Five daily lessons

Unit 9
Ordering numbers and understanding addition and subtraction

Primary National Strategy

This Unit Plan is designed to guide your teaching.

You will need to adapt it to meet the needs of your class.

Year 2
Autumn term

Unit Objectives

Year 2

Use and begin to read the vocabulary of comparing and ordering numbers, including ordinal numbers to 100.	Page 11
Order whole numbers to at least 100, and position them on a number line and 100 square.	Page 15
Extend understanding of the operations of addition and subtraction. Use and begin to read the related vocabulary.	Page 25
Find a small difference by counting up from the smaller to the larger number.	Page 33
Use patterns of similar calculations.	Page 35
Choose and use appropriate operations and efficient calculation strategies (e.g. mental, mental with jottings) **to solve problems.**	Page 61
Recognise all coins and begin to use the £.p notation for money. Find totals, give change, and work out which coins to pay.	Page 69

Link Objectives

Year 1

Understand and use the vocabulary of comparing and ordering numbers, including ordinal numbers to at least 20.
Order numbers to at least 20 and position them on a number track.
Understand the operation of addition, and of subtraction (as 'take away', 'difference', and 'how many more to make').
Use patterns of similar calculations.
Recognise coins of different values. Find totals and change from up to 20p. Work out how to pay an exact sum using smaller coins.
Choose and use appropriate number operations and mental strategies to solve problems.

Year 3

Read and begin to write the vocabulary of comparing and ordering numbers, including ordinal numbers to at least 100.
Order whole numbers to at least 1000, and position them on a number line.
Extend understanding of the operations of addition and subtraction, read and begin to write the related vocabulary, and continue to recognise that addition can be done in any order.
Find a small difference by counting up from the smaller to the larger number.
Use patterns of similar calculations.
Recognise all coins and notes. **Understand and use the £.p notation.**
Choose and use appropriate operations (including multiplication and division) to solve word problems and appropriate ways of calculating: mental, mental with jottings, pencil and paper.

(Key objectives in bold)

Resources needed to teach this unit:

Resource sheet 9.1
OHT 9.1
OHT 9.2
OHT 9.3
OHT 9.4
OHT 9.5
Activity sheet 9.1
Activity sheet 9.2
Activity sheet 9.3
Interactive teaching program (ITP) 'Ordering numbers'
ITP 'Number grid' (from Y4-6 plans and website: www.standards.dfes.gov.uk/primary/numeracy)
ITP 'Difference'
100 square
Toys and price tags
Strips of paper (approx 60cm x 12cm)
Place value cards
100 bead string
Mega money (large coins)
Sticky notes
Whiteboards

See Models and Images Charts:
Ordering numbers to 100;
Counting on and back in tens;
Partitioning and recombining;
Understanding addition and subtraction.

department for education and skills

Planning sheet	**Day One**	**Unit 9** ***Ordering numbers and understanding addition and subtraction***	**Term:** ***Autumn***	**Year Group:** ***2***

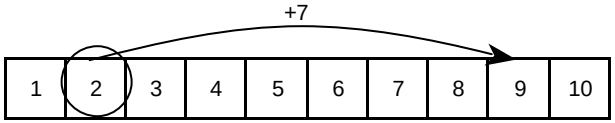
Oral and Mental		**Main Teaching**		**Plenary**
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/ Focus Questions**
Use and begin to read vocabulary of comparing and ordering numbers including ordinals to 30. VOCABULARY first second third fourth fifth sixth seventh eighth ninth tenth odd even RESOURCES 100 square Whiteboards	Count around the group using ordinal numbers, 1st, 2nd, 3rd etc. **Q** If Ben is the nineteenth child, who will be the twenty-first? On whiteboards, ask the children to write e.g. the 3rd letter of their name, the 4th day of the week, the 7th letter of the alphabet etc. Discuss how the first, second, third, twenty-first, twenty-second, twenty-third numbers are said differently to the other numbers where you simply add '-th' to the end of the number.	Use and begin to read the vocabulary of comparing and ordering numbers, including ordinal numbers to 100. Place numbers on a number line or 100 square. VOCABULARY twentieth twenty-first twenty-second twenty-third twenty-fourth etc. RESOURCES Bead string or show Resource sheet 9.1 Activity sheet 9.1 OHT 9.1 ITP Y1-3 'Ordering numbers' ITP 'Number grid'	Hold up the bead string. **Q** Which is the eleventh bead? How do you know? **Q** Which is the forty-first bead? How do you know? **Q** Which is the thirty-ninth bead? How do you know? **Q** Which is the sixty-ninth bead? How do you know? Ask the children to make up two similar questions for their partner using Resource sheet 9.1. Use ITP 'Ordering numbers'. **Q** Where will 50 beads come up to on this string? And 49? And 51? 20? 30? 25? Ask children to mark each number on the number lines as each appears. Repeat with different examples. Use ITP 'Number grid' to mask four numbers in a square formation. **Q** What numbers are covered? How do you know? Move the mask around the screen and repeat. Give out Activity sheet 9.1. Choose one snake and ask which numbers it is hiding. **Q** What clues can you use? Ask the children to write the missing numbers on each snake.	Show OHT 9.1 and ask the children where the number 12 goes on the 100 square. **Q** How do you know? How can we check that is correct? Repeat with 62, 19, 10, 20, 25, 66. **Q** Which are the hardest numbers to place? Why? Draw out that 66 was difficult because it was in the middle with few numbers around it to help. **Q** Which are the easiest? Why? Draw out that 12 and 62 were easy to place because they were next to numbers already on the square. **Q** Which numbers would complete another row under the number square starting under 91? Write these on the OHT. **Q** What would come next? **Q** What clues helped us? **By the end of the lesson, children should be able to:** **understand and use ordinal numbers: first, second, third…;** **position numbers on a number line and 100 square and explain how they decided on the position.** (Refer to supplement of examples, section 5, pages 11 and 13.)

Planning sheet	**Day Two (page 1 of 2)**	**Unit 9** ***Ordering numbers and understanding addition and subtraction***	**Term:** ***Autumn***	**Year Group:** ***2***

Oral and Mental

Objectives and Vocabulary	Teaching Activities
Count on or back in ones or tens starting from any two-digit number. VOCABULARY add subtract count on count back two-digit number multiple of 10 RESOURCES 100 square Place value cards Whiteboards	Ask for an even number which lies between 22 and 41. Find the number on the 100 square. Count on and back in tens from this number. Repeat starting at different numbers. **Q** What is: 35 + 10; 35 + 20; 35 + 30? Ask children to respond using place value cards or whiteboards. Ensure that children see the link with counting on in tens and adding multiples of ten. **Q** What is; 67 – 10; 67 – 20; 67 – 30? Check that children see the link between counting back in tens and subtracting multiples of ten.

Main Teaching

Objectives and Vocabulary	Teaching Activities
Use patterns of similar calculations. VOCABULARY pattern calculation describe the pattern predict RESOURCES 100 square	Write on the board 2 + 7 = 9 On a 100 square, ring 2, draw an arrow to 9 and write + 7 above the arrow.  **Q** What is 12 + 7? What is 22 + 7? Record each calculation on a number square as above. **Q** What do you think 72 + 7 is? Why? **Q** 2 + 7 = 9 so what is 9 – 7? Determine the answer and record on number square as above. (Ring 9, draw an arrow to 2 and write -7 above the arrow.) **Q** What is 19 - 7? 29 – 7? 39 – 7? Record each calculation on a 100 square as above. **Q** So what is 89 – 7? How do you know? **Q** What is 20 + 70? How do you know? 20 is 2 tens and 70 is 7 tens, how many tens altogether? Explain that it is 2 tens plus 7 tens which total 9 tens and 9 tens are 90. **Q** What is 200 + 700? Establish that it is 2 hundreds plus 7 hundreds which is 9 hundreds. **Q** What is 2000 + 7000? 2 000 000 + 7 000 000? Write on the board: 3 + 6 = 9 and ask children to write this number sentence in their books. Now write 13 + 6 = 9 and ask them to write this.

Plenary

Teaching Activities/ Focus Questions
Q How did the patterns help us to calculate? Write on the board: 9 + 4 = 13. **Q** What would be the next number sentence in the pattern? Record 19 + 4 = 23 etc. **Q** How is this different to the patterns we looked at earlier? Establish that adding 4 onto 9 takes the answer over 10, and so takes each answer over the next tens boundary. **By the end of the lesson, children should be able to: develop and recognise a pattern such as:** **3 + 5 = 8** **13 + 5 = 18** **23 + 5 = 28 and so deduce that 63 + 5 = 68.** **4 – 3 = 1** **14 – 3 = 11** **24 – 3 = 21 and so deduce that 54 – 3 = 51;** **recognise and use the pattern in, for example :** **4 + 3 = 7** **40 + 30 = 70** **400 + 300 = 700.** (Refer to supplement of examples, section 5, page 35.)

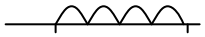
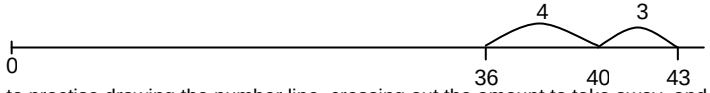
Planning sheet	Day Two (page 2 of 2)	Unit 9 *Ordering numbers and understanding addition and subtraction*	Term: *Autumn*	Year Group: *2*
Oral and Mental		**Main Teaching**		**Plenary**
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/ Focus Questions**
	Q If you make 67 with your place value cards, do you need to change both cards when you subtract 10? Or 20? 30?		**Q** What are the next two in the pattern? Check that they are correct. Now ask them to complete the sentence 53 + 6 = ? . Now write 9 – 6 = 3, 19 – 6 = 13 and ask them to write these two and the next two number sentences. Check that they are correct. Now ask them to complete the sentence 79 – 6 = ? . **Q** What is 90 – 60? 900 – 600? 9000 – 6000? 9 000 000 – 6 000 000? Write 2 + 5 = 7 and 7 – 5 = 2 on the board and ask children to use these to generate other number sentences. They should record them in their books.	

Planning sheet	Day Three	Unit 9 *Ordering numbers and understanding addition and subtraction*	Term: *Autumn*	Year Group: *2*

Oral and Mental

Objectives and Vocabulary	Teaching Activities
Know by heart the pairs of numbers with a total of 10. Begin to know pairs that total 20. VOCABULARY count on pattern addition facts pairs total RESOURCES Whiteboards	Ask children to quickly write all the pairs that make 10 on their whiteboards. Write 10 + 5 + 5 on the board. **Q** What is 5 + 5? And 10 + 10? So what is 10 + 5 + 5? How about 15 + 5? Write 10 + 6 + 4 on the board and repeat. Draw out how they can use their knowledge of pairs to 10 to find pairs that make 20. Ask them to write as many pairs with a total of 20 as they can in five minutes. List their responses on the board starting with 11 + 9, then 12 + 8 and so on.

Main Teaching

Objectives and Vocabulary	Teaching Activities
Find a small difference by counting up from the smaller to the larger number. VOCABULARY difference subtract take away count up to count on number line RESOURCES Strips of paper (roughly 12cm x 60cm) OHT 9.2 ITP 'Difference'	Write on the board: 23 - 19 **Q** How would you work this out? Collect answers and strategies. Discuss how taking away 19 one at a time is inefficient because it would take a long time to count back 19 or to count out 23 cubes and then take away 19 cubes. Demonstrate using a paper number line strip.  Say that you are going to take away 19. Tear off the strip from 0 to 19. **Q** What is left? Draw out that you are left with the part from 19 to 23. **Q** How big is this part?  Count on from 19 to 23 and say that you are finding the difference between 19 and 23. **Q** When we jumped from 19 to 23 did we have to draw every hop? Demonstrate hopping from 19 to 20 and then 1 hop to 23.  Use the ITP 'Difference' to show the difference between 23 and 19, first comparing the two rows of counters and then the positions on the number line. **Q** Which is the longer line? How much longer? Repeat the tearing off part of the number line to show 33 – 28, 52 – 49, 43 – 36. Demonstrate crossing out the amount on a number line to model taking away and then counting up e.g.  Ask the children to practise drawing the number line, crossing out the amount to take away, and counting up for: 24 – 18, 32 – 29, 41 – 36. **Q** Would this be a good way to find 23 – 4? Why not? Demonstrate that it is not a good strategy for subtracting a small number. Draw out that this is a good strategy to use when the two numbers are close together.

Plenary

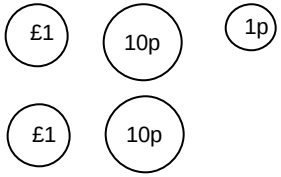
Teaching Activities/ Focus Questions
Q What have we learned about finding the difference? Ask the children to shut their eyes and imagine the number line. **Q** Look at 48 on it and 52. Count on to find the difference. What is the difference? Use OHT 9.2. Fill in the Difference Pyramids by finding the difference between neighbouring bricks and writing the answer in the overlapping brick above. In the blank pyramid, choose numbers for the bottom row by asking for a number between 10 and 20, 20 and 30, 30 and 40 and 40 and 50. **By the end of the lesson, children should be able to:** **recognise that when two numbers are close together, it is easier to find a difference by counting up, not counting back.** (Refer to supplement of examples, section 5, page 33.)

Planning sheet	**Day Four**	**Unit 9** ***Ordering numbers and understanding addition and subtraction***	**Term:** ***Autumn***	**Year Group:** ***2***

Oral and Mental

Objectives and Vocabulary	Teaching Activities
Know what each digit in a two-digit number represents. VOCABULARY ones tens digit RESOURCES Bead string Large place value cards Mega money (large coins)	Revise place value using a bead string. Show 36 beads (as 3 groups of ten beads and 6 single beads). **Q** How many beads are there? Do you need to count them all? Draw out that the children could count in tens to 30 and add on the 6 single beads to make 36. Write 36 on the board. **Q** How many groups of ten are there in 36? What does the 3 stand for? And the 6? Show a pack of place value cards. **Q** What place value cards do I need to make 36? Make 36 from 30 and 6, showing the two cards to the children. Match the 30 to the 3 tens on the bead string and the 6 to the 6 single beads. Show the 10p and 1p coins. **Q** If I use only 10p and 1p coins how could I make 36p? Repeat for other two-digit numbers and prices.

Main Teaching

Objectives and Vocabulary	Teaching Activities
Begin to use the £.p notation for money. VOCABULARY pound £ and p notation penny pennies pence decimal point money coin RESOURCES Activity sheet 9.2 A toy with a price tag on of £2.21 Other toys with tags on showing pounds and pence Mega money (large coins)	Show a toy with a £2.21 price tag. **Q** How many pounds and how many pennies does this toy cost? Establish that the toy costs two pounds and twenty-one pennies. Draw attention to the £ sign and the decimal point and the fact that we don't use the p sign as well. **Q** What coin or coins could we use to make £2? What coins could we use to make 21p? Use the large coins to show different ways of making the amounts, e.g. a £2 coin, two £1 coins, a 20p, two 10p coins and 1 penny. Establish that one way is to use two £1 coins, two 10p coins and one penny. Record this as:  Repeat for other prices e.g. £3.42 and £4.13, drawing out using £ coins, 10p coins and pennies as one way to make the amounts and recording these as above. Show a price tag of £3.05. **Q** How many £1 coins would we use? 10p coins? 1p coins? Establish that there are no 10p coins, and we write a zero in this place. Write £5.09 and £5.90 on the board. **Q** Which is more? Why? Draw out the explanation that £5.90 is 5 pounds and 90 pence and £5.09 is 5 pounds and 9 pence. Show the two amounts with the large coins and record as above. Choose a few amounts from Activity sheet 9.2 and ask for volunteers to help you write the amounts using £ notation e.g. £3.45. Ask the children to complete Activity sheet 9.2 and to draw and label their own amounts.

Plenary

Teaching Activities/ Focus Questions

Discus Activity sheet 9.2.

Q Which amounts did you find easy to write? Hard to write? Were amounts with zeros in them harder?

Q Which purse had the most money? Did it have the most coins?

Q Sohail has £1.48 and Jay has £1.84. Who has the most? How do you know?

Show the two amounts with the large coins.

HOMEWORK – Find four prices more than £1 from a till receipt or a catalogue. Record what the item is and what price it is. Don't forget to use the notation we have learned today e.g. box of choc ices £1.95. Then write the four amounts in order, cheapest first.

By the end of the lesson, children should be able to:
begin to appreciate that £4.65 means £4 and 65p;
write in £ and p the total of three £1 coins and six 1p coins (£3.06).

(Refer to supplement of examples, section 5, page 69.)

Planning sheet	Day Five	Unit 9 *Ordering numbers and understanding addition and subtraction*	Term: *Autumn*	Year Group: *2*

Oral and Mental

Objectives and Vocabulary	Teaching Activities
Begin to use £.p notation. Order amounts of money. Choose and use appropriate number operations and ways of calculating to solve problems. VOCABULARY cheapest expensive total add subtract RESOURCES OHT 9.3 Sticky notes	Ask the children to write the largest amount they found for homework on a sticky note. They should write it as big as they can. Ask for the largest amount from each table and arrange them randomly on the board. **Q** Which is the smallest amount, the cheapest price? The largest amount, the most expensive? Are any of the prices of the same? Which amounts are very close to £10? Why do you think lots of prices end in 99p? Ask each group to order the remaining sticky notes on their tables. Show the first number sentence on OHT 9.3 (hiding the others with a piece of paper). **Q** What is missing in this number sentence? How do you know? Show one number sentence at a time and ask the children to hold up one finger horizontally to show that a – sign is missing or cross two fingers to show the + sign. Ask the children to discuss in pairs what is missing from the last two number sentences and discuss their answers. **Q** Could there be another solution to the last one?

Main Teaching

Objectives and Vocabulary	Teaching Activities
Choose and use appropriate number operations and calculation strategies to solve simple word problems. Explain method. Begin to use the £.p notation for money. VOCABULARY operation calculation number sentence how much? spend jottings RESOURCES OHP 9.4 OHT 9.5 Activity sheet 9.3 (double-sided) Mega money (large coins) Whiteboards	Show the top part of OHT 9.4. **Q** I have 68p. I spend 30p. How much have I got left? **Q** Which operation do you need to use? How did you know? Did any of the words help you decide which operation to use? Ring the operation on OHT 9.4. Record the calculation 68p – 30p on OHT 9.4. Ask the children to work in pairs to find the answer and write it on their whiteboards. **Q** How did you work it out? Show the two ways on OHT 9.4 and explain them. Ask if any of them worked it out like that, or if they used another way. Model the recording of any other efficient methods. Show the calculation using large coins. Record the number sentence 68p – 30p = 38p. Repeat using OHT 9.5. **Q** Which operation do you need to use? How did you know? Did any words help? Ring the operation and then write the calculation £2.40 + £3.20 on OHT 9.5. Ask children to work in pairs to find the answer and write it on their whiteboards. Encourage the use of the jottings to explain how they got the answer. Gather some explanations, show the recording of them on OHT 9.5 and explain it. Model the recording of any other efficient methods you can see on their whiteboards. Show the calculation using large coins and then record the number sentence. Give out Activity sheet 9.3. Ask the children to work in pairs, ring the operation, write the calculation, record any jottings as you did on OHTs 9.4 and 9.5 and write the complete number sentence. After most children have completed the first two questions, share children's use of using jottings to help their calculations and then ask them to continue.

Plenary

Teaching Activities/ Focus Questions
Discuss how they solved the word problems. **Q** What were the important things to remember? Read the question carefully. Find the important words to help us decide on the operation. Decide on the operation. Record the calculation. Record how we worked it out (jottings). Write the number sentence. Write on the board: 23p + 20p = 43p. Read it together. Ask the children to work in pairs to make up a number story. Repeat with 45p – 20p = 25p. Repeat with £5.80 – £4.99 = 81p. **By the end of the lesson, children should be able to: use mental addition or subtraction, and own strategies to solve money problems; explain methods and reasoning orally and where appropriate, write a number sentence to show how the problem was solved.** (Refer to supplement of examples, section 5, page 69.)