

WA5MNACN1

Calculating with number

Core + Challenge

NAPLAN-style

Adding and Subtracting Large Numbers — Marking Key

I can add and subtract large numbers using jumps, friendly numbers and the column method.

For tutors and parents. Award method marks for correct working even if the final answer is wrong.

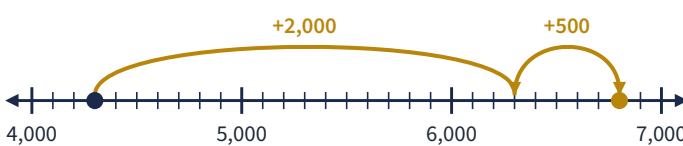
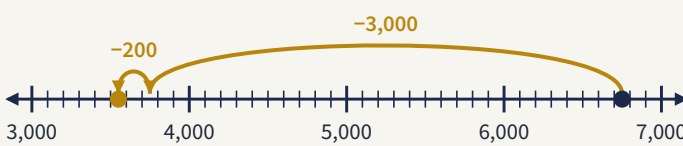
Marks summary

A Warm up: 16 B Practise: 21 C Think it through: 10 D Challenge: 9 **Total: 56**

Gold shading in this key shows what the child should have shaded or drawn. Accept any correct arrangement unless the question fixes it.

A Warm up answers

/ 16 marks

Q	Answer	Model answer / notes	Marks
1	6,800	 +2,000 +500 4,000 5,000 6,000 7,000 +2,000 then +500: 4,300 → 6,300 → 6,800. Accept any correct jumps.	1
2	3,550	 -200 -3,000 3,000 4,000 5,000 6,000 7,000 -3,000 then -200: 6,750 → 3,750 → 3,550. Accept any correct jumps.	1
3	7,380	+1,000 then +400: 5,980 → 6,980 → 7,380. Accept any correct jumps.	1
4	5,600	-2,000 then -600: 8,200 → 6,200 → 5,600. Accept any correct jumps.	1
5	4,455	 +1,000 -1 3,456 4,456 4,455 3,456 + 1,000 = 4,456, then take away 1: 4,455. Accept other correct steps.	1
6	6,212	 -1,000 +2 7,210 6,210 6,212 7,210 - 1,000 = 6,210, then add 2: 6,212. Accept other correct steps.	1
7	4,643	2,645 + 2,000 = 4,645, then take away 2: 4,643. Accept other correct steps.	1
8	7,501	12,500 - 5,000 = 7,500, then add 1: 7,501. Accept other correct steps.	1

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Q	Answer	Model answer / notes	Marks																				
9	6 5 5	<table> <thead> <tr> <th>Th</th><th>H</th><th>T</th><th>O</th></tr> </thead> <tbody> <tr> <td>3</td><td>6</td><td>4</td><td>7</td></tr> <tr> <td>+</td><td>2</td><td>5</td><td>5</td></tr> <tr> <td></td><td>6</td><td>2</td><td>0</td></tr> <tr> <td></td><td></td><td></td><td>5</td></tr> </tbody> </table> 3,647 + 2,558 = 6,205. Missing digits (top to bottom, left to right): 6, 5, 5.	Th	H	T	O	3	6	4	7	+	2	5	5		6	2	0				5	1
Th	H	T	O																				
3	6	4	7																				
+	2	5	5																				
	6	2	0																				
			5																				
10	8 9 1	4,386 + 1,975 = 6,361. Missing digits (top to bottom, left to right): 8, 9, 1.	1																				
11	3 4 8	<table> <thead> <tr> <th>Th</th><th>H</th><th>T</th><th>O</th></tr> </thead> <tbody> <tr> <td>7</td><td>5</td><td>2</td><td>3</td></tr> <tr> <td>-</td><td>2</td><td>6</td><td>4</td></tr> <tr> <td></td><td>4</td><td>8</td><td>7</td></tr> <tr> <td></td><td></td><td></td><td>5</td></tr> </tbody> </table> 7,523 - 2,648 = 4,875. Missing digits (top to bottom, left to right): 3, 4, 8.	Th	H	T	O	7	5	2	3	-	2	6	4		4	8	7				5	1
Th	H	T	O																				
7	5	2	3																				
-	2	6	4																				
	4	8	7																				
			5																				
12	5 3 7	8,004 - 3,567 = 4,437. Missing digits (top to bottom, left to right): 5, 3, 7.	1																				
13	5,300	8,500 - 3,200 = 5,300.	1																				
14	7,430	2,750 + 4,680 = 7,430.	1																				
15	2,470	The difference: 6,420 - 3,950 = 2,470.	1																				
16	5,375	10,000 - 4,625 = 5,375.	1																				

B

Practise *answers and working*

/ 21 marks

Q	Answer	Working / sample response	Marks																								
1	About 6,500; exact 6,523	<table> <thead> <tr> <th>Th</th><th>H</th><th>T</th><th>O</th></tr> </thead> <tbody> <tr> <td>3</td><td>6</td><td>4</td><td>8</td></tr> <tr> <td>+</td><td>2</td><td>8</td><td>7</td></tr> <tr> <td></td><td></td><td></td><td>5</td></tr> <tr> <td></td><td>6</td><td>5</td><td>2</td></tr> <tr> <td></td><td></td><td></td><td>3</td></tr> </tbody> </table> Estimate: $3,600 + 2,900 = 6,500$ (or $4,000 + 3,000 = 7,000$). Column method: $3,648 + 2,875 = 6,523$ (trade in the ones, tens and hundreds). <i>1 mark: a sensible estimate.</i> <i>1 mark: 6,523.</i>	Th	H	T	O	3	6	4	8	+	2	8	7				5		6	5	2				3	2
Th	H	T	O																								
3	6	4	8																								
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Q	Answer	Working / sample response	Marks																
2	12,615 empty seats	$\overbrace{\begin{array}{ c c } \hline 47,385 & 12,615 \\ \hline \end{array}}^{60,000}$ The whole bar is 60,000. The parts are 47,385 and the empty seats. $60,000 - 47,385 = 12,615$ (trade across the zeros). Check: $12,615 + 47,385 = 60,000$. <i>1 mark: bar model labelled (60,000 whole, 47,385 part).</i> <i>1 mark: 12,615.</i> <i>1 mark: addition check shown.</i>	3																
3	\$3,450	Jump to a friendly number: $4,750 + 250 = 5,000$. Then $+ 3,000 = 8,000$. Then $+ 200 = 8,200$. $250 + 3,000 + 200 = 3,450$, so they need \$3,450 more. <i>1 mark: correct jumps on the line (any efficient set).</i> <i>1 mark: \$3,450.</i>	2																
4	\$28,649	$\boxed{24,999} \xrightarrow{+1} \boxed{25,000} \xrightarrow{+3,650} \boxed{28,650} \xrightarrow{-1} \boxed{28,649}$ 24,999 is 1 less than 25,000. $25,000 + 3,650 = 28,650$, then take away 1: \$28,649. <i>1 mark: a correct friendly-number step (e.g. $25,000 + 3,650$).</i> <i>1 mark: \$28,649.</i>	2																
5	1,485; 49,955; 49,955	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Trip</th><th>Start</th><th>End</th><th>Distance</th></tr> </thead> <tbody> <tr> <td>1</td><td>45,820</td><td>47,305</td><td>1,485</td></tr> <tr> <td>2</td><td>47,305</td><td>49,955</td><td>2,650</td></tr> <tr> <td>3</td><td>49,955</td><td>53,100</td><td>3,145</td></tr> </tbody> </table> Trip 1: $47,305 - 45,820 = 1,485$ km. Trip 2: $49,955 - 47,305 = 2,650$ km. Trip 3: $53,100 - 49,955 = 3,145$ km. Trip 2 ends at $47,305 + 2,650 = 49,955$, and trip 3 starts there. <i>1 mark for each correct blank.</i>	Trip	Start	End	Distance	1	45,820	47,305	1,485	2	47,305	49,955	2,650	3	49,955	53,100	3,145	3
Trip	Start	End	Distance																
1	45,820	47,305	1,485																
2	47,305	49,955	2,650																
3	49,955	53,100	3,145																
6	3,005	3,005 3,995 3,015 7,001 1,998 is 2 less than 2,000. $5,003 - 2,000 = 3,003$, then add 2 back: 3,005. Or count on: $1,998 + 2 = 2,000$, $+ 3,003 = 5,003$; $2 + 3,003 = 3,005$. <i>1 mark: circles 3,005.</i> <i>1 mark: working shown.</i>	2																

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Q	Answer	Working / sample response	Marks																				
7	B: 3,847; total 6,315	A 2,468 B 2,468 1,379 School B: $2,468 + 1,379 = 3,847$. Altogether: $2,468 + 3,847 = 6,315$. <i>1 mark: bar model labelled (2,468 in both bars, 1,379 as the extra part).</i> <i>1 mark: 3,847.</i> <i>1 mark: 6,315.</i>	3																				
8	Yes, $4,547 + 2,859 = 7,406$	<table><tr><th></th><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td>4</td><td>5</td><td>4</td><td>7</td></tr><tr><td>+</td><td>2</td><td>8</td><td>5</td><td>9</td></tr><tr><td></td><td>7</td><td>4</td><td>0</td><td>6</td></tr></table> Add the answer to the number taken away: $4,547 + 2,859 = 7,406$. This is the number Kai started with, so he is correct. <i>1 mark: $4,547 + 2,859 = 7,406$ worked out.</i> <i>1 mark: says Kai is correct.</i>		Th	H	T	O		4	5	4	7	+	2	8	5	9		7	4	0	6	2
	Th	H	T	O																			
	4	5	4	7																			
+	2	8	5	9																			
	7	4	0	6																			
9	13,139 books	$12,450 - 1,386 = 11,064$. $11,064 + 2,075 = 13,139$. (Or $2,075 - 1,386 = 689$ more, and $12,450 + 689 = 13,139$.) <i>1 mark: 11,064 (or 689).</i> <i>1 mark: 13,139.</i>	2																				

C

Think it through *sample answers and criteria*

/ 10 marks

Q	Answer	Working / sample response	Marks
1	No, it is 3,836	In each column Sam took the smaller digit from the bigger digit (e.g. $8 - 4$ instead of $4 - 8$). He should trade: $5,204 - 1,368 = 3,836$. Check: $3,836 + 1,368 = 5,204$. <i>1 mark: explains that he subtracted the wrong way round instead of trading.</i> <i>1 mark: 3,836.</i>	2
2	True	Both numbers went up by 1, so the gap between them stays the same (constant difference). Both sides equal 3,001. <i>1 mark: True.</i> <i>1 mark: explains that adding 1 to both numbers keeps the difference the same.</i>	2
3	Sometimes	Always Sometimes Never $1,000 + 1,000 = 2,000$ has 4 digits. $5,000 + 5,000 = 10,000$ has 5 digits. So it is sometimes true. <i>1 mark: Sometimes.</i> <i>1 mark: one example each way.</i>	2

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Q	Answer	Working / sample response	Marks
4	9,100 – 1,800	4,500 + 2,700, 8,000 – 800 and 3,600 + 3,600 all equal 7,200. 9,100 – 1,800 = 7,300. <i>1 mark: 9,100 – 1,800.</i> <i>1 mark: shows the other three equal 7,200. Accept another choice with a correct reason.</i>	2
5	3,004	3,996 is close to 4,000. 7,000 – 4,000 = 3,000. I took away 4 too many, so add 4 back: 3,004. (Or count on 4 to 4,000, then 3,000 more.) <i>1 mark: a correct quicker strategy explained (compensation or counting on).</i> <i>1 mark: 3,004.</i>	2

D

Challenge solutions and criteria

/ 9 marks

Q	Answer	Working / sample response	Marks
1	a) 1,395 (e.g. 753 + 642) b) 47 (523 – 476)	a) Put the biggest digits in the hundreds (7, 6), then tens (5, 4), then ones (3, 2): 753 + 642 = 1,395. b) The hundreds digits must be as close as possible (5 and 4). Then make 5__ small and 4__ large: 523 – 476 = 47. All 720 arrangements were checked: 47 is the smallest. <i>1 mark: 1,395.</i> <i>1 mark: hundreds digits 1 apart used for the difference.</i> <i>1 mark: 47.</i>	3
2	6,233	<pre> graph LR A[6,233] -- "+ 2,450" --> B[8,683] B -- "- 3,675" --> C[5,008] </pre> Work backwards and do the opposite: 5,008 + 3,675 = 8,683. 8,683 – 2,450 = 6,233. Check: 6,233 + 2,450 = 8,683, and 8,683 – 3,675 = 5,008. <i>1 mark: 8,683.</i> <i>1 mark: 6,233.</i> <i>1 mark: check shown (or inverse operations explained).</i>	3
3	a) 16,061 b) 110 km c) 15,851, 100 km ago	a) A bigger palindrome starting with 15 would need a middle digit bigger than 9, so there are none. The next starts 16 and ends 61: the smallest is 16,061. b) 16,061 – 15,951 = 110 km. c) 15,851, which was 15,951 – 15,851 = 100 km ago. <i>1 mark for each part.</i>	3