Addition and Subtraction: Adding and Subtracting Mentally

Aim:	**Success Criteria:**	**Resources:**
To add and subtract numbers mentally with increasingly large numbers. To add and subtract numbers mentally.	I can add and subtract numbers using the compensation strategy. I can add numbers using the near doubles strategy. I can add and subtract numbers by counting on or back in repeated steps of 1, 10, 100 and 1000. I can partition numbers into thousands, hundreds, tens and ones then add or subtract them, starting with the most significant digit first. I can choose the most appropriate mental strategy for each calculation.	Lesson Pack Clock or timer
	Key/New Words: Multiple, add, plus, subtract, minus, take away, sum, total, nearest, partition, repeated steps, mental, strategy, compensation, doubling, rounding, estimations, accurate, adjust.	**Preparation:** Differentiated Strategy Sort Activity Sheets – one per child Diving into Mastery Activity Sheets – as required

Prior Learning: It will be helpful if children have a secure understanding of rounding, can partition numbers, are familiar with doubling and can count forwards and backwards in steps of 1, 10, 100 and 1000.

Learning Sequence

	Remember It: Children estimate the answers to the addition and subtraction calculations shown on the Lesson Presentation, rounding each number before making an estimation. They then time themselves, completing the same calculations using formal written methods of addition and subtraction. Start and stop the timer shown in the Lesson Presentation for each calculation. Give children sufficient time to record their times.	
	Mental Methods: Children are shown the names of four mental calculation strategies that they will be taught today on the Lesson Presentation: compensation, partitioning, near doubles and rounding. Can they match each name with its description?	
	Compensation: Use the Lesson Presentation to demonstrate worked examples of addition and subtraction that can be calculated by the compensation method: rounding to a multiple of ten before adding or subtracting and then compensating. Children select a set of five calculations to answer using this strategy and discuss with their partner when this strategy will be useful. Can children add and subtract numbers using the compensation strategy?	
	Near Doubles: Use the Lesson Presentation to demonstrate how to use doubling to add 340 000 and 350 000. The slide explains that either number can be doubled, as long as children remember to adjust up or down afterwards. Children select a set of five calculations to answer using this strategy and discuss with their partner when this strategy will be useful. Can children add numbers using the near doubles strategy?	
	Counting On or Back: Use the Lesson Presentation to demonstrate worked examples of addition and subtraction calculated by counting forwards or backwards in hundreds or thousands. Children select a set of five calculations to answer using this strategy and discuss with their partner when this strategy will be useful. Can children add and subtract numbers by counting on or back in repeated steps of 1, 10, 100 and 1000?	
	Partitioning: Use the Lesson Presentation to demonstrate worked examples of calculations that can be solved mentally by partitioning the smaller number before adding or subtracting. Children select a set of five calculations to answer using this strategy and discuss with their partner when this strategy will be useful. Can children partition numbers into thousands, hundreds, tens and ones then add or subtract them, starting with the most significant digit first?	
	Strategy Selection: On the Lesson Presentation, children are shown a set of calculations which can be solved mentally using one of the strategies taught. Children give a hand signal to show which strategy they would use. Discuss with the class why one method would be most effective in each case. Can children choose the most appropriate mental strategy for each calculation?	

Strategy Sort: Using the Differentiated Strategy Sort Activity Sheet, each child mentally calculates answers to a set of 20 questions and sorts the calculations according to which strategy they used.

- Children answer and sort addition and subtraction questions that involve numbers with two to six digits. The calculations require very little mental exchanging or regrouping.
- Children answer and sort addition and subtraction questions that involve numbers with three to six digits. The calculations require some mental regrouping or exchanging.
- Children answer addition and subtraction questions that involve numbers with three to six digits and then describe the strategy and steps used in their mental calculations.

Diving into Mastery: Schools using a mastery approach may prefer to use the following as an alternative activity. These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.

Children improve fluency of mental addition by adding 3-digit and 4-digit numbers using a variety of strategies.

Children look at a completed table and check whether the totals have been correctly calculated. They reason about the most efficient strategy for solving a given calculation.

Children explain the most efficient way to add three 4-digit numbers and they explain mistakes made in a subtraction question. In an open-ended problem-solving activity, children attempt the same calculation using different mental strategies to investigate the most efficient strategies for adding or subtracting different combinations of numbers.

Timed Challenge: Using the strategies explored in this lesson, children time their attempt to mentally calculate the answers to questions shown on the Lesson Presentation, which are very similar (but not the same!) as those from the beginning of the lesson. Can they beat the time they took using formal written methods?

ExploreIt

LearnIt: Children will find this visually exciting Knowledge Organiser a useful tool for helping to understand addition and subtraction strategies.

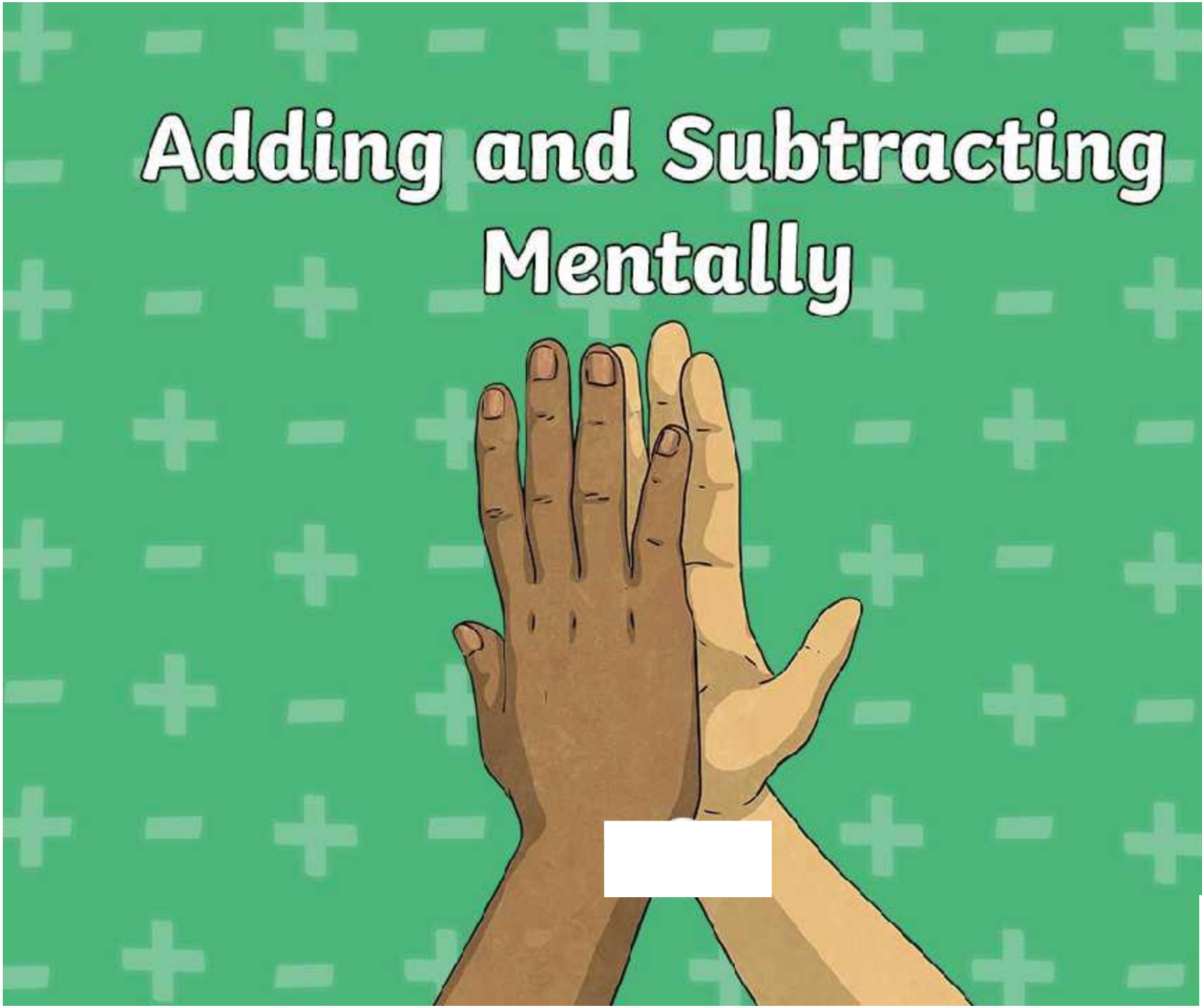
DisplayIt: Children make a display of the step-by-step process for one of the mental calculation strategies learnt during the lesson. Encourage them to add explanations of any other mental calculation strategies that they find useful.

UseIt: In future lessons, remind children of the strategies explored in this lesson when faced with a question where one of these strategies might be helpful.

Maths

Addition and Subtraction

Adding and Subtracting Mentally



Aim

- To add and subtract numbers mentally.

Success Criteria

- I can add and subtract numbers using the compensation strategy.
- I can add numbers using the near doubles strategy.
- I can add and subtract numbers by counting on or back in repeated steps of 1, 10, 100 and 1000.
- I can partition numbers into thousands, hundreds, tens and ones then add or subtract them, starting with the most significant digit first.
- I can choose the most appropriate mental strategy for each calculation.

Remember It

Estimate the answers to the following addition and subtraction questions, using rounding to support your estimations.

448 – 52	450 – 50 = **400**
8999 + 5020	9000 + 5000 = **14 000**
24 678 – 14 998	24 000 – 15 000 = **9000**
679 999 + 183 333	680 000 + 180 000 = **860 000**
451 113 – 289 999	450 000 – 290 000 = **160 000**

Remember It: Timed Challenge

Now, time how long it takes you to complete these 5 calculations using a formal written method. (Be careful, there's a 10 second penalty for every mistake!) Make a note of your time so you can see if you get faster at the end of this lesson.

448 – 52

8999 + 5020

24 678 – 14 998

679 999 + 183 333

451 113 – 289 999

448 – 52 = **396**

8999 + 5020 = **14 019**

24 678 – 14 998 = **9680**

679 999 + 183 333 = **863 332**

451 113 – 289 999 = **161 114**

Mental Methods

Some calculations can be done mentally (in our heads). This can sometimes be quicker and more accurate than formal written methods.

We can write notes to help us remember key numbers while working out the answer.

Today, we're going to practise four strategies to help us complete mental calculations.

- **Compensation**
- **Partitioning**
- **Counting On or Back**
- **Near Doubles**

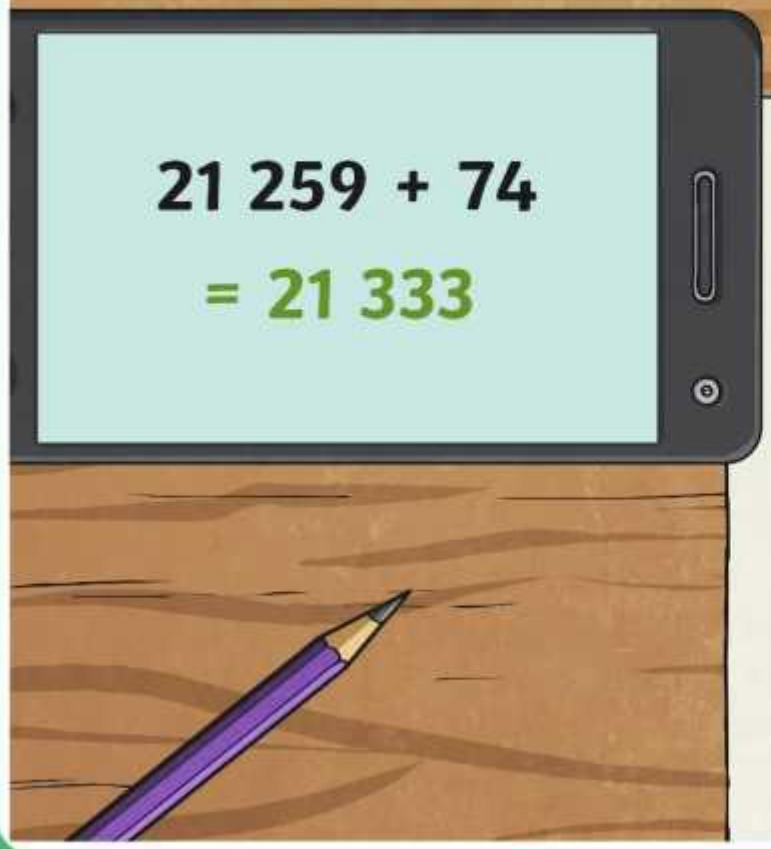
Mental Methods

Today, we're going to practise four strategies to help us complete mental calculations. Can you work out which is which?

Compensation	Partition the smaller number, then add or subtract the largest place value first.
Partitioning	Round before calculating, then adjust your answer to compensate.
Counting On or Back	Double one of the numbers, then adjust.
Near Doubles	Count forwards or backwards in multiples of 10, 100 or 1000.

Compensation

Round one of the numbers. Do the calculation, then adjust to compensate.



Firstly, round one of the numbers to the nearest multiple of ten.

21 259 is only 1 away from the nearest ten, which is 21 260.

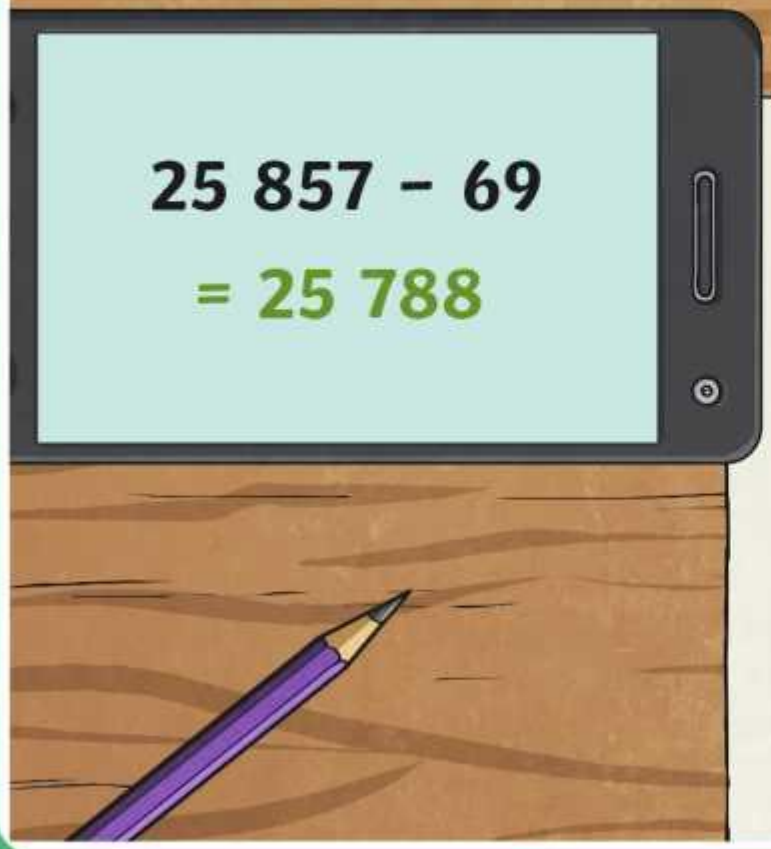
21 260 + 74 = **21 334**

You then need to compensate for adding 1 too many by subtracting the extra 1.

21 334 − 1 = **21 333**

Compensation

Round one of the numbers. Do the calculation, then adjust to compensate



Firstly, round one of the numbers to the nearest multiple of ten.

69 is only 1 away from the nearest ten, which is 70.

25 857 - 70 = **25 787**

You then need to compensate for subtracting 1 too many by adding on the extra 1.

25 787 + 1 = **25 788**

Compensation

Round one of the numbers. Do the calculation, then adjust to compensate.

★	★★	★★★
954 + 38 = **992**	6954 + 88 = **7042**	35 954 + 88 = **36 042**
125 – 19 = **106**	8125 – 199 = **7926**	25 125 – 39 = **25 086**
2215 + 68 = **2283**	29 215 + 498 = **29 713**	454 215 + 698 = **454 913**
9199 – 75 = **9124**	42 199 – 158 = **42 041**	515 199 – 799 = **514 400**

Talk to your partner about when this will be a useful strategy.

Near Doubles

Double one of the numbers, then adjust.

340 000 + 350 000

= 690 000

You could double
340 000 or 350 000.

Double 34 is **68**
so double 340 000 is **680 000**.

Adjust the answer by adding
the extra 10 000.

680 000 + 10 000 = **690 000**

Double 35 is **70**
so double 350 000 is **700 000**.

Adjust the answer by
subtracting the extra 10 000.

700 000 − 10 000 = **690 000**

Near Doubles

Double one of the numbers then adjust.

★	★★	★★★
450 + 440 = **890**	6000 + 7000 = **13 000**	37 000 + 38 000 = **75 000**
5100 + 5200 = **10 300**	8200 + 8100 = **16 300**	28 000 + 29 000 = **57 000**
2200 + 2300 = **4500**	24 000 + 25 000 = **49 000**	441 000 + 442 000 = **883 000**
9000 + 8000 = **17 000**	42 500 + 43 000 = **85 500**	315 000 + 316 000 = **631 000**

Talk to your partner about when this will be a useful strategy.

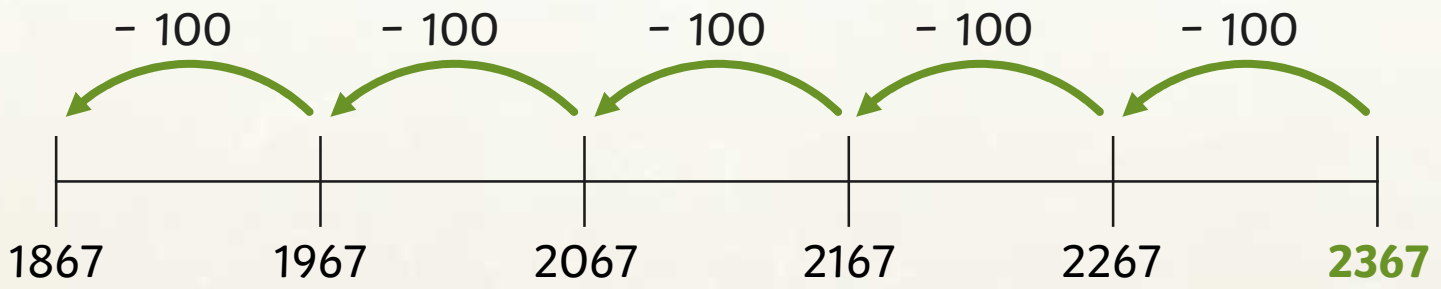
Counting On or Back

Count forwards or backwards in multiples of 10, 100 or 1000.

2367 – 500

= 1867

As we're subtracting a multiple of 100, we can count back in steps of 100.



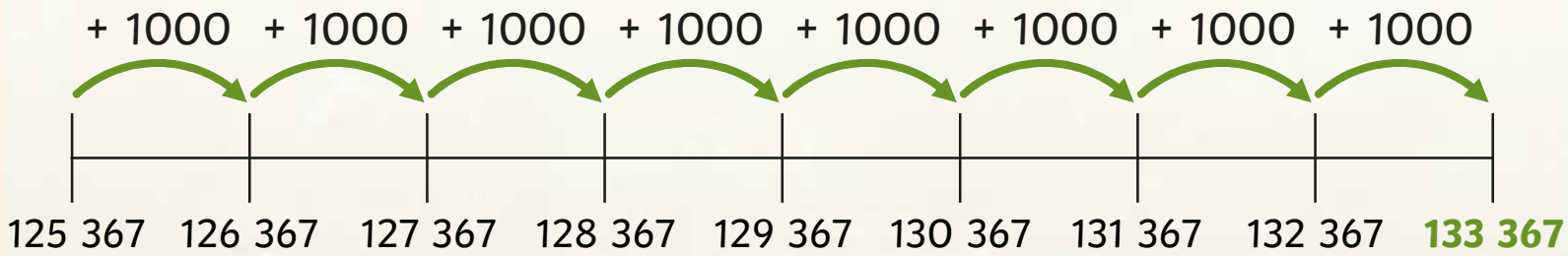
Counting On or Back

Count forwards or backwards in multiples of 10, 100 or 1000 to answer these calculations.

125 367 + 8000

= 133 367

As we're adding a multiple of 1000, we can count in steps of 1000.



Counting On or Back

Count forwards or backwards in multiples of 10, 100 or 1000. Try these.

★	★★	★★★
3554 + 120 = **3674**	6954 + 1500 = **8454**	35 954 + 18 000 = **53 954**
5125 – 1200 = **3925**	8125 – 900 = **7225**	25 125 – 19 000 = **6125**
9275 + 5000 = **14 275**	29 215 + 11 000 = **40 215**	8000 + 454 215 = **462 215**
9114 – 90 = **9024**	42 521 – 13 000 = **29 521**	227 458 – 170 000 = **57 458**

Talk to your partner about when this will be a useful strategy.

Partitioning

Partition the smaller number before adding or subtracting, starting with the largest place value.

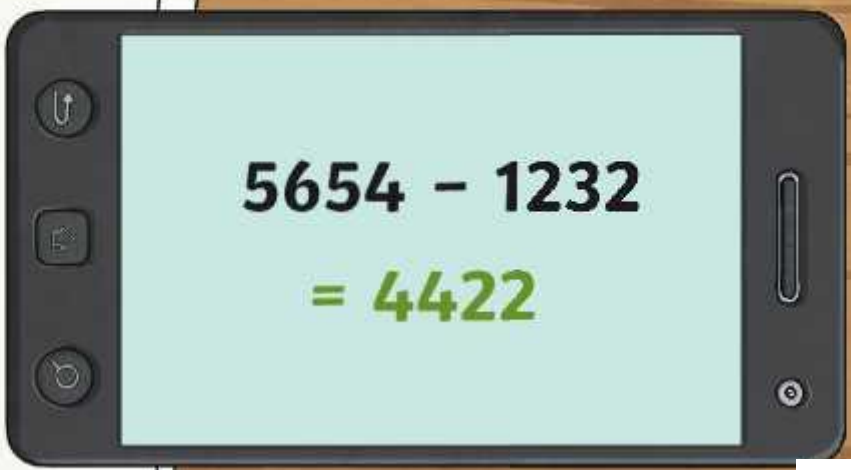
The first step is to partition the smaller number.
1232 = 1000 + 200 + 30 + 2

Firstly, you can subtract the thousands.
5654 – 1000 = 4654

Then, subtract the hundreds.
4654 – 200 = 4454

Next, subtract the tens.
4454 – 30 = 4424

Lastly, subtract the ones.
4424 – 2 = 4422



Partitioning

Partition the smaller number before adding or subtracting, starting with the largest place value.

The first step is to partition the smaller number.

35 232 = 30 000 + 5000 + 200 + 30 + 2

Firstly, you can add the ten thousands.

41 654 + 30 000 = 71 654

Then, add the thousands.

71 654 + 5000 = 76 654

After that, you can add on the hundreds.

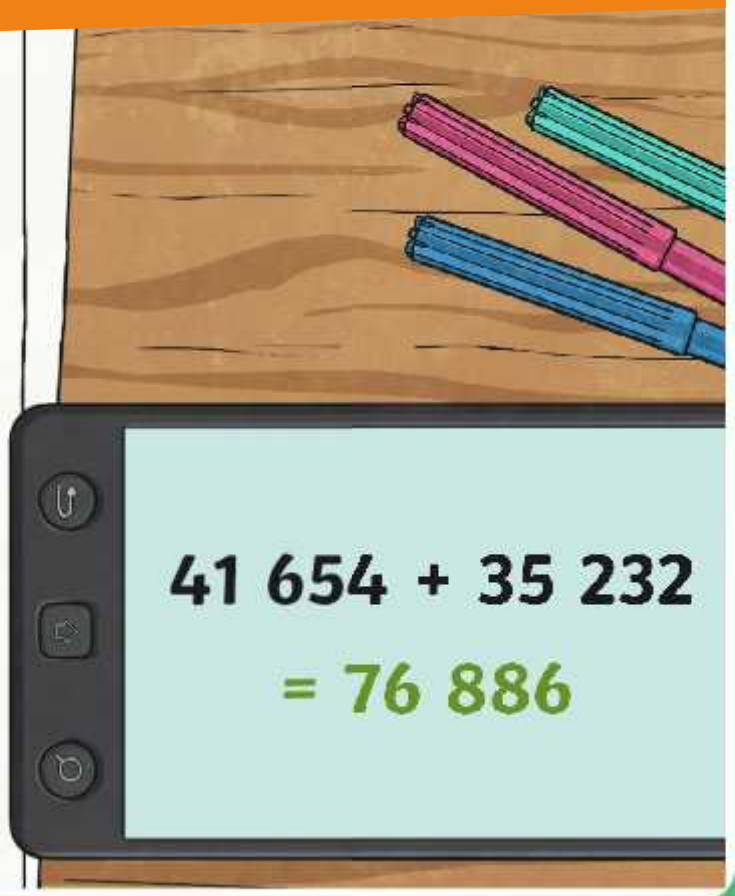
76 654 + 200 = 76 854

Next, add on the tens.

76 854 + 30 = 76 884

Lastly, add the ones.

76 884 + 2 = 76 886



Partitioning

Partition the smaller number before adding or subtracting, starting with the largest place value. Try these.

★	★★	★★★
3554 + 134 = **3688**	6954 + 1038 = **7992**	35 954 + 38 012 = **73 966**
5725 – 3215 = **2510**	8125 - 1119 = **7006**	25 125 – 19 029 = **6096**
2275 + 5506 = **7781**	29 215 + 11 162 = **40 377**	68 544 + 454 215 = **522 759**
9194 – 8172 = **1022**	42 521 – 40 415 = **2106**	515 192 – 175 256 = **339 936**

Talk to your partner about when this will be a useful strategy.

Strategy Selection

Which strategy would you use to work out the answer to this question?
Show your strategy using the hand signal.

4596 + 800 = **5396**

Compensation

Partitioning

Counting on or back

Near Doubles

As 800 is a multiple of 100, it would be easy to count on in steps of 100.

Strategy Selection

Which strategy would you use to work out the answer to this question?
Show your strategy using the hand signal.

1396 – 79 = **1317**

Compensation

Partitioning

Counting on or back

Near Doubles

As 79 is close to 80, we could subtract 80, then add 1.

Strategy Selection

Which strategy would you use to work out the answer to this question?
Show your strategy using the hand signal.

260 000 + 250 000 = **510 000**

Compensation

Partitioning

Counting on or back

Near Doubles

It's easy to double 250 000 and then add on the extra 10 000.

Strategy Selection

Which strategy would you use to work out the answer to this question?
Show your strategy using the hand signal.

54 574 − 19 = **54 555**

Compensation

Partitioning

Counting on or back

Near Doubles

As 19 is close to 20, we could subtract 20, then add 1.

Strategy Selection

Which strategy would you use to work out the answer to this question?
Show your strategy using the hand signal.

1289 + 56 = **1345**

Compensation

Partitioning

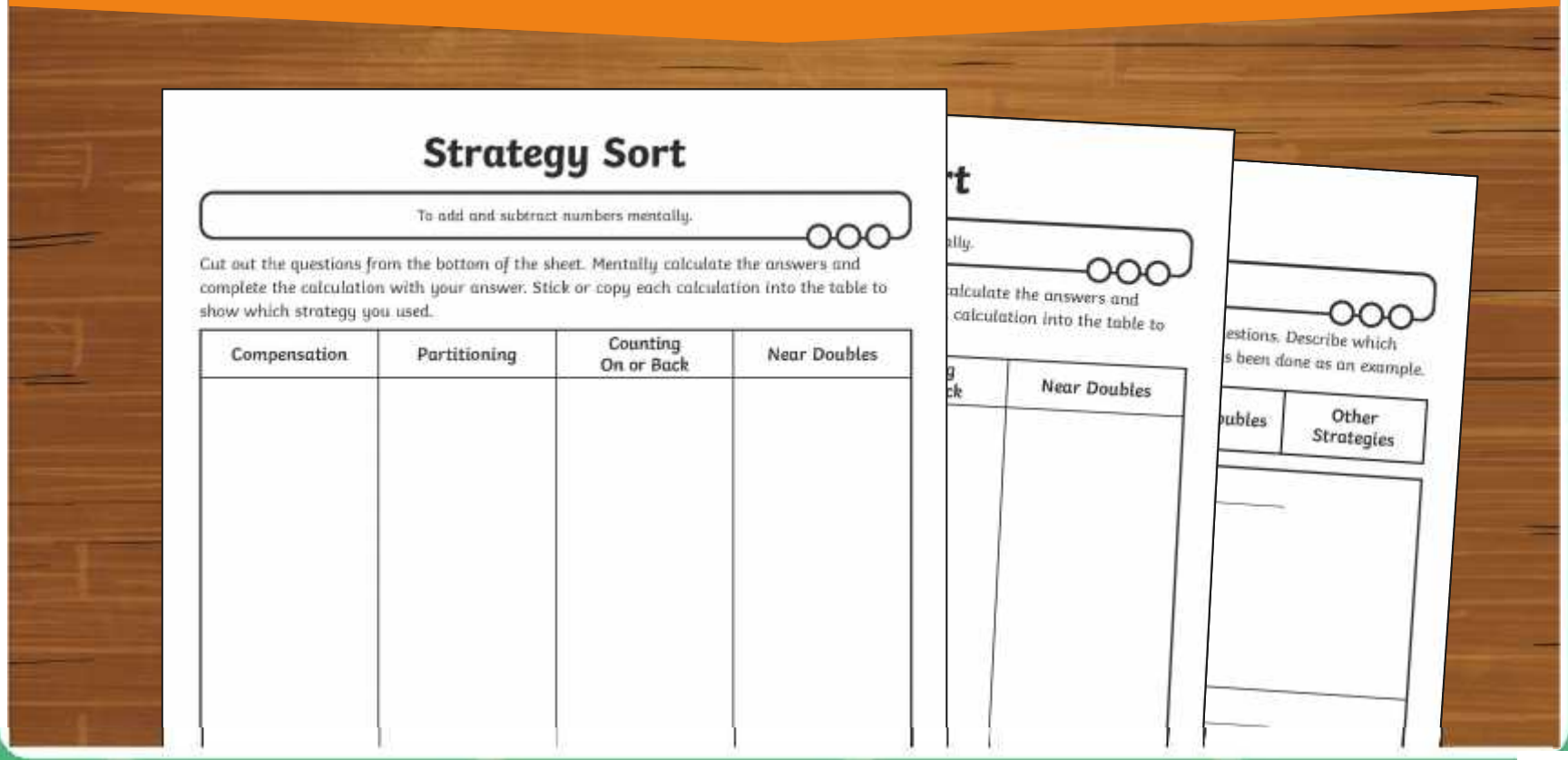
Counting on or back

Near Doubles

First add on 5 tens, then add on 6 ones.

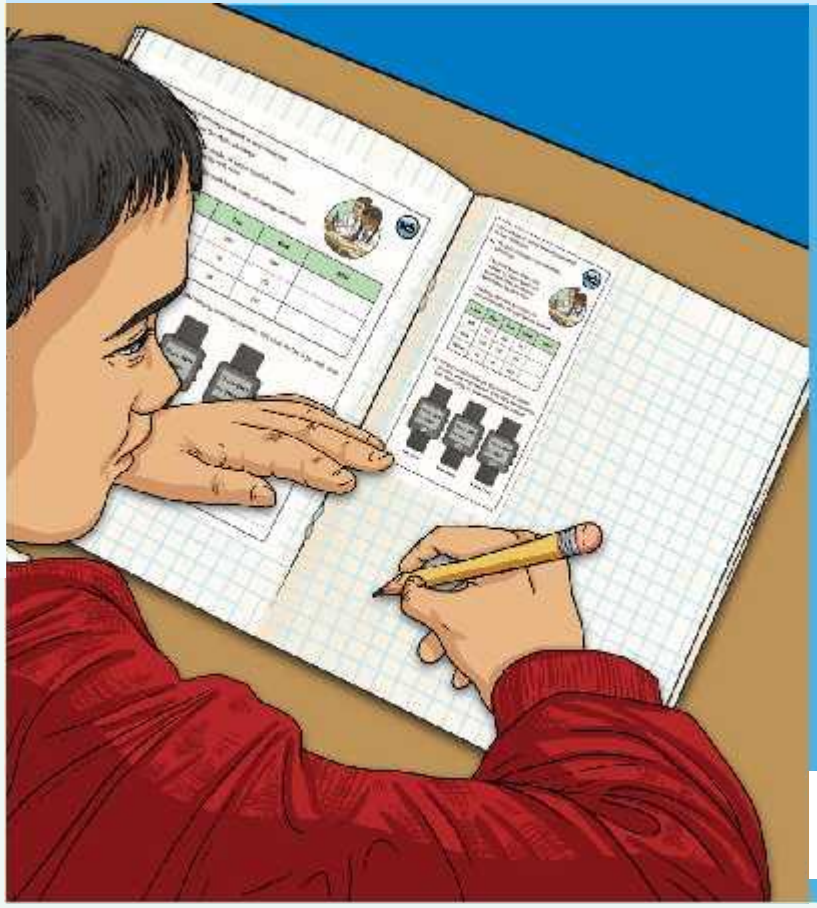
Strategy Sort

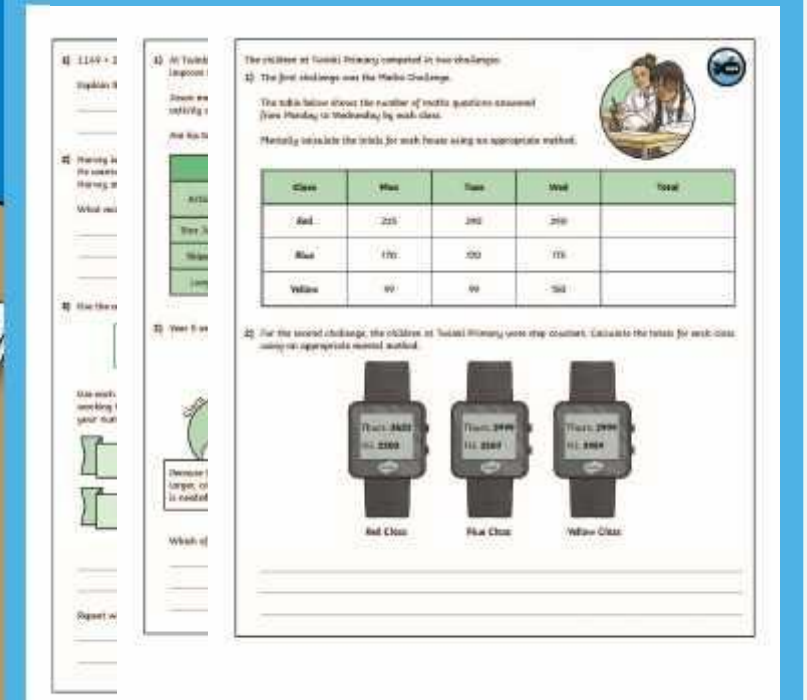
Mentally calculate the answers to the addition and subtraction questions on your sheet. Stick them into the table, or write step-by-step notes to show which strategy you used for each question.



Diving into Mastery

Dive in by completing your own activity!





Timed Challenge

Now, time how long it takes you to complete these 5 calculations using mental methods. (Remember, there's a 10 second penalty for every mistake!)

648 – 52 =	**596**
6400 + 6500 =	**12 900**
26 678 – 16 128 =	**10 550**
579 949 + 12 000 =	**591 999**
451 113 – 299 999 =	**151 114**

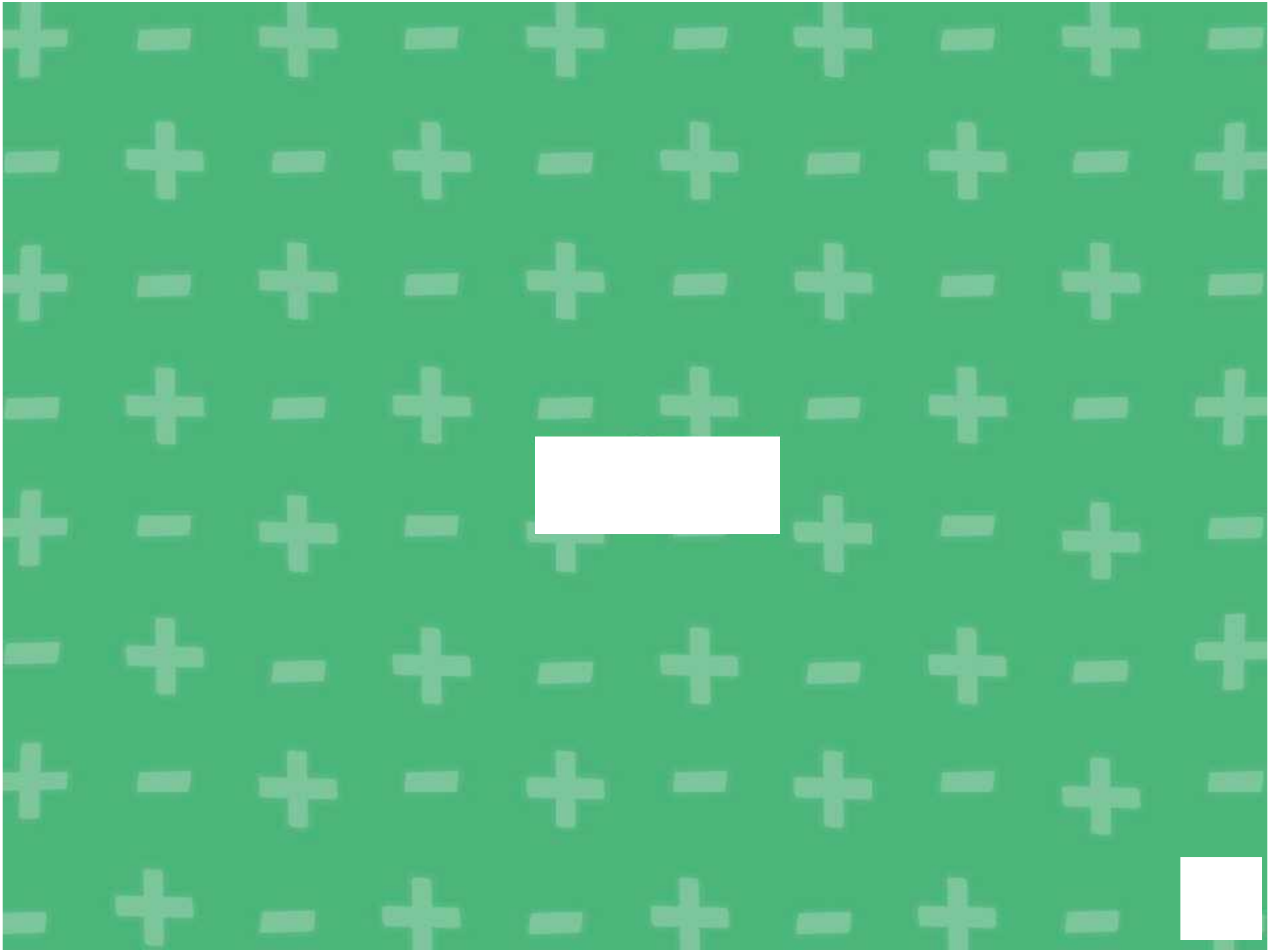
Were you faster or slower than when you used formal written methods?

Aim

- To add and subtract numbers mentally.

Success Criteria

- I can add and subtract numbers using the compensation strategy.
- I can add numbers using the near doubles strategy.
- I can add and subtract numbers by counting on or back in repeated steps of 1, 10, 100 and 1000.
- I can partition numbers into thousands, hundreds, tens and ones then add or subtract them, starting with the most significant digit first.
- I can choose the most appropriate mental strategy for each calculation.



Aim: To add and subtract numbers mentally.				**Date:**					
				Delivered By:			**Support:**		
Success Criteria	**Me**	**Friend**	**Teacher**	**T**	**PPA**	**S**	**I**	**AL**	**GP**
I can add and subtract numbers using the compensation strategy.				**Notes/Evidence**					
I can add numbers using the near doubles strategy.									
I can add and subtract numbers by counting on or back in repeated steps of 1, 10, 100 and 1000.									
I can partition numbers into thousands, hundreds, tens and ones then add or subtract them, starting with the most significant digit first.									
I can choose the most appropriate mental strategy for each calculation.									

Next Steps

- _____
- _____

T	Teacher	**I**	Independent
PPA	Planning, Preparation and Assessment	**AL**	Adult Led
S	Supply	**GP**	Guided Practice

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Next Steps

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T	Teacher	**I**	Independent
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1)

Class	Mon	Tues	Wed	Total
Red	225	290	290	**835**
Blue	170	170	175	**515**
Yellow	99	99	150	**348**

2) **Red Class**
3000 + 2000 = 5000
500 + 400 = 900
50 + 5 + 2 = 57
Total = 5957

Blue Class
4000 + 2587 = 6587
6587 – 1 = 6586

Yellow Class
3000 + 3969 = 6969
6969 – 1 = 6968

1) **Star Jumps – Jason is incorrect. He has missed one thousand. He should have put 5384.**
Skipping – Jason is incorrect. He added 1 at the end when he should have subtracted 1.
Lunges – Correct.

2) **Mental partitioning is the most efficient method for this calculation. You can partition the number to subtract the thousands and then the tens.**
10 909 – 9000 = 1909
1909 – 10 = 1899.

1) **Accept any efficient method that gives the final answer as 5599. For example:**
The thousands can quickly be added up mentally: 1000 + 2000 + 2000 = 5000.
We are then left with 149 + 151 + 299.
If we use our number bonds, we can see that 149 + 151 = 300.
We are then left with 300 + 299 which equals 599.
Our final answer is 5599.

2) **Harvey has correctly subtracted 4000 and then he rounded 99 to 100 before subtracting. However, he forgot to compensate by adding on the extra 1. His answer should have been 141 501.**

3) **Various possible answers. Look for children who can explain why different mental strategies suit adding and subtracting certain pairs of numbers.**

The children at Twinkl Primary competed in two challenges.

1) The first challenge was the Maths Challenge.

The table below shows the number of maths questions answered from Monday to Wednesday by each class.

Mentally calculate the totals for each house using an appropriate method.

Class	Mon	Tues	Wed	Total
Red	225	290	290	
Blue	170	170	175	
Yellow	99	99	150	

2) For the second challenge, the children at Twinkl Primary wore step counters. Calculate the totals for each class using an appropriate mental method.

Red Class **Blue Class** **Yellow Class**

1) At Twinkl Primary, the children did daily circuit training to improve their fitness and compete against each other.

Jason mentally calculated the total amounts for each activity completed.

Are his totals correct? Explain any mistakes he has made.

Jason's Fitness Chart			
Activity	Thursday Total	Friday Total	Total Amount
Star Jumps	2984	2400	4384
Skipping	3999	3467	7468
Lunges	984	1015	1999

2) Year 5 are discussing which method of mental calculation is the most efficient for the calculation shown below:

10 909 – 9010

Because the numbers are larger, column subtraction is needed.

I would use mental partitioning.

I would use repeated subtraction in groups of 10.

Which of the methods is most mathematically efficient? Explain your answer fully.

1) 1149 + 2151 + 2299 =

Explain the most efficient way to carry out this calculation using mental methods.

2) Harvey is stuck when doing his homework. He is mentally calculating 145 600 – 4099. He wants to partition the smaller number and subtract each partitioned value. Harvey attempts this and writes the answer 141 500.

What mistake has Harvey made and what should he have done instead?

3) Use the cards below to create two 4-digit numbers.

0	1	2	3	4	5	6	7	8	9

Use each of these mental strategies to find the sum of your numbers and the difference between them. Show your working to explain how your calculation could be solved using each method. Which method is most efficient for your numbers and why?

- Round to the nearest multiple of 10 and adjust.
- Partition the smaller number.
- Count on or back in repeated steps.
- Double then adjust.

Repeat with a different pair of 4-digit numbers to see if a different strategy is more effective.

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Explain the most efficient way to carry out this calculation using mental methods.

2) Harvey is stuck when doing his homework.
He is mentally calculating 145 600 – 4099.
He wants to partition the smaller number and subtract each partitioned value.
Harvey attempts this and writes the answer 141 500.

What mistake has Harvey made and what should he have done instead?

3) Use the cards below to create two 4-digit numbers.

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6	7	8	9

Use each of these mental strategies to find the sum of your numbers and the difference between them. Show your working to explain how your calculation could be solved using each method. Which method is most efficient for your numbers and why?

- Round to the nearest multiple of 10 and adjust.
- Partition the smaller number.
- Count on or back in repeated steps.
- Double then adjust.

Repeat with a different pair of 4-digit numbers to see if a different strategy is more effective.

1) 1149 + 2151 + 2299 =

Explain the most efficient way to carry out this calculation using mental methods.

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0	1	2	3	4	5

6	7	8	9

Use each of these mental strategies to find the sum of your numbers and the difference between them. Show your working to explain how your calculation could be solved using each method. Which method is most efficient for your numbers and why?

- Round to the nearest multiple of 10 and adjust.
- Partition the smaller number.
- Count on or back in repeated steps.
- Double then adjust.

Repeat with a different pair of 4-digit numbers to see if a different strategy is more effective.

Strategy Sort

To add and subtract numbers mentally.

Cut out the questions from the bottom of the sheet. Mentally calculate the answers and complete the calculation with your answer. Stick or copy each calculation into the table to show which strategy you used.

Compensation	Partitioning	Counting On or Back	Near Doubles

54 + 66 = _____	99 + 254 = _____	65 + 90 = _____	45 + 46 = _____
310 + 320 = _____	457 – 327 = _____	854 – 198 = _____	645 – 50 = _____
500 + 925 = _____	4000 + 3000 = _____	8524 + 655 = _____	8542 + 399 = _____
92 256 – 19 999 = _____	5342 – 800 = _____	2400 + 2500 = _____	9826 – 1518 = _____
26 575 + 51 225 = _____	599 999 + 245 120 = _____	7584 + 30 = _____	12 000 + 13 000 = _____

Strategy Sort **Answers**

Compensation	Partitioning	Counting On or Back	Near Doubles
99 + 254 = **353**	54 + 66 = **120**	65 + 90 = **155**	45 + 46 = **91**
854 – 198 = **656**	457 – 327 = **130**	645 – 50 = **595**	310 + 320 = **630**
8542 + 399 = **8941**	8524 + 655 = **9179**	500 + 925 = **1425**	4000 + 3000 = **7000**
92 256 – 19 999 = **72 257**	9826 – 1518 = **8308**	5342 – 800 = **4542**	2400 + 2500 = **4900**
599 999 + 245 120 = **845 119**	26 575 + 51 225 = **77 800**	7584 + 30 = **7614**	12 000 + 13 000 = **25 000**

Strategy Sort

To add and subtract numbers mentally.

Cut out the questions from the bottom of the sheet. Mentally calculate the answers and complete the calculation with your answer. Stick or copy each calculation into the table to show which strategy you used.

Compensation	Partitioning	Counting On or Back	Near Doubles

354 + 366 = _____	499 + 654 = _____	6665 + 900 = _____	245 + 246 = _____
2310 + 2320 = _____	6457 – 6327 = _____	6854 – 198 = _____	9645 – 500 = _____
5000 + 9253 = _____	3800 + 3900 = _____	8524 + 8655 = _____	8542 + 3999 = _____
192 256 – 109 999 = _____	53 342 – 8000 = _____	2426 + 2427 = _____	92 826 – 19 518 = _____
267 575 + 517 225 = _____	599 999 + 245 129 = _____	77 584 + 30 000 = _____	12 650 + 12 651 = _____

Strategy Sort **Answers**

Compensation	Partitioning	Counting On or Back	Near Doubles
499 + 654 = **1153**	354 + 366 = **720**	6665 + 900 = **7565**	245 + 246 = **491**
6854 – 198 = **6656**	6457 – 6327 = **130**	9645 – 500 = **9145**	2310 + 2320 = **4630**
8542 + 3999 = **12 541**	8524 + 8655 = **17 179**	5000 + 9253 = **14 253**	3800 + 3900 = **7700**
192 256 – 109 999 = **82 257**	92 826 – 19 518 = **73 308**	53 342 – 8000 = **45 342**	2426 + 2427 = **4853**
599 999 + 245 129 = **845 128**	267 575 + 517 225 = **784 800**	77 584 + 30 000 = **107 584**	12 650 + 12 651 = **25 301**

Strategy Sort

To add and subtract numbers mentally.

Mentally calculate the answers to these addition and subtraction questions. Describe which strategy you used and the steps taken to solve each one. The first has been done as an example.

Compensation	Partitioning	Counting On or Back	Near Doubles	Other Strategies

354 + 366 = 720 Partition the smaller number into 300 + 50 + 4. First, add on the hundreds. 366 + 300 = 666 Then, add the tens. 666 + 50 = 714 Lastly, add the ones. 714 + 6 = **720**	**499 + 654 =** _____
6665 + 900 = _____	**245 + 246 =** _____
2310 + 2320 = _____	**6457 – 6327 =** _____

6854 – 198 = _____	9645 – 500 = _____
5000 + 9253 = _____	3800 + 3900 = _____
8524 + 8655 = _____	8542 + 3999 = _____
192 256 – 109 999 = _____	53 342 – 8000 = _____

2426 + 2427 = _____	92 826 – 19 518 = _____
267 575 + 517 225 = _____	599 999 + 245 129 = _____
77 584 + 30 000 = _____	12 650 + 12 651 = _____

Strategy Sort **Answers**

Possible strategies given as examples.

354 + 366 = **720** Partition the smaller number into 300 + 50 + 4. First, add on the hundreds. 366 + 300 = 666 Then, add the tens. 666 + 50 = 714 Lastly, add the ones. 714 + 6 = **720**	499 + 654 = **1153** **Add on 500, then subtract 1 to compensate.**
6665 + 900 = **7565** **Count on 9 hundreds.**	245 + 246 = **491** **Double 245 is 490.** **490 + 1 = 491**
2310 + 2320 = **4630** **Double 2320 is 4640.** **4640 – 10 = 4630**	6457 – 6327 = **130** **Partition the smaller number. Subtract each place value, starting from the thousands.** **6457 – 6000 = 457** **457 – 300 = 157** **157 – 20 = 137** **137 – 7 = 130**
6854 – 198 = **6656** **Subtract 200, then add 2 to compensate.**	9145 – 500 = **8645** **Count back 5 hundreds.**
5000 + 9253 = **14 253** **Count on 5 thousands.**	3800 + 3900 = **7700** **Double 3800 is 7600.** **7600 + 100 = 7700**
8524 + 8695 = **17 219** **Partition the smaller number. Add each place value, starting from the thousands.** **8524 + 8000 = 16 524** **16 524 + 600 = 17 124** **17 124 + 90 = 17 214** **17 214 + 5 = 17 219**	8542 + 3999 = **12 541** **Add on 4000, then subtract 1 to compensate.**

192 256 – 109 999 = **82 257** **Subtract 110 000 then add 1 to compensate.**	53 342 – 8000 = **45 342** **Count back 8 thousands.**
2426 + 2427 = **4853** **Double 2426 is 4852.** **4852 + 1 = 4853**	92 126 – 19 518 = **72 608** **Partition the smaller number.** **Subtract each place value, starting from the ten thousands.** **92 126 – 10 000 = 82 126** **82 126 – 9000 = 73 126** **73 126 – 500 = 72 626** **72 626 – 10 = 72 616** **72 616 – 8 = 72 608**
267 596 + 517 225 = **784 821** **Partition the smaller number. Add each place value, starting from the hundred thousands.** **517 225 + 200 000 = 717 225** **717 225 + 60 000 = 777 225** **777 225 + 7000 = 784 225** **784 225 + 500 = 784 725** **784 725 + 90 = 784 815** **784 815 + 6 = 784 821**	599 999 + 245 129 = **845 128** **Add 600 000 then subtract 1 to compensate.**
77 584 + 30 000 = **107 584** **Count on 3 ten thousands.**	12 650 + 12 651 = **25 301** **Double 12 650 is 25 300.** **25 300 + 1 = 25 301**

Mental Addition and Subtraction | Adding and Subtracting Mentally

To add and subtract numbers mentally.		
I can add and subtract numbers using the compensation strategy.		
I can add numbers using the near doubles strategy.		
I can add and subtract numbers by counting on or back in repeated steps of 1, 10, 100 and 1000.		
I can partition numbers into thousands, hundreds, tens and ones then add or subtract them, starting with the most significant digit first.		
I can choose the most appropriate mental strategy for each calculation.		

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