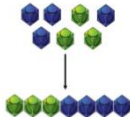
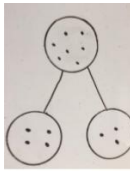
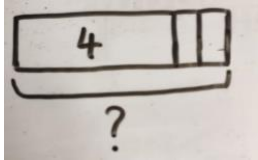
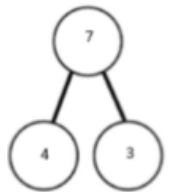


Sledmere and Wetwang Federation Calculation Policy

EYFS Addition

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
EYFS	If available, Numicon shapes are introduced straight away and can be used to : Identify 1 more/less Combine pieces to add Find number bonds Add without counting	 Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars).  Counting on using number lines using cubes or   Numicon.	Children to represent the cubes using dots or crosses. They could put each part on a part whole model too.  A bar model which encourages the children to count on, rather than count all. 	$4 + 3 = 7$ Four is a part, 3 is a part and the whole is seven.  The abstract number line: What is 2 more than 4? What is the sum of 2 and 4? What is the total of 4 and 2? $4 + 2$ 	Add More And Make Sum Total Altogether Score Double One more, two more, ten more How many more to make? How many more is ... than ...?	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base tens and ones
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html				

Year One Addition

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 1	Add a pair of single-digit numbers, including crossing 10, e.g. $5 + 8$ Add one-digit number to a teens number, e.g. $13 + 5$ Add one-digit to 10, and a multiple of 10 to a one-digit number, e.g. $10 + 7$, $7 + 30$ Add one-digit and two-digit numbers to 20 ($9 + 9$, $18 - 9$), including zero Add near doubles, e.g. $6 + 7$	<u>Regrouping to make 10</u> using ten frames and counters/cubes or using Numicon. $6 + 5$ <u>TO + O not crossing 10s</u> Using base 10. Continue to develop understanding of partitioning and place value. $41 + 8$	<u>Regrouping to make 10</u> Children to draw the ten frame and counters/cubes. Also draw counters in place value frames <u>TO + O not crossing 10s</u> Children to represent the base 10 e.g. lines for tens and dot/crosses for ones.	<u>Regrouping to make 10</u> Children to develop an understanding of equality $6 + \square = 11$ $6 + 5 = 5 + \square$ $6 + 5 = \square + 4$ Use a bar model <u>TO + O not crossing 10s</u> Use a part whole model $41 + 8 = 49$	Add Total More Tens Ones Digit	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base tens and ones

	Represent and use number bonds to 20 (&2,3,4,5,6,7,8,9,11,12,13,14,15,16,17,18,19)	Solve simple one-step problems that involve addition using concrete objects and pictorial representations, and missing number problems. Explain methods & reasoning Use the 100 square to add 10 to a single digit number Record addition by: - showing jumps on prepared number lines - recording number sentences Eg $6 + 5 = 11$ Read, write and interpret mathematical statements involving addition (+) and equals (=) signs			
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html			

Year Two Addition

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 2	Add numbers using concrete objects, pictorial representations, and mentally, including: add a single-digit number to a two-digit number, including crossing the tens boundary, e.g. $23 + 5$,, then $28 + 5$ MA2a: Counting On add a multiple of 10 to any two-digit MA2b: Counting On 	<u>TO + O bridging the tens.</u> e.g. 24 added to 7	<u>TO + O bridging the tens.</u> e.g. 24 added to 7	<u>TO + O bridging the tens.</u> e.g. 24 added to 7 $31 = 7 + 24$ <u>TO + TO</u>	Add Sum More than Total Altogether Plus Digit Partition into tens	100 square Number lines Number tracks Bead strings (for ...) Tens Frame Numicon Place Value Disks

number, e.g. $27 + 60$ add two two-digit numbers

adding three one-digit numbers

MA3: Number Bonds
Year 2

$$\begin{array}{r} 3 + 4 + 7 = 14 \\ \text{10} \quad 4 \end{array}$$

add 9, 19, 29, ...
or 11, 21, 31, ...

MA5: Round & Adjust
Year 2

$$\begin{array}{r} 45 + 19 = 64 \\ 45 + 20 - 1 \\ 65 - 1 = 64 \end{array}$$

add near doubles, e.g. $13 + 14$, $39 + 40$

MA4: Double & Adjust
Year 2

$$\begin{array}{r} 7 + 8 = 15 \\ 7 + 7 + 1 \\ 14 + 1 = 15 \end{array}$$

Recall number bonds to 20 fluently and derive and use related facts to 100

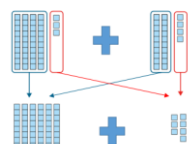
Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.

TO + TO

Not crossing the tens

E.g. $43 + 24$

$$43 + 24 = 67$$



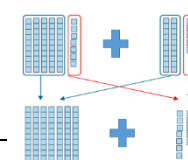
$$60 + 7 = 67$$

Can also use Numicon and place value counters

TO + TO

Crossing the tens
 57 added to 25

$$57 + 25 = 82$$



$$70 + 12 = 82$$

TO + TO

Not crossing the tens

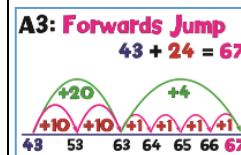
10s	1s
//	///
///	////

TO + TO

Crossing the tens

10s	1s
////	////
///	////

Not crossing the tens



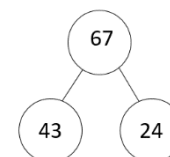
A5: Partition Jot

$$\begin{array}{r} 43 + 24 = 67 \\ 60 + 7 \end{array}$$

A4: Partitioning

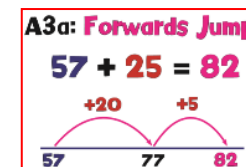
$$\begin{array}{r} 43 + 24 = 67 \\ 40 + 20 = 60 \\ 3 + 4 = 7 \\ \hline 67 \end{array}$$

67	
43	24



TO + TO

Crossing the tens



A5a: Partition Jot

$$\begin{array}{r} 57 + 25 = 82 \\ 70 + 12 \end{array}$$

A4a: Partitioning

$$\begin{array}{r} 57 + 25 = 82 \\ 50 + 20 = 70 \\ 7 + 5 = 12 \\ \hline 82 \end{array}$$

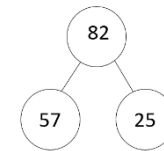
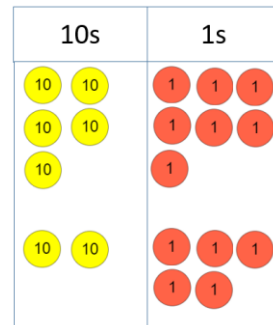
and ones

Cuisenaire

Base hundreds
tens and ones

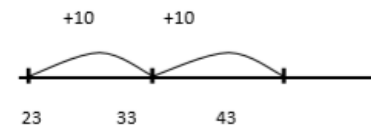
Arrow Cards

Can also use Numicon and place value counters



82	
57	25

Count or add in multiples of 10 using 100 square number line



or

Add by using partitioning of tens and ones – see above

Solve simple one-step problems with addition: using concrete objects and pictorial representations, involving numbers, quantities and measures - see above

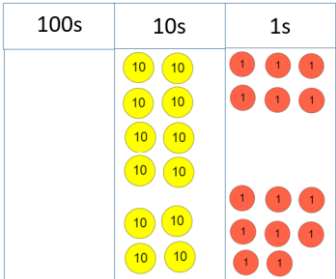
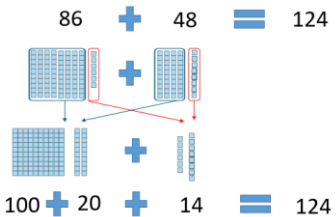
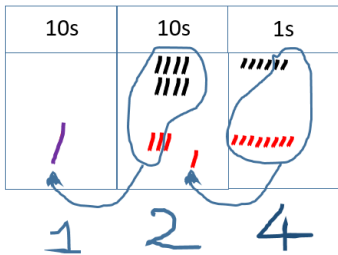
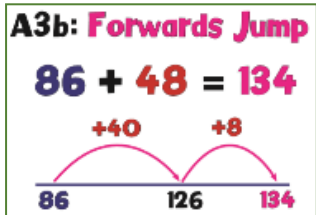
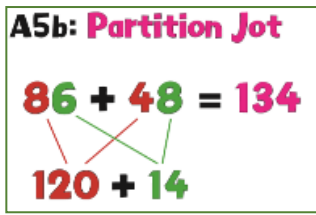
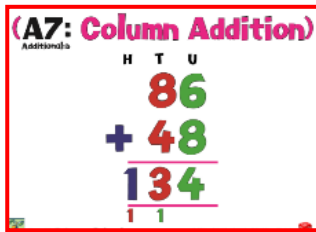
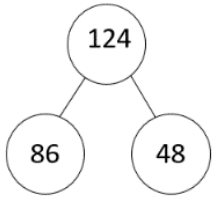
Recognise and use the inverse relationship between addition and subtraction to check calculations and missing number problems. Check by adding numbers in a different order eg. $5 + 2 + 1 = 1 + 5 + 2 = 1 + 2 + 5$.

Begin recording addition in columns to support place value and prepare for efficient written methods - see above

Useful IWB links for manipulatives

<https://www.coolmath4kids.com/manipulatives/base-ten-blocks>
<https://mathsbot.com/manipulatives/placeValueCounters>
<https://mathsbot.com/manipulatives/bar>

Year 3 Addition

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 3	Use number bonds to 20 and links to bonds of multiples of 10 to 100, complements to 100 e.g. $45 + 55 = 100$ Practise solving varied addition questions mentally with two-digit numbers, the answers could exceed 100. Add numbers mentally, including: a three-digit number and ones a three-digit number and tens a three-digit number and hundreds Recall number bonds to 20 fluently	TO + TO See Y2 and now crossing 100s and carrying  	TO + TO See Y2 and now crossing 100s 	TO + TO See Y2 and now crossing 100s A3b: Forwards Jump  A5b: Partition Jot  (A7: Column Addition)  	Add Sum More than Total Altogether Plus Partition into tens and ones Empty number line Count on Carry ten addend	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards

addend
plus
addend
is equal to the
sum

$$\begin{array}{r} 22 \\ + 78 \\ \hline 100 \end{array}$$

100s	10s	1s
		
6	1	1

100s	10s	1s
00	0000	00
000	0000	0000
6	1	1

?	
£2 and 35p	

£3 and 45p + £4 and 34p
 £3 + £4 = £7
 45p + 34p = 79p
 £7 and 79p
Decimal point for money is in Y4

Add numbers with up to three digits, using the efficient written methods. Use understanding of place value and partitioning – see above

Estimate the answer to a calculation and use inverse operations to check

Solve problems, including missing number problems, using number facts, place value, and more complex addition.

Add by using :

- 1) partitioning TU + TU, HTU + TU or HTU + HTU
- 2) Expanded columnar addition
- 3) Compact columnar addition

Where there are more than 2 addends in a column –add up the digits efficiently

$$416 + 223 + 184 = 823$$

$$15 + 57 + 27 = 99$$

$$172 + 234 + 54 = 460$$

Useful IWB links for manipulatives

<https://www.coolmath4kids.com/manipulatives/base-ten-blocks>
<https://mathsbot.com/manipulatives/placeValueCounters>
<https://mathsbot.com/manipulatives/bar>
<https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/>
<https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/>
<http://www.ictgames.com/mobilePage/tenFrame/index.html>

Year 4 Addition

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources																																																																																																				
Year 4	Practise mental methods with increasingly large numbers to aid fluency Add numbers mentally, including: A 3-digit number and hundreds MA2a: Counting On Year 5 837 + 500 = 1337 +500 837 1337 A 4-digit number and thousands MA2b: Counting On Year 4 4837 + 3000 = 7837 +3000 4837 7837 Add any pair of two-digit numbers, including crossing the tens and 100 boundary, e.g. 47 + 58 add a near multiple of 10, e.g. 45 + 39	Use of place value counters to add TH H T O and also money to + <table><tr><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td>1000 1000</td><td>100</td><td>10 10 10 10 10 10 10 10 10 10</td><td>1 1 1 1 1 1 1 1 1 1</td></tr><tr><td>1000 1000</td><td>100 100 100 100</td><td>10 10 10 10 10 10 10 10 10 10</td><td>1 1 1 1 1 1 1 1 1 1</td></tr></table>	Th	H	T	O	1000 1000	100	10 10 10 10 10 10 10 10 10 10	1 1 1 1 1 1 1 1 1 1	1000 1000	100 100 100 100	10 10 10 10 10 10 10 10 10 10	1 1 1 1 1 1 1 1 1 1	Use of place value grid <table><tr><th>1000s</th><th>100s</th><th>10s</th><th>1s</th></tr><tr><td>88</td><td>88</td><td>88</td><td>88</td></tr><tr><td>0</td><td>88</td><td>88</td><td>88</td></tr><tr><td>5</td><td>7</td><td>0</td><td>1</td></tr></table>	1000s	100s	10s	1s	88	88	88	88	0	88	88	88	5	7	0	1	TH H T O + TH H T O A7d: Column Addition <table><tr><th>Th</th><th>H</th><th>T</th><th>U</th></tr><tr><td>4</td><td>8</td><td>7</td><td>3</td></tr><tr><td>+</td><td>3</td><td>7</td><td>6</td></tr><tr><td colspan="4"> </td></tr><tr><td>8</td><td>6</td><td>3</td><td>5</td></tr><tr><td colspan="4">1 1</td></tr></table> Decimals - same number of digits A7h: Column Addition <table><tr><th>T</th><th>U</th><th>$\frac{1}{10}$</th></tr><tr><td>7</td><td>6</td><td>7</td></tr><tr><td>+</td><td>5</td><td>8</td></tr><tr><td colspan="3"> </td></tr><tr><td>1</td><td>3</td><td>2</td></tr><tr><td colspan="3">1 1 1</td></tr></table> Money up to 4 digits A7i: Column Addition With Money <table><tr><td>£</td><td>3</td><td>8</td><td>.</td><td>2</td><td>5</td></tr><tr><td>+</td><td>£</td><td>2</td><td>7</td><td>.</td><td>4</td></tr><tr><td colspan="6"> </td></tr><tr><td>£</td><td>6</td><td>5</td><td>.</td><td>7</td><td>1</td></tr><tr><td colspan="6">1 1</td></tr></table>	Th	H	T	U	4	8	7	3	+	3	7	6					8	6	3	5	1 1				T	U	$\frac{1}{10}$	7	6	7	+	5	8				1	3	2	1 1 1			£	3	8	.	2	5	+	£	2	7	.	4							£	6	5	.	7	1	1 1						Add Sum More than Total Altogether Plus Partition into tens and ones Empty number line Count on Carry ten Carry 100 Two digit	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards
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MA5: Round & Adjust

$$45 + 39 = 84$$

$$45 + 40 - 1$$

$$85 - 1 = 84$$

Add near doubles of two-digit numbers, e.g. $38 + 37$

MA4: Double & Adjust

$$37 + 38 = 75$$

$$37 + 37 + 1$$

$$74 + 1 = 75$$

Understand addition as inverse of subtraction

Know the related vocabulary for addition

addend sum

$$6 + 4 = 10$$

addend

sum 10

addend 4	addend 6
-------------	-------------

addend
plus
addend
is equal to the
sum

$$22 + 78 = 100$$

Compact columnar addition

Add numbers with up to 4 digits using the efficient written column method Practise with increasingly large numbers to aid fluency.

Estimate and use inverse operations to check answers

Solve addition two-step problems in contexts, deciding which operations and methods to use and why. Include problems involving decimals in money or measures eg. $6.3m + 3.7m = 10m$

Where there are more than 2 addends in a column –add up the digits efficiently

$$416 + 223 + 184 = 823$$

$$15 + 57 + 27 = 99$$

$$172 + 234 + 54 = 460$$

three digit

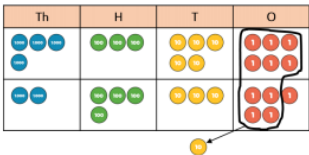
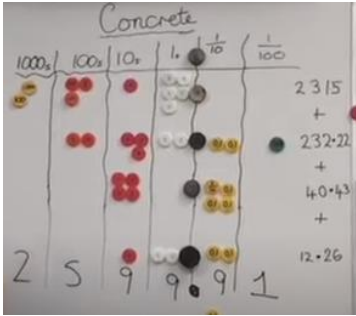
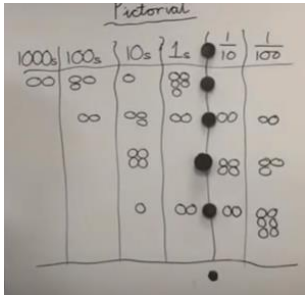
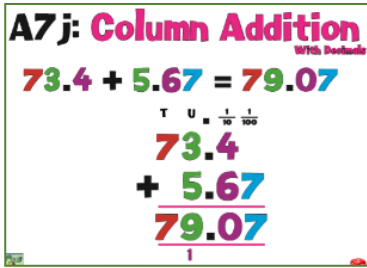
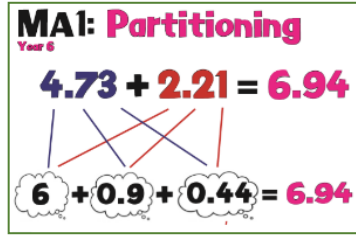
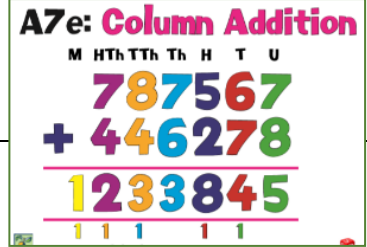
Crossing
tens
boundary

Inverse

addend

	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html
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Year 5 and 6 Addition

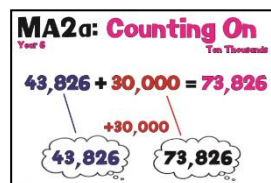
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 5 And Year 6	Y5 Add numbers mentally with increasingly large numbers to aid fluency e.g. $12\ 462 + 2\ 300 = 14\ 762$ Use rounding to check answers and determine, levels of accuracy Add a pair of two or three-digit multiples of 10, e.g. $30 + 80$, $35 + 36$ and $350 + 360$ Add a near multiple of 10, 100 and 1000 to any two-digit, three-digit	Use of place value counters to add up to 6 digits  	Use of place value grid 	Varied sized numbers up to millions or 3DP added using compact method. Includes measures and money Decimals - same and different number of digits A7j: Column Addition $73.4 + 5.67 = 79.07$  MA1: Partitioning $4.73 + 2.21 = 6.94$  A7e: Column Addition $787567 + 446278 = 1233845$ 	Add Sum More than Total Altogether Plus Partition into tens and ones Empty number line Count on Carry ten Carry 100 Two digit	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards

number or four-digit number, e.g. 235 + 198

Add pairs of decimal fractions each with units and tenths, e.g. 5.7 + 2.5, 6.3 + 4.8

Y6

Calculate mentally with increasingly large numbers and more complex calculations. Including Counting on in multiples

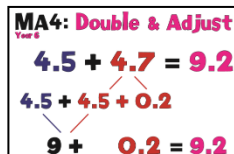
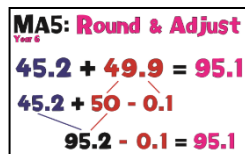


Addition facts for multiples of 10 to 1000 and decimal numbers with one decimal place,

e.g.

$$650 + \underline{\quad} = 930$$

$$\underline{\quad} + 1.4 = 2.5$$



Know the related vocabulary for addition

See the images from Y4

Compact columnar addition

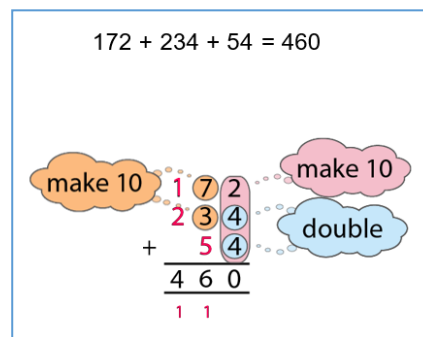
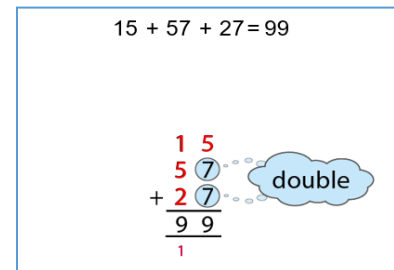
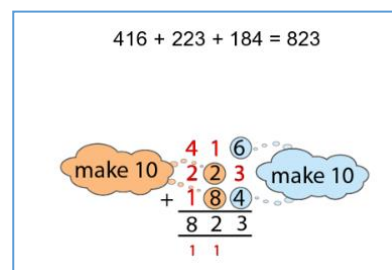
Add numbers with up to 4 digits using the efficient written column method Practise with increasingly large numbers to aid fluency.

Estimate and use inverse operations to check answers

Solve addition two-step problems in contexts, deciding which operations and methods to use and why. Include problems involving decimals in money or measures eg. 6.3m + 3.7m = 10m

Practise addition for larger numbers, using the efficient written methods of columnar addition.

Where there are more than 2 addends in a column –add up the digits efficiently



three digit

Crossing
tens
boundary

Inverse

addend

Useful IWB links for manipulatives

<https://www.coolmath4kids.com/manipulatives/base-ten-blocks>
<https://mathsbot.com/manipulatives/placeValueCounters>
<https://mathsbot.com/manipulatives/bar>

		https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html
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