Unit 3A1 2 weeks

Counting, partitioning and calculating

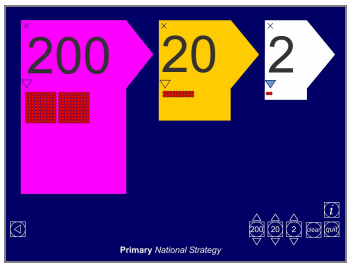
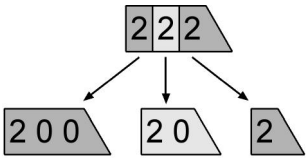
Objectives
End-of-year expectations (key objectives) are highlighted
• Describe and explain methods, choices and solutions to puzzles and problems, orally and in writing, using pictures and diagrams
• Read, write and order whole numbers to at least 1000 and position them on a number line; count on from and back to zero in single-digit steps or multiples of 10
• Partition three-digit numbers into multiples of 100, 10 and 1 in different ways
• Derive and recall all addition and subtraction facts for each number to 20, sums and differences of multiples of 10 and number pairs that total 100
• Add or subtract mentally combinations of one-digit and two-digit numbers

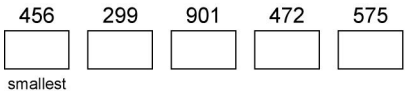
Starters

1	**Ordering two-digit numbers** Reason **Objective:** Read, write and order whole numbers to at least 1000 and position them on a number line; count on from and back to zero in single-digit steps or multiples of 10 Count aloud in tens to 100 and back to zero. Repeat, counting in 20s, then counting in 5s. Review the ordering of two-digit numbers. Play 'Guess my Number'. Explain that you are thinking of a number which children must identify by asking questions such as: Is it greater/more than …? Is it smaller/less than …? Does it lie between … and …? Say that you are only allowed to answer 'yes' or 'no' and that they can ask up to ten questions. Keep a record of the facts that are established by recording with symbols on the board, for example 50 > ☐ > 10 to indicate that the number lies between 50 and 10. After ten guesses work through the recorded facts and get children to read and explain them.
2	**Partitioning three-digit numbers** Rehearse **Objective:** Partition three-digit numbers into multiples of 100, 10 and 1 in different ways Write 704 on the board. Read it aloud in words. Discuss the value of different digits. • What is the value of the digit 7? Of the 4? • Why is there a zero or nought in the tens place? Explain that 'zero' and 'nought' are interchangeable, and that 0 is used as a place holder. • Which number is 100 more than 704? 100 less than 704? 10 more? 10 less? Talk through partitioning 437 into hundreds, tens and ones. 437 = 400 + 30 + 7 = 400 + 20 + 17 = 400 + 10 + 27 = 400 + 37 Ask children to predict the next few lines in the pattern, beginning with: = 300 + 90 + 47 Repeat with a few more numbers until children are confident. Give some missing-number calculations for children to complete, such as: 400 + ☐ + 3 = 453 ☐ + 20 + 8 = 928 600 + 70 + ☐ = 675

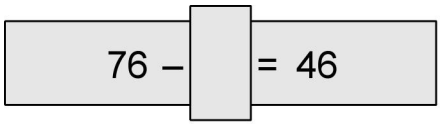
3	**Deriving addition and subtraction facts to 20** Recall **Objective:** Derive and recall all addition and subtraction facts for each number to 20, sums and differences of multiples of 10 and number pairs that total 100 Show the class a number card in the range 10 to 20, e.g. 17, then either a + or – sign card. Challenge them to write on their whiteboards as many number sentences as they can with an answer of 17. They must use the sign shown and any numbers up to and including 20. • What patterns could you use to help you find more number sentences? Remind them that addition can be done in any order, so 13 + 4 = 17 and 4 + 13 = 17 can be used. Repeat using a different number or sign, such as 16 or –.

Main activities

1	**Partitioning and ordering three-digit numbers** **Objective:** Partition three-digit numbers into multiples of 100, 10 and 1 in different ways Launch the ITP 'Place value'. Make the number 222.  • Which of the digits represents the greatest value? Click to reveal the number of counters to show children how much bigger the hundreds are than the other numbers. Ask children to make the number with their place value cards.  Show how to write it as the sum of multiples of 100, 10 and 1, e.g. 222 = 200 + 20 + 2. Repeat with other three-digit numbers. Make two 3-digit numbers such as 234 and 432. Ask children to read them aloud and to use place value cards to make each. Ask them to hold up the cards to show the larger number, and then the smaller number. • How can you tell which number is larger? Draw out that the hundreds digits tell us this. Record 234 < 432. Use 'Place value' to make 252 and 225. • Which is larger? How can we tell now? Draw out that the hundreds digits are the same, so we must look at the next digit. Repeat with similar pairs of numbers, then extend to three numbers, asking each time: • Which is the smallest number? Which is the largest number? How can you tell? Write three digits on the board, such as 5, 6 and 7. Ask children in pairs to use the digits to make as many different three-digit numbers as they can. Allow a couple of minutes, then collect the set of numbers on the board in random order: 657, 765, 576, 756, 675, 567.

	Ask the pairs to write the set of numbers in order. **Review** Bring the class together and, with the children, order a set of three-digit numbers such as:  Ask children to write these numbers in figures on their whiteboards: five hundred and sixty-three; six hundred and eighty; two hundred and eight. Check and correct any errors by partitioning the numbers. Choose a three-digit number, such as 253. Show how to write it in words: two hundred and fifty-three. Write it also as the sum of multiples of 100, 10 and 1: 253 = 200 + 50 + 3. Choose more numbers for children to write in words and to partition.
2	**Deriving addition and subtraction facts to 20** **Objective:** Derive and recall all addition and subtraction facts for each number to 20, sums and differences of multiples of 10 and number pairs that total 100 Ask a few quick-fire questions about complements in 10, varying the vocabulary as much as possible. For example: • What must be added to 4 to make 10? • What is 2 plus 8? 10 minus 3? • What is the difference between 10 and 7? • Subtract 5 from 10. • How many more is 10 than 1? Write 8 + 7 on the board. • Imagine that you have a friend who has forgotten the answer to this sum. How could your friend work out the answer? Acknowledge suggestions, which may include that 8 + 7 is double 8 minus 1, or double 7 plus 1, or other strategies. Draw out that, if all else fails, the answer can be worked out in two steps by bridging through 10. First work out how much of the 7 must be added to the 8 to make 10 and represent the 7 as 2 + 5. Illustrate the addition with an empty number line.  • How could you work out the answer to 6 + 9 using an empty number line and bridging through 10? Explain that, when adding, it is usually easier to put the larger number first. Write 9 + 6 on the board. Invite a child to the board to explain how to work out the answer by bridging through 10. Repeat with 6 + 7. Write 16 – 7 on the board. Explain that with subtraction we can count up from the smaller number to the larger number, again by bridging through 10. Illustrate the subtraction using an empty number line. 

	• How could you work out the answer to 13 – 6 using an empty number line and bridging through 10? Now ask children to work out the answer to 8 + 5, this time by imagining the number line. Repeat with 7 + 9, 12 – 5 and 15 – 8. Stress that there are other ways to work out addition and subtraction facts. For example, 16 – 7 might be done as 16 – 6 – 1, and 9 + 6 as 10 + 6 – 1. It doesn't matter which method is used but is important to be able to work out the answers quickly. Display this addition table. + | 5 | 6 | 7 | 8 | 9 5 | | | | | | 6 | | | | | | 7 | | | | | | 8 | | | | | | 9 | | | | | | With the children fill in the 'doubles' across the diagonal. Ask children to work in pairs to complete the table. **Review** Invite children to help you complete the displayed table. Make sure that they recognise that they can fill in 8 + 6 at the same time as they fill in 6 + 8. Add a row and column with 10 and quickly complete the extra row and column with the children. Invite children to identify the patterns in the table. Hide a cell, cells or a whole row or column and ask children to tell you the addition facts for the hidden cells.
3	**Using inverses to add and subtract** **Objective:** Add or subtract mentally combinations of one-digit and two-digit numbers Write 14 + 18 = ☐ on the board, with a box large enough to write in. Establish that the answer is 32 and write it in the box. Explain that this number sentence is part of a family of four. • What are the other associated number sentences? Collect the other three: 18 + 14 = 32, 32 – 14 = 18, 32 – 18 = 14. Stress that for each number sentence of this type there are usually three others that make up the family. Work through a double such as 17 + 17 = 34. Show that when the sum involves the same two numbers there is only one subtraction sentence: 34 – 17 = 17. Write 23 + 64 = ☐ on the board. Establish that the answer is 87. Ask children to use their whiteboards to write an associated number sentence. Check responses for all possibilities. Write 58 – 16 = 42 on the board. Develop the other three number sentences. • How can we describe the relationship between 58, 16 and 42? Encourage children to use terms such as 'more than', 'less than', 'difference between', 'sum of' and 'total of'. Write 67 + 20 = 87 on a card, and cover the 87 with a 'slidy box'. As an alternative to using strips of card, you could create pages on an interactive whiteboard, with one of the numbers covered. • What number do you think is hidden under the box? How do you know? Reveal the number to see whether children are correct.

	Write 54 + 30 = 84 on another card, and hide the 54. • What number do you think is hidden under the box? How do you know? Reveal the number to see whether children are correct. Write 76 – 30 = 46 on another card and hide the 30.  • What number do you think is hidden under the box? How do you know? Reveal the number to see whether children are correct. Repeat with other additions and subtractions, hiding either the first or second numbers. Ask children work in pairs to find the missing number and then to generate the other three number statements in statements such as: ☐ – 45 = 23 34 + 27 = ☐ 38 – ☐ = 21 ☐ + 17 = 46 **Review** Ask children to complete the number statement: 27 + ☐ = 64. Reinforce that knowing that 27 plus 37 equals 64 means that we know that 64 minus 27 equals 37, and that 64 minus 37 equals 27. Knowing that 27 + 37 = 64 is enough. Say that addition and subtraction are *inverse* operations. Addition is the inverse of subtraction and subtraction is the inverse of addition.

Seven more lessons consolidating the above and extending to:

a	**Reading, writing, partitioning and ordering three-digit numbers**
b	**Deriving and recalling all addition and subtraction facts for each number to 20, sums and differences of multiples of 10 and number pairs that total 100**
c	**Adding and subtracting mentally combinations of one-digit and two-digit numbers**
d	**Solving problems and puzzles, using pictures and diagrams to record methods and solutions**

Unit 3A2 2 weeks

Counting, partitioning and calculating

Objectives
End-of-year expectations (key objectives) are highlighted
• Describe and explain methods, choices and solutions to puzzles and problems, orally and in writing, using pictures and diagrams
• Partition three-digit numbers into multiples of 100, 10 and 1 in different ways
• Round two-digit or three-digit numbers to the nearest 10 or 100 and give estimates for their sums and differences
• Derive and recall all addition and subtraction facts for each number to 20, sums and differences of multiples of 10 and number pairs that total 100
• Add or subtract mentally combinations of one-digit and two-digit numbers
• Derive and recall multiplication facts for the 2, 3, 4, 5, 6 and 10 times-tables and the corresponding division facts; recognise multiples of 2, 5 or 10 up to 1000
• Multiply one-digit and two-digit numbers by 10 or 100, and describe the effect

Starters

1	**Recalling addition and subtraction facts to 20**	Recall
	Objective: Derive and recall all addition and subtraction facts for each number to 20, sums and differences of multiples of 10 and number pairs that total 100 Ask children to write six numbers between 1 and 20 on the left side of their whiteboards. Use two piles of cards, one 0–9 and the other 1–20. Turn over one card from each pile, e.g. 13 and 6. (Keep a record of the pairs, to check children's answers later.) Ask children to add or subtract these numbers. The aim is to make an answer that is one of the numbers they have written on their whiteboards, for example: 13 + 6 = 19 13 – 6 = 7 If they make a number on their whiteboard, they cross it off and record the number sentence on the right-hand side of the board. The first to cross out all their numbers wins.	
2	**Visualising coins and adding them mentally**	Reason
	Objective: Add or subtract mentally combinations of one-digit and two-digit numbers Ask children to imagine coins in a purse. • I have three £1 coins and two 10p coins in my purse. How much do I have altogether? Ask children to record the total amount of money (£3.20) on their whiteboards. If necessary, demonstrate using coins, perhaps on an interactive whiteboard. • I have three £2 coins and three 2p coins. How much do I have altogether? Check that children have written £6.06, not £6.6 or £6.60. • I have three coins in my purse. The total is £1.20. What could the coins be? (e.g. £1, 10p, 10p) Are there any other possibilities? (e.g. 50p, 50p, 20p) Repeat with other combinations. When children are confident, include 50p and 20p coins, and £5 and £10 notes. For example: • I have a £5 note, a 50p coin and a 10p coin. How much do I have in total?	

3	**Using patterns to add and subtract one-digit and two-digit numbers** Refine **Objective:** Add or subtract mentally combinations of one-digit and two-digit numbers Display a 100-square, but use it only if necessary. Ask a series of questions for children to answer on their whiteboards. Keep the units digit the same, and vary the wording. • What is 10 take away 6? 20 take away 6? 90 take away 6? 50 take away 6? • What is 30 minus 16? What is 70 minus 16? How did you work that out? • Subtract 26 from 50. Subtract 26 from 80. How did you work that out? • What do you notice about the answers to all these questions? (the units digit is always 4) Why? (because 10 take away 6 is 4) If children have difficulty with the questions, refer to the 100-square. Repeat with a different units digit. • What is 10 minus 3? 40 minus 3? 80 minus 3?

Main activities

1	**Rounding three-digit numbers to the nearest 10 or 100** **Objective:** Round two-digit or three-digit numbers to the nearest 10 or 100 and give estimates for their sums and differences Remind children how to round two-digit numbers to the nearest 10. • Which whole numbers between 80 and 90 would you round to 90 to the nearest 10? Agree that the key number is 85. Numbers below 85 round down to 80. Numbers 85 and above round up to 90. Move on to rounding to the nearest 100. • Which numbers between 300 and 400 would you round to 300 to the nearest 100? Agree that the key number is now 350. Numbers 301 to 349 round down to 300 and numbers 350 to 399 round up to 400. Explain that three-digit numbers can also be rounded to the nearest 10, using the rules for two-digit numbers, so 358 is 360 to the nearest 10 since 58 rounds up to 60, and 342 is 340 to the nearest 10 since 42 rounds down to 40. Go through more examples, including numbers that round up to the nearest 10, but down to the nearest 100, and vice versa. For example: 428 → 430 to the nearest 10 → 400 to the nearest 100 754 → 750 to the nearest 10 → 800 to the nearest 100 Use a kilometre chart similar to these distances from Croydon. Hastings 92 km York 255 km Brighton 67 km Central London 13 km Coventry 172 km Birmingham 209 km • How far is Hastings to the nearest 10 km/100 km? • How far is York to the nearest 10 km/100 km?

Establish that the answers are approximations.

- Why might we round distances up or down?

Establish that long distances are commonly approximated, particularly when reading from a map or estimating journey times.

Explain that rounding is also useful when estimating answers to calculations. Work through 72 + 39 on the board, rounding to 70 + 40 = 110. Explain that this can be a helpful way to judge if an answer is about the right size.

Estimate the answers to 63 + 28 and 83 – 28 by rounding to the nearest 10.

Write on the board: 600 + 200, 700 + 300, 600 + 300, 700 + 200.

- Which of these is the closest approximation to 608 + 297?

Establish that the calculation becomes 600 + 300 when each number is rounded to the nearest 100, so 600 + 300 is the closest approximation.

- What approximation could be used if the numbers were rounded to the nearest 10?

Discuss and establish 610 + 300 as the best approximation.

Review

Write up: 350 – 110, 300 – 100, 400 – 100, 320 – 120, 400 – 120.

- Which of these is the best approximation for 324 – 116?

Ask children to justify their choice.

- What if the numbers were rounded to the nearest 100?

2

Finding the total cost and giving change

Objective: Describe and explain methods, choices and solutions to puzzles and problems, orally and in writing, using pictures and diagrams

Discuss a supermarket leaflet advertising its prices, or show a selection of priced objects on the interactive whiteboard. Make sure that some prices are in pence only and some in pounds and pence.

- What is the most expensive item? How can you tell?
- What is the least expensive item? How can you tell?
- What can you buy for up to £1? Are there any other possibilities? Could you buy three items for £1?
- What is the price of two …? How could you use this to work out the price of four …?
- I have £2 to spend. What items could I buy?'

Show children how to record the prices and a running total.

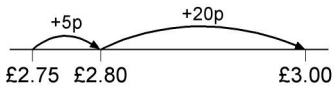
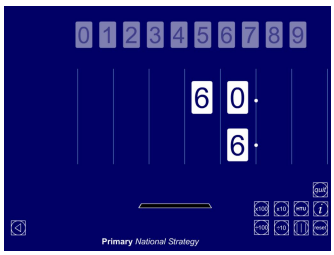
Item	Cost	Total amount spent
Lemonade	30p	30p
Pasta sauce	75p	£1.05

- How much have I spent altogether?
- What else could I buy with my £2? Will I have any money left? Can I buy something else?

Ask children to create their own list for £2 and then for £3.

Act as a 'shopkeeper'. Ask a few children to show their lists. Check the total on an OHP calculator, emphasising the position of the decimal point.

- If you pay the shopkeeper £3, what change will you need?

	• What coins will make up your change? Model giving the appropriate change by counting up from the amount to £3. Show this on a number line, for example:  • If my items cost a total of £2.39, what would my change be from £3? From £4? From £5? **Review** Finish by reminding children that £1 = 100p. • How many pence are there in £2? In £3? • How many pence in £3.50? What about £4.65? • I have six hundred and twenty pennies. What is that in pounds? • £8.00 is divided equally among 100 children. How much would each child get? How do you know?
3	**Multiplying by 10 and 100** **Objective:** Multiply one-digit and two-digit numbers by 10 or 100, and describe the effect Chant the 10 times-table, forwards and backwards (‘one ten is ten, two tens are twenty, three tens are thirty’, and so on). Write on the board: 6 × 10 = 60. Explain that each individual unit in the six ones has been multiplied by 10, or made 10 times larger, so each one becomes ten. Use the ITP ‘Moving digits’ to show how the six ones or units have become six tens, and the digit 6 has moved one place to the left.  Now write on the board: 40 × 10 = 400. Explain that this time each individual ten has been multiplied by 10, or made ten times larger. Demonstrate, using hundreds, tens and units boxes, how the four tens have become four hundreds, and the digit 4 has moved one place to the left. Write on the board: 46 × 10. Ask: • What do you think the answer will be? How did you work it out? Establish that each of the digits has moved one place to the left and that 0 has been put in the units place as a place holder. Explain that ‘add a 0’ is not acceptable. Repeat for one or two more two-digit numbers. Use an OHP calculator to multiply whole numbers under 100 by 10. Each time ask the class to predict the answer before you display it. Ask: • What will happen if I now divide the answer by 10? Establish the generalisation that dividing by 10 makes the number ten times smaller and that each of its digits moves one place to the right.

	Draw out, through a few different examples, that multiplying by 10 and dividing by 10 are inverse operations (one undoes the effect of the other). As a class, chant the 100 times-table up to 'nine hundreds are nine hundred, ten hundreds are one thousand'. Write on the board: 6 × 100 = 600. Read this aloud together: 'six multiplied by one hundred equals six hundred'. Explain that each individual unit has been multiplied by 100, or made 100 times larger. Demonstrate using the ITP 'Moving digits' how each has moved two places to the left. Write on the board: 10 × 100. Ask: • What do you think the answer will be? How did you work it out? Establish again that each digit has moved two places to the left. • What will happen if I now divide the answer by 100? Establish that dividing by 100 makes the number one hundred times smaller and that each digit has moved two places to the right. Draw out, through more examples, that dividing by 100 and multiplying by 100 are inverse operations. **Review** Pose some questions. • A lolly costs 7p. I buy 10 lollies. How much do I pay? How do you know? • What if I buy 100 lollies – how much is this in pounds? • A comic costs 70p. I buy 10 comics. How much do I pay? How much is this in pounds? Explain why. • A chew costs 4p. I buy 100 chews. How much do I pay? How much is this in pounds? • I pay 90p for 10 pens. How much is each pen? Explain how you worked it out. • I pay £8 for 100 stamps. How much is each stamp? • I pay £5 for some apples. Each apple costs 50p. How many apples did I buy? Explain how you worked it out.

Seven more lessons consolidating the above and extending to:

a	**Partition three-digit numbers into multiples of 100, 10 and 1 in different ways**
a	**Deriving and using the 2 and the 4 times-tables**
b	**Deriving and using the 3 and the 6 times-tables**
c	**Problem solving based on sequences and patterns**

Unit 3A3 2 weeks

Counting, partitioning and calculating

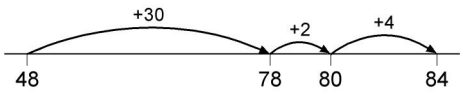
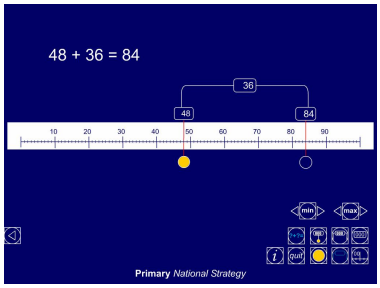
Objectives
End-of-year expectations (key objectives) are highlighted
• Solve one-step and two-step problems involving numbers, money or measures, including time, choosing and carrying out appropriate calculations
• Round two-digit or three-digit numbers to the nearest 10 or 100 and give estimates for their sums and differences
• Add or subtract mentally combinations of one-digit and two-digit numbers
• Develop and use written methods to record, support or explain addition and subtraction of two-digit and three-digit numbers
• Derive and recall multiplication facts for the 2, 3, 4, 5, 6 and 10 times-tables and the corresponding division facts; recognise multiples of 2, 5 or 10 up to 1000
• Use practical and informal written methods to multiply and divide two-digit numbers (e.g. 13 × 3, 50 ÷ 4); round remainders up or down, depending on the context

Starters

1	**Place value and problem solving**	Reason
	Objective: Solve one-step and two-step problems involving numbers, money or measures, including time, choosing and carrying out appropriate calculations Explain to children that the digit sum of 222 is 6; that is, we add the digits (not the values they represent) together. Ask children to discuss in pairs and to record on their whiteboards another three-digit number with a digit sum of 6. Ask them then to work in pairs to find as many different three-digit numbers with a digit sum of 6 that they can. Encourage them to be systematic, for example by using the biggest possible digit first (6). • What is the biggest possible three-digit number? And the smallest? How do you know? The complete list is 600, 510, 501, 420, 411, 402, 330, 321, 312, 303, 240, 231, 222, 213, 204, 150, 141, 132, 123, 114, 105.	
2	**Adding and subtracting mentally multiples of 10 or 100**	Revisit
	Objective: Add or subtract mentally combinations of one-digit and two-digit numbers Write 80 on the board. Count on in tens around the class to 230. Then begin at 1000, and count back in tens to 880. Ask: • What is 30 plus 50? 90 take away 40? How did you know the answer? • Add 700 to 200. How did you work it out? • Subtract 500 from 800. Explain how you did it. Extend to 56 + 30, 93 – 50. Refer to a 100-square to confirm answers, counting on or back in tens. Model the calculation on an empty number line. Write 357 on the board. • What do we add to change 357 into 397? To change 357 into 407? • What answer will we get if we take away 50 from 357? If we take away 60? How did you work it out?	

3	**Making decisions about which method to use**	Read
	Objective: Solve one-step and two-step problems involving numbers, money or measures, including time, choosing and carrying out appropriate calculations	
	Write a set of subtractions on the board. For example: 155 – 19 311 – 86 593 – 308 400 – 389 456 – 293 700 – 698 Discuss which of these questions can be done entirely mentally, which can be done mentally with some jottings, and which might need a written method in columns. Work through each calculation, inviting a child to explain their method to the class. Stress that the last example, in particular, is one that can be done mentally.	

Main activities

1	**Developing a written method for addition**
	Objective: Develop and use written methods to record, support or explain addition and subtraction of two-digit and three-digit numbers
	Write 48 + 36 on the board. Ask children to do the calculation mentally and to explain their method. Show them that, if necessary, they can use an empty number line as a jotting to support their thinking.  Repeat with 82 – 27, counting up from 27 to 77, to 80, to 82 (or other methods that children are confident with). Give some more examples. Provide extra support using the ITP ‘Number line’. Select options and ask questions to consolidate children’s understanding.  Say that some calculations are too awkward to be done mentally. Write 379 + 138 on the board. Ask: • What will the answer be, approximately? Establish that 379 can be rounded up to 400, and 138 can be rounded to 140. An approximate answer to the calculation is 400 + 140 = 540. Invite children to come to the board to do a column addition. They may use an expanded form, adding either the hundreds or the ones or units first. Stress the importance of lining up the columns to help avoid errors. 369 + 138 400 90 17 507 Repeat with one or two more examples. Demonstrate that adding the units column first

	produces the same result as adding the hundreds column first. Some children may be ready to move beyond this stage to carry out column addition in a more compact form, with carrying figures below the total. If they make persistent errors with this method, revert to the expanded form, asking them to explain the steps in their calculations. Give some practice. Write six 3-digit numbers on the board. Ask children to choose any two of the numbers and find the total.
2	**Developing a written method for subtraction** **Objective:** Develop and use written methods to record, support or explain addition and subtraction of two-digit and three-digit numbers Ask children to think about the mental methods of subtraction that they have used previously. Ask them to work out in their heads examples such as: 56 – 42 96 – 66 76 – 59 267 – 259 They can make jottings or sketch a number line. Prompt by saying: • Imagine a number line. What multiples of 10 can you see on it? What other numbers can you see? • What is the answer? How did you work it out? Explain that some calculations are too awkward to be done mentally. Write on the board: 784 – 159 Ask: • What will the answer be, approximately? Establish that 784 can be rounded up to 800, and 159 can be rounded to 200. An approximate answer to the calculation is 800 – 200 = 600. Invite children to come to the board to tackle the subtraction. They may already use a method accurately and reasonably quickly. If there is no clearly established approach, you could introduce complementary addition, which relates closely to the counting-up method on the number line. 784 – 159 1 to make 160 40 to make 200 500 to make 700 84 to make 784 625 Children may be able to shorten this to: 784 – 159 41 to make 200 584 to make 784 625 If children have made sound progress with mental methods of subtraction, and are confident with addition and subtraction facts to 20, introduce them to an expanded form of subtraction using partitioning. 784 = 700 + 80 + 4 = 700 + 70 + 14 – 159 100 + 50 + 9 100 + 50 + 9 600 + 20 + 5 = 625

	With either method, draw attention to the hundreds, tens and units columns and the need to keep digits in their correct columns. With partitioning, stress that the calculation begins with the ones or units column on the right. Demonstrate two more examples, then ask children to try for themselves. For now, restrict 'exchanging' to the tens and units.
3	**Solving word problems** **Objective:** Solve one-step and two-step problems involving numbers, money or measures, including time, choosing and carrying out appropriate calculations Give out Resource 3A3.1 of word problems. Explain that these are all word problems which need addition or subtraction to solve them. Stress to children that they need to read each problem carefully and consider if the answer will be more or less than the given starting numbers. Ask children to read each problem and discuss in pairs whether they think the problem requires addition or subtraction. If they think it needs addition, they should put + by the side, and – by the side if it needs subtraction. Discuss children's responses to a few of the problems and ask for the calculation needed. • Which words gave you clues? Remind children that some calculations can be done mentally and some need jottings to help. Ask children to annotate each problem with M (for Mental) or J (for Jottings). Explain that drawing jumps on a number line would be an example of a jotting. Draw an example to remind children what you mean. After they have discussed each problem, invite children to read a problem, explain how they think they will solve it and why. Ask children to select at least one problem from each category (+M, +J, −M, −J) and to solve it, making sure that their strategy is the most efficient. Ask them to read the problem after they have solved it to check that they have answered the question and that the answer seems reasonable in the context of the question. Remind them to make sure their answer includes any unit used. Write two numbers on the board, such as 21, 35. Invite one child to put the numbers into a 'number story', for example: 'I had 35 sweets. I gave 21 to my friend. How many were left?' • Does this need addition or subtraction? Ask children to answer by showing 'addition' with crossed fingers or 'subtraction' with a flat hand. • Would you solve this easily in your head or would it help to jot something on paper? Ask children to answer 'mentally' by pointing to their head or 'jottings' by holding up their whiteboard pen. Solve the problem as a class. Repeat as time allows, including some calculations which are easy to work out mentally and some which require jottings.

Seven more lessons consolidating the above and extending to:

a	**Rounding two-digit or three-digit numbers to the nearest 10 or 100 and using rounding to estimate sums and differences of two-digit and three-digit numbers**
b	**Developing recall of the 3, 4 and 6 times-tables through games and puzzles**
c	**Multiplying two-digit numbers using informal written methods, e.g. 13 × 3**
d	**Dividing two-digit numbers using informal methods, e.g. 50 ÷ 4**

1 Asif went to the shop with £43. He bought some toys.
He came home with £37.
How much did he spend?

2 Mary has lost 30 of her 86 marbles.
How many marbles does she still have?

3 A chew costs 6p. Nasreen bought 100 chews.
How much did she pay?

4 Tim's brother has saved £8 more than him. Tim has saved £48.
How much has Tim's brother saved?

5 There are 48 cakes on a plate. 27 children take a cake each.
How many cakes are left on the plate?

6 My sister has 27p. My brother has 32p. I have 10p.
What is the total amount that we have to spend?

7 Alice has 35 cars. John has 6 cars.
How many cars do Alice and John have altogether?

8 James is going on holiday next month.
He will get double his pocket money.
This month James had £16 pocket money.
How much will he get next month?

9 Leroy has 32 sweets in a bag. He drops 5 sweets.
How many sweets are left in the bag?

10 There are 25 black cows and 26 brown cows in a field.
How many cows are there altogether?