Old Town Infant School and Nursery

MATHS MEDIUM TERM PLANNING

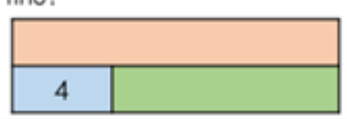
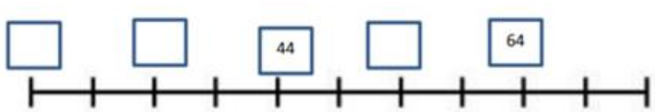
Coastal Learning PARTNERSHIP

Year 2 – Addition and Subtraction (Approximately 5 weeks split – 3 weeks in Autumn and 2 weeks in Spring)	
Objectives from Progression Document	**recall and use addition and subtraction facts to 20** **use + and - facts up to 100 related to known addition and subtraction facts to 20** **understand that addition of two numbers can be done in any order (commutative)** **understand that subtraction of one number from another cannot be done in any order** **recognise the inverse relationship between addition and subtraction** **add and subtract a two-digit number and ones using concrete objects, pictorial representations*, and mentally** **add and subtract a two-digit number and tens using concrete objects, pictorial representations*, and mentally** **add and subtract two two-digit numbers using concrete objects, pictorial representations*, and mentally** **add three one-digit numbers** **use the inverse relationship between addition and subtraction to check calculations** **show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot** **solve problems with addition and subtraction involving numbers** **solve problems with addition and subtraction involving quantities** **solve problems with addition and subtraction involving measures** **derive + and – facts up to 100 related to known addition and subtraction facts to 20**
Previous Learning	**read, write and interpret mathematical statements involving addition (+) and equals (=) signs** **read, write and interpret mathematical statements involving subtraction (-) and equals (=) signs** **represent and use number bonds within 20** **represent and use subtraction facts related to number bonds within 20** **add and subtract one-digit and two-digit numbers to 20, including zero** **solve one-step problems that involve addition and subtraction**
Vocabulary	(recap year one vocabulary); inverse, bar model
Key fact(s)	To know the importance of the tens digit To know that addition of two numbers can be done in any order (commutative) To know that subtraction of one number from another cannot be done in any order To know that addition and subtraction are the opposite of one another (inverse)
Number facts for fluency	All multiplication and division facts for 10x (5x) Make ten and then – addition (2+9, 3+8, 4+7, 5+6, 6+5, 7+4, 8+3, 9+2; 3+9, 4+8, 5+7, 7+5, 8+4, 9+3; 4+9, 5+8, 6+7, 7+6, 8+5, 9+4; 5+9, 6+8, 8+6, 9+5; 6+9, 7+8, 8+7, 9+6; 7+9, 9+7, 8+9, 9+8)
DfE Ready to Progress Guidance Pages https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/897806/Maths_guidance_KS_1_and_2.pdf	**2AS-1** Add and subtract across 10 pages 18 -20 **2AS-2** Solve comparative addition and difference problems pages 20 - 22 **2AS-3** Add and subtract within 100 – part 1 pages 23 - 26 **2AS-4** Add and subtract within 100 – part 2 pages 27 – 29 **2NF-1** Fluently add and subtract within 10 pages 16 - 17
NCETM Ready to Progress Exemplification https://www.ncetm.org.uk/classroom-resources/exemplification-of-ready-to-progress-criteria/	**2AS – 1** Addition and Subtraction across 10 **2AS – 2** Solve comparative addition and difference problems **2AS-3** Add and subtract within 100 – part 1 **2AS-4** Add and subtract within 100 – part 2 **2NF-1** Fluently add and subtract within 10 pages 16 - 17
Problem Solving and Reasoning Skills Objectives	respond to 'What if…?' questions, making predictions based on mathematical knowledge identify the key information in a two-step puzzle or word problem, where the two steps are shown in the question
Pre-assessment:	Year one addition and subtraction – addition and subtraction within 10 and within 20

Old Town Infant School and Nursery

MATHS MEDIUM TERM PLANNING

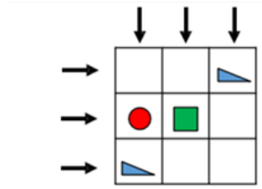
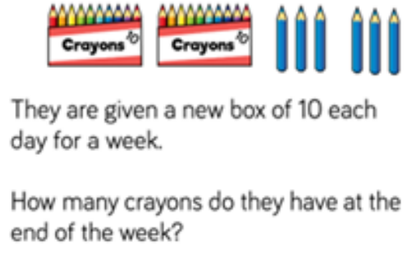
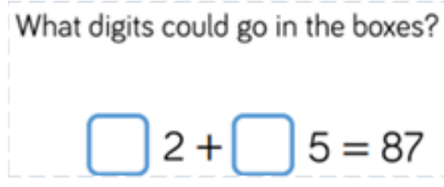
Coastal Learning PARTNERSHIP

Sequence of Learning						
White Rose Small Steps	**Learning Intention**	**Key Questions**	**Sentence Stems**	**Comments**	**Problem-solving links**	**Extension and Greater Depth Opportunities**
Bonds to 10 (2NF 1)	**To practise using known number bond facts**	How many ____ have you got? How many more do you need to make 10? What is the bond to 10 for _____? What number are you starting with? What do you need to add to make 10? If 4 + 5 = 9, what is the missing number in 4 + ___= 10? How do you know?	If I have___ counters, I need to add ___ more counters to make 10. I need to add___ to ___to make 10.	Children may not use efficient strategies when working out an answer to a calculation. For example, when calculating 3 + 7, they may start at 3 and count on 7 rather than start at 7 and count on 3		Using these digits, can you complete each number sentence? **19** **9** **10** ___ + ___ = ___ ___ + ___ = ___ ___ - ___ = ___ ___ - ___ = ___ Both missing numbers are less than 10 $7 + \square < 7 + \square$ How many different possible answers can you find? Here is an incomplete bar model. The total is greater than 10 but less than 20 What could the missing numbers be? How many different combinations can you find?  Fill in the missing numbers in the number line.  What other numbers can you show?
Fact families – addition and subtraction bonds to 20 (2NF 1)	**To be able to work out the fact families for all addition bonds to 20**	How many ____ have you got? How many more ____ do you need to make ____ ? What is the bond to ____ for ____ ? What number are you starting with? What do you need to add to make ____ ? If 4 + 5 = 9, what is the missing number in 14 + ____ = 19? How do you know?	If I have ____ counters, I need to add ____ more counters to make ____ . I need to add ____ to ____ to make ____.	Children looked at fact families in Year 1 and these are reintroduced here to write the addition and subtraction statements for number bonds. This is a good opportunity to remind children of the commutative property of addition. Children may assume that as addition is commutative, then subtraction must also be commutative. Some children may think that because 4 + 6 = 10, they can add 10 to each number to give 14 + 16 = 20	Strike it Out (maths.org) Strike it Out. Game practising number bonds to 20.	
Related facts (2AS 3)	**To be able to use known number facts to work out other facts**	If 2 ones plus 3 ones is equal to 5 ones, what is 2 tens plus 3 tens? What is the same about the number sentences? What is different? If 3 + 5 = 8, what is 30 + 50? How do you know? If 6 – 2 = 4, what is 60 – 20? How do you know? Show each number sentence using base 10. What is the same? What is different?	____ ones + ____ ones = ____ ones, so ____ tens + ____ tens = ____ tens. This means that ____ + ____ = ____ . ____ ones – ____ ones = ____ ones, so ____ tens – ____ tens = ____ tens. This means that ____ – ____ = ____.	If children know that 2 + 5 = 7, then they should be able to use this knowledge to state that 20 + 50 = 70. Unitising tens and ones within a calculation can support children's understanding and help to avoid common misconceptions. Children may think that if 8 – 3 = 5, then 80 – 30 = 5 because the zeros cancel each other out. Some children may think that, for example, 20 + 30 = 500 because 2 + 3 = 5 and there are two zeros.		
Bonds to 100 (tens)	To apply known number bonds for numbers up to 10 to work out bonds for multiples of 10 up to 100	How many tens are there in 100? How many tens are there? How many more do you need to make 100? What is the bond to 100 for ____? What number are you starting with? What do you need to add to make 100? If 4 + 6 = 10, what is the missing number in 40 + ____ = 100? How do you know?	If ____ ones + ____ ones = 10, then ____ tens + ____ tens = 100. If I have ____ tens, I need to add ____ more tens to make 100. I need to add ____ to ____ to make 100.	The focus is on multiples of 10 that have bonds to 100. If children found any particular bonds to 10 challenging, they are likely to carry this through to this step. A Rekenrek and base 10 are useful concrete resources to support this learning. While base 10 supports the link between related facts, the Rekenrek ensures that children keep the 100 visible at all times. A hundred square can also be used.		
Add and subtract 1s (2AS 3)	**To be able to add and subtract 1s from any number within 100**	How many ones are there in ____? How many ones do you need to add/subtract?	____ has ____ tens and ____ ones. ____ ones + ____ ones = ____ ones, so ____ + ____ = ____.	Children may add to the wrong digit, for example 23 + 1 = 33. When a calculation is written with the smallest number first, for example 2 + 35, children may try to count on 35 rather than use the	The Add and Take-away Path (maths.org) The Add and Take-Away Path. Adding and subtracting practice	

Old Town Infant School and Nursery

MATHS MEDIUM TERM PLANNING

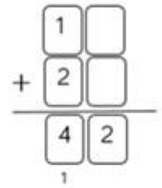
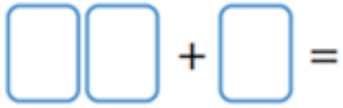
Coastal Learning PARTNERSHIP

		What is ____ ones + ____ ones? What is ____ + ____? What happens to the tens? What happens to the ones?	To subtract ____ ones, I need to subtract 1 ____ times.	commutative property of addition to support them.	with predicting and understanding inverse operations.	 Squares are worth 10 Triangles are worth 20 Circles are worth 30 Can you complete the grid above so that all horizontal and vertical lines equal 60? Can children create another pattern on an empty grid where each line equals 60? How many possible ways are there to solve this?
Add by making 10 (2AS 1)	**To add two 1-digit numbers by finding bonds to 10 and adding on**	What numbers do you need to add together? What is the bond to 10 for ____? What do you need to add to ____ to ____make ____? What can you partition ____into? How many more do you need to add to 10? What is ____ plus ____? Why does partitioning ____ into ____and ____ help with this question?	____ can be partitioned into ____ and ____. ____+ ____ = 10 10 + ____ = ____ So ____+ ____= ____.	If children are not confident in recalling their number bonds to 10, this will cause difficulty in this small step. Children may not partition the number they are adding in a way that simplifies the calculation. Some children may identify the jump to 10, but then still rely on their fingers to count beyond 10.		
Add three 1-digit numbers (2AS 1)	**To use number bonds to 10 to help add three 1-digit numbers**	What is ____ ones + ____ ones? If you add ____ more ones, what do you get? What is ____ + ____ + ____ ? Does it matter what order you add the numbers in? Can you see any number bonds in the calculation? What is the most efficient way to complete the calculation?	____ ones + ____ ones = ____ ones So ____ ones + ____ ones +____ ones = ____ones. ____and ____ are a bond to ____. 10 + ____ = ____ So ____+ ____ + ____ = ____.	Children recognise that to add three numbers, they just need to add two of them and then add the third to the answer. Children may add two pairs of numbers and then add the answers. For example, when working out 4 + 3 + 6, they might add 4 and 3 to give 7, add 3 and 6 to give 9 and then add the 9 to the 7. Children may make numerical errors when crossing 10.	What's in a Name? (maths.org) What's in a name? a problem to practise mental maths purposefully.	 Here are Class 2's crayons. They are given a new box of 10 each day for a week. How many crayons do they have at the end of the week?
Add to the next 10	**To use number bonds knowledge to add to the next ten**	What numbers do you need to add together? How many tens are there in____? What is the multiple of 10 after ____? How many ones are there in____? What is the bond to 10 for ____? How many more do you need to add to get to____? What is ____ plus ____?	____ has ____tens and ____ones. The next 10 is ____. The bond to 10 for ____ is ____. I need to add ____ to ____ to get to the next 10.	Useful concrete resources to support this learning are base 10 and Rekenreks, as children can physically see the 10 they are making. It is important they do not rely on counting the individual ones and so move towards a mental strategy. Calculations presented in a different way can feel more difficult.		 What digits could go in the boxes? ☐ 2 + ☐ 5 = 87
Add across a 10	**To add a 1 digit and a 2 digit number, crossing 10**	What numbers do you need to add together? How many tens are there in ____ ? What do you need to add to get to the next 10? What can you partition ____ into? How many more do you need to add? What is ____ plus ____ ?	The multiple of 10 after ____ is ____. I need to add ____ to get to the next 10. ____ +____ = ____ I need to add ____ more. So ____ + ____ = ____.	Children are not required to set their calculations up using the formal written method, but they should be encouraged to set concrete resources out in a methodical way. If children are not confident in their number bonds to 10, it can make this step more challenging. Children may think calculations such as 3 + 19 are harder than 19 + 3, but should be encouraged to recognise that these are the same.		34 + ☐ = 40 ☐ + 3 = 30 40 = 47 - ☐ 50 = ☐ - 6
Subtract across 10	**To subtract from 2-digit numbers less than 20, crossing 10**	How many do you start with? How many do you need to take away? What can you partition ____ into? How many do you need to subtract to get 10?	I need to subtract ____ to get to 10. can partition ____ into ____ and ____ . I need to subtract ____ more. ____ less than ____ is ____.	Children will need to partition the 1-digit number in order to get to 10 and then subtract whatever is remaining. Number lines for representing calculations and part-whole models for partitioning are useful throughout. Children may find the difference between the ones rather than correctly performing the	Arranging Additions and Sorting Subtractions (maths.org) Subtraction slip. Video for discussion of	

Old Town Infant School and Nursery

MATHS MEDIUM TERM PLANNING

Coastal Learning PARTNERSHIP

		How many more do you need to subtract? What is ____ less than ____?		subtraction, for example 15 – 7 = 12 because 7 – 5 = 2. If children incorrectly partition a number, this will lead to an incorrect answer.	subtraction of error and best method.	Find all the possible pairs of numbers that can complete the addition.  How do you know you have found all the pairs? What is the same about all the pairs of numbers? Here are three digit cards.  Place the digit cards in the number sentence. How many different totals can you find?  What is the smallest total? What is the largest total? Can you create a calculation where there will be an exchange in the ones and your answer will have two ones and be less than 100?
Subtract from a 10	**To subtract a 1-digit number from any multiple of 10 within 100**	How many do you start with? How many do you need to take away? What is the bond to 10 for ____ ? What is ____ less than 10? So what is less than ____? If you know that 4 + 6 = 10, what is 50 – 6? What do you notice about the tens? What do you notice about the ones?	When subtracting, the answer will be ____ than the number I start with. ____ +____ = 10, so 10 ____ – ____ = If 10 – ____ = ____, then ____ – ____ = ____.	Children subtract a 1-digit number from any multiple of 10 within 100. Their knowledge of fact families for number bonds is particularly helpful here. While children might initially count back using the chosen representations as support, it is essential that they do not rely too heavily on counting the individual ones, as they need to move towards a mental strategy. Children may not reduce the number of tens by 1, instead just using bonds to 10, for example 50 – 4 = 56		
Subtract a 1-digit number from a 2-digit number – (across a ten) (2AS 3)	To be able to subtract a 1-digit number from any 2-digit number with exchanging	How many do you start with? How many do you need to take away? What is the multiple of 10 before ____? What can you partition ____ into? How many do you need to subtract to get to the previous 10? How many more do you need to subtract? So what is ____ less than ____?	The previous multiple of 10 is ____. ____ = ____ + ____, so ____ – ____ = ____ – ____ –____ I need to subtract ____ and then subtract another ____.	Children are not required to set out their calculations using the formal written method. Children may find the difference between the ones digits, for example 34 – 7 = 33 because 7 – 4 = 3. When counting back, children may get to, for example, 50 and then go to 59, rather than recognising that they have crossed a 10 and should be at 49.		
10 more, 10 less (2AS 3)	**To be able to work out 10 more and 10 less than any number within 100**	What number are you starting with? When you count on 10, what do you get? When you count back 10, what do you get? What is 10 more/less than ____? What do you notice about the number of tens? What do you notice about the number of ones? What do you notice about the positions of the numbers on the hundred square?	____ has ____ tens and ____ ones. 10 more than ____ is ____. 10 less than____ is____.	Children may add or subtract 1 from the ones digit rather than from the tens digit. Children may jump straight to the next/previous multiple of 10 rather than finding 10 more/less than the given number. Children need to pay close attention to the digits in the number before and after finding 10 more/less to recognise that the tens digit increases/decreases by 1, while the ones digit remains unchanged.		
Add and subtract 10s (2AS 3)	**To be able to add and subtract multiples of 10 to numbers within 100**	What number are you starting with? Count on/back 10. What do you get? Count on/back another 10. What do you get? 30 has ____ tens, so I need to add/subtract ____ 10 times. What is ____ more/less than ____? What do you notice about the number of tens? What do you notice about the number of ones?	____ has ____ tens. To add/subtract ____, I need to add/subtract ____ 10 times.	Children may add or subtract from the ones digit rather than from the tens digit. Children may jump straight to the next/previous multiple of 10 and then keep counting in 10s.	Arranging Additions and Sorting Subtractions (maths.org) Arranging additions and sorting subtractions. Discussing and explaining which calculations are easiest/hardest.	

Old Town Infant School and Nursery

MATHS MEDIUM TERM PLANNING

Coastal Learning PARTNERSHIP

		What do you notice about the positions of the numbers on the hundred square?			
Add two 2-digit numbers – not across a ten (2AS 4)	**To be able to add two 2-digit numbers in different representations, without exchanging**	What numbers are you adding together? How many ones are there in each number? How many ones are there altogether? How many tens are there in each number? How many tens are there altogether?	____ ones + ____ ones = ____ ones. ____ tens + ____ tens = ____ tens. There are ____ ones altogether. There are ____ tens altogether. ____ tens and ____ ones is ____.	The calculations in this step do not require children to make an exchange. While it will be tempting for children to consider the tens first, as they are used to working from left to right, encourage them to first consider how many ones they have altogether before looking at the tens. If children do not set out their concrete resources in an organised way, they may make numerical errors. Children may add the tens first, then the ones. While this will work for these questions, it will hold them back in later steps.	
Add two 2-digit numbers – across a ten (2AS 4)	**To be able to add two 2-digit numbers by adding ones and tens, with exchange**	How many ones are there in each number? How many ones are there altogether? Can you make an exchange? Why? How many tens are there in each number? How many tens are there altogether? Did you include the ten from your exchange?	____ has ____ tens and ____ ones. ____ ones + ____ ones = ____ ones. ____ ones = ____ ten + ____ ones. There are ____ ones, so I do/do not need to make an exchange.	Children should first consider how many ones they have before looking at the tens. They could also be encouraged to think about why they need to do it in this order. Children do not need to set out their calculations using the column method, but should be encouraged to organise their manipulatives in a structured way. Children may say, for example, 25 + 38 = 513 because 5 ones + 8 ones = 13 ones and 2 tens + 3 tens = 5 tens. Children may forget to add the extra ten that resulted from an exchange.	
Subtract two 2-digit numbers (not across a ten) (2AS 4)	**To be able to subtract a 2-digit number from a 2-digit number in different representations, without exchanging**	What number are you subtracting from? What number are you subtracting? How many ones do you need to subtract? How many ones are left? How many tens do you need to subtract? How many tens are left? What is the difference between ____ and ____?	____ ones − ____ ones = ____ ones. ____ tens − ____ tens = ____ tens. The difference between ____ and ____ is ____. ____ minus ____ is equal to ____.	When adding, children used base 10 to make both numbers. Doing that here may cause confusion. Instead, they need to make the greater of the two numbers and "take away" the smaller one. Children may start by considering the tens first, which can cause problems with later learning.	
Subtract two 2-digit numbers (across a ten) (2AS 4)	**To be able to subtract a 2-digit number from a 2-digit number by subtracting ones and tens, with exchange**	What number are you subtracting from? How many ones do you need to subtract? What do you do if there are not enough ones? What can you exchange 1 ten for? How many tens do you need to subtract? How many tens are left? What is the difference between ____ and ____?	1 ten is equal to ____ ones. I need to exchange ____ for ____. I know I need to make an exchange because … The difference between ____ and ____ is ____.	Children look at calculations where they must exchange 1 ten for 10 ones in order to complete the subtraction. Children may simply find the difference between the tens digits and the ones digits in order to avoid making an exchange, for example 81 − 25 = 64 because 8 − 2 = 6 and 5 − 1 = 4. Children do not need to set out their calculations using the column method, but should be encouraged to organise their manipulatives in a structured way.	
Mixed addition and subtraction	To use a bar model to help answer mixed addition and subtraction word problems	Is the question an addition or a subtraction? How do you know? Do you need to make both numbers using base 10? Why/why not?	I know this is an addition/subtraction because… I know I need to make an exchange because… ____ plus ____ is equal to ____.	If children make both numbers using base 10 to perform a subtraction, this can lead to confusion. When performing a subtraction, children may just find the difference between digits in each column, rather than make an exchange.	Number Round Up (maths.org) Number Round Up. Context in which addition and subtraction can be practised.

True or False?

When you subtract 2 even numbers, the answer is always even.

Explain your answer.

Find the missing numbers.

$$\begin{array}{r} 6\,\square \\ -\ 2\,\square \\ \hline 4\ 2 \end{array}$$

Is this the only possible solution? Explain your answer.

Make the numbers using Base 10 to help you find your answer.

True or false?

"When you add 3 odd numbers it will make 20."

Take 3 consecutive one-digit numbers, e.g. 4, 5 and 6.

Add them together.

What do you notice?

Choose different groups of 3 consecutive one-digit numbers and see if there is a pattern.

Old Town Infant School and Nursery

MATHS MEDIUM TERM PLANNING

Coastal Learning PARTNERSHIP

		What does the number ____ represent in the calculation? Do you need to make an exchange? How do you know?	____ subtract ____ is equal to ____.	Before they begin a question, encourage children to consider whether it will require an exchange, and ask them to explain their decision.		
Compare number sentences (2NF 1)	**To compare number sentences by looking for what is the same and what is different**	What do the symbols >, < and = mean? Do you need to work out the answer to each calculation? Why/why not? When you add a greater number, is the answer greater or smaller? When you subtract a greater number, is the answer greater or smaller?	____ is greater/less than ____. ____ is greater than ____, so ____ + ____ is greater than ____ + ____. ____ is less than ____, so ____ – ____ is greater than ____ – ____.	Children should already be familiar with the inequality symbols and in this small step they use them to compare number sentences. Encourage children to use correct mathematical language to say their answer in words. Children may need reminding of the meaning of the inequality symbols. When comparing calculations, children may automatically find the value of each number sentence rather than considering the numbers that they are made up of.		
Missing number problems	**To solve problems that involve missing numbers**	What can you partition ____ into? How does that help you to work out the missing number? If one number increases by ____ ones, what must happen to the other number if the answer is the same? Do you need to work out the answer to each calculation? How can you check your answer? What do you notice about the numbers?	____ can be partitioned into ____ and ____. ____ +____ = ____ + ____ + ____ ____ is ____ more than ____, so the missing number must be ____.	Correct mathematical language can support children's understanding. When finding the missing number in 10 + 6 = 13 + ____, children may think that because 13 is 3 more than 10, then the missing number must be 3 more than 6. Children may try to complete a series of calculations to find the missing number, rather than think about the connections between the numbers in the question.	Eggs in Baskets (maths.org) Eggs in baskets. Problem needing complex thinking although small numbers are involved.	
Post-assessment	WRH end of block place value assessment – snip as feel appropriate Previous addition and subtraction SATs questions – snip as feel appropriate					