Scaling and Associated Language**	**Associative Law**	**Written Methods**
$326 \div 1 =$ $838 \div 1 =$ $505 \div 1 =$ $99 \div 11 =$ $120 \div 12 =$ Unitising Use of unitising language. $320 \div 4 =$ 32 tens $\div$ 4 Division as sharing with tens counters. $18\underline{0} \div 3 =$ (18 tens $\div3=$ 6 tens). Use tens counters to **share**). $270 \div 3$ $72 \div 9$ $720 \div 9$ $5400 \div 9$ Grouping/Sharing Make decision about whether to share or group. $60 \div 15 =$ (by grouping) $100 \div 25 =$ $200 \div 25 =$	Divide by 4 by halving and halving again: $96 \div 4 =$ $96 \div 2 \div2$ (half and half again). $328 \div 4 =$ 	328	
---	---
164	164
82 | 82	82 | 82		$91 \div 7 =$ 70 21 $70 \div 7 = 10$ $21 \div 7 = 3$ $95 \div 5$ $96 \div 8$ $96 \div 4$ Later in the Year $483 \div 3 =$ 300 180 3	***Divide by 10, make 10 times smaller/10 times as small.*** $60 \div 10$ $486 \div 10$ Divide by 100 by dividing by 10 and 10 again. Show on place value chart. $58 \div 10 =$ (Once covered decimals) $58 \div 100$ $581 \div 100$	Show on number lines, in arrays and bar models. Divide by 5 by dividing by 10 and doubling the answer. Divide by 8 by dividing by 4 and halving the answer. Divide by 6 by dividing by 3 and halving the answer. Divide by 20 by dividing by 10 and halving the answer.	When mental methods are well established at the end of the year with 2-digit numbers divided by 1-digit numbers, show them the formal written method for short division to show the link between mental and formal. $83 \div 3 =$ $81 \div 4 =$ $48 \div 3 =$ $58 \div 7 =$

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Fraction Strategies				
Known Facts and Complements to 1	**Doubling/Halving (to find equivalence) and Visual Representations**	**Partitioning**	**Scaling and Associated Language**	**Ordering/Comparing**

Known Facts and Complements to 1

$\frac{2}{10} + \frac{5}{10} + \underline{} = 1$

$\frac{9}{11} - \frac{4}{11} =$

$\underline{} + \underline{} = \underline{}$

$1 - \underline{} = \underline{}$

$\frac{4}{6} + \frac{3}{6} =$

Going Over 1 Whole

$1\frac{2}{7} + \frac{2}{7} =$

$2\frac{1}{6} + \frac{5}{6} =$

$1\frac{1}{3} - \frac{1}{3} =$

$1\frac{4}{5} + \frac{3}{5} =$

$1\frac{1}{5} + 2\frac{1}{5} =$

$1\frac{5}{8} - \frac{2}{8} =$

$1\frac{1}{5} - \frac{2}{5} =$

Doubling/Halving (to find equivalence) and Visual Representations

After fractions covered:

$\frac{2}{5} = \frac{}{10}$

Draw bar model to find out

Partitioning

After fractions covered:
How many ways can you partition $\frac{8}{10}$

Scaling and Associated Language

Half of numbers to 20
Halves of multiples of 10/100.
Quartering by halving and halving again.

$\frac{1}{4}$ *of 100 =*

$\frac{3}{4}$ *of 100 =*

$\frac{1}{4}$ *of 1000 =*

$\frac{3}{4}$ *of 1000 =*

1000			

After fractions covered:

$\frac{1}{2}$ *x 26 =*

$1\frac{1}{2}$ *x 40 =*

$\frac{1}{5}$ *x 25 =*

Ordering/Comparing

After fractions covered:

$\frac{1}{5}, \frac{1}{10}, \frac{1}{100},$

$\frac{2}{5}, \frac{2}{10}, \frac{2}{100},$

Which fraction is closest to 1?

$\frac{99}{100}, \frac{49}{50}, \frac{19}{20}.$