

# Addition mental strategies – look for a ten

- 1 Let's warm up with some addition grids. Write these answers as fast as you can by counting on:

a

+	2	3	0
6	8	9	6
17	19	20	17
13	15	16	13
12	14	15	12

b

+	3	0	2
9	12	9	11
16	19	16	18
11	14	11	13
14	17	14	16

c

+	2	3	0
7	9	10	7
13	15	16	13
8	10	11	8
5	7	8	5

- 2 Adding more than two numbers together is easier if we look for a ten. Circle the numbers that add to 10 first, then add what is left:

a  $\boxed{6} + 3 + \boxed{4} = \boxed{13}$

b  $1 + 5 + 5 = \boxed{11}$

c  $9 + 5 + 1 = \boxed{15}$

d  $7 + 6 + 3 = \boxed{16}$

e  $5 + 6 + 4 = \boxed{15}$

f  $2 + 1 + 8 = \boxed{11}$

- 3 Loop the numbers that make 10. Look for sets going across and down. One set has been looped for you. How many more can you find?

6	3	1	6	9	2	8	5
4	1	3	3	3	8	3	5
3	7	1	4	6	2	5	3
3	3	9	6	3	1	2	7

Some numbers may be in more than one set.



DISCOVER

- 4 Look for a ten and change the order of the numbers in each addition problem to make it faster to add.

a  $4 + 5 + 3 + 5 + 6$

b  $9 + 3 + 7 + 1 + 5$

$4 + 6 + 5 + 5 + 3 = \boxed{23}$

$9 + 1 + 3 + 7 + 5 = \boxed{25}$

# Addition mental strategies – look for patterns

Number patterns are useful. You can build on basic addition facts.

## 1 Add 10 each time:

a

10	20	30	40
----	----	----	----

b

15	25	35	45
----	----	----	----

c

7	17	27	37
---	----	----	----

## 2 Add 100 each time:

a

10	110	210	310
----	-----	-----	-----

b

15	115	215	315
----	-----	-----	-----

c

7	107	207	307
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## 3 Use patterns to complete this addition table:

a

$3 + 5 =$	8	$30 + 50 =$	80	$300 + 500 =$	800
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b

$6 + 2 =$	8	$60 + 20 =$	80	$600 + 200 =$	800
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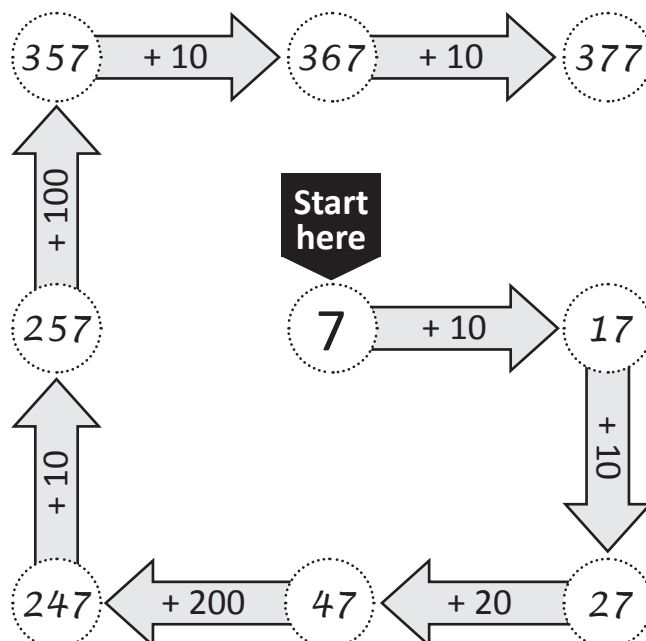
c

$4 + 1 =$	5	$40 + 10 =$	50	$400 + 100 =$	500
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d

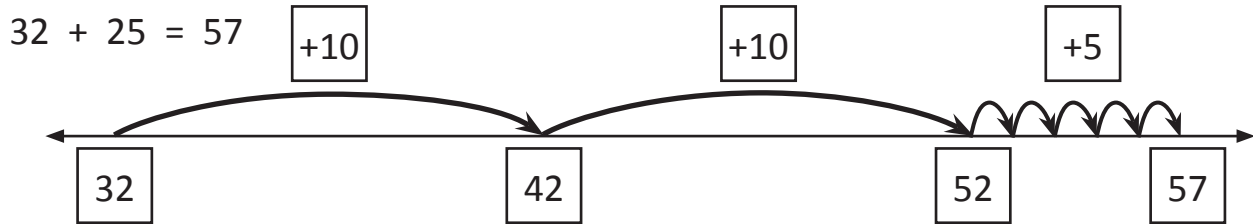
$7 + 3 =$	10	$70 + 30 =$	100	$700 + 300 =$	1 000
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## 4 Complete this addition trail:

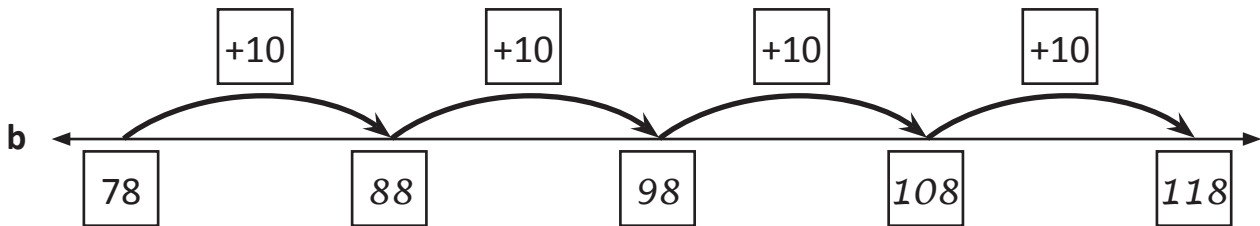
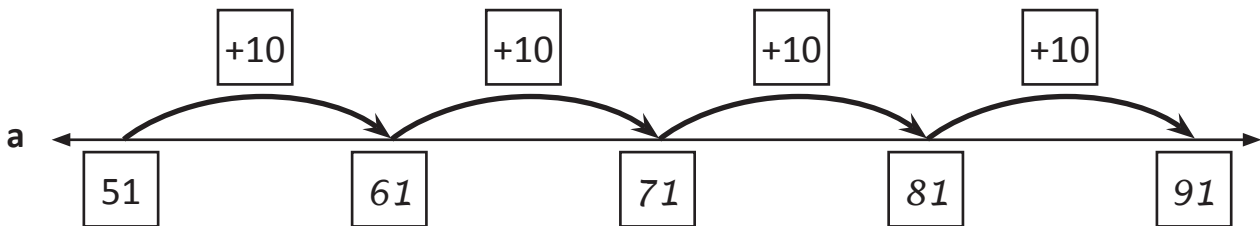


# Addition mental strategies – jump strategy

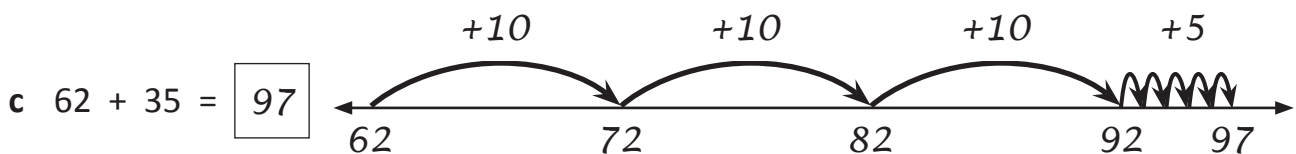
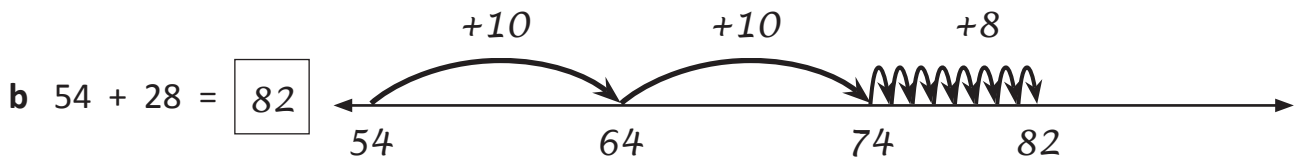
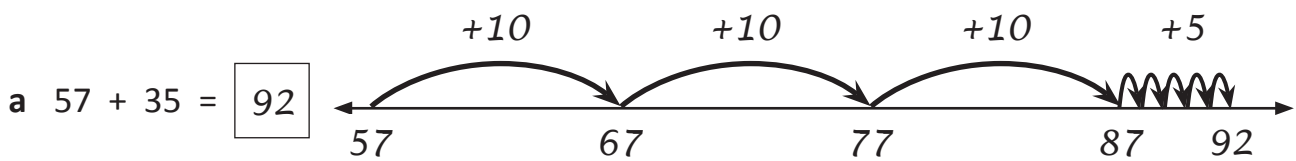
The jump strategy is when you use a number line to jump in tens and then units.



1 Practise jumping along the number line in tens:



2 Add these using the jump strategy. Show your working on each number line:



# Addition mental strategies – split strategy version 1

When adding large numbers in our heads, it can be easier to split one of the numbers into parts and add each part separately.

$$57 + 46 \begin{cases} 40 \\ 6 \end{cases} \longrightarrow 57 + 40 = 97 \longrightarrow 97 + 6 = 103$$

- 1 Practise separating these numbers into tens and ones. The first one has been done for you.

a  $22 \begin{cases} 20 \\ 2 \end{cases}$

b  $57 \begin{cases} 50 \\ 7 \end{cases}$

c  $65 \begin{cases} 60 \\ 5 \end{cases}$

d  $96 \begin{cases} 90 \\ 6 \end{cases}$

- 2 Practise adding tens to these numbers:

+	10	50	20	30	60
21	31	71	41	51	81
48	58	98	68	78	108

- 3 Use the split strategy with these problems:

a  $38 + 34 \begin{cases} 30 \\ 4 \end{cases} \longrightarrow 38 + 30 = 68 \longrightarrow 68 + 4 = 72$

b  $29 + 28 \begin{cases} 20 \\ 8 \end{cases} \longrightarrow 29 + 20 = 49 \longrightarrow 49 + 8 = 57$

c  $75 + 14 \begin{cases} 10 \\ 4 \end{cases} \longrightarrow 75 + 10 = 85 \longrightarrow 85 + 4 = 89$

d  $94 + 17 \begin{cases} 10 \\ 7 \end{cases} \longrightarrow 94 + 10 = 104 \longrightarrow 104 + 7 = 111$

# Subtraction mental strategies – patterns

Recognising patterns in subtraction is useful in extending known facts.

Can you see the pattern in this set of facts?

$17 - 3 = 14$

$37 - 3 = 34$

$27 - 3 = 24$

$47 - 3 = 44$

- 1** Extend each set of subtraction patterns in the sets below and then shade the answers on this grid:

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

**a Set 1**

$8 - 2 = 6$

$18 - 2 = 16$

$28 - 2 = 26$

$38 - 2 = 36$

$48 - 2 = 46$

$58 - 2 = 56$

$68 - 2 = 66$

$78 - 2 = 76$

**b Set 2**

$25 - 4 = 21$

$35 - 4 = 31$

$45 - 4 = 41$

$55 - 4 = 51$

$65 - 4 = 61$

$75 - 4 = 71$

$85 - 4 = 81$

$95 - 4 = 91$

**c Set 3**

$19 - 6 = 13$

$29 - 6 = 23$

$39 - 6 = 33$

$49 - 6 = 43$

$59 - 6 = 53$

$69 - 6 = 63$

$79 - 6 = 73$

$89 - 6 = 83$

- 2** Extend this subtraction pattern beyond the hundred grid:

**a**  $88 - 7 = 81$

**b**  $98 - 7 = 91$

**c**  $108 - 7 = 101$

**d**  $118 - 7 = 111$

**e**  $128 - 7 = 121$

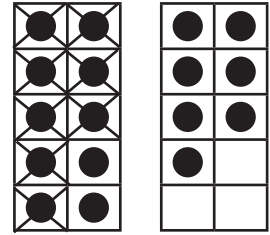
**f**  $138 - 7 = 131$

# Subtraction mental strategies – bridge to ten

A ten frame is useful to show the bridge to ten strategy when subtracting.

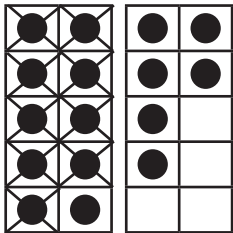
Here are 17 counters in 2 tens frames.

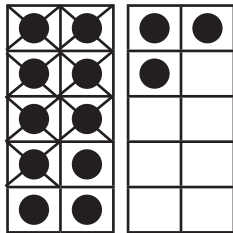
When you see  $17 - 8 = \square$ , cross out 8 from the first ten frame then add what is left.

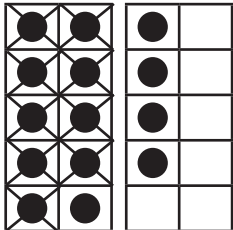


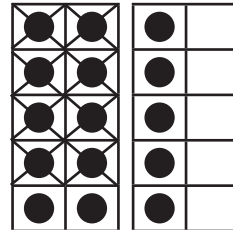
$$17 - 8 = 9$$

- 1 Use each ten frame to subtract using bridge to ten. Cross out the number of counters that are subtracted from the first ten frame:

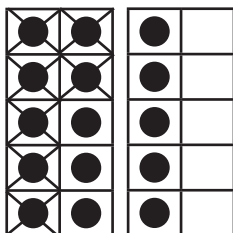
a   $16 - 9 = 7$

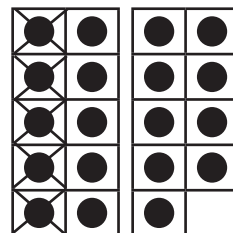
b   $13 - 7 = 6$

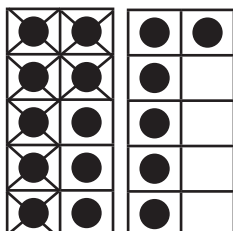
c   $14 - 9 = 5$

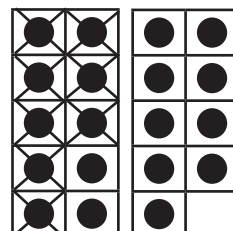
d   $15 - 8 = 7$

- 2 Write a subtraction fact that matches each ten frame:

a   $15 - 7 = 8$

b   $19 - 5 = 14$

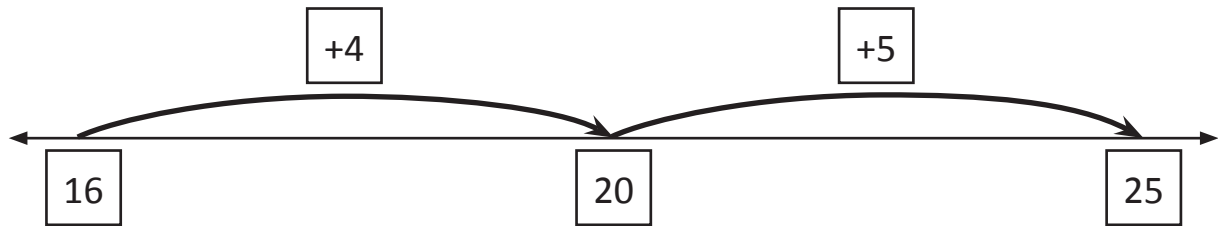
c   $16 - 7 = 9$

d   $19 - 8 = 11$

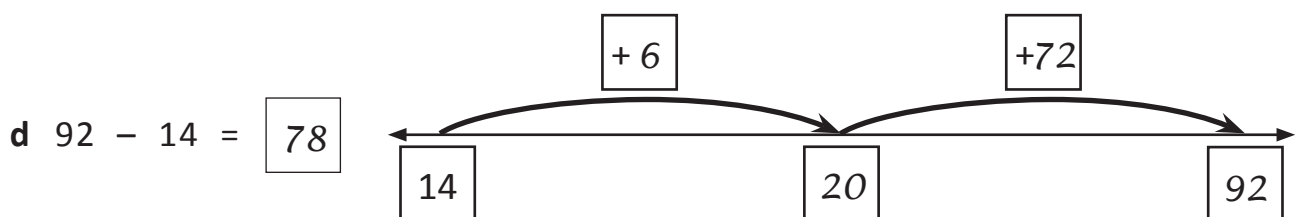
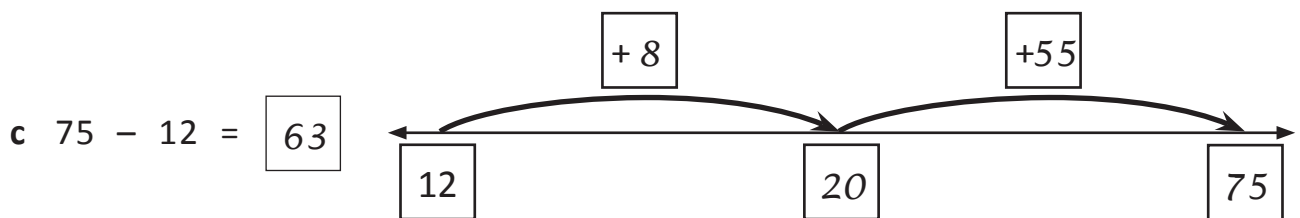
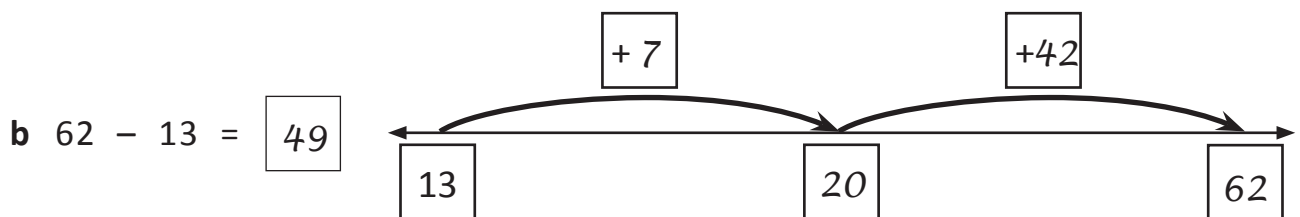
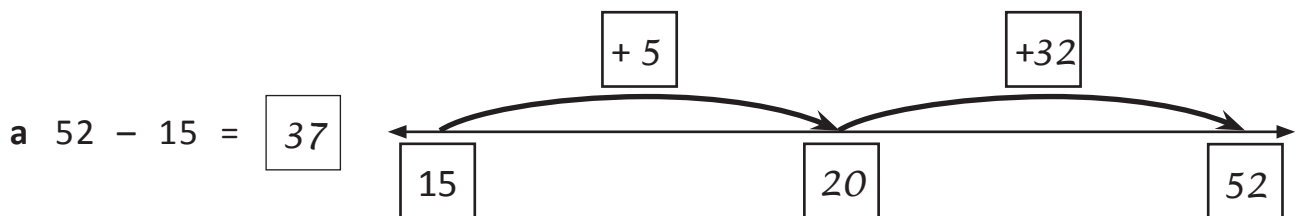
# Subtraction mental strategies – bridge to ten

Bridge to the next ten and then count on what is left.

$$25 - 16 = \boxed{9}$$



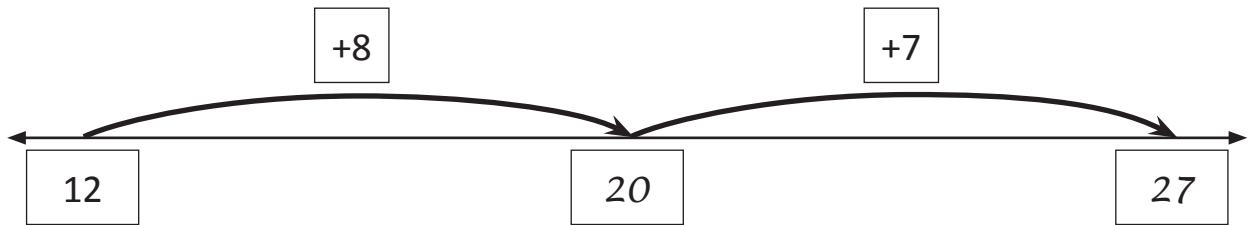
6 Use the number lines to bridge to ten:



# Subtraction mental strategies – bridge to ten

7 Complete the subtraction frame to match this number line:

$$\boxed{27} - \boxed{12} = \boxed{15}$$

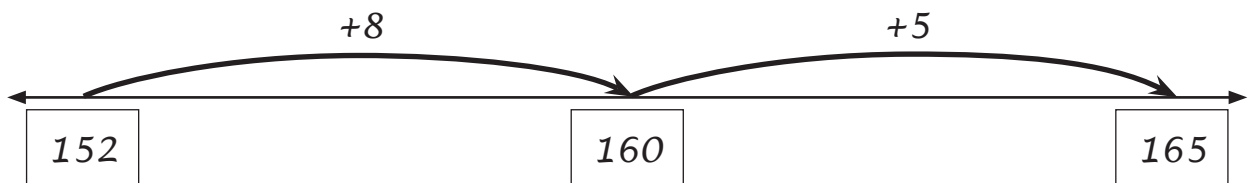


8 Here is a jar of 165 shells. Three kids guessed how many shells were in the jar. Use bridge to ten on the number lines to show how close each guess was. The first one is done for you.



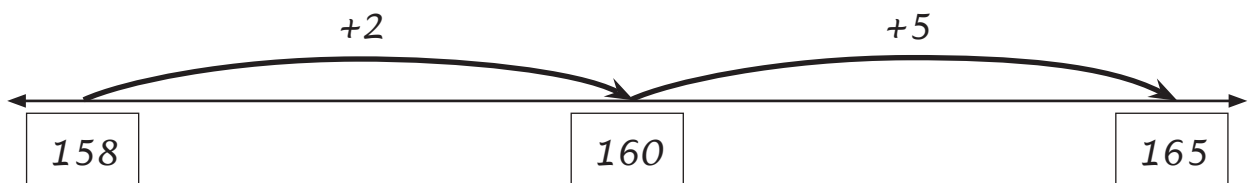
a Jo's guess: 152

$$\boxed{165} - \boxed{152} = \boxed{13}$$



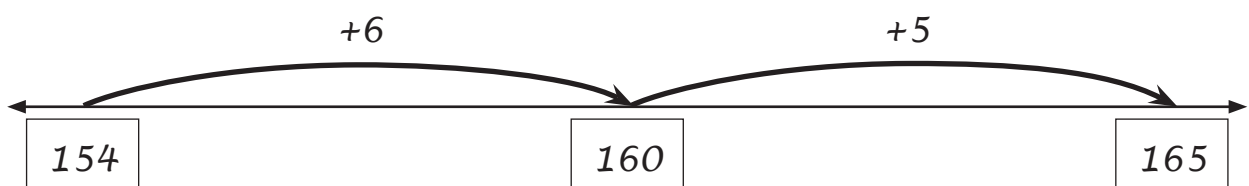
b Liam's guess: 158

$$\boxed{165} - \boxed{158} = \boxed{7}$$



c Joel's guess: 154

$$\boxed{165} - \boxed{154} = \boxed{11}$$

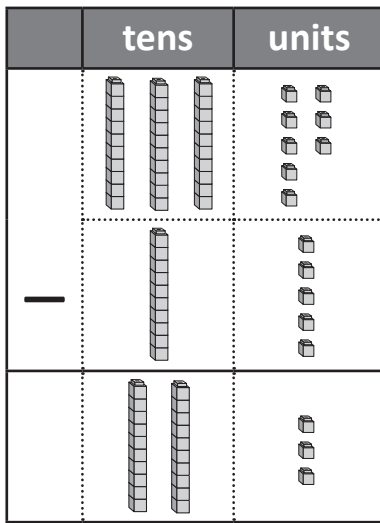


d Whose guess was the closest? Liam's



# Written methods – subtraction to 99, no regrouping

Here is the written method for subtraction. The longs and shorts show you the place value. But you actually use digits.



	tens	units
	3	8
–	1	5
	2	3

1 Subtract these using the written method. Subtract the units then the tens. Write your answer neatly in line with the place value columns:

a

	tens	units
	6	3
–	3	2
	3	1

b

	tens	units
	8	7
–	4	3
	4	4

c

	tens	units
	7	7
–	5	3
	2	4

d

	tens	units
	5	8
–	4	2
	1	6

e

	tens	units
	7	8
–	3	2
	4	6

f

	tens	units
	6	8
–	3	5
	3	3

g

	tens	units
	6	7
–	1	2
	5	5

h

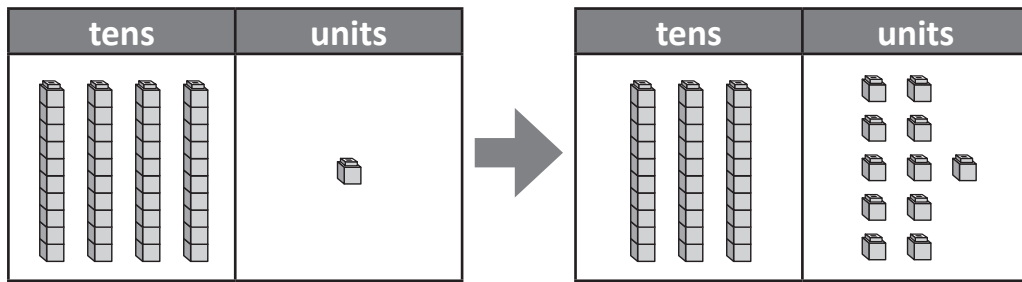
	tens	units
	3	4
–	1	3
	2	1

i

	tens	units
	9	7
–	2	6
	7	1

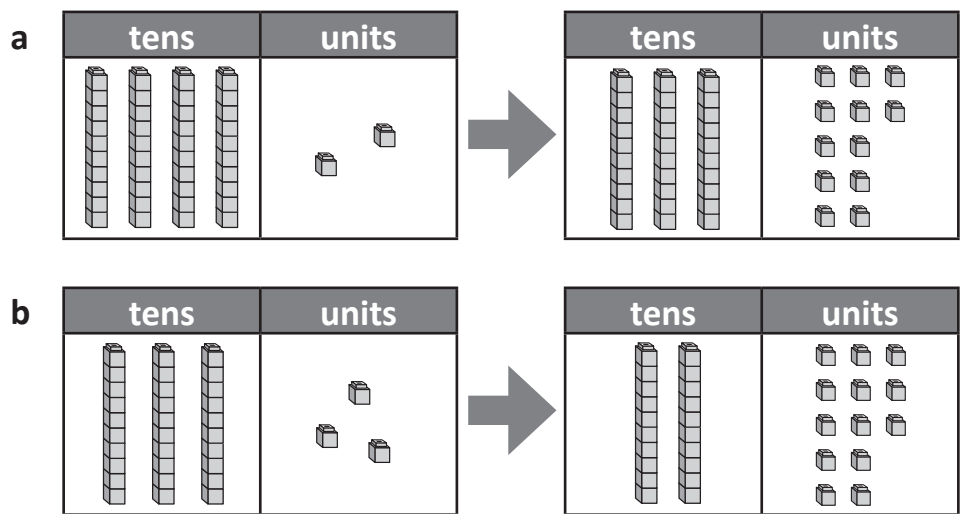
# Written methods – subtraction to 99 with regrouping

These place value boards show how we can regroup a ten into units.

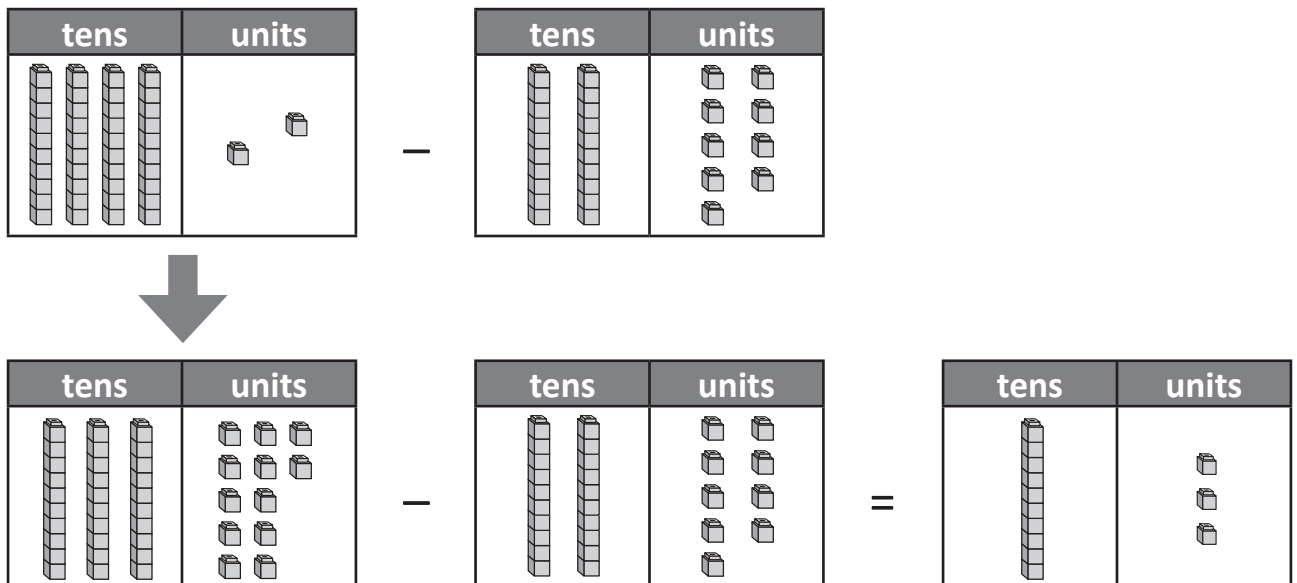


4 tens and 1 unit is now 3 tens and 11 units.

- 1** For each set of place value boards, regroup a ten into units and show the new amount on the next board. Just use straight lines for tens and squares for units.



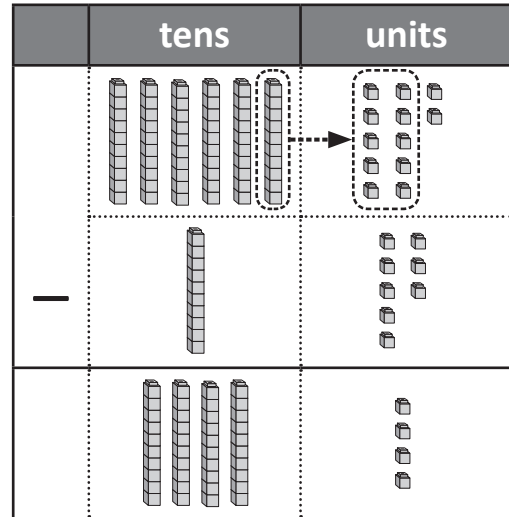
- 2** Complete this subtraction problem shown in longs and shorts. Regroup a ten into units and then subtract. Show your answer in longs and shorts:



# Written methods – subtraction to 99 with regrouping

Now that you can regroup a ten on the place value board, we can look at written subtraction with regrouping.

Here is  $62 - 18$  shown in longs and shorts. If we regroup a ten into units, we can now subtract the units.



Now look at the written method for subtraction when regrouping.

e: 40

	tens	units
	<del>6</del> <sup>5</sup>	<del>2</del> <sup>12</sup>
-	1	8
	4	4

First, estimate the answer:

$60 - 20 = 40$ . You estimate by rounding to the nearest 10.

Look at the units. We can't subtract 8 from 2, so we regroup a ten into units.

We now have 12 units. 12 subtract 8 is 4, so we write 4 in the units column. Now subtract the tens. 5 tens subtract 1 ten is 4 tens. Write 4 in the tens column.

Is our answer reasonable? Yes, because it is close to our estimate.

**3** Complete these written subtraction problems with regrouping. Start by writing your estimate:

a e: 40

	tens	units
	<del>7</del> <sup>6</sup>	<del>2</del> <sup>12</sup>
-	2	8
	4	4

b e: 10

	tens	units
	<del>5</del> <sup>4</sup>	<del>2</del> <sup>12</sup>
-	4	3
		9

c e: 30

	tens	units
	<del>6</del> <sup>5</sup>	<del>1</del> <sup>11</sup>
-	3	4
	2	7

Continued on page 39.

# Written methods – subtraction to 99 with regrouping

Continued from page 38.

**3** Complete these written subtraction problems with regrouping. Start by writing your estimate:

**d** e: 40

	tens	units
	<del>4</del> 5	<del>1</del> 6
-	1	8
	3	8

**e** e: 30

	tens	units
	<del>5</del> 6	<del>1</del> 2
-	3	3
	2	9

**f** e: 70

	tens	units
	<del>8</del> 9	<del>1</del> 6
-	2	8
	6	8

**g** e: 20

	tens	units
	<del>3</del> 4	<del>1</del> 1
-	2	4
	1	7

**h** e: 40

	tens	units
	<del>6</del> 7	<del>1</del> 6
-	3	9
	3	7

**i** e: 30

	tens	units
	<del>8</del> 9	<del>1</del> 7
-	6	8
	2	9

**4** What is the digit behind the star?

**a**

	tens	units
	7	2
-	5	★
	1	6

★ =

**b**

	tens	units
	8	★
-	5	9
	2	5

★ =

**c**

	tens	units
	7	9
-	5	★
	2	4

★ =