CALCULATION POLICY FOR ADDITION AND SUBTRACTION

YEAR 3

Year 3			
	Block 1	**Block 2**	**Block 3**
Calculation content	**ADDITION AND SUBTRACTION (UNIT 1)** • **+ and - facts for 100 using multiples of 5 and 10** • **Add a 3-digit number and ones** • **Subtract ones from a three-digit number** (exchanging) • **Add a three-digit number and tens; subtract tens from a three-digit number** • **Adding multiples of ten beyond one hundred** • **Subtract multiples of ten** • **Add numbers with up to three-digits** (without and with exchanging) • **Subtract numbers with up to three-digits** (without and with exchanging)	**MONEY (UNIT 1)** • **Making £1, £2 and £5** • **Adding 2 two-digit amounts** (eg 35p + 25p = 30p + 20p + 5p +5p) • **Adding pounds and pence, including bridging through £1** (eg £4 and 70p + £3 and 60p) **ADDITION AND SUBTRACTION (UNIT 2)** • **+ and - facts for 100 and related facts** • **Add a three-digit number to a three-digit number** (exchanging ones to tens and tens to hundreds) • **Subtract a three-digit number from a three-digit number** (exchanging hundreds to tens and tens to ones) **FRACTIONS (UNIT 2)** • **Add and subtract fractions with the same denominator** • **Subtract from one whole**	**CALCULATION UNIT** • **Scaling additive facts by ten** • **Add a three-digit number to a three-digit number** (r) • **Subtract a three-digit number from a three-digit number** (r) **MONEY (UNIT 2)** • **Subtracting amounts of money** (empty number line and subtracting by partitioning the minuend)

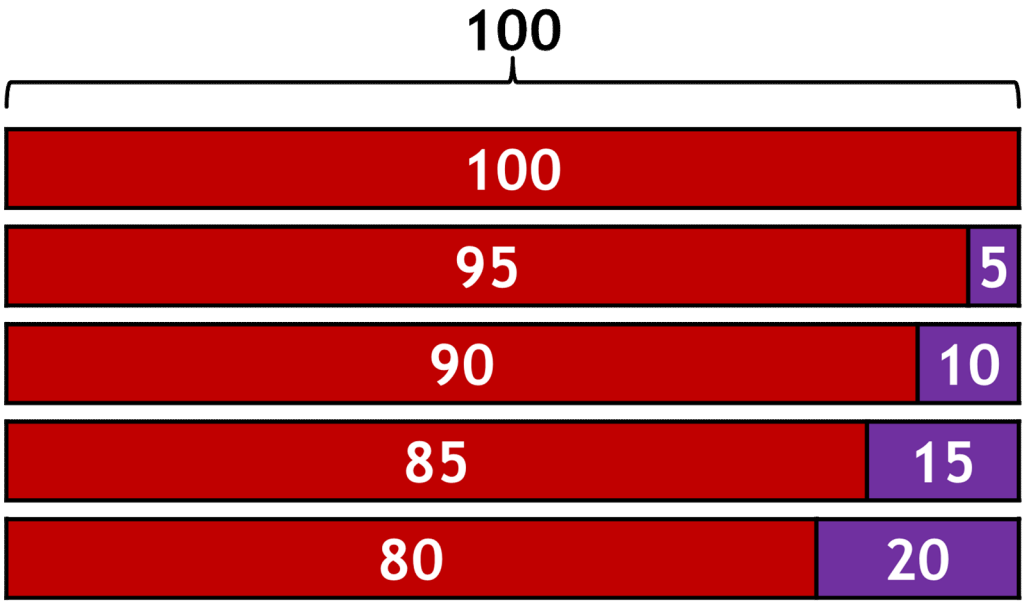
Year 3			
	Block 1	**Block 2**	**Block 3**
Strategies/ methods	+ and - facts for 100 using multiples of 5 and 10 Teaching needs to stress how to avoid common errors when calculating complements to 100, eg: 65 + 45 = 110 instead of 100. See notes in lesson. Add a 3-digit number and ones Making the next ten, eg: 167 + 9 = 170 + 3 + 6. Subtract ones from a three-digit number Making the previous ten, eg: 167 – 9 = 167 – 7 – 2. Add a three-digit number and tens; subtract tens from a three-digit number For addition: partition the three-digit number into hundreds and tens and ones, eg: 258 + 30 = 250 + 8 + 30 = 280 + 8. For subtraction: partition the minuend, eg: 258 – 30 = 58 – 30 + 200	Making £1, £2 and £5 Representations of coins and money number lines support calculating amounts to £1, £2 and £5. Adding 2 two-digit amounts Both amounts are partitioned into multiples of ten pence and multiples of one pence, eg: 35p + 25p = 30p + 5p + 20p +5p Adding pounds and pence, including bridging through £1 The core strategy is to add the pounds, then add the pence, then combine, eg: £4 and 70p + £3 and 60p = £7 and 130p = £8 and 30p NB Remember that children in Year 3 have not formally encountered decimal notation. Pounds and pence are presented as either £8 and 30p or £8.30 – but the decimal is referred to as a separator.	Scaling additive facts by ten Use known facts, eg: 5 – 2 = 3 so 5 tens - 3 tens = 2 tens. Add a three-digit number to a three-digit number Partitioning to expand second addend; partitioning both addends; compensation. Subtract a three-digit number from a three-digit number Counting on using empty number line; compensation. Subtracting amounts of money Empty number line and subtracting by partitioning the minuend.

Year 3			
	Block 1	**Block 2**	**Block 3**
Strategies/ methods	<u>Adding multiples of ten</u> Making the next hundred, eg: 80 + 60 = 80 + 20 + 40. <u>Subtract multiples of ten</u> Making the previous hundred, eg: 140 – 60 = 140 – 40 – 20. <u>Add numbers with up to three-digits</u> (three-digit + two-digit) Partitioning the second addend – 100 square representation; column method. <u>Subtract numbers with up to three-digits</u> (three-digit - two-digit) Using hundred square; counting back on empty number line; column method.	<u>+ and - facts for 100 and related facts</u> For addition: partitioning both addends into ten and ones and combining parts, eg: 73 + 27 = 70 + 3 + 20 + 7 = 90 + 10. For subtraction: partitioning the subtrahend, eg: 100 – 68 = 100 – 60 – 8; counting on with number line. <u>Add a three-digit number to a three-digit number</u> Column method (exchanging ones to tens and tens to hundreds). <u>Subtract a three-digit number from a three-digit number</u> Column method (exchanging hundreds to tens and tens to ones).	

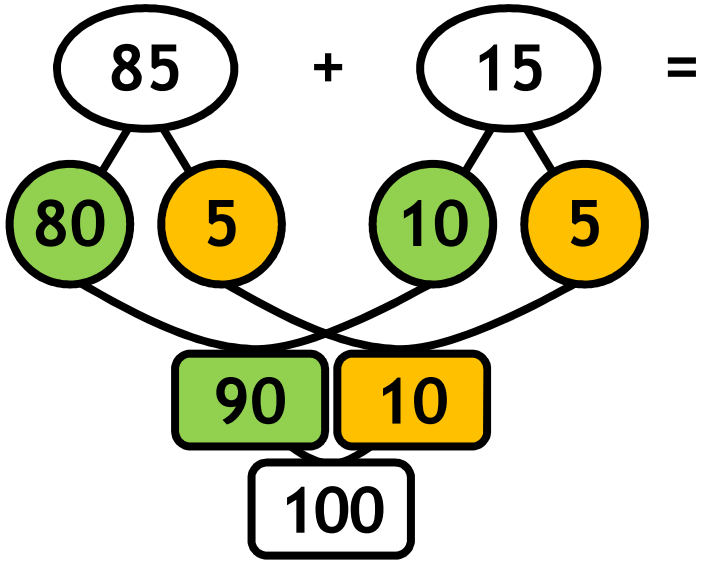
Year 3			
	Block 1	Block 2	Block 3
Strategies/ methods		<u>Add and subtract fractions with the same denominator</u> Teaching uses dual-naming. For example: $\frac{2}{6}+\frac{3}{6}=$ First say: *Two one-sixths and three one-sixths = five one-sixths.* (Unitising the fraction by verbally describing a non-unit fraction as a multiple of its unit fraction – this is important to avoid the misconception that two-sixths plus three-sixths = five twelfths. Then say: *Two sixths plus three sixths = five sixths.* <u>Subtract from one whole</u> Key teaching point is that when the numerator and denominator are the same the fraction is equivalent to a whole number. For example: $1-\frac{5}{6}=\frac{6}{6}-\frac{5}{6}$	

Year 3 - Block 1

+ and - facts for 100 using multiples of 5 and 10



bar model supports understanding that
one addend decreases by 5 and
the other increases by 5



partitioning both addends:
combine the tens; combine the ones; combine the results

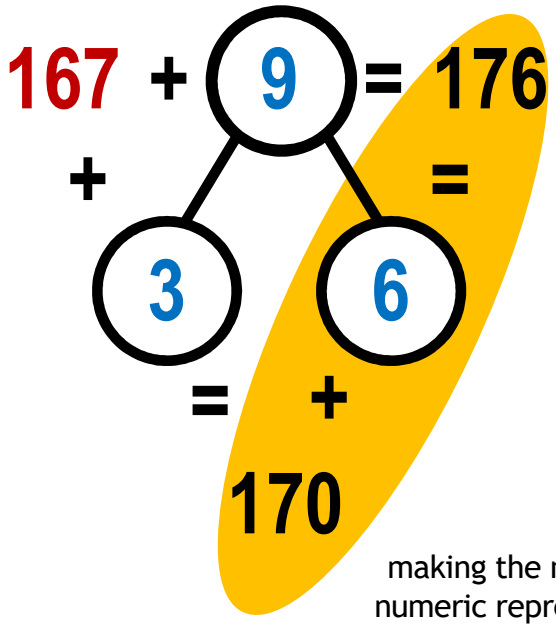
Year 3 - Block 1

167 + 9 = 176

Add a 3-digit number and ones

101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

making the next ten – 100 square representation



making the next ten – numeric representation

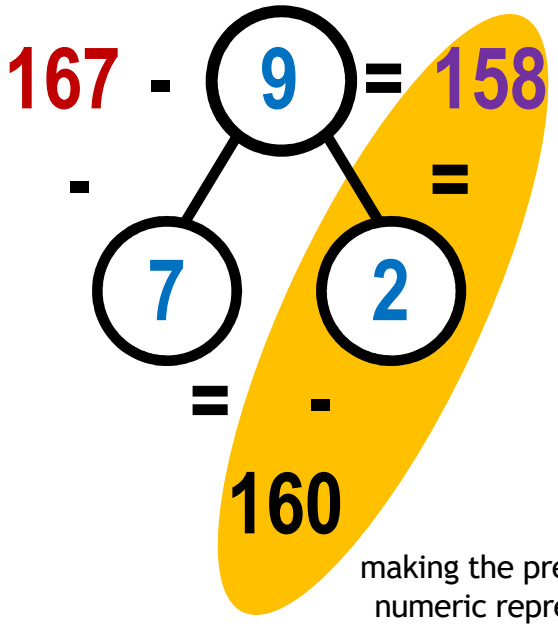
Year 3 - Block 1

167 - 9 = 158

Subtract ones from a three-digit number

101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

making the previous ten –
100 square representation

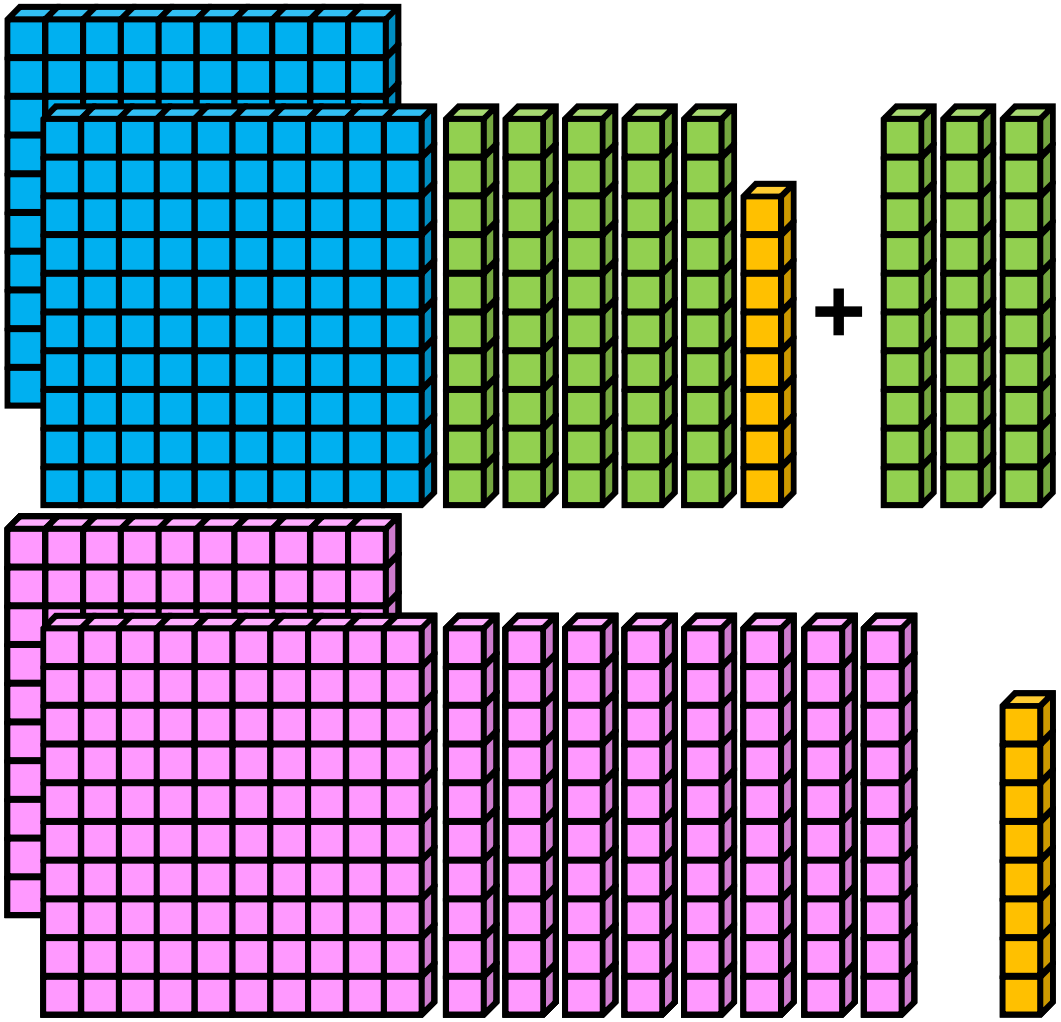


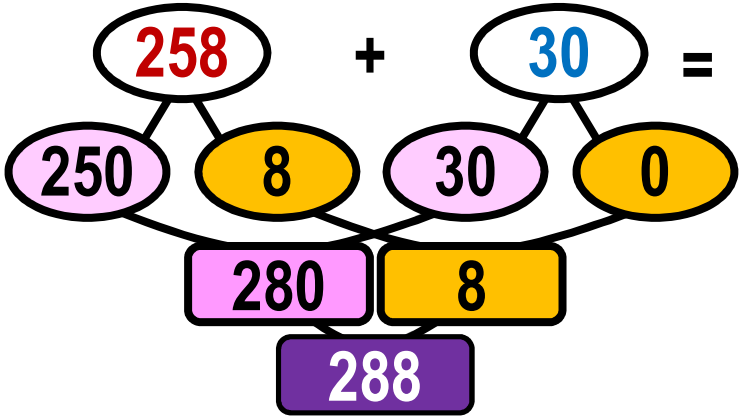
making the previous ten
numeric representation

Year 3 - Block 1

258 + 30 = 288

Add a three-digit number and tens



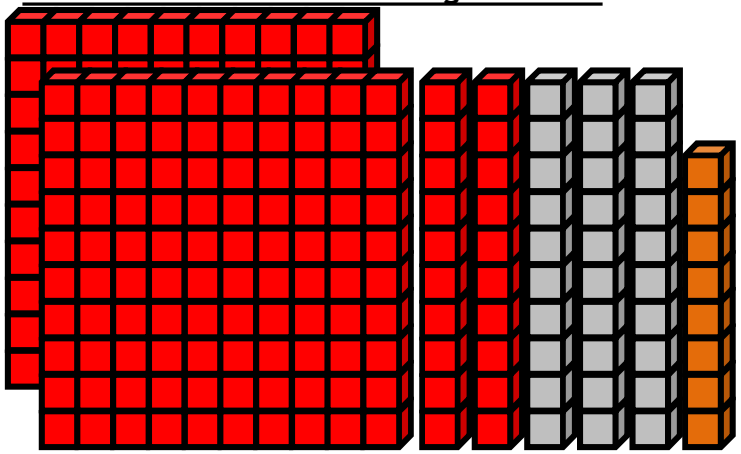


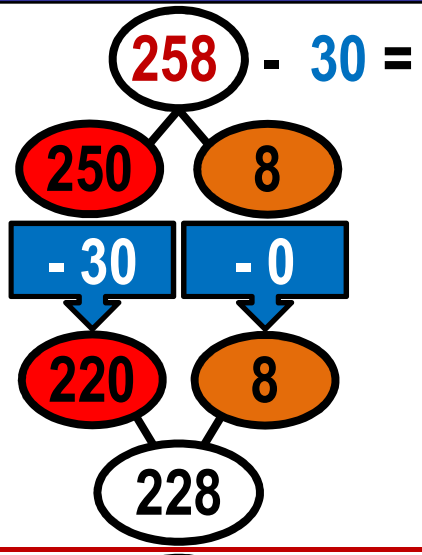
partition the three-digit number into
[a] hundreds and tens [b] ones;
partition the two-digit multiple of ten into tens and ones;
combine.

Year 3 - Block 1

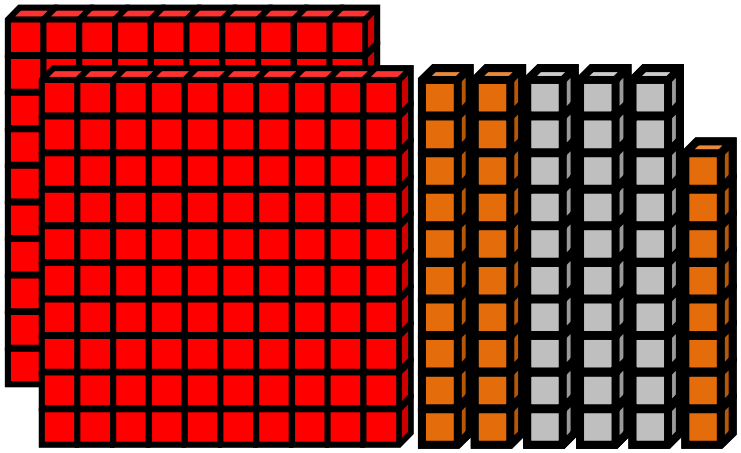
258 - 30 = 228

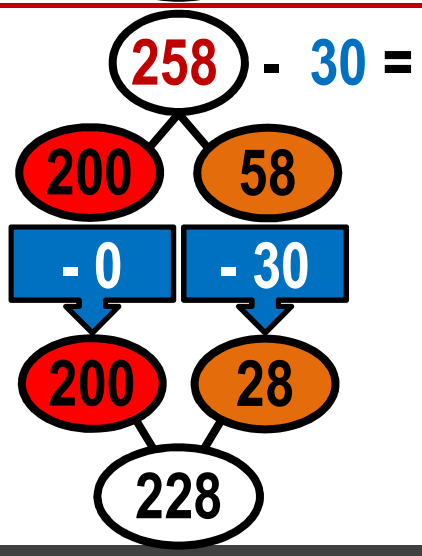
Subtract tens from a three-digit number





partitioning the minuend

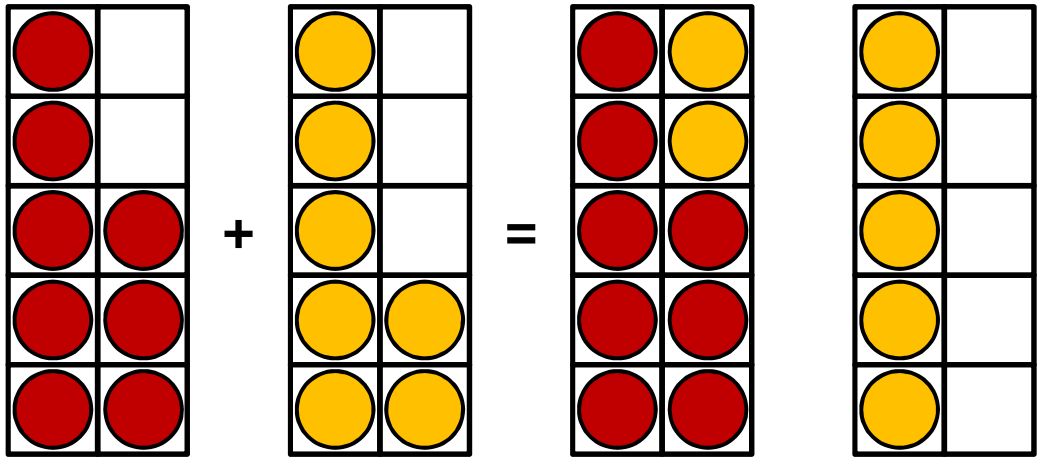




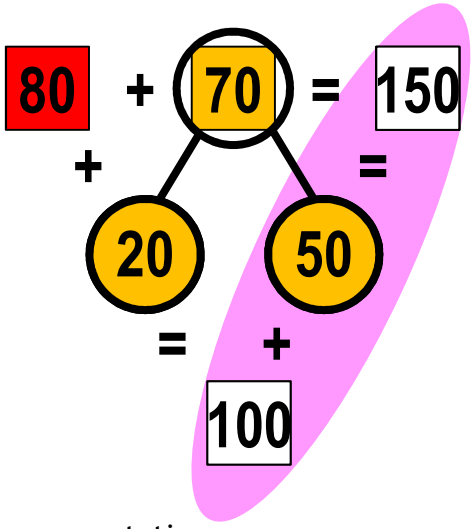
Year 3 - Block 1

80 + 70 = 150 • 150 - 70 = 80

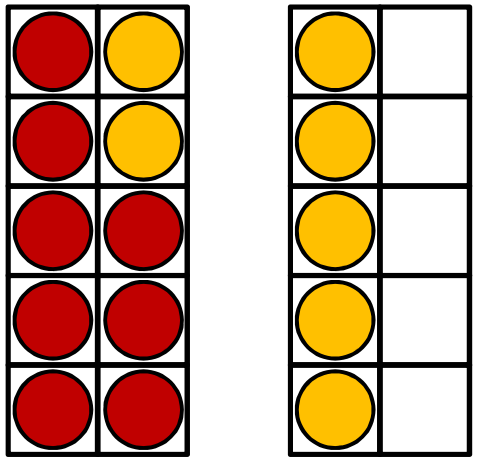
Add multiples of ten bridging hundreds/ subtract multiples of ten bridging hundreds

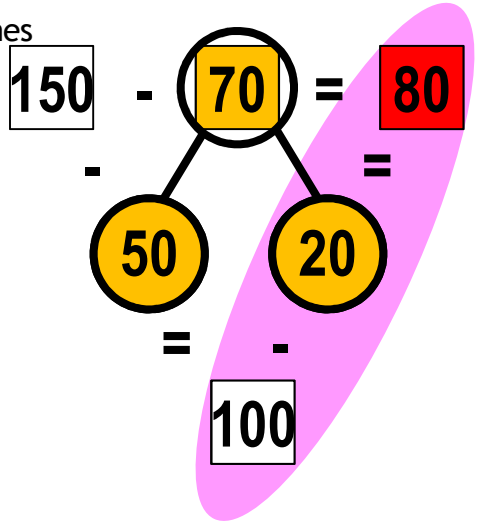


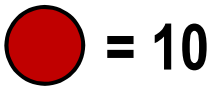
hundreds frames



numeric representations





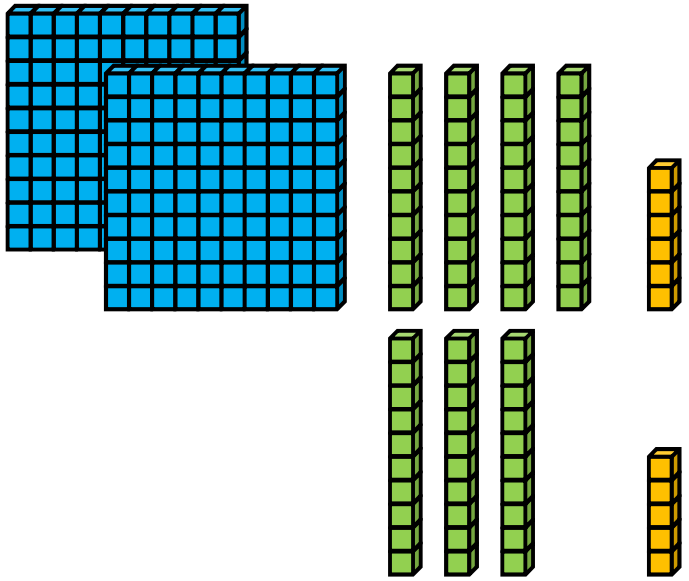


Year 3 - Block 1

246 + 35 = 281

Add numbers with up to three-digits

201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300



	H	T	O
	2	4	6
+		3	5
	2	8	1
		1	

Add the ones.
6 ones + 5 ones = 11 ones
11 ones = 1 ten and 1 one

Add the tens.
4 tens + 3 tens + 1 ten = 8 tens

Add the hundreds.
2 hundreds + 0 hundreds = 2 hundreds

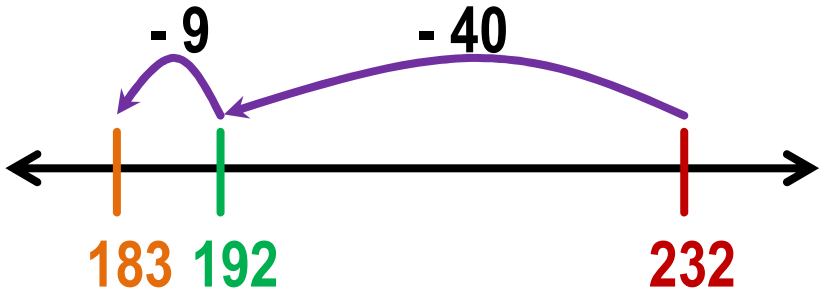
Year 3 - Block 1

232 - 49 = 183

Subtract numbers with up to three-digits

181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280

partitioning the subtrahend - empty number line representation



	H	T	O
	1 ~~2~~	~~2~~ ~~3~~	12
-		4	9
	1	8	3

column method supported by base ten blocks in the lessons

Subtract the ones.

There are not enough ones. Let's exchange.

Exchange 1 ten for 10 ones.

Subtract the ones.

12 ones - 9 ones = 3 ones

Subtract the tens.

There are not enough tens. Let's exchange.

Exchange 1 hundred for 10 tens.

Subtract the tens.

12 tens - 4 tens = 8 tens

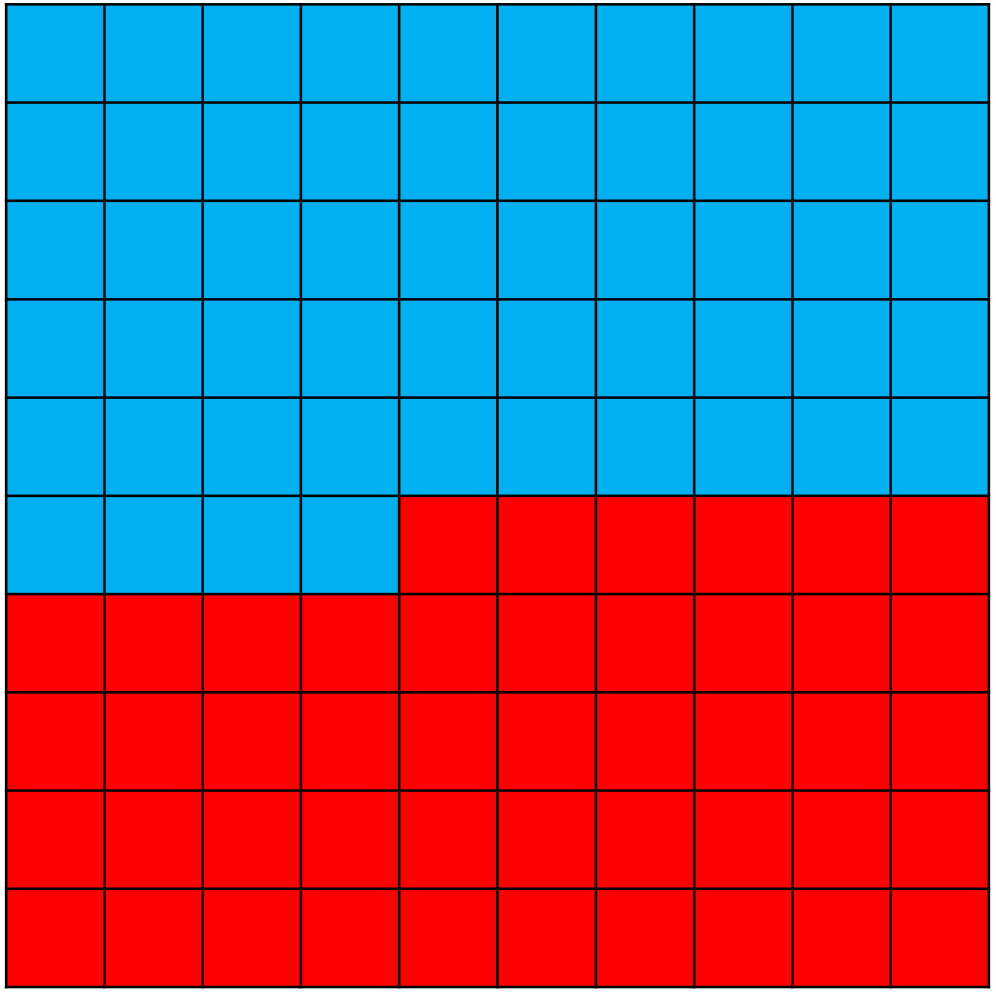
Subtract the hundreds.

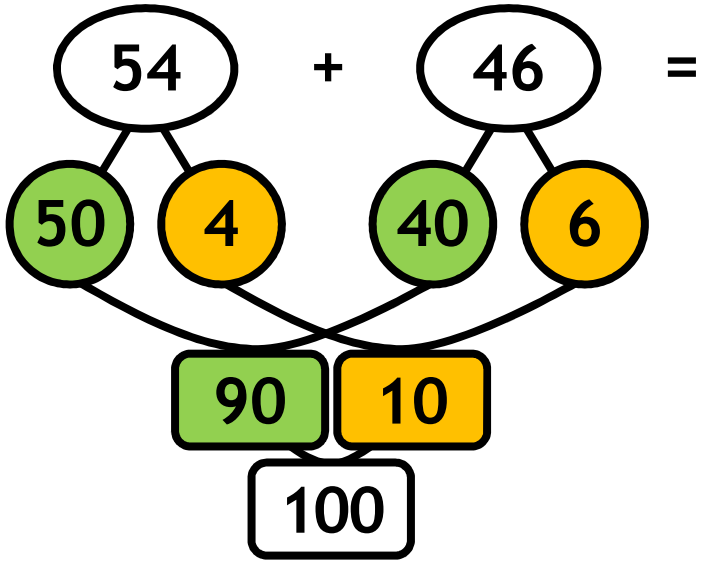
1 hundred - 0 hundreds = 1 hundred

Year 3 - Block 2

54 + 46 = 100

+ and - facts for 100 and related facts





partitioning both addends:
combine the tens; combine the ones; combine the results

Year 3 - Block 2

100 - 46 = 54

+ and - facts for 100 and related facts

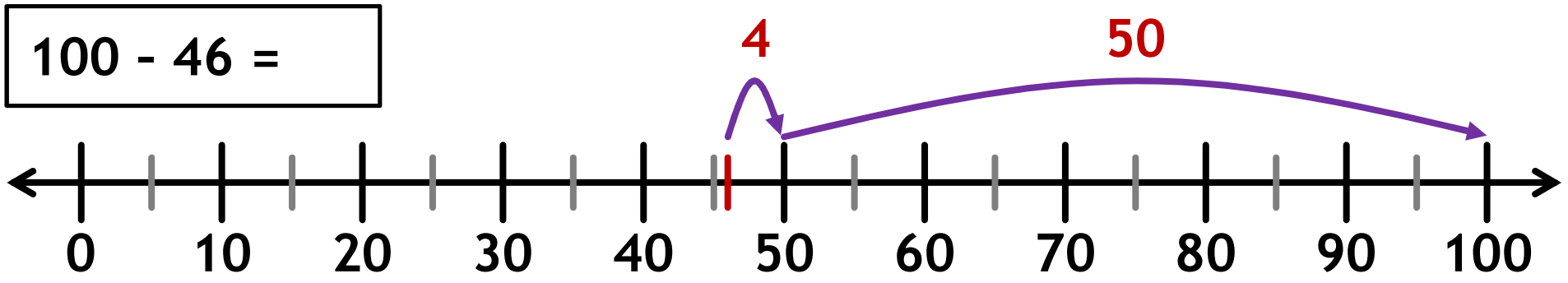
100 - 46 =

100 - 40 - 6 =

60 - 6 = 54

partitioning the subtrahend

100 - 46 =

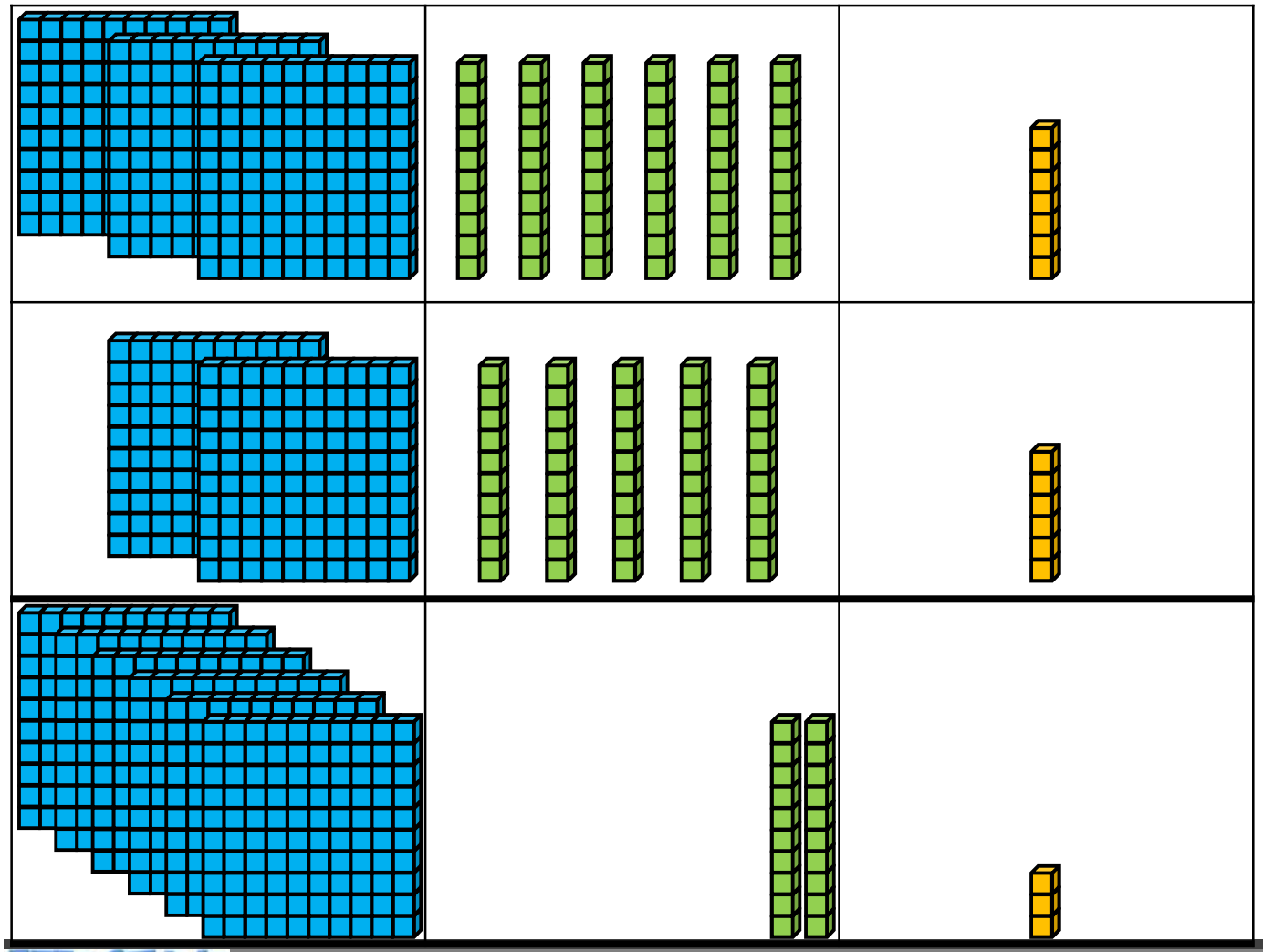


counting on -
number line representation

Year 3 - Block 2

367 + 256 = 623

Add a three-digit number to a three-digit number



	H	T	O
	3	6	7
+	2	5	6
	6	2	3
	1	1	

Add the ones.

7 ones + 6 ones = 13 ones

13 ones = 1 ten and 3 ones

Add the tens.

6 tens + 5 tens + 1 ten = 12 tens

12 tens = 1 hundred and 2 tens

Add the hundreds.

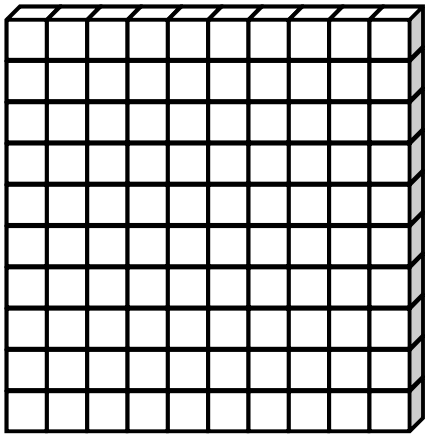
3 hundreds + 2 hundreds + 1 hundred = 6 hundreds

column method supported by base ten

Year 3 - Block 2

341 - 187 = 154

Subtract a three-digit number from a three-digit number



	H	T	O
	2	13	1
	~~3~~	~~4~~	1
-	1	8	7
	1	5	4

Subtract the ones.

There are not enough ones. Let's exchange.

Exchange 1 ten for 10 ones.

Subtract the ones.

11 ones – 7 ones = 4 ones

Subtract the tens.

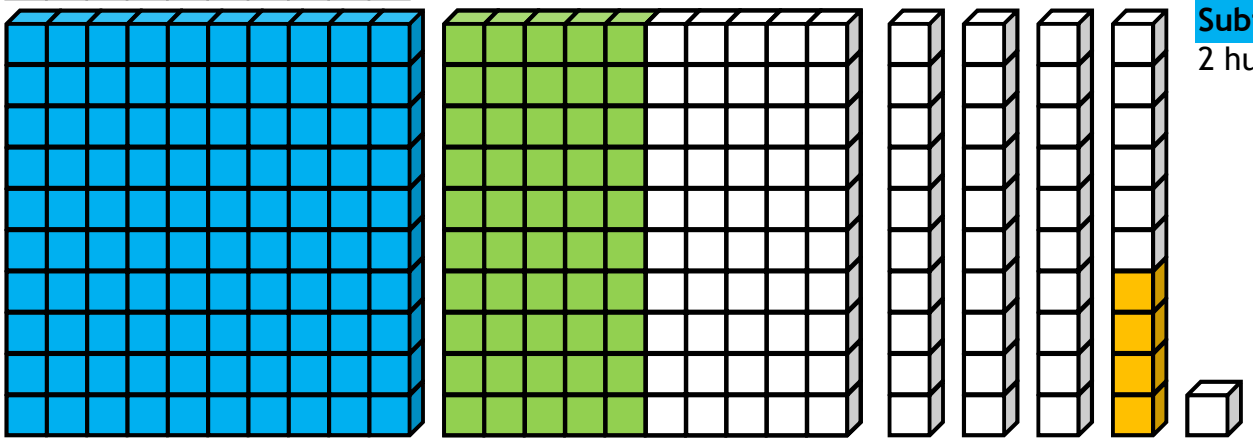
There are not enough tens. Let's exchange.

Exchange 1 hundred for 10 tens.

13 tens – 8 tens = 5 tens

Subtract the hundreds.

2 hundreds – 1 hundred = 1 hundred

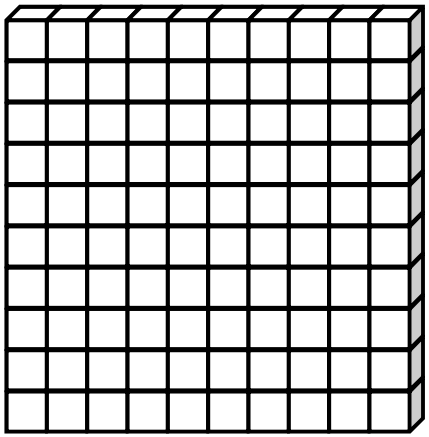


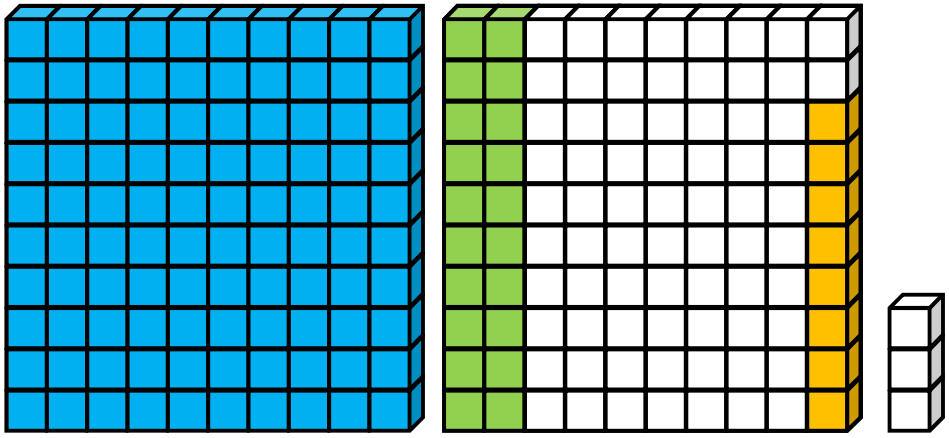
column method supported by base ten

Year 3 - Block 2

303 - 175 = 128

Subtract a three-digit number from a three-digit number





	H	T	O
		9	
	2	10	
	~~3~~	~~0~~	13
-	1	7	5
	1	2	8

Subtract the ones.

There are not enough ones. Let's exchange.

Exchange 1 hundred for 10 tens.

Exchange 1 ten for 10 ones.

Subtract the ones.

13 ones – 5 ones = 8 ones

Subtract the tens.

9 tens – 7 tens = 2 tens

Subtract the hundreds.

2 hundreds – 1 hundred = 1 hundred

column method supported by base ten

Scaling additive facts by ten

3 + 2 =

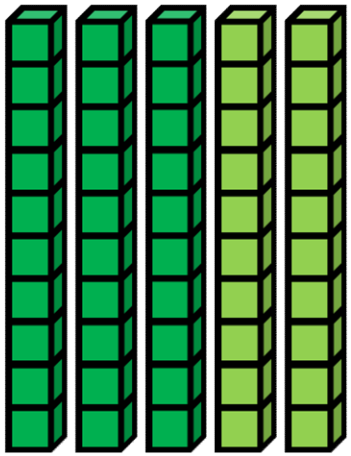
3 ones + 2 ones =

5

5 ones

base ten supports understanding of scaling

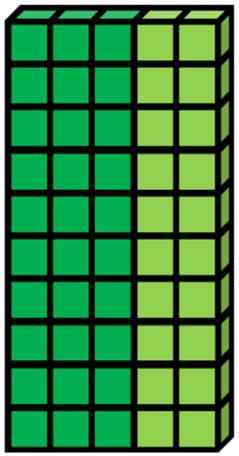
30 + 20 =



3 tens + 2 tens =

30 + 20 =

50



5 tens

50

Scaling additive facts by ten

The way you use language and write can really support children.

Say:

6 tens + 8 tens = 14 tens

14 tens = one hundred and forty

Write as you say:

60 + 80 = 140

140 = 140

You are writing and underlining the digit zero as you say 'tens'.

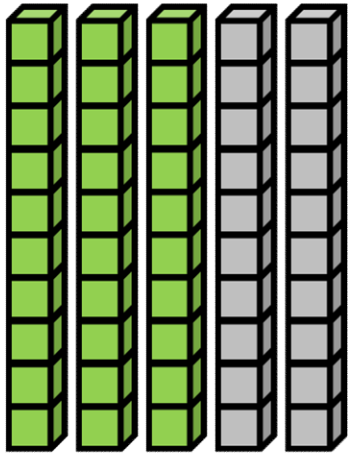
6 tens = 60

Scaling additive facts by ten

5 - 2 = 3

5 ones - 2 ones = 3 ones

50 - 20 = 30



5 tens - 2 tens = 3 tens

50 - 20 = 30

base ten supports understanding of scaling

Year 3 - Block 3

375 + 129 = 504

Add a three-digit number to a three-digit number

375 + 100 + 20 + 9 =

475 + 20

495 + 9 = 504

partitioning second addend

375 + 129 =

300 + 100 = 400

70 + 20 = 90

5 + 9 = 14

400 + 90 + 14 = 504

partitioning both addends

375 + 129 =

+ 25 + 0

400 + 129 =

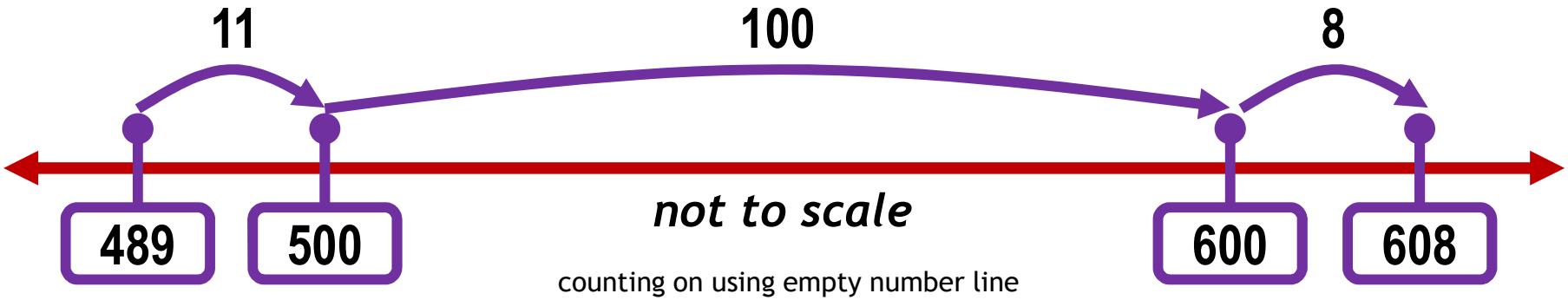
629 - 25 = 504

compensation

Year 3 - Block 3

608 - 489 = 119

Subtract a three-digit number from a three-digit number



counting on using empty number line

608 - 489 =

- 8

600 - 489 = 111

+ 8

119

compensation

608 - 489 =

+ 11

608 - 500 = 108

+ 11

119