Unit 2A1 2 weeks

Counting, partitioning and calculating

Objectives
End-of-year expectations (key objectives) are highlighted
• Present solutions to puzzles and problems in an organised way; explain decisions, methods and results in pictorial, spoken or written form, using mathematical language and number sentences
• Read and write two-digit and three-digit numbers in figures and words; describe and extend number sequences and recognise odd and even numbers
• Count up to 100 objects by grouping them and counting in tens, fives or twos; explain what each digit in a two-digit number represents, including numbers where 0 is a place holder; partition two-digit numbers in different ways, including into multiples of 10 and 1
• Order two-digit numbers and position them on a number line; use the greater than (>) and less than (<) signs
• Estimate a number of objects; round two-digit numbers to the nearest 10
• Add or subtract mentally a one-digit number or a multiple of 10 to or from any two-digit number; use practical and informal written methods to add and subtract two-digit numbers
• Understand that subtraction is the inverse of addition and vice versa; use this to derive and record related addition and subtraction number sentences

Starters

1	**Read and write two-digit numbers in figures and words** Read **Objective:** Read and write two-digit and three-digit numbers in figures and words; describe and extend number sequences and recognise odd and even numbers Play the game 'Matching Pairs'. Use a set of 12 cards showing six 2-digit numbers, each one written in figures on one card and in words on another. Demonstrate the game. Shuffle the cards, then lay them out on the table in three rows of four, face down. Two players take turns to turn over any two cards. They check to see if the two cards match. If so, the player keeps the pair and has another turn. If not, the cards are turned face down again and the next player takes a turn. The winner is the player with the most pairs at the end of the game.
2	**Positioning numbers on a number line** Rehearse **Objective:** Order two-digit numbers and position them on a number line; use the greater than (>) and less than (<) signs Put out a 'washing line' with space for 30 numbers (or the same number as the number of children in the class). Prepare a set of number cards with 30 consecutive numbers between 10 and 100. Give each child one card. Choose a child to come forward, read their number aloud, and peg their card on the washing line. Ask another child to come forward and read aloud the number on their card. Ask the class to say together whether this number is greater than or less than the previous number. Ask how they know. The child then attaches their number to the washing line, to the left or right of the previous number as appropriate. Continue in this way until all the numbers are positioned in order on the number line. Choose any pair of numbers on the washing line. Record them on the board using the <

	sign or > sign, e.g. 14 < 21, 21 > 14. Read the sentences aloud as a whole class: fourteen is less than twenty-one, twenty-one is greater than fourteen. Repeat several times.
3	**Counting money in tens and ones** Refine **Objective:** Count up to 100 objects by grouping them and counting in tens, fives or twos; explain what each digit in a two-digit number represents, including numbers where 0 is a place holder; partition two-digit numbers in different ways, including into multiples of 10 and 1 Show children 10p and 1p coins, either large models or on an interactive whiteboard. Explain that you are going to set some out for them all to see. Count aloud as you place the coins to make 43p: 10p, 20p, 30p, 40p, 41p, 42p, 43p. Record 43p on the board. Now make 36p but ask the children to count with you as you do so. Ask them to record 36p on their whiteboards. Repeat for several different amounts, each time asking children to count aloud and to record on their whiteboards the amounts that are made. Now ask children to suggest an amount less than 50p. Write this down on the board. Now ask them to draw on their whiteboards the 10p and 1p coins that they would use to make the amount. Repeat a few more times.

Main activities

1	**Reading and ordering two-digit numbers** **Objective:** Read and write two-digit and three-digit numbers in figures and words; describe and extend number sequences and recognise odd and even numbers **Objective:** Order two-digit numbers and position them on a number line; use the greater than (>) and less than (<) signs Use a bead string up to 50 to count the beads in tens. • How many beads are there? Do we need to count them in ones like this, one, two, three, …? Or can we count them in a quicker way? • Where is the 20th bead? Do we need to count the beads in ones? Ask a child to come and write 20 on a tag and hang it after the 20th bead. Write 25 on a tag. • What does this number say? Where shall we hang the tag? How did you know? Did you have to count the beads from the beginning? Write 40 on a tag. • What does this number say? Where shall we hang the tag? How did you know? Count on 6 beads after 40. • What tag should we hang here? Why? Draw a large number line like this on the board. Say that the line starts at zero and goes up in tens. • What is the biggest number on the line? Where is 50? Why? Where is 10? And 20? And 40? • What number is halfway between 40 and 50? Where should we put 46? Will it be closer to 45 or 50? Where would we put 49? • Which two tens numbers does 25 lie between?

	Ask other questions to help children become familiar with the unnumbered line. • Where is 90? How do you know? Ask children to record the numbers between 90 and 100 on their whiteboards. Ask for volunteers to mark 5, 15, 25, …, 95. Count in tens along these numbers. Give out copies of Resource 2A1.1. Ask children to work in pairs, taking it in turns to roll two 0–9 dice. They use one number for the tens digit and one for the ones digit of a two-digit number. One child makes a smaller number and the other a larger number. They each mark and number their two-digit number on their number line. Demonstrate this first with the class. • If you roll a 6 and a 1, what large number can you make? What small number can you make? Are 16 and 61 near to each other or far apart? If you roll a 3 and a 4, what numbers can you make? Are 34 and 43 closer or further apart than 16 and 61? **Review** • What was the biggest number you could make with the two dice? What was the smallest? Was there a number that you couldn't make? Which numbers are not said as they are written? How do we write nineteen? • Which digit is important in deciding whether the number is big or small? Discuss how children decided where numbers should go on the number line. • Where would you put 79? Why? • Which are the two closest numbers to 60?
2	**Counting objects by grouping them in tens and ones** **Objective:** Count up to 100 objects by grouping them and counting in tens, fives or twos; explain what each digit in a two-digit number represents, including numbers where 0 is a place holder; partition two-digit numbers in different ways, including into multiples of 10 and 1 Show 46 beads on a bead string. Point out the four groups of 10, counting them: '10, 20, 30, 40'. Say that the digit 4 tells us how many groups of 10 there are in 46. Count on the 6 ones, saying: '1, 2, 3, 4, 5, 6'. Say that the digit 6 tells us how many ones there are. • What did we add to 40 to get 46? Write 46 = 40 + 6 on the board. • What would be left if we took away the 6 beads? What if we took away 40 beads from 46? How many beads would be left? Write 37 = 30 + ☐ on the board. • What would we add to 30 to get 37? Ask children to discuss with their partner before answering. Demonstrate on the bead string. Write 18 on the board. • What does this number say? What would it look like on a bead string? What number sentence could we write to show how many tens and ones there are? Give out copies of Resource 2A1.2. Ask children to look at the images on the sheet and what they show. Ask children to look at the first question. • What do you think that you are being asked to do? Ask children to complete the number sentences, using the bead pictures to help them. If

	they finish they should make up their own tens and ones number sentences. **Review** • Which question did you find most difficult? Why? • Is it easier to have the box at the beginning or the end? Discuss the 'tricky teens' and how these are said and written. Play 'What's my Number?'. When children think that they have guessed the number they should write it on their whiteboards. • My number has 2 tens and 3 ones. What's my number? • My number is the answer to 30 plus 2. What is it? • My number is 2 more than 50. What's my number? • My number is 39 take away 9. What is it? • My number is 75 take away 70. What's my number? • My number is the biggest two-digit number. What's my number? • My number is the smallest two-digit number. What is it?
3	**Solving problems in an organised way** **Objective:** Present solutions to puzzles and problems in an organised way; explain decisions, methods and results in pictorial, spoken or written form, using mathematical language and number sentences Put a bucket inside a hoop. Ask a child to throw three different coloured beanbags into the hoop or bucket one at a time. If the beanbag lands in the bucket, the score is 10. If it lands in the hoop the score is 5. If it lands in neither, the child throws again. Record the total score on the board, e.g. 5 + 5 + 10. • What is the total score? Agree that it is 20. • What do you think the largest score could be? Why? Agree that this will be 30, as the biggest score is 10 + 10 + 10. • What do you think the smallest score could be? Why? Agree that this is 15, made from 5 + 5 + 5. Tell children to work in pairs, and find all the possible totals. Remind them to record the totals in order in their books. Take feedback. Establish that the possible totals are 15, 20, 25 and 30. Ask for the ways that 25 can be made: 10 + 10 + 5; 10 + 5 + 10; 5 + 10 + 10. Point out that the total is the same; the order that the scores are shown in does not matter. Each one is two scores of 10 and one of 5. Show an OHT made from Resource 2A1.3. Point out that this time there are four beanbags. Ask children to work in pairs to find all the possible totals. Suggest that they start with largest or smallest total first. **Review** Ask each pair of children to share their answers with another pair and see if the answers are the same. Ask if anyone had a way of finding the answers in order. Ask a child to explain how they did this. If anyone did it differently, discuss this. For example, they could start with the biggest answer, 10 + 10 + 10 + 10, then find the next biggest answer, 10 + 10 + 10 + 5,

	and so on. • How did you know that you had found all the scores? • How many different totals are there? Establish that the five totals are: 5 + 5 + 5 + 5 = 20 5 + 5 + 5 + 10 = 25 5 + 5 + 10 + 10 = 30 5 + 10 + 10 + 10 = 35 10 + 10 + 10 + 10 = 40 and that the second, third and fourth totals could be scored in different orders, e.g. 5 + 10 + 5 + 5. Remind children of the importance of being systematic to ensure all the answers are found. • What do you notice about the possible scores? Discuss the fact that they are all multiples of 5 and that some are multiples of 10. • Could Chris have scored 18? Why not?

Seven more lessons consolidating the above and extending to:

a	**Adding a one-digit number or a multiple of 10 to any two-digit number**
b	**Subtracting a one-digit number or a multiple of 10 from any two-digit number**
c	**Understanding that subtraction is the inverse of addition and vice versa, and using this to derive and record related addition and subtraction number sentences**
d	**Problem solving**

Unit 2A2 2 weeks

Counting, partitioning and calculating

Objectives
End-of-year expectations (key objectives) are highlighted
• Present solutions to puzzles and problems in an organised way; explain decisions, methods and results in pictorial, spoken or written form, using mathematical language and number sentences
• Read and write two-digit and three-digit numbers in figures and words; describe and extend number sequences and recognise odd and even numbers
• Order two-digit numbers and position them on a number line; use the greater than (>) and less than (<) signs
• Count up to 100 objects by grouping them and counting in tens, fives or twos; explain what each digit in a two-digit number represents, including numbers where 0 is a place holder; partition two-digit numbers in different ways, including into multiples of 10 and 1
• Add or subtract mentally a one-digit number or a multiple of 10 to or from any two-digit number; use practical and informal written methods to add and subtract two-digit numbers
• Use the symbols +, –, ×, ÷ and = to record and interpret number sentences involving all four operations; calculate the value of an unknown in a number sentence (e.g. ☐ ÷ 2 = 6, 30 – ☐ = 24)

Starters

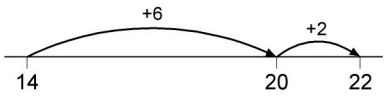
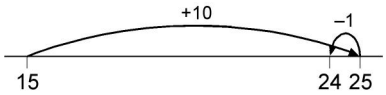
1	**Counting in 100s, 50s and 20s** Rehearse **Objective:** Read and write two-digit and three-digit numbers in figures and words; describe and extend number sequences and recognise odd and even numbers Use a counting stick to practise counting on and back from 0 to 1000. • Count in 100s from 0 to 1000. • Count in 50s starting from 500. • Count in 20s from 0 to 200, then 800 to 1000, then from 250 to 450. Vary the group of children required to respond, e.g. whole class, 'green' group.
2	**Adding a single-digit number to make 10 or 20** Recall **Objective:** Add or subtract mentally a one-digit number or a multiple of 10 to or from any two-digit number; use practical and informal written methods to add and subtract two-digit numbers Ask children to play a 'Target Game' using a calculator. Demonstrate the game using an OHP calculator or a calculator on the interactive whiteboard. Explain that the first game involves someone entering a number less than 10, then passing the calculator to a partner who has to get to 10 by adding another number. Ask children for a number to enter, e.g. 7. • What keys do I need to press to reach 10? Try what children suggest. Establish that the keys are [+], [3] and [=]. Get children to play the game in pairs for a few minutes, taking turns to enter a number, while their partner presses the appropriate keys to finish with an answer of 10. Now explain a second game. This involves one child entering a number between 10 and 20, then passing the calculator to their partner who has to get to 20 by adding another number. Play the game for a few minutes.

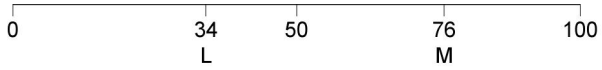
3	**Inverse operations** Reason **Objective:** Use the symbols +, –, ×, ÷ and = to record and interpret number sentences involving all four operations; calculate the value of an unknown in a number sentence (e.g. □ ÷ 2 = 6, 30 – □ = 24) Ask children to write three different number sentences using the numbers 35, 7 and 42 with = and any of the four signs +, –, ×, ÷. Ask them to show and explain their solutions to a partner, and to discuss any differences. Invite one or two pairs where there was disagreement in their number sentences to describe the differences to the class, and say how they were resolved. Repeat for sets of numbers requiring other operations, such as 35, 5, 7.

Main activities

1	**Working in an organised way to choose three cards with a sum of 12** **Objective:** Present solutions to puzzles and problems in an organised way; explain decisions, methods and results in pictorial, spoken or written form, using mathematical language and number sentences Show an OHT made from Resource 2A2.1. Ask children in pairs to write an answer to the first question on their whiteboards. Take feedback. • Have we got some answers that are the same? How do you know? • Have we got all ten answers between us? Tell children that it helps to record the answers in order so that they don't miss any or repeat any. Ask them to talk to their partner about how they could do this and where they would start. Take suggestions. Say that one way would be to find all the possible ways of making 12 if the first card is zero. • If we have to find three numbers that total 12 and one is zero, what must the two remaining numbers total? Ask children to work in pairs to find the pairs to 12. Remind them to put the pairs in order in an organised way. Collect answers: 9 + 3, 8 + 4, 7 + 5. Write them on the board, putting the zero first. 0 + 9 + 3 = 12 0 + 8 + 4 = 12 0 + 7 + 5 = 12 • Is 0 + 5 + 7 = 12 a different answer? Why don't we need this? • Why haven't we used 1 or 2 with zero? Why haven't we used 6 and 6? Emphasise that there is only one of each card. Also, make sure that children understand that if one card is 0 and another is 1, the other card would have to be 11, which is not one of the ten cards. • What number shall we start with next? Ask children to find a total of 12 using 1 as the first card and to record their number sentences on their whiteboards. Take feedback and record answers on the board, following on from the set beginning with zero. 1 + 9 + 2 = 12 1 + 8 + 3 = 12 1 + 7 + 4 = 12 1 + 6 + 5 = 12

	• Can you see any patterns? Discuss the pattern 9, 8, 7, 6 and 2, 3, 4, 5. • Which number shall we use as our first card now? • If we have to find three numbers which total 12 and one is 2, what must the two remaining numbers total? Ask children to record answers as before. Take feedback and record responses on the board: 2 + 9 + 1 = 12 2 + 7 + 3 = 12 2 + 6 + 4 = 12 • Can you see a set of three numbers that we have already used? Agree that 2 + 9 + 1 and 1 + 9 + 2 are the same three cards. Explain that as you don't want any repeats you will cross out 2 + 9 + 1. Ask children to start with 3 and record as before. Take feedback. Help children to see that the only new answer is 3 + 4 + 5 = 12. Ask children to start with 4 and to see if this gives any new answers. Agree that it does not as the other two cards will have a total of 8 and all pairs with a total of 8 have been used. Say that starting with higher numbers will also give answers they already have and so they don't need to go any further. Check that you have ten answers as suggested in the question. Ask children to work in pairs to look at question 2. Remind them that we have been learning to record systematically and they should do the same. If there is time, children should move on to answer question 3. **Review** Ask pairs of children to share their answers to questions with another pair and to see if their answers were the same. Collect the answers to question 2 on the board. • How many different ways would there be if the 0 card was not there? Point out that if they have recorded systematically this is easy to find out. Write on the board: □ + □ + 3 = 11 Say that the boxes represent the same number. Ask children in pairs to work out what the number must be. Take feedback, asking children to explain how they worked it out.
2	**Adding and subtracting on a number line** **Objective:** Add or subtract mentally a one-digit number or a multiple of 10 to or from any two-digit number; use practical and informal written methods to add and subtract two-digit numbers Write on the board: 14 + 8. Ask children to discuss with their partner how they would do this. Record it as a number sentence. Agree that they can use the number facts for multiples of 10: 14 + 8 = 14 + 6 + 2 14 + 6 = 20 20 + 2 = 22

	Show this on a number line.  Repeat with: 17 + 8. • How could we partition the 8 to make it easier to do this calculation? Ask children to record the calculations that they do. 17 + 8 = 17 + 3 + 5 17 + 3 = 20 20 + 5 = 25 Show this on a number line.  Repeat with other calculations. Write on the board: 15 + 9. • How could you do this calculation? Remind children of other strategies they have used before, e.g. to add 10 and adjust. Show this on a number line.  Give out and read through copies of Resource 2A2.2. Ask children to complete it. **Review** Ask children to explain to a partner how they grouped their calculations. Discuss answers. Write on the board: 24 + 8. Ask children to visualise the number line and to do 24 + 6 = 30 and 30 + 2 = 32. • Why did we partition the 8 into 6 + 2? Agree that it is because we want to use the pairs that make 10, i.e. 24 + 6 = 30, since adding onto a multiple of 10 is easy. Repeat with other calculations bridging through multiples of 10.
3	**Ordering two-digit numbers** **Objective:** Order two-digit numbers and position them on a number line; use the greater than (>) and less than (<) signs Write 'eighty-four' and 'seventy-three' in words on the board. Ask children to write these numbers in figures on their whiteboards. Record 84 and 73 on the board. • Which is the larger number? How do you know? Which digit do you look at to find the larger number? Write 23 and 32 on the board. Ask children, in pairs, to discuss the following questions, posing one question at a time and taking feedback before moving on to the next question. • Which is the larger number? How do you know? Which digit do you look at to find the larger number? Show 23 and 32 using place value cards. Demonstrate by partitioning that 32 is more

	because 30 is more than 20. Emphasise again that we look at the digit with the greatest value – the tens digit in this case – to show us that the whole number is more. Ask two children to find and point to 32 and 23 on the number line so that we can see 32 is more than 23. Ask a third child to find and point to a number that lies between 23 and 32. Explain the meaning of the > and < signs and show children how to use them. Ask children to discuss with their partner how they might use the > and < signs to describe the relationship between 23 and 32. Share responses. Establish that we could write: 23 < 32 32 > 23 Read these two sentences aloud together: '23 is less than 32; 32 is greater than 23'. Ask children to work in pairs to choose an odd number that is greater than 40 and less than 75 and to write down their number. Now ask them to choose an even number greater than 45 and less than 70 and write that number down. Ask them to discuss with their partner which of the two numbers is less and how they know. Now ask them to use the 'less than' symbol with their two numbers to record what they have decided. • What numbers did you choose? How did you decide which of the two numbers is less? Give two dice to each pair of children, one marked in tens and the other in ones. Children throw both dice and then write down the number they make, in words and in numerals. They then mark and label the number on a number line marked with 0, 50 and 100. They then throw both the dice again, write down the number that they make in words and numerals and mark and label the number on the number line. They write M under the number which is more and L under the number which is less, for example:  Ask children to record this using the < and > signs. 34 < 76 76 > 34 They should repeat this, sketching a new '0, 50, 100' number line each time. **Review** Make and show an OHT of the word problems on Resource 2A2.3. Read the first question. Ask children to discuss the question with their partner and then write down their agreed decision using the appropriate sign, for example 28 cm < 82 cm. • How did you decide on your answer? Repeat with the other questions.

Seven more lessons consolidating the above and extending to:

a	**Counting objects by grouping them and counting in tens, explaining what each digit in a two-digit number represents and partitioning two-digit numbers into multiples of 10 and 1 in different ways**
b	**Reading and writing three-digit numbers in figures and words; odd and even numbers**
c	**Informal written methods for adding and subtracting two-digit numbers**
d	**Calculating the value of an unknown, e.g. in 30 – ☐ = 24, ☐ ÷ 2 = 6**

Unit 2A3 2 weeks

Counting, partitioning and calculating

Objectives End-of-year expectations (key objectives) are highlighted
• Present solutions to puzzles and problems in an organised way; explain decisions, methods and results in pictorial, spoken or written form, using mathematical language and number sentences
• Read and write two-digit and three-digit numbers in figures and words; describe and extend number sequences and recognise odd and even numbers
• Count up to 100 objects by grouping them and counting in tens, fives or twos; explain what each digit in a two-digit number represents, including numbers where 0 is a place holder; partition two-digit numbers in different ways, including into multiples of 10 and 1
• Order two-digit numbers and position them on a number line; use the greater than (>), less than (<) signs
• Estimate a number of objects; round two-digit numbers to the nearest 10
• Add or subtract mentally a one-digit number or a multiple of 10 to or from any two-digit number; use practical and informal written methods to add and subtract two-digit numbers
• Understand that subtraction is the inverse of addition and vice versa; use this to derive and record related addition and subtraction number sentences
• Use the symbols +, –, ×, ÷ and = to record and interpret number sentences involving all four operations; calculate the value of an unknown in a number sentence (e.g. ☐ ÷ 2 = 6, 30 – ☐ = 24)

Starters

1	**Using the < and > signs**	Rehearse
	Objective: Order two-digit numbers and position them on a number line; use the greater than (>) and less than (<) signs Hold up a card with an inequality written on it, for example 4 < 7. Ask children to discuss with a partner what it says. Take feedback. Demonstrate using a number line that 4 is less than 7. Repeat with other inequalities written on cards for children to read and demonstrate on a number line. Now read out some inequalities. Ask children to record them on their whiteboards, using the < and > signs, for example 'five is less than thirteen; nineteen is greater than twelve'. Ask children to write some of their own statements using < or > on their whiteboards. Ask some children to read out their statement.	
2	**Rounding to the nearest 10 and estimating a number of objects**	Refine
	Objective: Estimate a number of objects; round two-digit numbers to the nearest 10 Prepare sets of 21 consecutive number cards, beginning and ending with a multiple of 10, for example 30 to 50 or 60 to 80. Ask children to work in pairs to order the cards. Now ask them to sort the cards into three groups: those nearest to the lowest multiple of 10, those nearest to the middle multiple of 10, and those nearest to the highest multiple of 10. Each pair then joins another pair. Children check each other's groupings, discussing any changes that they would like to make. Ask a few questions for children to answer on their whiteboards, such as:	

	• What is 87 rounded to the nearest 10? • What is 42 rounded to the nearest 10? • What is 65 rounded to the nearest 10? Give each group of four children a pot of dried beans. Ask the groups to tip the beans carefully on their tables. Each child should estimate the number of beans and record the estimate on their whiteboards. The group should then count their beans by grouping them in tens and ones, recording the actual number next to their estimate. Ask each group to decide whose estimate was closest to the actual number.
3	**Solving missing number problems** Refine **Objective:** Use the symbols +, –, ×, ÷ and = to record and interpret number sentences involving all four operations; calculate the value of an unknown in a number sentence (e.g. ☐ ÷ 2 = 6, 30 – ☐ = 24) Use some prepared number-sentence cards with a slider so that a number can be hidden. For example: 15 + ☐ = 22 ☐ + 7 = 24 5 × ☐ = 30 ☐ ÷ 2 = 10 Ask children to read out the sentences; for example: '15 plus a number equals 22'. Ask them to talk to their partner about what number they think is missing. When pairs have agreed, ask them to write out the full number sentence on their whiteboards. Discuss with the whole class how the pairs worked out the answers. Ask pairs to check whether what they have written is correct. Ask how they know.

Main activities

1	**Solving word problems** **Objective:** Present solutions to puzzles and problems in an organised way; explain decisions, methods and results in pictorial, spoken or written form, using mathematical language and number sentences Write on the board: 13 + 19. Ask children in pairs to make up a number story to reflect this. For example: 'I have 13 stickers and I buy another 19. How many stickers do I have altogether?' Choose one of the children's number stories and write it on the board. • How could you solve this problem? • What calculation will you do? • How will you do the calculation? Ask them to show their method on their whiteboards, e.g. 13 + 20 = 33, 33 – 1 = 32. • What were the important words that helped you to know that it was an addition problem? Underline the words. Repeat by writing on the board: 3 × 4. Ask children to make up a number story to reflect this; for example: 'A tricycle has three wheels. How many wheels are on four tricycles?' Choose one of the children's number stories and write it on the board. • How could you solve this problem? • What calculation will you do? • How will you do the calculation? (e.g. drawing hops of 3 on a number line and counting

	in threes mentally) Ask them to show their method on their whiteboards. Write on the board: ☐ – 4 = 58. Ask children to talk to their partners about how they would work out the missing number. • What calculation will you do? (e.g. add 4 to 58) • How will you do the calculation? (e.g. add 2 to get to 60, then 2 more) • How could you check the answer? (e.g. put the answer in the box, and work out the calculation to check that it works, i.e. 62 – 4 = 58) Ask children to make up a number story to reflect ☐ – 4 = 58. Write on the board: 36 – ☐ = 4. Ask children to talk to their partners about how they would work out the missing number. • What calculation will you do and how will you do it? (e.g. subtract 4 from 36; count on from 4 to 36) • How could you check the answer? Ask children to make up a number story to reflect 36 – ☐ = 4. Give out copies of **Resource 2A3.1**. Ask children to answer the questions. **Review** Use a prepared card showing the number sentence 24 + 8 = 32 but with the '+' symbol hidden by a slider or replaced by a symbol, such as 24 ○ 8 = 32. • What do you think is covered up? Why? • How do you know that the operation is addition? Encourage children to answer with a sentence; for example: 'This is addition because 24 plus 8 equals 32.' Ask children how they might check their answer. Repeat with: 6 = 3 ○ 2 33 = 14 ○ 19 87 ○ 9 = 78 10 ○ 2 = 5
2	**Number sequences** **Objective:** Read and write two-digit and three-digit numbers in figures and words; describe and extend number sequences and recognise odd and even numbers Write on the board: 3, 12, 21, 30, … • What is the next number in this sequence? How do you know? Ask children to discuss this with a partner. Discuss with the whole class and agree that 9 is added each time. Ask children to continue the sequence for another five terms on their whiteboards. Record the answers. Ask if children notice any patterns. • What do you notice about the ones digits and the tens digits? Why do you think this is happening? Draw out that we can add 9 by adding 10 and then subtracting 1 so the tens digit will increase by 1 and the units will decrease by 1 each time. Write on the board: 2, 4, … • Can you predict the next number in this sequence? Draw out that it could be 6 or 8. Agree that we need more terms to establish the rule.

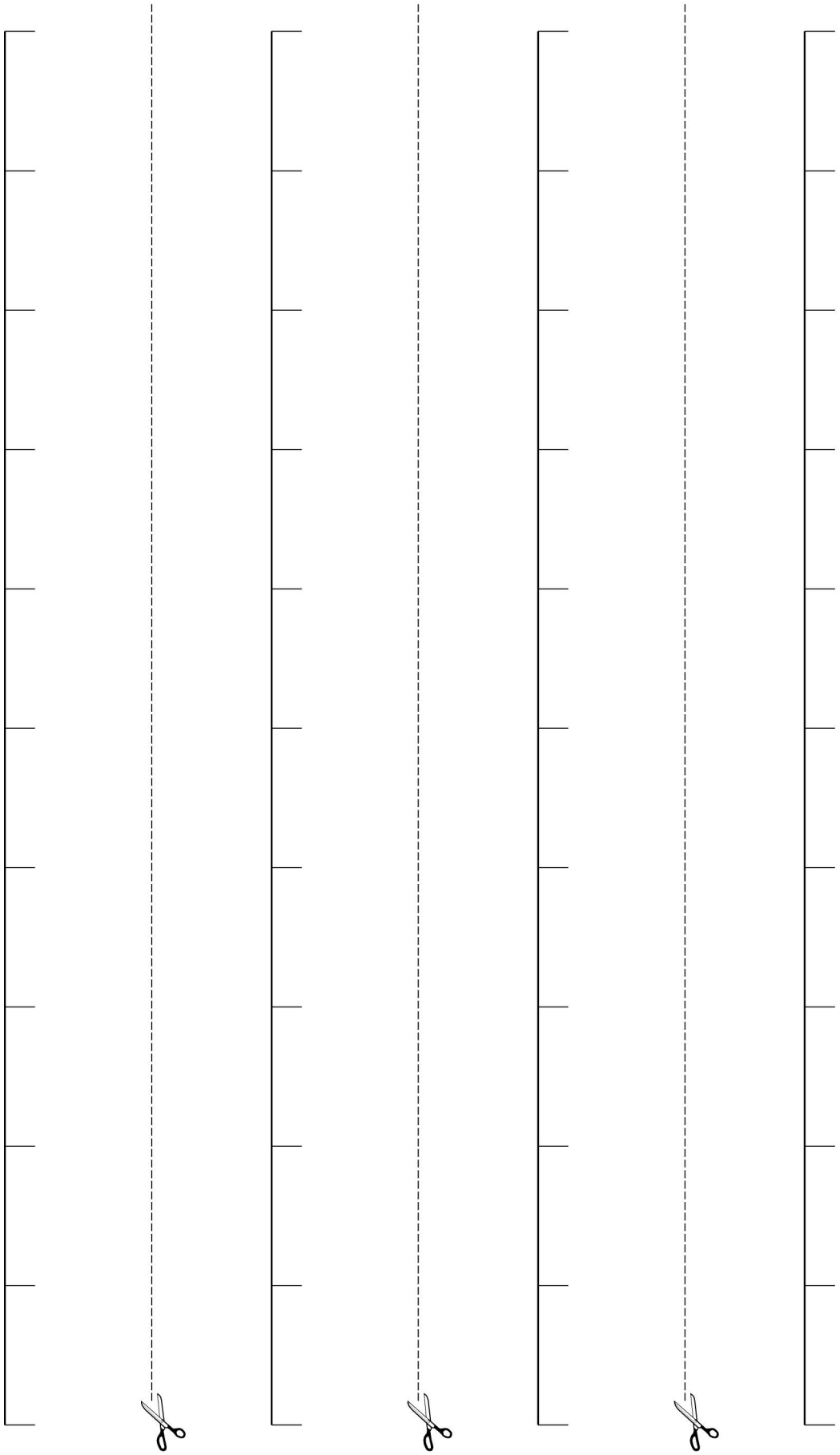
	Write on the board: 2, 4, 6, … • Can you be sure of the rule now? Some children may say that the next term is 10 because 2 + 4 = 6, 4 + 6 = 10. If so give the next term, 8. • What is the rule? Agree that the rule is to add on 2 each time. Ask children to write in their books 2, 4, 6, 8, and the next five numbers in the sequence. • What if the rule were the same but the start number was 1 – what would the sequence be? Ask children to record the first eight numbers in the sequence in their books. • What do you notice about the sequence? • How is it the same as the previous sequence? How is it different? Draw out that both sequences contain alternate numbers, but that the numbers in the first sequence all divide exactly by 2 and are even, whereas the numbers in the second sequence don't divide exactly by 2 and are all odd. Ask each child to think of their own rule for a sequence, to write the first few numbers on their whiteboards and to ask their partner to guess their rule. • How many numbers did you need before you could work out the rule? **Review** Write on the board: 27, 23, 19, … • What will the fifth number in this sequence be? Ask children to tell their partner how they worked it out. Ask if everyone remembered to check that their rule worked. • What was different about this sequence from the others that we looked at? Stress that sequences can go down as well as up.
3	**Estimating a number of objects or amounts of money** **Objective:** Estimate a number of objects; round two-digit numbers to the nearest 10 Show a tray of about 40 conkers or other objects. • Do you think that there are enough objects for everyone in the class to have one? • Roughly how many objects are there? How do you know? Explain that this is an *estimate*. Discuss how we can use an estimate rather than a wild guess. Demonstrate by showing 5 objects. • Do you think there are as many as 100? Why not? • Are there more or fewer than 5? Repeat with another set of objects. Ask children in pairs to agree an estimate. • Are there more or less than 5? More or less than 20? Show an OHT of Resource 2A3.2. Ask children to estimate how many spots are on it. Repeat with Resource 2A3.3 and Resource 2A3.4. • How did you estimate the number of spots? Did any of you see any groups of five? Demonstrate how roughly grouping the spots into fives can help to inform the estimate.

	Use prepared sets of objects set out on tables, such as 85 counters in a jar, 48 shells in a bowl, 95 cubes in a box, 23 bricks in a box, 100 grains of rice in a jar, 32 pasta shells in a jar. Ask children to go round and look at each set of objects, make an estimate of how many there are and record their estimates in their books. After most children have completed the task, take feedback on the answers for each set. • How did you come to your estimate? Ask children to find out by counting how many are in the sets. Give each group one set of objects to count and write the actual numbers on the board. Ask children to compare their estimates with the actual numbers and to work out the differences. • Who was closest? How close does an estimate need to be to be a good estimate? Does it need to be exactly right? What would be a silly estimate? **Review** Show a handful of pennies on the OHP or interactive whiteboard. • How much money is there? Then use a mix of 2p and 1p coins. • How much is there now? How did you estimate? Count the money to see if they were close. Show two amounts of money on either side of the screen. • Which amount would you rather have? Count each amount to check which is the larger.

Seven more lessons consolidating the above and extending to:

a	**Estimating up to 100 objects and counting them by grouping them in tens, fives or twos; partitioning two-digit numbers into multiples of 10 and 1**
b	**Reading and writing three-digit numbers in figures and words; number sequences**
c	**Using informal written methods to add and subtract two-digit numbers**
d	**Problem solving**

Resource 2A1.1



23 = 20 + ☐

34 = 30 + ☐

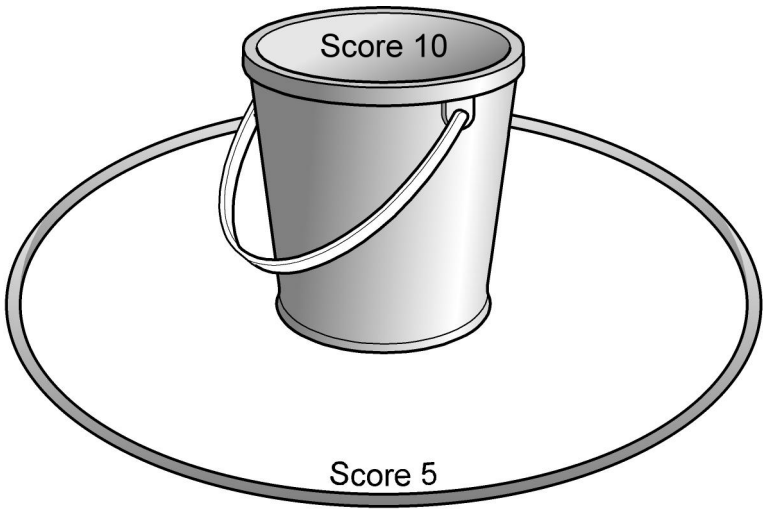
27 = ☐ + 7

44 = ☐ + 4

☐ = 30 + 4

☐ = 50 + 5

Chris threw four beanbags.
Each beanbag went in the bucket or the hoop.



Chris added up his four scores to find the total score.
Find all the possible totals Chris could get.

Make a list of them.
Make sure that you don't repeat or miss any possibilities.

Take ten cards numbered 0 to 9.

1 Pick three cards with a total of 12.
You can do it in ten different ways.
See if you can record them all.

2 Now pick four cards with a total of 12.
How many ways can you do it?

3 Can you pick five cards with a total of 12?

Which strategy would you use?

Group the calculations into the strategy you would use. Then choose two calculations from each group and complete them.

14 + 9	13 + 8	18 + 6	23 + 19	16 + 8
15 + 7	42 + 19	37 + 19	24 + 9	25 + 6

Add to the next 10 first	Add 10 or 20 then adjust

Tell your partner how you worked out the answers to these problems.

1 Which is less: 28 cm or 82 cm?

2 Which is more: £31 or £13?

3 I have two pieces of ribbon.
One is 4 cm long. The other is 6 cm long.
I need the longest piece.
Which one is it?

4 Ella was given £23 for Christmas. Desi was given £32.
Who got more money?

5 It takes Ella 49 seconds to drink a glass of milk.
It takes Kiz 53 seconds.
Who drinks the milk faster?

6 Hannah took a longer time than Ella but a shorter time than Kiz to drink her milk.
What time could she have taken?

1 Make up a number story for this calculation.

24 + 11

Underline the important words which show which operation is needed.

How would you work out the answer? Show your method.

2 Make up a number story for this calculation.

17 + 5

Underline the important words which show which operation is needed.

How would you work out the answer? Show your method.

3 Make up a calculation. Ask your partner to write a number story for it.

Ask your partner to underline the important words and to show how you could work out the answer.

Check to find out if you would have done the same.