Addition

Pupils read, write and interpret mathematical statements involving addition(+) and equals (=) signs.
Pupils memorise and reason with number bonds to 10 and 20 in several forms (for example, 9 + 7 = 16; 16 – 7 = 9; 7 = 16 – 9). They should realise the effect of adding zero.
Pupils combine and increase numbers, counting forwards.
They discuss and solve problems in familiar practical contexts, including using quantities.

Key vocabulary

add plus total sum equals whole part altogether commutative

addend sum (years 1 and 2)

Key stem sentences

Addition is commutative.

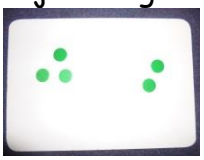
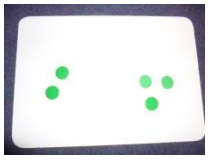
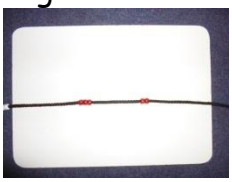
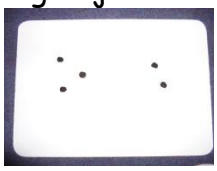
Addend plus addend equals sum (years 1 and 2)

Sum equals addend plus addend. (years 1 and 2)

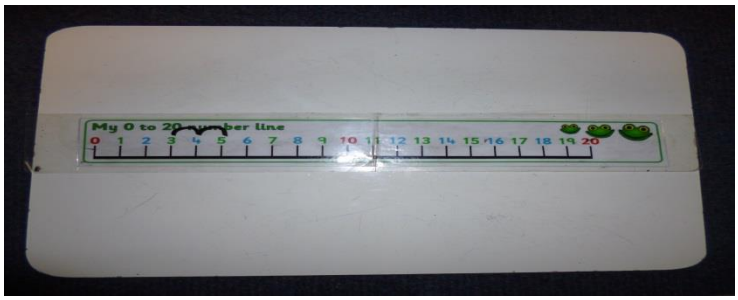
- <u>Add a 1-digit number to a 1-digit number, initially up to 5, then up to 10, then up to 20, including 0.</u>

  Begin by counting all the objects in both groups to find the total, then move towards counting on.

  Eg 3+2

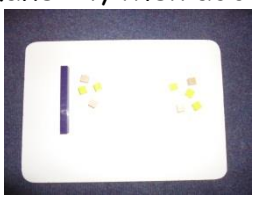
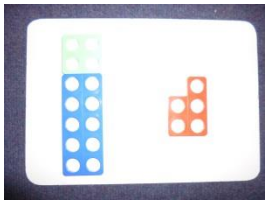
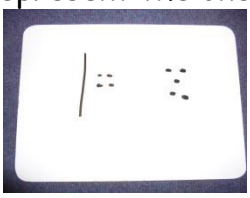
concrete	pictorial	abstract
Using objects eg counters  Use commutative law to demonstrate that 3 add 2 is the same as 2 add 3  Using numicon  Using a bead string 	Drawing objects or dots 	3+2=5 2+3=5 5=3+2 5=2+3

Numbered number line: start at 3 and jump on 2 ones.

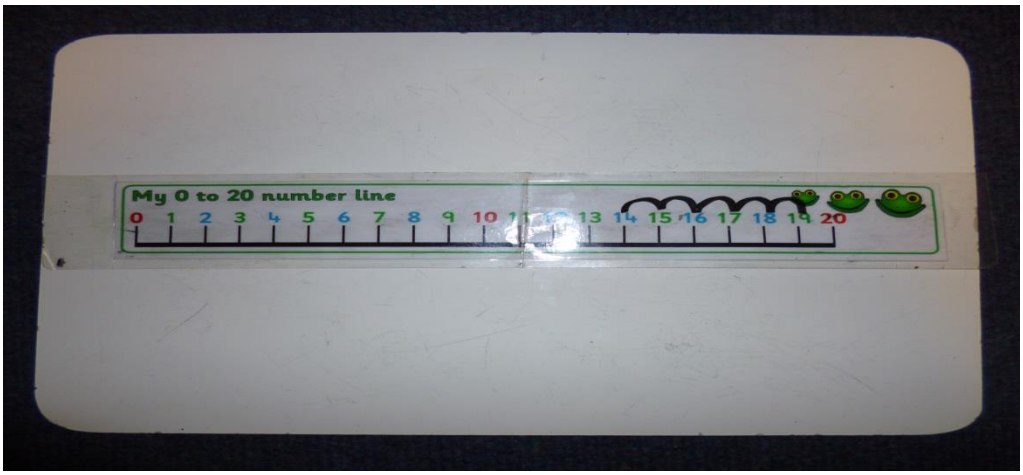


Use the above methods to also add 3 1-digit numbers

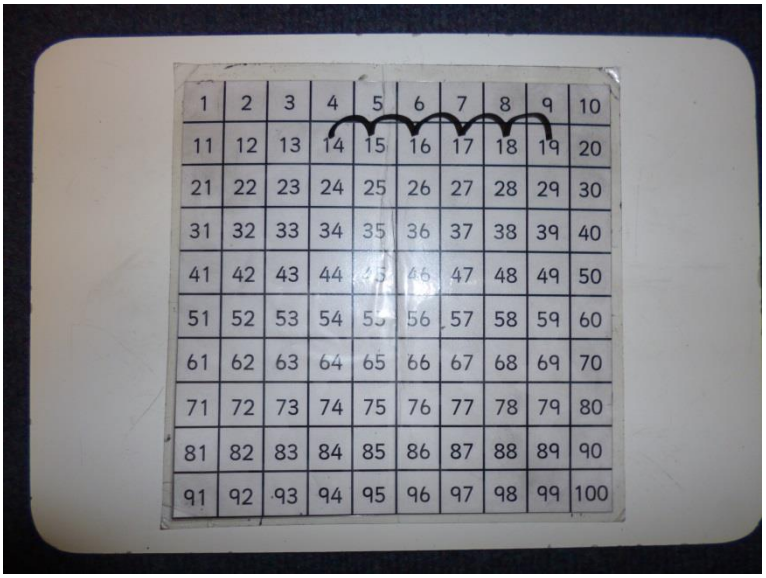
- <u>Add a 1-digit number to a 2-digit number, initially up to 20, then up to 100, including 0.</u>
  Eg 14+5

concrete	pictorial	abstract
Use apparatus to use knowledge of place value to make 14, then add 5   	Draw a line to represent 1 ten. Draw dots to represent the ones 	14+5=19 5+14=19 19=14+5 19=5+14

Numbered number line: start at 14 and jump on 5 ones.

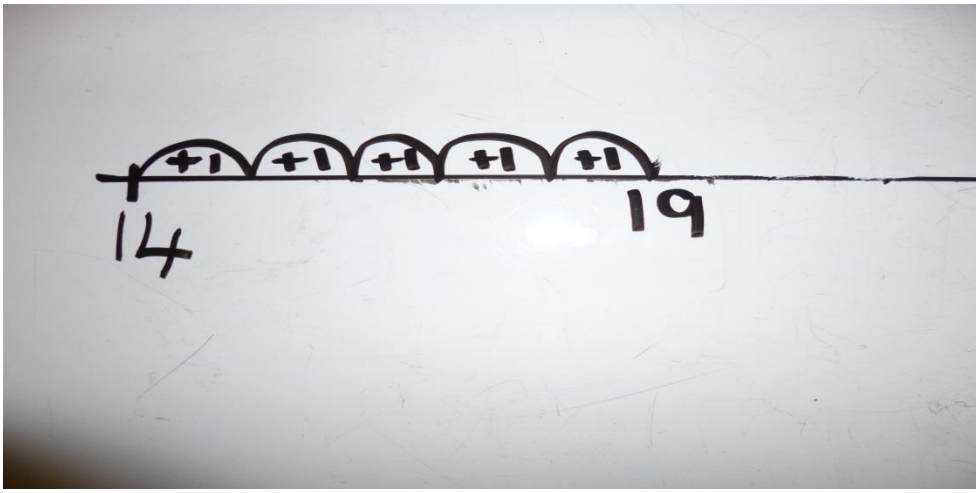


Number square: start at 14 and jump on 5 ones.



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
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Empty number line: start at 14 and jump on 5 ones.

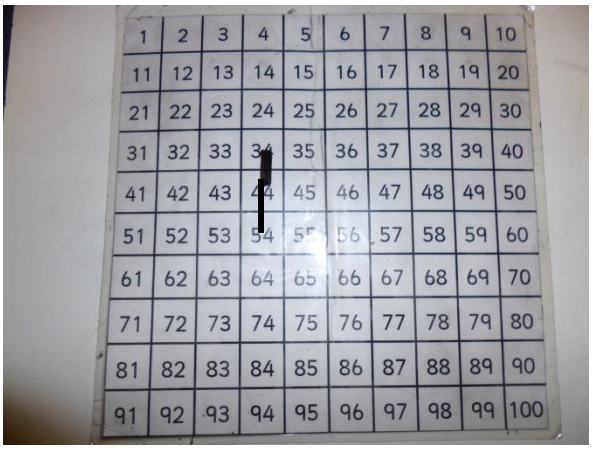


- <u>Add a 2-digit number and tens</u>

Eg 34+20

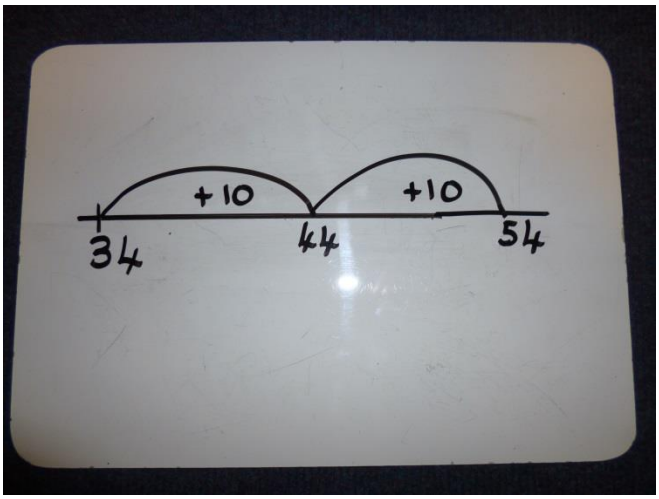
concrete	pictorial	abstract
Add the tens first, then count on to add the ones 10,20,30,40,50, 51,52,53,54.   		34+20=54 20+34=54 54=34+20 54+20+34

Number square: add tens by moving down a row vertically to encourage mental addition. Ensure children understand this is adding tens, not ones.



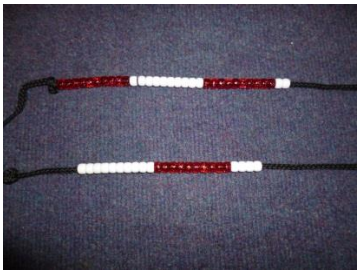
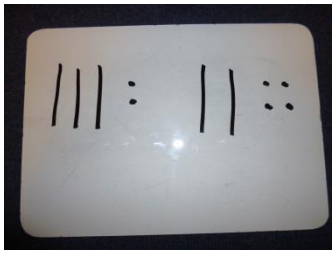
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Empty number line: Start at 34. Add 1 ten, then add another 10. Eventually children will add the 20 in one jump.



- Add 2 2-digit numbers within 100, using concrete apparatus or pictures

  Eg 32 + 24

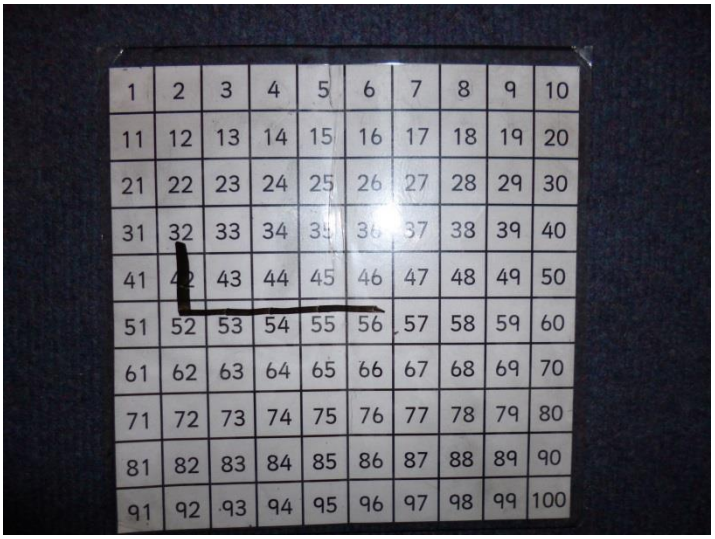
concrete	pictorial	abstract
Use apparatus to use knowledge of place value to 32 and 24. Add all the tens first, then count on to add the ones: 10,20,30,40,50,51,52,53,54,55,56   	Draw lines to represent the tens Draw dots to represent the ones. 	32+24=56 24+32=56 56=32+24 56=24+32

Children will be taught to recognise the inverse relationships between addition and subtraction and use this to check calculations and work out missing number problems(e.g. ☐ – 12 = 27).

Pupils will be taught to use estimation to check that their answers to a calculation are reasonable.

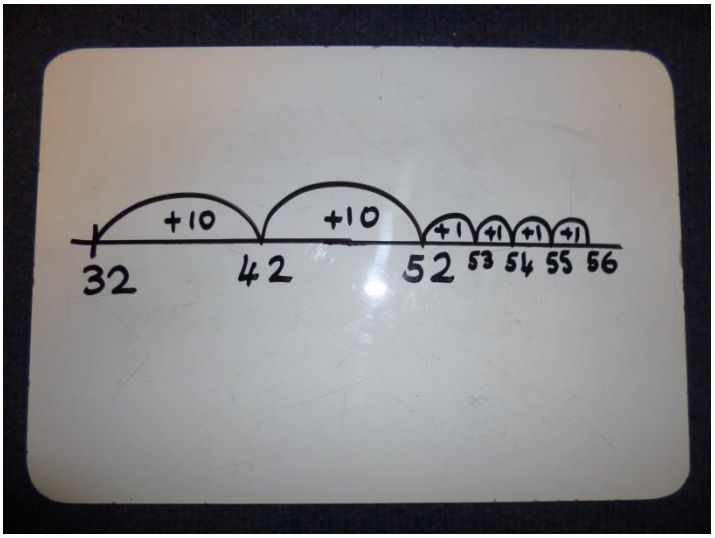
Number square: drop down to add the tens, then count across to add the ones.

42,52,53,54,55,56



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
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

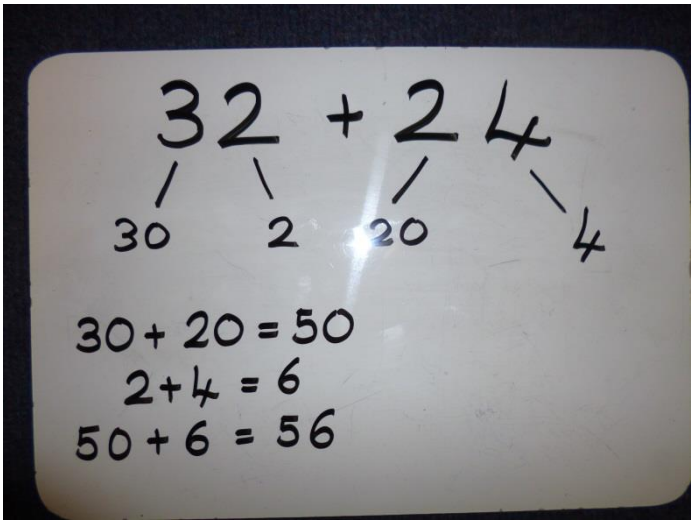
Empty number line: start at 32. Add the tens, then add the ones.



Pupils will be taught to solve more complex missing number problems

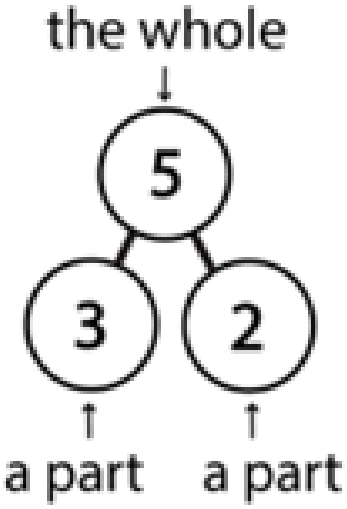
eg 14 + ☐ = 15 + 27.

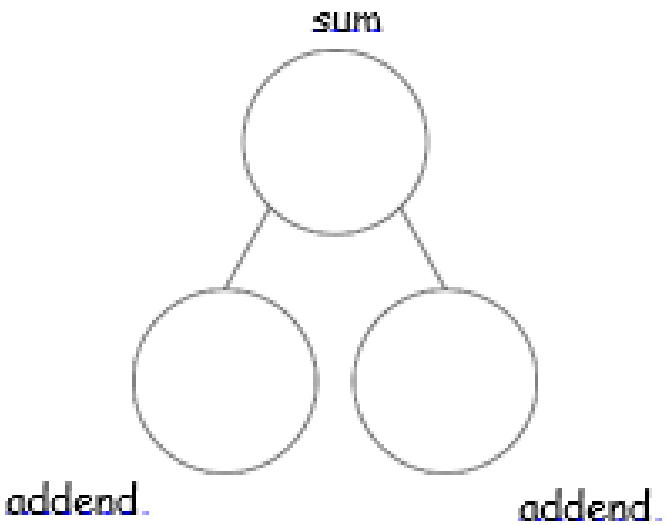
Partitioning by adding the tens mentally, then adding the ones mentally, then combining the tens and ones.

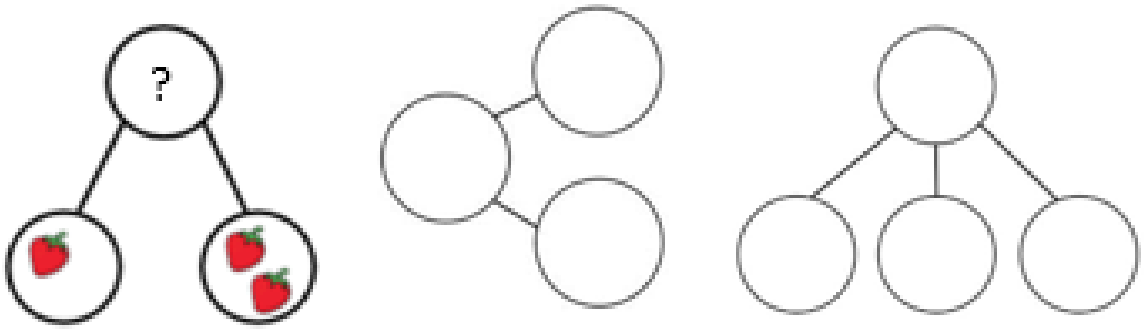


Key models and representations for addition:

part / whole model







bar model (especially for number bonds)

