



214 + 138

214 + 138 = 352

## Addition and Subtraction



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# Series F – Addition and Subtraction

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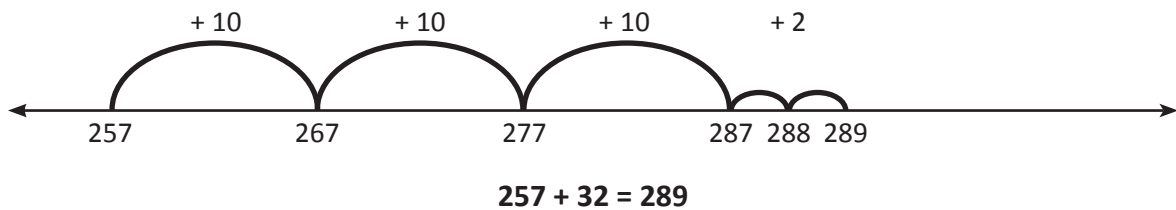
Nicola Herringer



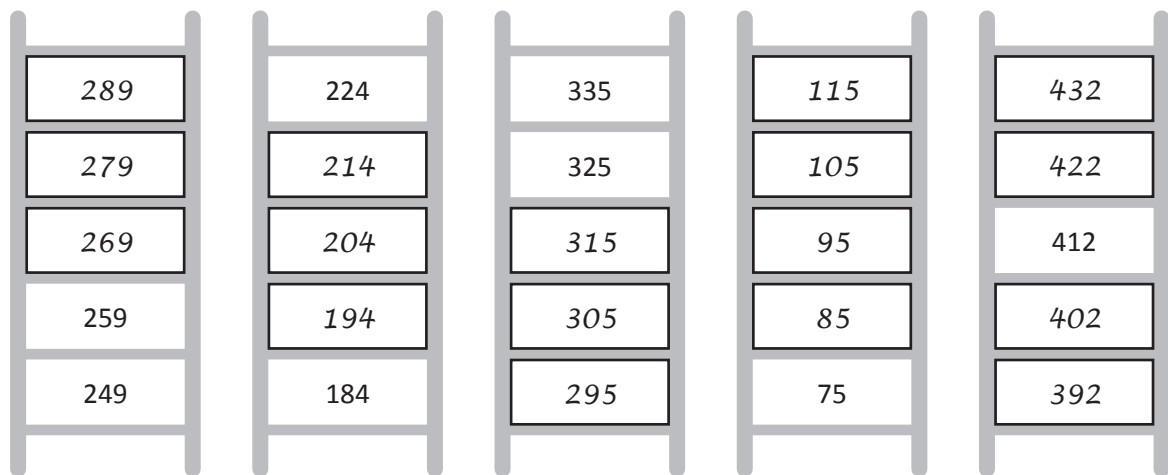
# Addition mental strategies – jump strategy

When we add we can use the jump strategy to help us. Look at  $257 + 32$ :

- 1 First we jump up by the tens
- 2 Then we jump up by the units

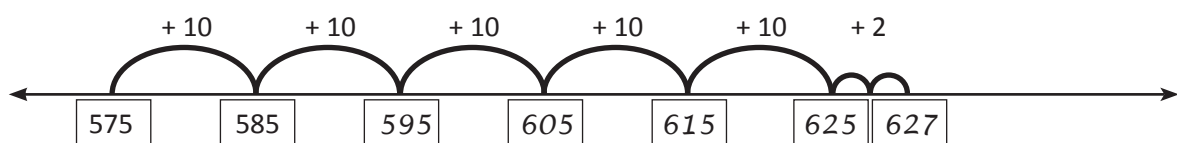


- 1 Warm up with jumping by tens up and down these ladders:

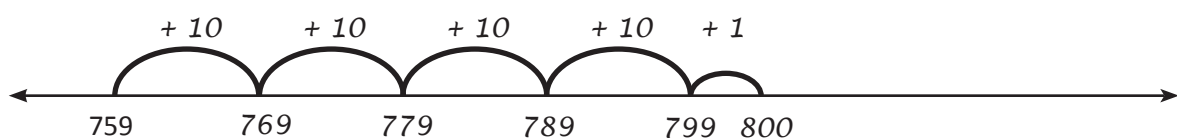


- 2 Use the jump strategy to complete these additions:

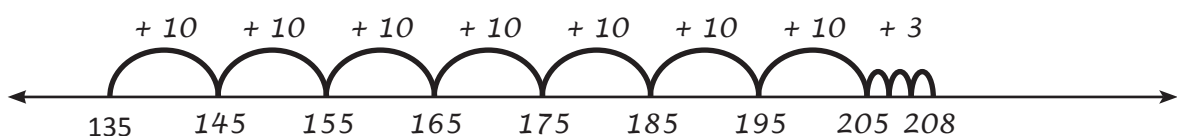
a  $575 + 52 =$  627



b  $759 + 41 =$  800

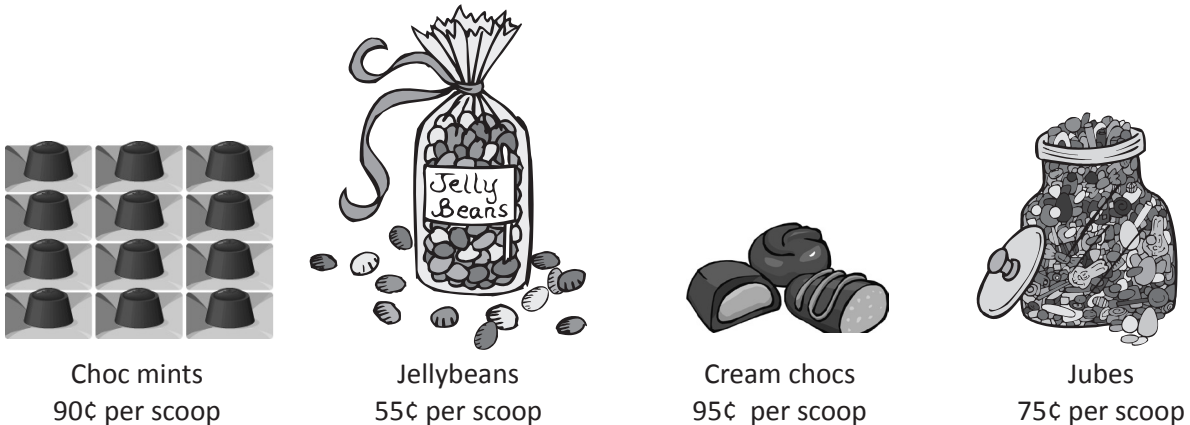


c  $135 + 73 =$  208

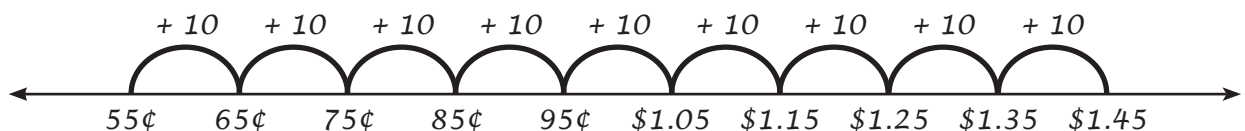


## Addition mental strategies – jump strategy

- 3 A group of friends each bought a bag of mixed lollies at a lolly bar. Practise using the jump strategy to solve each problem. Write your answer and any working out in the space below each problem:



- a How much did Liam spend if he bought a scoop of jellybeans and a scoop of choc mints?



- b How much did Ruby spend if she bought a scoop of cream chocs and a scoop of jubes?

\$1.70

- c How much did Rea spend if she bought one scoop of each type?

\$3.15

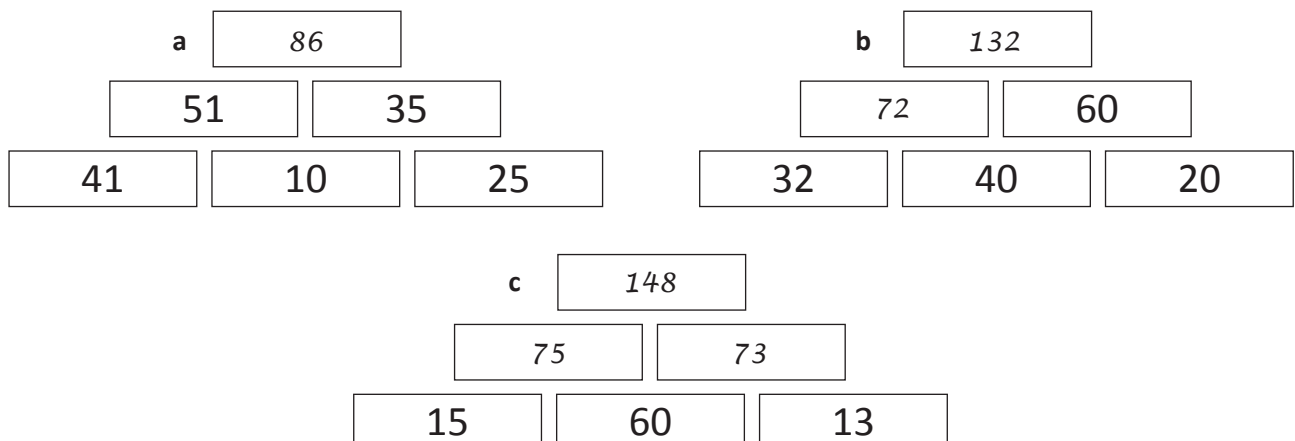
- d Rachel spent \$1.85 on 2 scoops of lollies. Use guess, check and improve to work out which 2 scoops she could have bought.

*Choc mints and cream chocs.*

Remember with addition, you can start with either number.



- 4 Use the jump strategy to help you finish these addition walls. Can you see how they work?



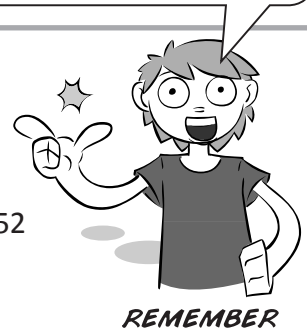
# Addition mental strategies – split strategy

138 can be split into 100, 30 and 8.

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

$$214 + 138 \begin{cases} 100 \\ 30 \\ 8 \end{cases} \rightarrow 214 + 100 = 314 \rightarrow 314 + 30 = 344 \rightarrow 344 + 8 = 352$$

$$214 + 138 = 352$$



**1 Use the split strategy to add the numbers. The first one has been done for you.**

a  $623 + 28 \begin{cases} 20 \\ 8 \end{cases}$

$$623 + 20 = 643$$

$$643 + 8 = 651$$

$$623 + 28 = 651$$

b  $38 + 26 \begin{cases} 20 \\ 6 \end{cases}$

$$38 + 20 = 58$$

$$58 + 6 = 64$$

$$38 + 26 = \boxed{64}$$

c  $156 + 142 \begin{cases} 100 \\ 40 \\ 2 \end{cases}$

$$156 + 100 = 256$$

$$256 + 40 = 296$$

$$296 + 2 = 298$$

$$156 + 142 = \boxed{298}$$

**2 These problems have been split and some have been solved already. Lucky, hey? You just have to work out what the second numbers were before they were split and answer any unsolved problems:**

a  $416 + 90 + 1 = 507$

was

$$416 + \underline{91}$$

b  $230 + 30 + 3 = \boxed{263}$

was

$$230 + \underline{33}$$

c  $283 + 60 + 7 = \boxed{350}$

was

$$283 + \underline{67}$$

d  $532 + 60 + 1 = \boxed{593}$

was

$$532 + \underline{61}$$

e  $425 + 100 + 40 + 2 = \boxed{567}$

was

$$425 + \underline{142}$$

f  $129 + 200 + 40 + 6 = \boxed{375}$

was

$$129 + \underline{246}$$

**3 Work out the answers to these questions by using the split strategy. See if you can do the working in your head. If it helps, make notes as you go:**

a  $173 + 36 = \boxed{209}$

b  $446 + 51 = \boxed{497}$

c  $112 + 83 = \boxed{195}$

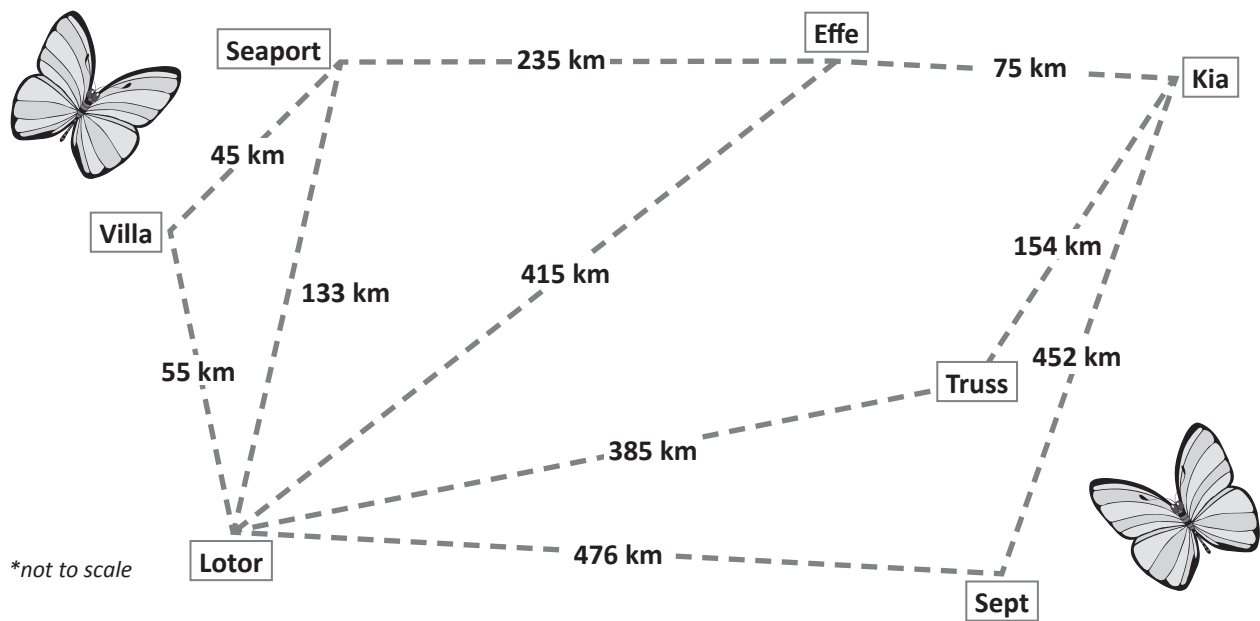
d  $724 + 72 = \boxed{796}$

e  $475 + 122 = \boxed{597}$

f  $123 + 164 = \boxed{287}$

Addition mental strategies – split strategy

4 Butterflies can fly great distances. Use the map and the split strategy to calculate the total distance flown by each butterfly in the table below:

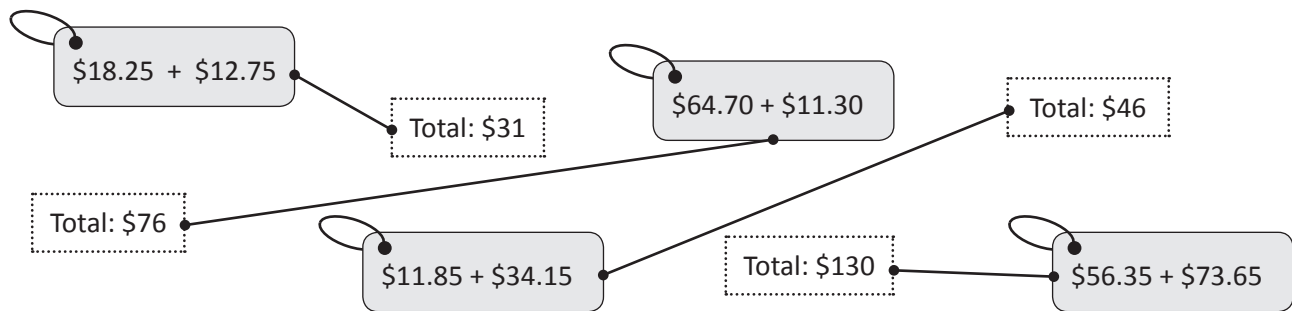


Flight Path	Distances to add	Total distance
The Field Crescent flies from Lotor to Villa and then to Seaport	55 + 45	100 km
The Painted Lady flies from Sept to Lotor and then to Villa	476 + 55	531 km
The Fawn flies from Seaport to Effe and then to Kia	235 + 75	310 km
The Monarch flies from Sept to Kia and then to Effe	452 + 75	527 km

We often use the split strategy when adding money. We split the amounts into dollars and cents, work out each part and then add the two answers together:

$$\begin{aligned} \$28.50 + \$16.80 &= (\$28 + \$16) + (\$0.50 + \$0.80) \\ &= \$44 + \$1.30 \\ &= \$45.30 \end{aligned}$$

5 Match the price tags with the bills:





# Addition mental strategies – compensation strategy

Sometimes we round one number in the problem to make it easier to do in our heads. Then we adjust our answer to compensate:

$$405 + 69 = \boxed{474}$$

$$405 + 70 \quad (-1) \quad \text{I rounded up by 1}$$

$$475 \quad (-1) = 474 \quad \text{so I subtract 1.}$$

I added 1 extra to round to 70 so I have to take 1 off my answer.



**THINK**

## 1 Warm up by rounding these numbers to the closest ten:

a 48 50

b 67 70

c 232 230

d 74 70

e 89 90

f 456 460

g 955 960

h 786 790

## 2 Solve these problems using compensation:

a  $45 + 37 = \boxed{82}$

$$45 + 40 \quad (-3)$$

$$\underline{85} \quad (-3) = \underline{82}$$

b  $66 + 18 = \boxed{84}$

$$66 + \underline{20} \quad (-2)$$

$$\underline{86} \quad (-2) = \underline{84}$$

c  $86 + 49 = \boxed{135}$

$$86 + \underline{50} \quad (-1)$$

$$\underline{136} \quad (-1) = \underline{135}$$

d  $124 + 57 = \boxed{181}$

$$124 + \underline{60} \quad (-3)$$

$$\underline{184} \quad (-3) = \underline{181}$$

We can also round down to the closest ten. When we do this we add to compensate.

## 3 Round these numbers to the closest ten. Then compensate by adding:

a  $26 + 42 = \boxed{68}$

$$26 + 40 \quad (+2)$$

$$\underline{66} \quad (+2) = \underline{68}$$

b  $35 + 63 = \boxed{98}$

$$35 + \underline{60} \quad (+3)$$

$$\underline{95} \quad (+3) = \underline{98}$$

c  $96 + 21 = \boxed{117}$

$$96 + \underline{20} \quad (+1)$$

$$\underline{116} \quad (+1) = \underline{117}$$

d  $145 + 34 = \boxed{179}$

$$145 + \underline{30} \quad (+4)$$

$$\underline{175} \quad (+4) = \underline{179}$$

# Addition mental strategies – compensation strategy

## 4 Connect the statements with their answer:

When we round down we compensate by

subtracting

When we round up we compensate by

adding

## 5 Solve these addition problems using compensation. Decide if you need to round up or down and compensate accordingly. Make as many notes as you need to:

a  $425 + 67$

$= 492$

b  $673 + 98$

$= 771$

c  $275 + 91$

$= 366$

d  $784 + 32$

$= 816$

e  $316 + 73$

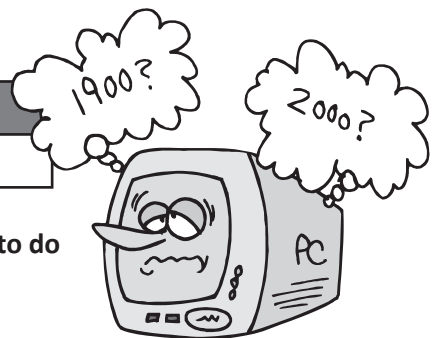
$= 389$

f  $115 + 79$

$= 194$

## 6 A website tracked the number of visitors over 5 days:

Monday	Tuesday	Wednesday	Thursday	Friday
124	199	213	158	236



Use the compensation method to answer the following questions. Try to do the sum in your head, then show how you did it in the space below:

a How many people looked at the website on Monday and Tuesday?

$323$

b How many people looked at the website on Thursday and Friday?

$394$

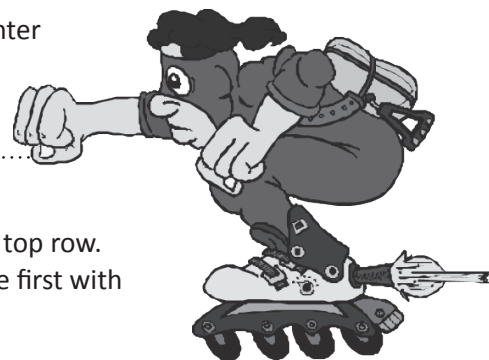
c On which 2 days did the total reach 449 visitors?

*Wednesday and Friday*



**Getting ready**

This is a game for 2 players. You will need a counter each, a die and some paper to keep score.



**What to do**

Each of you will choose a starting square on the top row. The object of this game is to get to the finish line first with the largest total.

Roll a die. If you throw:

- a 1 or 2, you can only move one square across the row in either direction;
- a 3 or 4 means you can move one square diagonally;
- a 5 or 6 means you move one downwards.

Add the two numbers using a strategy of your choice. Record your total as you go. Who will arrive at the finish with the largest score? Good luck!

Choose the best addition mental strategy.



**THINK**

81	76	93	42	89	50	66	74
62	28	54	37	63	45	95	39
87	70	69	83	75	57	12	49
63	93	52	44	86	67	37	58
38	47	83	17	95	72	49	56
90	73	68	39	54	23	85	43
41	36	51	91	78	66	17	32
63	81	27	11	44	46	50	74
FINISH							

Can you find the route that would give you the largest possible score?



**DISCOVER**



Work out the answers to these sums in your head. Each answer matches a letter in the list on the right. Write the letters next to your answers, then unjumble the letters to find the name of a city.



Try competing with a friend to be the fastest to do all of the sums and work out the names of the three cities.

**a**  $701 + 126 =$  827 Letter Y

$501 + 81 =$  582 Letter D

$810 + 117 =$  927 Letter E

$304 + 205 =$  509 Letter S

$810 + 17 =$  827 Letter Y

$230 + 626 =$  856 Letter N

The city is SYDNEY

**b**  $293 + 216 =$  509 Letter S

$811 + 111 =$  922 Letter A

$650 + 130 =$  780 Letter I

$610 + 57 =$  667 Letter P

$380 + 32 =$  412 Letter R

The city is PARIS

**c**  $816 + 40 =$  856 Letter N

$913 + 62 =$  975 Letter O

$751 + 105 =$  856 Letter N

$830 + 79 =$  909 Letter L

$882 + 93 =$  975 Letter O

$471 + 111 =$  582 Letter D

The city is LONDON

## Code

A = 922

B = 754

C = 141

D = 582

E = 927

F = 735

G = 222

H = 358

I = 780

J = 989

K = 481

L = 909

M = 398

N = 856

O = 975

P = 667

Q = 555

R = 412

S = 509

T = 538

U = 656

V = 1110

W = 1150

X = 716

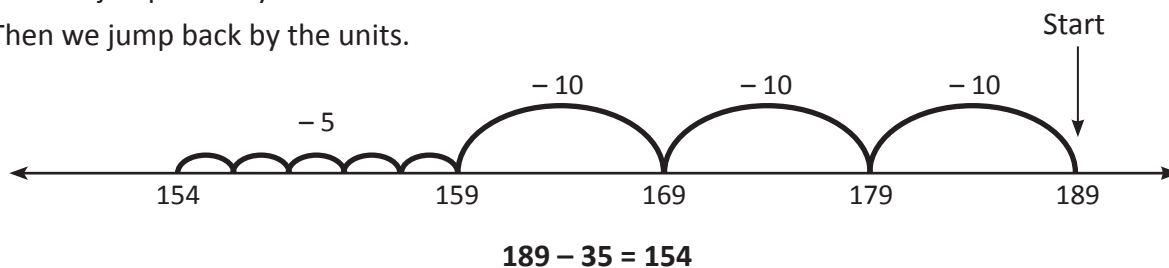
Y = 827

Z = 1907

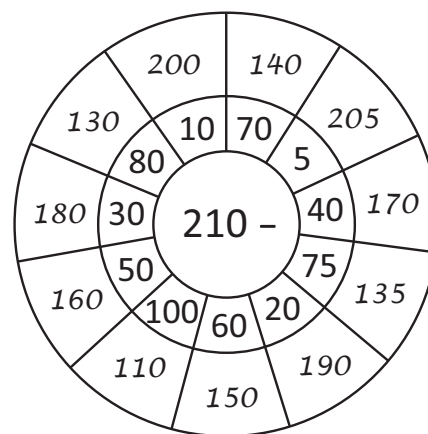
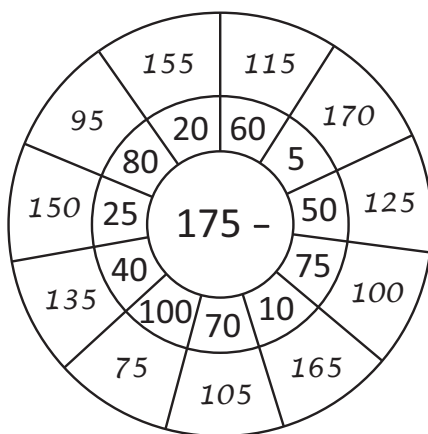
# Subtraction mental strategies – jump strategy

When we subtract we can use the jump strategy to help us. Look at  $189 - 35$ :

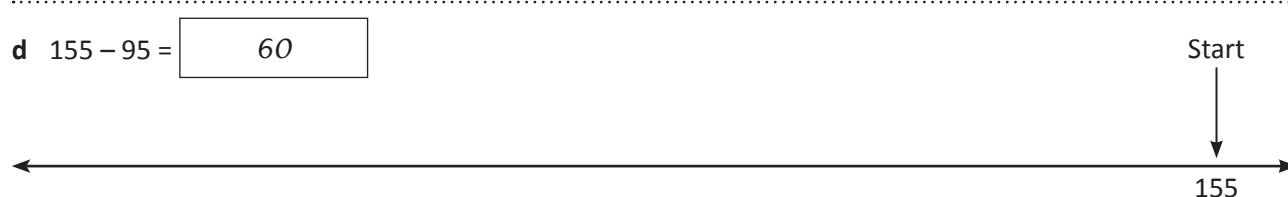
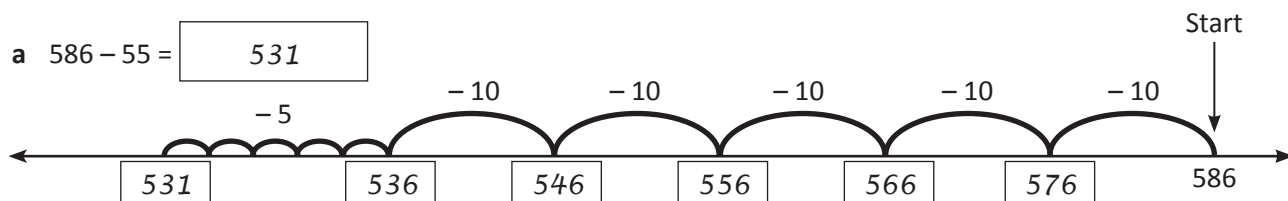
- 1 First we jump back by the tens.
- 2 Then we jump back by the units.



- 1 Warm up with these subtraction wheels:



- 2 Use the jump strategy to complete these subtraction problems. The first one has been started for you:



## Subtraction mental strategies – jump strategy

- 3 Work out the answers to these by using the jump strategy. See if you can do the working in your head:

a  $274 - 30 =$  244

b  $872 - 61 =$  811

c  $444 - 50 =$  394

d  $784 - 61 =$  723

e  $189 - 35 =$  154

f  $825 - 60 =$  765

- 4 An electronics store had a sale on the following video games. Use the jump strategy to work out the savings on each item:

Bionic Bozo	Revenge of the Ponies	Fitness Frenzy	Taekwondo Team
Was \$105	Was \$135	Was \$102	Was \$155
Now \$75	Now \$60	Now \$91	Now \$111
Save \$30	Save \$75	Save \$11	Save \$44



- 5 Use the prices above and the jump strategy to solve these problems. Show your answer and any working out:

- a Tahlia saved her pocket money for weeks to buy Fitness Frenzy. She had \$120 saved and bought Fitness Frenzy in the sale. How much money did she have left after the purchase?

\$29

- b Martin saved up especially for the sale and bought 2 items for \$186. He bought Bionic Bozo and which other game?

*Taekwondo Team*

- c Dana bought Taekwondo Team for her husband before the sale. What change did she receive if she paid with 2 \$100 notes?

\$45

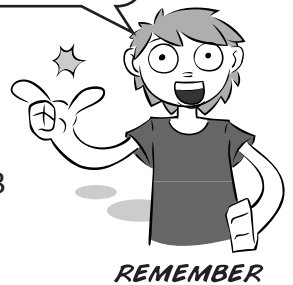
# Subtraction mental strategies – split strategy

Remember that  
215 is 200 + 10 + 5

When subtracting large numbers in our heads it can be easier to split the number to be subtracted into parts and work with each part separately.

$$468 - 215 \begin{array}{l} \swarrow 200 \\ \swarrow 10 \\ \swarrow 5 \end{array} \rightarrow 468 - 200 = 268 \rightarrow 268 - 10 = 258 \rightarrow 258 - 5 = 253$$

$$468 - 215 = 253$$



REMEMBER

1 Practise splitting these numbers into hundreds, tens and units. The first one is done for you.

a  $356 = 300 + 50 + 6$

b  $289 = \underline{200 + 80 + 9}$

c  $867 = \underline{800 + 60 + 7}$

d  $923 = \underline{900 + 20 + 3}$

e  $442 = \underline{400 + 40 + 2}$

f  $294 = \underline{200 + 90 + 4}$

2 Use the split strategy to subtract:

a  $468 - 316 \begin{array}{l} \swarrow 300 \\ \swarrow 10 \\ \swarrow 6 \end{array}$

b  $574 - 155 \begin{array}{l} \swarrow 100 \\ \swarrow 50 \\ \swarrow 5 \end{array}$

c  $457 - 323 \begin{array}{l} \swarrow 300 \\ \swarrow 20 \\ \swarrow 3 \end{array}$

$468 - 300 = \underline{168}$

$574 - 100 = \underline{474}$

$457 - 300 = \underline{157}$

$\underline{168} - 10 = \underline{158}$

$474 - 50 = \underline{424}$

$157 - 20 = \underline{137}$

$\underline{158} - 6 = \underline{152}$

$424 - 5 = \underline{419}$

$137 - 3 = \underline{134}$

$468 - 316 = \underline{152}$

$574 - 155 = \underline{419}$

$457 - 323 = \underline{134}$

3 Work out the answers to these questions then cross out the letter above each answer in the puzzle. The letters that remain will form the answer to the riddle.

a  $484 - 74 = \boxed{410}$

b  $400 - 80 = \boxed{320}$

c  $406 - 106 = \boxed{300}$

d  $410 - 40 = \boxed{370}$

e  $403 - 13 = \boxed{390}$

f  $455 - 60 = \boxed{395}$

g  $497 - 92 = \boxed{405}$

h  $505 - 25 = \boxed{480}$

i  $520 - 25 = \boxed{495}$

j  $795 - 150 = \boxed{645}$

k  $410 - 100 = \boxed{310}$

S	Y	H	O	U	E	R	X	E	L	A
300	195	410	305	150	320	505	370	595	405	200

K	Z	R	I	D	R	J	U	M	V	A
390	495	220	395	210	385	480	500	205	645	310

Riddle: What is the most rhythmic part of your body?

Y O U R E A R D R U M

## Subtraction mental strategies – split strategy

- 4 These problems have been completed. Are they correct? If not, circle where it all began to go wrong:

a  $375 - 164$

100

60

4

$$375 - 100 = 275$$

$$275 - 60 = 215$$

$$215 - 4 = 211$$

$$375 - 164 = 211 \quad \checkmark$$

b  $429 - 143$

100

40

3

$$429 - 100 = 323$$

$$323 - 4 = 319$$

$$319 - 3 = 316$$

$$429 - 143 = 316 \quad \times$$

c  $179 - 158$

100

50

8

$$179 - 100 = 79$$





$$79 - 50 = 39$$

$$39 - 8 = 31$$

$$179 - 158 = 31 \quad \times$$

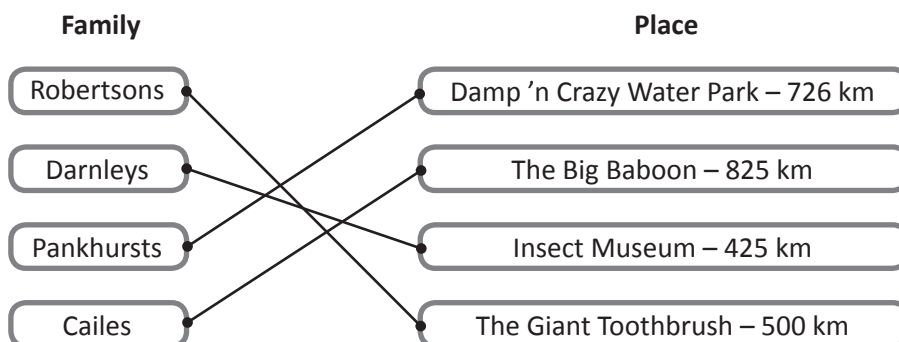
- 5 The following problems require you to add and subtract. Use the split strategy to help you solve them:

Four different families went on a holiday over Easter. Work out the distance that each car has travelled on the missing days:

	 Robertsons	 Pankhursts	 Cailes	 Darnleys
Day 1	125 km	225 km	300 km	130 km
Day 2	375 km	501 km	525 km	295 km
Day 3	235 km	110 km	125 km	270 km
Total distance	735 km	836 km	950 km	695 km

Make as many notes as you need to help you:

- 6 Assuming that each family started their holiday from the same place, work out where each family was at the end of Day 2. Connect the place with the family by drawing a line:





# Subtraction mental strategies – compensation strategy

Sometimes we round one number in the problem to make it easier to do in our heads. Then we adjust our answer to compensate:

$$486 - 59 = \boxed{427}$$

$$486 - 60 (+1) \quad \text{I rounded up by 1, which means I subtracted}$$

$$426 (+1) = 427 \quad \text{1 extra so we need to add 1 back.}$$

I took off 1 extra so I have to add 1 back.



**THINK**

- 1** Round these numbers to the closest ten. Then compensate by subtracting or adding to get back to the first number. The first one is done for you.

a  $93 = 90 + 3$

b  $48 = 50 - 2$

c  $52 = 50 + 2$

d  $76 = 80 - 4$

e  $57 = 60 - 3$

f  $37 = 40 - 3$

g  $27 = 30 - 3$

h  $68 = 70 - 2$

- 2** Solve these subtraction problems using compensation. Show all your working out:

a  $585 - 78 = \boxed{507}$

b  $894 - 71 = \boxed{823}$

c  $163 - 149 = \boxed{14}$

$$585 - 80 (+2)$$

$$894 - 70 (-1)$$

$$163 - 150 (+1)$$

$$\underline{505} (+2) = \underline{507}$$

$$\underline{824} (-1) = \underline{823}$$

$$\underline{13} (+1) = \underline{14}$$

- 3** Solve these problems using compensation. Decide if you need to round up or down and compensate accordingly:

a  $555 - 63$

$$555 - 60 (-3)$$

$$495 - 3$$

$$= 492$$

b  $775 - 98$

$$775 - 100 (+2)$$

$$675 + 2$$

$$= 677$$

c  $644 - 139$

$$644 - 140 (+1)$$

$$504 + 1$$

$$= 505$$

d  $594 - 329$

$$594 - 330 (+1)$$

$$264 + 1$$

$$= 265$$

e  $432 - 204$

$$432 - 200 (-4)$$

$$232 - 4$$

$$= 228$$



**REMEMBER**

# Subtraction mental strategies – compensation strategy

- 4 Wally the work experience boy has solved these. He is very chuffed because he solved them all correctly. Can you use his working out to establish what the original questions were?

a  $\boxed{454} - \boxed{27} = \boxed{427}$

$454 - 30 = 424 + 3 = 427$

b  $\boxed{568} - \boxed{308} = \boxed{260}$

$568 - 310 = 258 + 2 = 260$

c  $\boxed{994} - \boxed{78} = \boxed{916}$

$994 - 80 = 914 + 2 = 916$

d  $\boxed{678} - \boxed{452} = \boxed{226}$

$678 - 450 = 228 - 2 = 226$

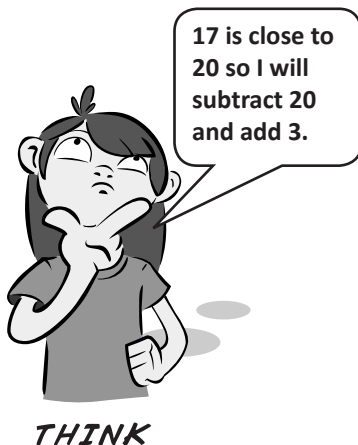
e  $\boxed{684} - \boxed{59} = \boxed{625}$

$684 - 60 = 624 + 1 = 625$

f  $\boxed{348} - \boxed{128} = \boxed{220}$

$348 - 130 = 218 + 2 = 220$

- 5 Use the compensation method to count backwards and complete these number patterns.



- 17	- 21	- 98	- 33
600	124	395	800
583	103	297	767
566	82	199	734
549	61	101	701

- 6 These subtraction problems have been partially solved using compensation. Colour match the steps that were used and complete the missing parts. The first one has been done for you:

$\$4.50 - \$2.75$	$\$5.70 - \$3.00 = \$2.70$	$\$2.45 + \underline{\$0.15} =$	$\$4.35$
$\$10.00 - \$6.25$	$\$4.50 - \$3.00 = \$1.50$	$\$4.25 + \underline{\$0.10} =$	$\$3.75$
$\$5.70 - \$3.05$	$\$17.25 - \$13.00 = \$4.25$	$\$1.50 + \underline{\$0.25} =$	$\$2.60$
$\$17.25 - \$12.90$	$\$9.45 - \$7.00 = \$2.45$	$\$4.00 - \underline{\$0.25} =$	$\$2.65$
$\$9.45 - \$6.85$	$\$10.00 - \$6.00 = \$4.00$	$\$2.70 - \underline{\$0.05} =$	$\$1.75$



**Getting ready**

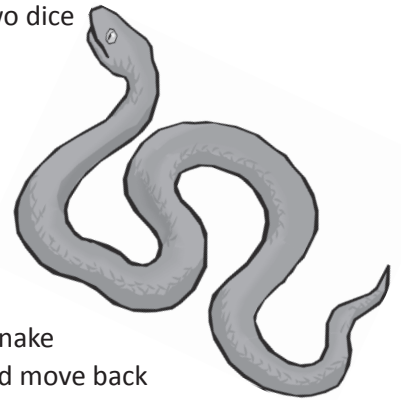
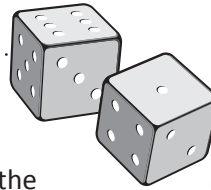
You can play with 1 to 4 players and you will need two dice and a love of snakes!



**What to do**

Start at 200. Throw the dice and add the numbers. The answer is the number of spaces you can move.

Follow the numbers. If you land on a square with a snake you must work out the answer to the subtraction and move back to that square! The winner is the first to finish ... alive!



263 <b>Finish</b>	262 (-25)	261	260	259 (-32)	258	257	256
248	249 (-14)	250	251	252	253 (-50)	254	255 (-17)
247	246	245	244 (-9)	243	242	241	240
232 (-20)	233	234	235	236 (-3)	237	238 (-14)	239
231	230	229 (-21)	228	227	226 (-11)	225	224
216 (-8)	217	218	219 (-5)	220 (-17)	221	222	223
215	214	213 (-10)	212	211	210	209 (-6)	208
200 <b>Start</b>	201	202	203	204 (-3)	205	206	207



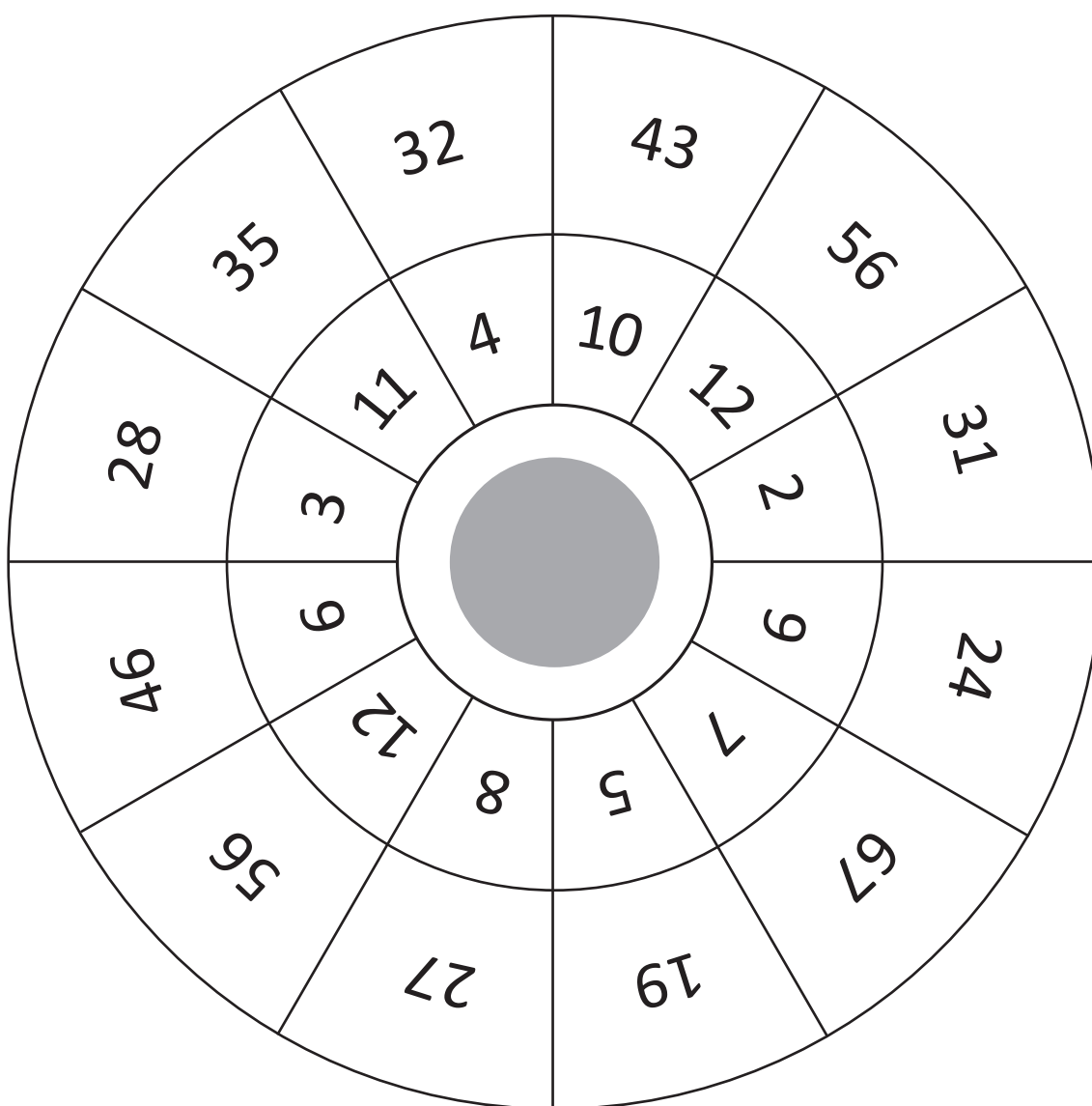
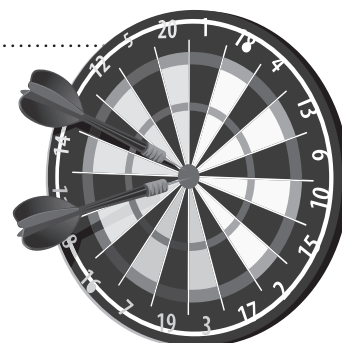
A game of darts is usually scored by subtracting the number that you throw from 301. Throwing darts can be dangerous in a classroom so you will be throwing dice instead!

You can play with 1 to 4 people. You will take turns. You will need a copy of this page, two dice, a pencil and paper to keep score.



Throw two dice, find the total and look for the number in the inner ring. The number next to it in the outer ring is the one that you will subtract from. Start subtracting from 301, keeping score as you go.

The winner is the first to get past 0!



## Written methods – addition

	H	T	U
	<sup>1</sup> 2	<sup>1</sup> 3	5
+	4	8	9
	7	2	4

How do we add using a written strategy?

First we estimate:  $235 + 500 = 735$ . Our answer will be around 735.

We start with the units.  $5 + 9$  is 14 units. We rename this as 1 ten and 4 units.

We put the 4 in the units column and carry the 1 to the tens column.

3 tens plus 8 tens plus the carried ten is 12 tens.

We rename this as 1 hundred and 2 tens

We put the 2 in the tens column and carry the 1 to the hundreds column.

We add the hundreds. We put 7 in the hundreds column.

Finally we check against our estimate – do they match?

### 1 Solve these addition problems. First estimate the answers:

e: 850	e: 800	e: 600	e: 700
--------	--------	--------	--------

a	b	c	d																																																																
<table> <tr><th></th><th>H</th><th>T</th><th>U</th></tr> <tr><td></td><td>5</td><td>4</td><td>1</td></tr> <tr><td>+</td><td>3</td><td>1</td><td>3</td></tr> <tr><td></td><td>8</td><td>5</td><td>4</td></tr> </table>		H	T	U		5	4	1	+	3	1	3		8	5	4	<table> <tr><th></th><th>H</th><th>T</th><th>U</th></tr> <tr><td></td><td><sup>1</sup>1</td><td>7</td><td>3</td></tr> <tr><td>+</td><td>5</td><td>9</td><td>2</td></tr> <tr><td></td><td>7</td><td>6</td><td>5</td></tr> </table>		H	T	U		<sup>1</sup> 1	7	3	+	5	9	2		7	6	5	<table> <tr><th></th><th>H</th><th>T</th><th>U</th></tr> <tr><td></td><td>3</td><td>8</td><td>4</td></tr> <tr><td>+</td><td>2</td><td>1</td><td>3</td></tr> <tr><td></td><td>5</td><td>9</td><td>7</td></tr> </table>		H	T	U		3	8	4	+	2	1	3		5	9	7	<table> <tr><th></th><th>H</th><th>T</th><th>U</th></tr> <tr><td></td><td><sup>1</sup>2</td><td><sup>1</sup>6</td><td>8</td></tr> <tr><td>+</td><td>4</td><td>9</td><td>3</td></tr> <tr><td></td><td>7</td><td>6</td><td>1</td></tr> </table>		H	T	U		<sup>1</sup> 2	<sup>1</sup> 6	8	+	4	9	3		7	6	1
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e: 5 600	e: 5 800	e: 6 500	e: 4 600
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### 2 Use these cards to make 5 different addition problems using 2 and 3 digit numbers. Show your working out:

2	3	4	5	6	7	8	9	=	+
---	---	---	---	---	---	---	---	---	---

*Answers will vary.*

## Written methods – addition

	H	T	U
	5	6	2
+	1	4	5
			7
	1	0	0
	6	0	0
	7	0	7

We can also add each place value separately and then add these together:

$$2 + 5 = 7$$

$$60 + 40 = 100$$

$$500 + 100 = 600$$

$$7 + 100 + 600 = 707$$

3 Solve these addition problems using a written strategy of your choice:

e: 800

a

	H	T	U
	3	8	5
+	4	2	3
			8
	1	0	0
	7	0	0
	8	0	8

e: 600

b

	H	T	U
	4	1	2
+	2	3	8
		1	0
		4	0
	6	0	0
	6	5	0

e: 990

c

	H	T	U
	9	2	2
+		6	9
		1	1
		8	0
	9	0	0
	9	9	1

e: 600

d

	H	T	U
	1	8	8
+	4	1	4
		1	2
		9	0
	5	0	0
	6	0	2

e: 750

e

	H	T	U
	7	2	4
+		2	9
		1	3
		4	0
	7	0	0
	7	5	3

e: 180

f

	H	T	U
		3	6
+	1	4	4
		1	0
		7	0
	1	0	0
	1	8	0

4 Can you work out what the missing numbers should be? Remember there may have been some regrouping!

Guess, check and improve will help me here.

a

	H	T	U
	4	3	5
+	4	2	2
	8	5	7

b

	H	T	U
	<sup>1</sup> 1	<sup>1</sup> 5	9
+	2	4	7
	4	0	6

c

	H	T	U
	5	<sup>1</sup> 6	7
+	4	2	9
	9	9	6



DISCOVER

## Written methods – subtraction

	H	T	U
	9	<del>8</del>	<sup>14</sup>
–	2	7	8
	7	1	6

First we estimate:  $1000 - 300 = 700$

We start with the units. We can't take 8 away from 4 so we must rename one of the tens as units. We now have 14 units.

14 subtract 8 is 6 so we put the 6 in the units column.

8 tens subtract 7 tens is 1 ten so we put a 1 in the tens column.

We subtract the hundreds. 9 hundred subtract 2 hundred is 7 hundred. Put a 7 in the hundreds column.

We check the answer against our estimate.

### 1 Complete the subtraction problems:

e: 4 800

a

	Th	H	T	U
	4	9	<del>7</del>	<sup>12</sup>
–		1	5	3
	4	8	2	9

e: 2 100

b

	Th	H	T	U
	2	<del>8</del>	<del>14</del>	<sup>1</sup>
–		8	7	8
	2	0	7	3

e: 3 300

c

	Th	H	T	U
	3	<del>7</del>	<del>16</del>	<sup>1</sup>
–		5	8	6
	3	2	8	6

When a problem asks us to find the difference, we subtract. We always start with the larger number.

Showtown	4129 km	Tidings	1233 km
Normanville	3262 km	Ringer	7869 km
Roper	7419 km	Harpville	486 km
Ace Bay	1226 km	Eagle Bay	595 km

### 2 Solve these to find the difference problems:

a How far from Showtown to Ringer?

	Th	H	T	U
	7	8	6	9
–	4	1	2	9
	3	7	4	0

km

b What is the distance from Normanville to Tidings?

	Th	H	T	U
	3	2	<del>5</del>	<sup>12</sup>
–	1	2	3	3
	2	0	2	9

km

c What is the distance from Roper to Eagle Bay?

	Th	H	T	U
	<del>6</del>	<del>13</del>	<sup>1</sup>	9
–		5	9	5
	6	8	2	4

km

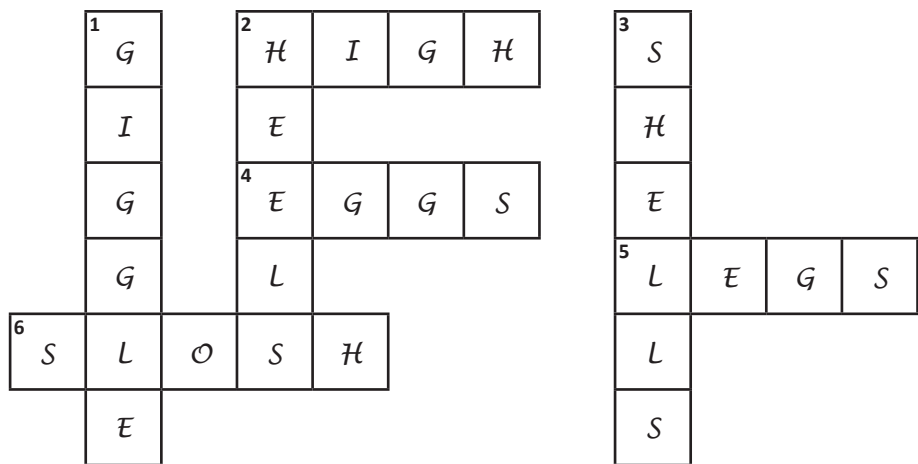
d How far from Normanville to Ace Bay?

	Th	H	T	U
	3	2	<del>5</del>	<sup>12</sup>
–	1	2	2	6
	2	0	3	6

km

## Written methods – subtraction

- 3 Use a calculator to add each group of numbers. Turn your calculator upside down to see a word on the screen. Use the key below to help you identify the letters. Write each word in the correct place in the crossword puzzle.



### CLUES

#### Across

2.  $3\,025 + 1\,589 = \underline{\quad 4\,614 \quad}$   
 4.  $4\,456 + 1\,207 = \underline{\quad 5\,663 \quad}$   
 5.  $2\,776 + 2\,861 = \underline{\quad 5\,637 \quad}$   
 6.  $12\,824 + 32\,251 = \underline{\quad 45\,075 \quad}$

#### Down

1.  $34\,569 + 342\,047 = \underline{\quad 376\,616 \quad}$   
 2.  $20\,786 + 36\,548 = \underline{\quad 57\,334 \quad}$   
 3.  $456\,789 + 120\,556 = \underline{\quad 577\,345 \quad}$

#### Key

0	1	3	4	5	6	7	8
O	I	E	H	S	G	L	B

- 4 The answer is 42. What could the missing numbers be? Come up with 5 possibilities:

	H	T	U
-			
		4	2

	H	T	U
-			
		4	2

	H	T	U
-			
		4	2

Answers will vary.

	H	T	U
-			
		4	2

	H	T	U
-			
		4	2



# Written methods – adding and subtracting decimals

When we add and subtract decimals we follow the same rules we use when working with whole numbers. We need to make sure we line up the place values and the decimal points:

	T	U	T
	<sup>3</sup> <del>3</del>	<sup>1</sup> 3	• 3
-	1	7	• 2
	2	6	• 1

**1** Estimate and solve these addition problems. Remember to put the decimal point into your answers:

<p><b>a</b></p> <p>e: 85</p> <table border="1"> <thead> <tr> <th></th> <th>T</th> <th>U</th> <th>T</th> </tr> </thead> <tbody> <tr> <td></td> <td>5</td> <td>4</td> <td>• 1</td> </tr> <tr> <td>+</td> <td>3</td> <td>1</td> <td>• 3</td> </tr> <tr> <td></td> <td>8</td> <td>5</td> <td>• 4</td> </tr> </tbody> </table>		T	U	T		5	4	• 1	+	3	1	• 3		8	5	• 4	<p><b>b</b></p> <p>e: 90</p> <table border="1"> <thead> <tr> <th></th> <th>T</th> <th>U</th> <th>T</th> </tr> </thead> <tbody> <tr> <td></td> <td><sup>1</sup>3</td> <td>2</td> <td>• 3</td> </tr> <tr> <td>+</td> <td>5</td> <td>8</td> <td>• 1</td> </tr> <tr> <td></td> <td>9</td> <td>0</td> <td>• 4</td> </tr> </tbody> </table>		T	U	T		<sup>1</sup> 3	2	• 3	+	5	8	• 1		9	0	• 4	<p><b>c</b></p> <p>e: 90</p> <table border="1"> <thead> <tr> <th></th> <th>T</th> <th>U</th> <th>T</th> </tr> </thead> <tbody> <tr> <td></td> <td>4</td> <td>8</td> <td>• 4</td> </tr> <tr> <td>+</td> <td>4</td> <td>1</td> <td>• 3</td> </tr> <tr> <td></td> <td>8</td> <td>9</td> <td>• 7</td> </tr> </tbody> </table>		T	U	T		4	8	• 4	+	4	1	• 3		8	9	• 7	<p><b>d</b></p> <p>e: 70</p> <table border="1"> <thead> <tr> <th></th> <th>T</th> <th>U</th> <th>T</th> </tr> </thead> <tbody> <tr> <td></td> <td><sup>1</sup>2</td> <td><sup>1</sup>7</td> <td>• 8</td> </tr> <tr> <td>+</td> <td>3</td> <td>9</td> <td>• 3</td> </tr> <tr> <td></td> <td>6</td> <td>7</td> <td>• 1</td> </tr> </tbody> </table>		T	U	T		<sup>1</sup> 2	<sup>1</sup> 7	• 8	+	3	9	• 3		6	7	• 1																
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	5	1	• 7	4																																																																															

**2** Estimate and solve these subtraction problems. Remember to put the decimal point into your answers:

<p><b>a</b></p> <p>e: 5</p> <table border="1"> <thead> <tr> <th></th> <th>T</th> <th>U</th> <th>T</th> </tr> </thead> <tbody> <tr> <td></td> <td>8</td> <td>• 4</td> <td>3</td> </tr> <tr> <td>-</td> <td>3</td> <td>• 2</td> <td>3</td> </tr> <tr> <td></td> <td>5</td> <td>• 2</td> <td>0</td> </tr> </tbody> </table>		T	U	T		8	• 4	3	-	3	• 2	3		5	• 2	0	<p><b>b</b></p> <p>e: 4</p> <table border="1"> <thead> <tr> <th></th> <th>T</th> <th>U</th> <th>T</th> </tr> </thead> <tbody> <tr> <td></td> <td><sup>8</sup><del>8</del></td> <td><sup>1</sup>0</td> <td>8</td> </tr> <tr> <td>-</td> <td>5</td> <td>• 3</td> <td>2</td> </tr> <tr> <td></td> <td>3</td> <td>• 7</td> <td>6</td> </tr> </tbody> </table>		T	U	T		<sup>8</sup> <del>8</del>	<sup>1</sup> 0	8	-	5	• 3	2		3	• 7	6	<p><b>c</b></p> <p>e: 5</p> <table border="1"> <thead> <tr> <th></th> <th>T</th> <th>U</th> <th>T</th> </tr> </thead> <tbody> <tr> <td></td> <td>7</td> <td>• <sup>5</sup><del>6</del></td> <td><sup>1</sup>3</td> </tr> <tr> <td>-</td> <td>2</td> <td>• 0</td> <td>4</td> </tr> <tr> <td></td> <td>5</td> <td>• 5</td> <td>9</td> </tr> </tbody> </table>		T	U	T		7	• <sup>5</sup> <del>6</del>	<sup>1</sup> 3	-	2	• 0	4		5	• 5	9	<p><b>d</b></p> <p>e: 6</p> <table border="1"> <thead> <tr> <th></th> <th>T</th> <th>U</th> <th>T</th> </tr> </thead> <tbody> <tr> <td></td> <td>9</td> <td>• <sup>6</sup><del>7</del></td> <td><sup>1</sup>0</td> </tr> <tr> <td>-</td> <td>3</td> <td>• 2</td> <td>3</td> </tr> <tr> <td></td> <td>6</td> <td>• 4</td> <td>7</td> </tr> </tbody> </table>		T	U	T		9	• <sup>6</sup> <del>7</del>	<sup>1</sup> 0	-	3	• 2	3		6	• 4	7
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**3** Bart finished his race in a time of 10.67 secs. Lisa finished in 11.24 secs. How much faster was Bart?

0.57 secs

## Written methods – adding and subtracting decimals

- 4 You bought the following. Find the difference between the discount price and regular price for each item, then calculate your total savings. Show all your working out:

Was \$9.99

Now \$8.50

Save \$ 1.49

Was \$8.50

Now \$7.99

Save \$ 0.51

Was \$7.35

Now \$6.85

Save \$ 0.50

Was \$8.95

Now \$6.50

Save \$ 2.45

Was \$2.89

Now \$1.65

Save \$ 1.24

Was \$4.66

Now \$3.89

Save \$ 0.77

Total savings: \$6.96

## Written methods – word problems

- 1 Solve the following word problems using addition or subtraction. Circle the process you use to calculate the answer:

- a Joe scored 346 more points than Zac. Joe scored 589 points. How many points did Zac score?

$$\begin{array}{r} + \quad 5 \quad 8 \quad 9 \\ - \quad 3 \quad 4 \quad 6 \\ \hline \text{Answer} \quad 2 \quad 4 \quad 3 \end{array}$$

- b Jenny is 32 cm taller than Jaala. Jaala is 143 cm tall. How tall is Jenny?

$$\begin{array}{r} \oplus \quad 1 \quad 4 \quad 3 \text{ cm} \\ - \quad \quad 3 \quad 2 \text{ cm} \\ \hline \text{Answer} \quad 1 \quad 7 \quad 5 \text{ cm} \end{array}$$

- c Maitland recorded 117 mm of rain. Balaklava recorded 58 mm more. How much rain did Balaklava record?

$$\begin{array}{r} \oplus \quad 1 \quad 1 \quad 7 \text{ mm} \\ - \quad \quad 5 \quad 8 \text{ mm} \\ \hline \text{Answer} \quad 1 \quad 7 \quad 5 \text{ mm} \end{array}$$

- d Wayne has \$17. How much more money does he need to buy a t-shirt that costs \$39?

$$\begin{array}{r} + \quad \$ \quad 3 \quad 9 \\ - \quad \$ \quad 1 \quad 7 \\ \hline \text{Answer} \quad \$ \quad 2 \quad 2 \end{array}$$

- e Charlene had \$132. After she paid for a ticket, she had \$84. How much did the ticket cost?

$$\begin{array}{r} + \quad \$ \quad 1 \quad \cancel{2} \quad \cancel{1} \quad 2 \\ - \quad \$ \quad \quad 8 \quad 4 \\ \hline \text{Answer} \quad \$ \quad \quad 4 \quad 8 \end{array}$$

- f Sanjay spent \$34 and had \$92 left. How much did he have before the purchase?

$$\begin{array}{r} \oplus \quad \$ \quad \quad 9 \quad 2 \\ - \quad \$ \quad \quad 3 \quad 4 \\ \hline \text{Answer} \quad \$ \quad 1 \quad 2 \quad 6 \end{array}$$

- g Jarred's bike cost \$189. Molly's bike cost \$263. What is the price difference between the two bikes?

$$\begin{array}{r} + \quad \$ \quad \cancel{1} \quad \cancel{2} \quad \cancel{1} \quad 5 \quad \cancel{8} \quad \cancel{1} \quad 3 \\ - \quad \$ \quad 1 \quad 8 \quad 9 \\ \hline \text{Answer} \quad \$ \quad \quad 7 \quad 4 \end{array}$$

- h The rainfall in Two Wells was 73 mm. Gawler recorded 36 mm less. How much rainfall did Gawler record?

$$\begin{array}{r} + \quad \cancel{6} \quad \cancel{7} \quad \cancel{1} \quad 3 \text{ mm} \\ - \quad 3 \quad 6 \text{ mm} \\ \hline \text{Answer} \quad 3 \quad 7 \text{ mm} \end{array}$$

- i Write your own word problem and solve it.

$$\begin{array}{r} + \text{ Answers will vary.} \\ - \\ \hline \text{Answer} \end{array}$$



**Players** 2

**Objective** To be the first to slide all the way down the slippery dip and land in the sand.

**Materials** Game marker for each player, scrap paper, pencils, deck of cards with tens and picture cards taken out. Ace has a value of 1.



**To play**

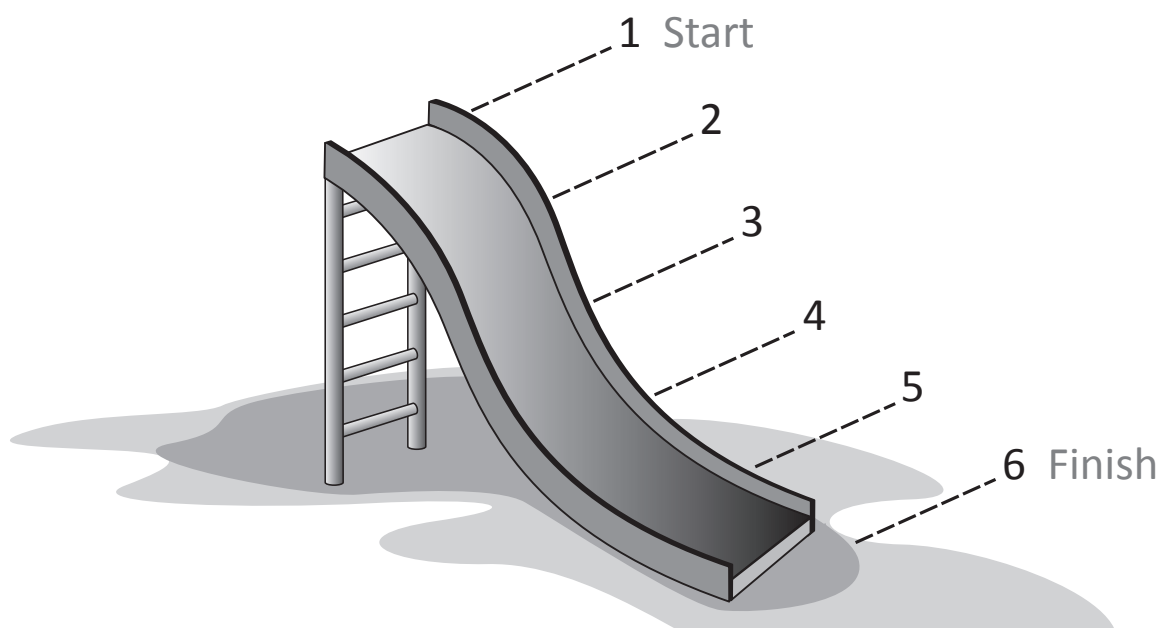
- 1 Mix up the cards and place them face down in a pile.
- 2 Players place the game markers at the Start.
- 3 Each player draws 6 cards arranging them to make two 3 digit-numbers. Arrange the cards as shown: Remember, the first card drawn is in the hundreds place for the first number. The fourth card drawn is in the hundreds place for the second number.


+


*Answers will vary.*

- 4 Add the 2 numbers. The player with the larger total moves the game marker one space down the slippery dip.
- 5 Play until someone lands in the sand.

**Variations** Change the number of cards laid out.

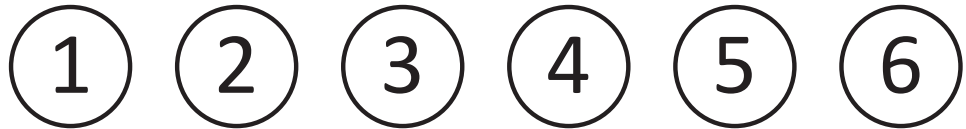




What  
to do

### Puzzle 1

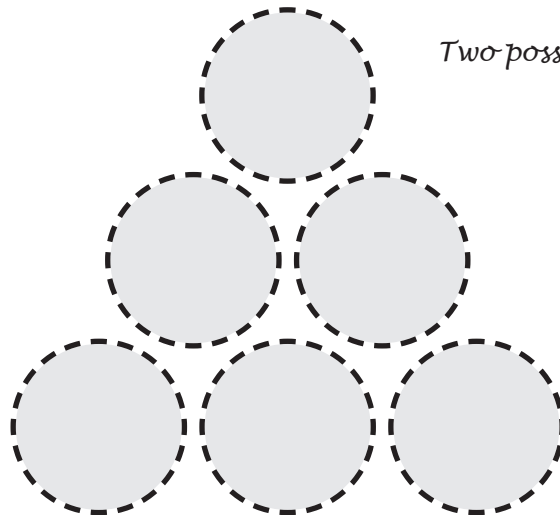
Place the numbers 1 to 6 in the grey circles so that each number is the difference between the two numbers just below it.



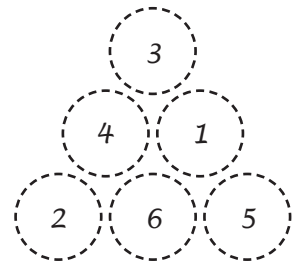
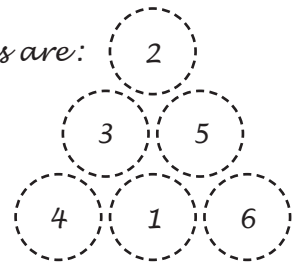
**HINT:** Place some stickers over a set of counters and write the digits 1 to 8 on each counter. Now you can move them around.



**THINK**



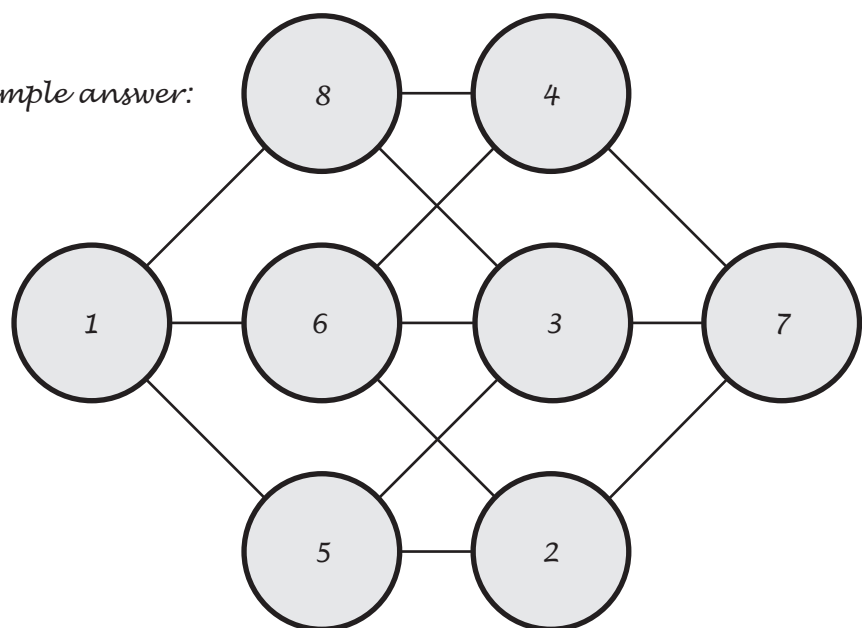
Two possibilities are:



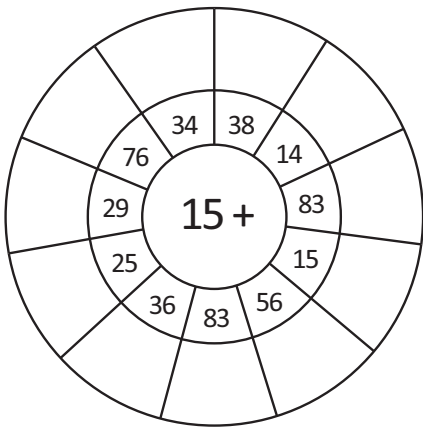
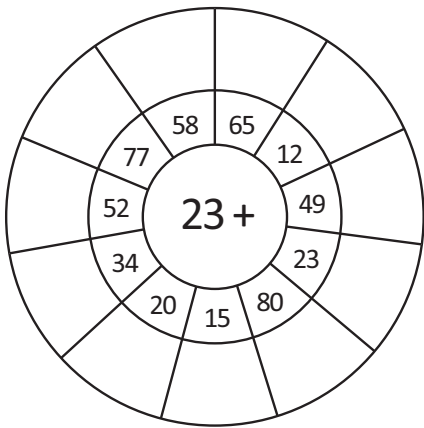
### Puzzle 2

Place eight digits from 1 to 8 in each circle. Numbers with a difference of 1 cannot be placed in circles directly connected by a straight line.

Sample answer:



1 Complete these addition wheels.



2 Show how you would solve  $135 + 87$  using:

Area for solving  $135 + 87$  using the Jump strategy.

**Jump strategy**

Area for solving  $135 + 87$  using the Split strategy.

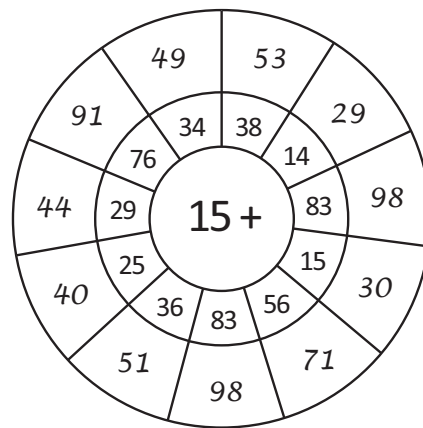
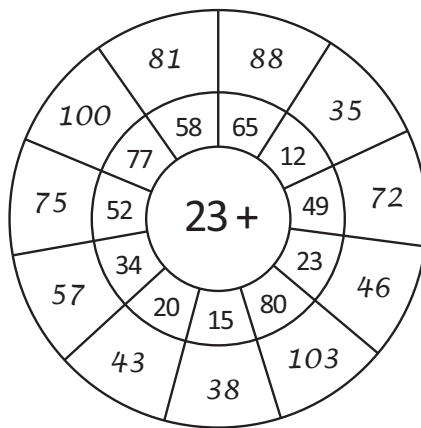
**Split strategy**

Area for solving  $135 + 87$  using the Compensation strategy.

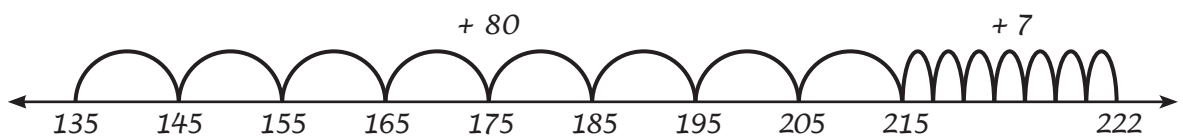
**Compensation strategy**

Skills	Not yet	Kind of	Got it
• Calculates basic addition facts			
• Demonstrates mental addition strategies for: Jump <input type="checkbox"/> Split <input type="checkbox"/> Compensation <input type="checkbox"/>			

**1 Complete these addition wheels.**



**2 Show how you would solve  $135 + 87$  using:**



$$135 + 87 = 222$$

**Jump strategy**

$$\begin{aligned} 135 + 87 \\ \rightarrow 135 + 80 = 215 \\ 215 + 7 = 222 \end{aligned}$$

$$135 + 87 = 222$$

**Split strategy**

$$\begin{aligned} 135 + 87 \\ \rightarrow 135 + 90 - 3 \\ = 225 - 3 \\ = 222 \end{aligned}$$

$$135 + 87 = 222$$

**Compensation strategy**

Skills	Not yet	Kind of	Got it
• Calculates basic addition facts			
• Demonstrates mental addition strategies for: Jump <input type="checkbox"/> Split <input type="checkbox"/> Compensation <input type="checkbox"/>			

**1** Complete this subtraction grid:

	82	34	76	93	100	37	53
- 18							

**2** Show how you would solve  $461 - 66$  using:

**Jump strategy**

**Split strategy**

**Compensation strategy**

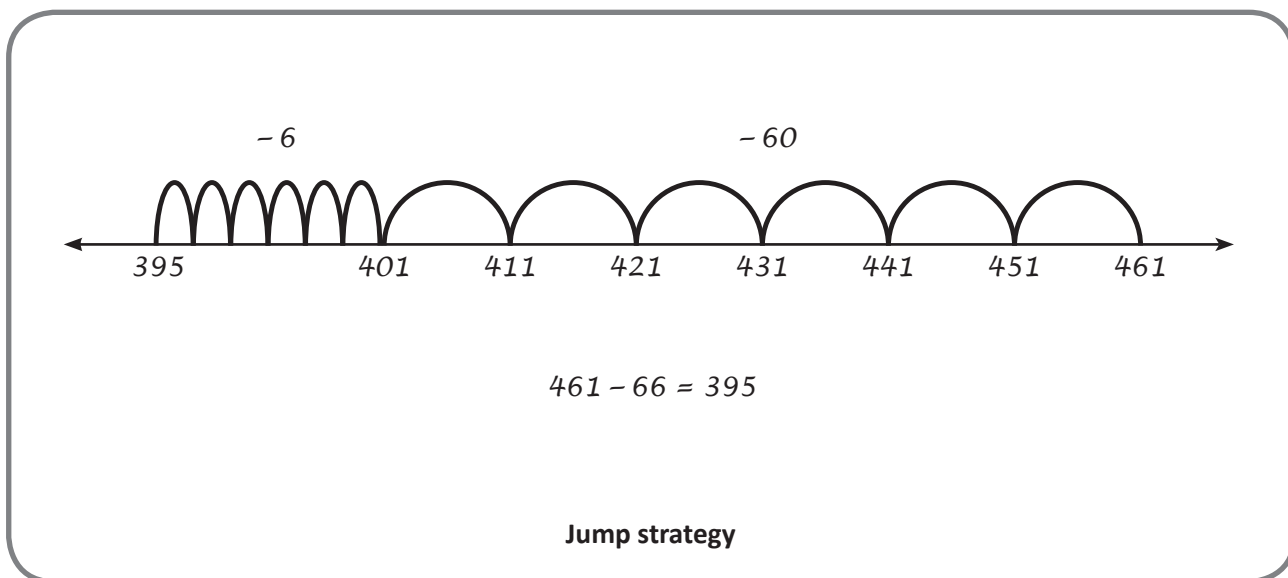
Skills	Not yet	Kind of	Got it
• Calculates basic subtraction facts			
• Demonstrates mental subtraction strategies for: Jump <input type="checkbox"/> Split <input type="checkbox"/> Compensation <input type="checkbox"/>			



**1 Complete this subtraction grid:**

	82	34	76	93	100	37	53
- 18	64	16	58	75	82	19	35

**2 Show how you would solve  $461 - 66$  using:**



$461 - 66$   
 $\rightarrow 461 - 60$   
 $401 - 6 = 395$   
  
 $461 - 66 = 395$

**Split strategy**

$461 - 66$   
 $\rightarrow 461 - 70 + 4$   
 $= 391 + 4$   
 $= 395$   
  
 $461 - 66 = 395$

**Compensation strategy**

Skills	Not yet	Kind of	Got it
• Calculates basic subtraction facts			
• Demonstrates mental subtraction strategies for: Jump <input type="checkbox"/> Split <input type="checkbox"/> Compensation <input type="checkbox"/>			

## 1 Complete these algorithms. Write an estimate for each:

a

e:			
	H	T	U
	5	6	7
+	2	7	6

b

e:				
	Th	H	T	U
	5	3	5	2
+		3	4	7

c

e:				
	Th	H	T	U
	1	5	6	4
+		2	7	6

d

e:				
	Th	H	T	U
	2	8	5	3
-		7	6	7

e

e:			
	H	T	U
	8	7	6
+		9	6

f

e:				
	Th	H	T	U
	3	8	9	7
-		5	9	8

g

e:					
	H	T	U	T	H
		6	3	• 2	8
+		4	6	• 0	3

h

e:				
	T	U	T	H
	5	6	• 2	
-	2	5	• 1	6

i

e:				
	T	U	T	H
		9	• 5	4
+		4	• 3	4

Skills	Not yet	Kind of	Got it
• Solves addition and subtraction problems using a written algorithm			
• Adds and subtracts decimals in an algorithm			
• Provides a reasonable estimate			

1 Complete these algorithms. Write an estimate for each:

a

e: 800			
	H	T	U
	<sup>1</sup> 5	<sup>1</sup> 6	7
+	2	7	6
	8	4	3

b

e: 5 700				
	Th	H	T	U
	5	3	5	2
+		3	4	7
	5	6	9	9

c

e: 1 800				
	Th	H	T	U
	1	<sup>1</sup> 5	<sup>1</sup> 6	4
+		2	7	6
	1	8	4	0

d

e: 2 000				
	Th	H	T	U
	2	<sup>7</sup> <del>8</del>	<sup>14</sup> <del>5</del>	<sup>1</sup> 3
-		7	6	7
	2	0	8	6

e

e: 1 000			
	H	T	U
	<sup>1</sup> 8	<sup>1</sup> 7	6
+		9	6
	9	7	2

f

e: 3 300				
	Th	H	T	U
	3	<sup>7</sup> <del>8</del>	<sup>18</sup> <del>9</del>	<sup>1</sup> 7
-		5	9	8
	3	2	9	9

g

e: 110					
	H	T	U	T	H
		6	3	<sup>1</sup> 2	8
+		4	6	0	3
	1	0	9	3	1

h

e: 30				
	T	U	T	H
	5	6	<sup>1</sup> <del>2</del>	<sup>1</sup> 0
-	2	5	1	6
	3	1	0	4

i

e: 12				
	T	U	T	H
		9	5	4
+		4	3	4
	1	3	8	8

Skills	Not yet	Kind of	Got it
• Solves addition and subtraction problems using a written algorithm			
• Adds and subtracts decimals in an algorithm			
• Provides a reasonable estimate			

# Word problems using addition and subtraction

Name \_\_\_\_\_

- 1** Read the problems below carefully. Complete each section of each problem. Use any strategy or written method that you find the easiest.

<p><b>a</b> Max is reading an exciting book that is 126 pages long. If he has read 48 pages, how many does he have left to read?</p>	<p>My estimate:</p> <p>My working out:</p>
<p>What do I need to find out?</p>	
<p><b>b</b> Baz is training for a fun run. On Monday he ran 12 km, Thursday 19 km and on the weekend he ran 22 km. How far did he run altogether?</p>	<p>My estimate:</p> <p>My working out:</p>
<p>What do I need to find out?</p>	
<p><b>c</b> Bella went to the shops and bought a magazine for \$4.75 and a drink for \$2.10. How much change does she get back from \$10?</p>	<p>My estimate:</p> <p>My working out:</p>
<p>What do I need to find out?</p>	

Skills	Not yet	Kind of	Got it
• Solves addition and subtraction problems using own strategy or written method			
• Identifies the question			
• Provides a reasonable estimate			

# Word problems using addition and subtraction

Name \_\_\_\_\_

- 1 Read the problems below carefully. Complete each section of each problem. Use any strategy or written method that you find the easiest.

<p><b>a</b> Max is reading an exciting book that is 126 pages long. If he has read 48 pages, how many does he have left to read?</p>	<p>My estimate: 76</p> <p>My working out:</p> $126 - 48$ $= 126 - 50 + 2$ $= 78$
<p>What do I need to find out?</p> <p><i>The pages left to read.</i></p>	<p><i>Max has 78 pages left to read.</i></p>
<p><b>b</b> Baz is training for a fun run. On Monday he ran 12 km, Thursday 19 km and on the weekend he ran 22 km. How far did he run altogether?</p>	<p>My estimate: 50 km</p> <p>My working out:</p> $\begin{array}{r} 12 \\ 19 \\ + 22 \\ \hline 53 \end{array}$
<p>What do I need to find out?</p> <p><i>Total distance.</i></p>	<p><i>Baz ran 53 km altogether.</i></p>
<p><b>c</b> Bella went to the shops and bought a magazine for \$4.75 and a drink for \$2.10. How much change does she get back from \$10?</p>	<p>My estimate: \$3</p> <p>My working out:</p> $4.75 + 2.10$ $= 6.85$ $10 - 6.85$ $= 3.15$
<p>What do I need to find out?</p> <p><i>The change Bella should get.</i></p>	<p><i>Bella gets \$3.15 change.</i></p>

Skills	Not yet	Kind of	Got it
• Solves addition and subtraction problems using own strategy or written method			
• Identifies the question			
• Provides a reasonable estimate			

## Series F – Addition and Subtraction

Curriculum		Outcomes
<b>National Curriculum</b>	ACMNA291	Use efficient mental and written strategies and apply appropriate digital technologies to solve problems
	ACMNA099	Use estimation and rounding to check the reasonableness of answers to calculations
<b>NSW</b>	MA3-5NA	Selects and applies appropriate strategies for addition and subtraction with counting numbers of any size
	MA3-1WM	Describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions
	MA3-2WM	Selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations
	MA3-3WM	Gives a valid reason for supporting one possible solution over another
<b>AusVELS</b>	ACMNA291	Use efficient mental and written strategies and apply appropriate digital technologies to solve problems
	ACMNA099	Use estimation and rounding to check the reasonableness of answers to calculations