Unit 3
Money and 'real life' problems

Five daily lessons

Primary National Strategy

Year 3
Autumn term

This Unit Plan is designed to guide your teaching.

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

Unit Objectives
Year 3

• Extend understanding of addition and subtraction, read and begin to write related vocabulary, and continue to recognise that addition can be done in any order. Use the +, − and = signs.	Pages 25, 29
• Identify near doubles, using doubles already known (e.g. 80 + 81).	Page 33
• **Choose and use appropriate operations to solve word problems** and appropriate ways of calculating: mental, mental with jottings, pencil and paper.	Page 61
• **Explain methods and reasoning** orally and, where appropriate, in writing.	Page 65
• Solve word problems involving numbers in 'real life' money and measures, using one or more steps, including finding totals and giving change, and working out which coins to pay. Explain how the problem was solved.	Pages 67, 69, 71
• Recognise all coins and notes. **Understand and use £.p notation** (for example, know that £3.06 is £3 and 6p.	Page 69

Link Objectives

Year 2

- Extend understanding of the operations of addition and subtraction. Use and begin to read the related vocabulary.
- Identify near doubles, using doubles already known (e.g. 8 + 9, 40 + 41).
- Use mental addition and subtraction, simple multiplication and division to solve simple word problems involving numbers in 'real life', money or measures, using one or two steps. Explain how the problem was solved.
- **Choose and use appropriate operations and efficient calculation strategies** (e.g. mental, mental with jottings to **solve problems**).
- **Explain how a problem was solved** orally and where appropriate in writing.
- Recognise all coins and begin to use £.p notation for money. Find totals, give change and work out which coins to pay.

Year 4

- Consolidate understanding of relationship between + and −. Understand the principles of the commutative and associative laws as they apply or not to addition and subtraction.
- Identify near doubles using known doubles (e.g. 150 + 160).
- **Choose and use appropriate number operations and appropriate ways of calculating (mental, mental with jottings, pencil and paper) to solve problems.**
- Use all four operations to solve word problems involving numbers in 'real life' money and measures (including time) using one or more steps, including converting pounds to pence and metres to centimetres and vice versa.

(Key objectives in bold)

Resources needed to teach this unit:

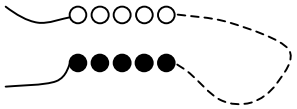
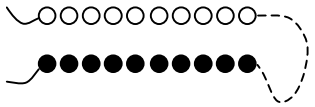
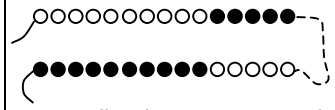
- Resource sheet 3.1
- Resource sheet 3.2a
- Resource sheet 3.2b
- OHT 3.1
- Activity sheet 3.1
- Packs of 0-20 cards
- OHP calculator
- OHP money or large coins
- Supermarket prices leaflet
- Money, real and representational
- Whiteboards
- Soft ball
- Bead string to 100

Also see Models and Images Chart:
- Understanding addition and subtraction.

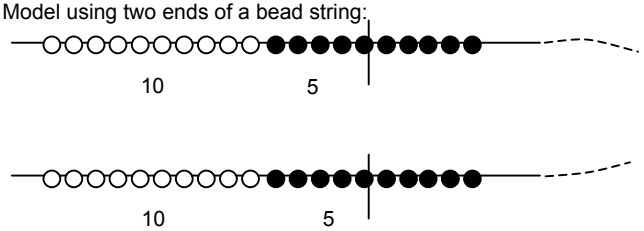
department for education and skills

Planning sheet	Day One	Unit 3 *Money and 'real life' problems*	Term: *Autumn*	Year Group: *3*

Oral and Mental

Objectives and Vocabulary	Teaching Activities
Derive quickly doubles of multiples of 5 to 100. VOCABULARY multiple double RESOURCES Bead string	• Revise the multiples of 5 to 50, by saying them in order together 'flashing' one hand each time to reinforce the fives. • Use opposite ends of a bead string to show doubles.  **Q** What is double 5? Record this on the board. • Now show double 10:  Double 15:  recording the answers to each. **Q** What do you think double 20 will be? • Show double 20 on the bead string to confirm. **Q** What about double 25? • Say that it might help to think of this as double 20 and double 5. Show this on a bead string. • Continue until you reach 50.

Main Teaching

Objectives and Vocabulary	Teaching Activities
Identify near doubles using doubles already known. VOCABULARY double near double twice RESOURCES Activity sheet 3.1 OHT 3.1 Bead string	• Discuss the term 'double'. **Q** What does double mean? **Q** What if I said 'nearly double?' Identify near doubles as numbers which are close to each other e.g. 15 and 16 or 15 and 14. **Q** How could I find the total of these numbers? Discuss: 15 + 16 = 15 + 15 + 1 = double 15 + 1 15 + 14 = 15 + 15 – 1 = double 15 – 1 Model using two ends of a bead string:  • Give each pair of children a copy of Activity sheet 3.1. Ask them to match the numbers to their near doubles. • Show how some of the pairs can be written as a calculation e.g. 45 + 47 = 45 + 45 + 2 = 90 + 2 = 92 • Ask children to solve the remaining calculations and record them in their books. If they finish ask them to make up their own near doubles questions and answer them.

Plenary

Teaching Activities/ Focus Questions

- Discuss the mental calculation strategies used today and covered last week. Identify as:
  - doubles;
  - near doubles;
  - bridging through 10 (+ and –);
  - adding/subtracting a single digit – not crossing tens.
- Show OHT 3.1 – reveal the calculations one at a time.

  Ask children to discuss in pairs the strategy they would use for each one.

  Collect and discuss responses.

Q Why do you think that strategy is the most efficient?

Encourage the children to justify their choice of strategy.

By the end of the lesson, children should be able to:

- **identify near doubles, for example, work out mentally that 36 + 35 = 71, explaining that it is double 35 plus 1.**

(Refer to supplement of examples, section 5, page 33.)

Planning sheet	**Day Two**	**Unit 3** ***Money and 'real life' problems***	**Term:** ***Autumn***	**Year Group:** ***3***

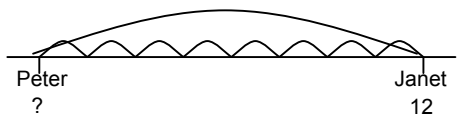
Oral and Mental		**Main Teaching**		**Plenary**
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/ Focus Questions**
Know by heart all addition and subtraction facts for each number to 20. VOCABULARY add subtract RESOURCES Whiteboards Pack of 1-20 cards	• Ask children to write 6 numbers between 1 and 20 on the left-hand side of their whiteboards. • Use two piles of cards one 0-9 and the other 10-20. Turn over one card from each pile e.g. 13 6 (Keep a record of the pairs as you do so, to check children's answers later.) • Ask the children to add or subtract these numbers to try and make an answer that is one of the numbers they have written on their whiteboards e.g. 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 the numbers wins.	Choose and use appropriate operations to solve word problems, and appropriate ways of calculating: mental or mental with jottings. VOCABULARY addition subtraction mentally jottings calculation more left altogether number line RESOURCES Resource sheet 3.1	• Give out Resource sheet 3.1 of word problems. Explain that these are all word problems which need addition or subtraction to solve them. Emphasise that children need to read each problem carefully and consider if the answer will be more or less than the given starting numbers. Ask the 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 the children's responses to a few of the problems and ask for the calculation needed. **Q** Which words gave you clues? • Remind the 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). Say that you used jottings yesterday when you wrote 45 + 47 as: 45 + 45 + 2 = 90 + 2 = 92. Explain that drawing jumps on a number line would be another example of a jotting. Draw an example from last week to show 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 solve it, to check if 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. Remind them to make sure their answer includes the unit used (£, sheep, cars etc.).	• Write two numbers on the board. Invite one child to put the numbers into a 'number story' e.g. 21 35 'I had 35 sweets, I gave 21 to my friend. How many were left?' **Q** Does this need addition or subtraction? • Ask children to show their answers as follows: addition – cross fingers subtraction – flat hand **Q** Would you solve this easily in your head or would it help to jot something on paper? • Ask all children to respond: mentally – point to head jottings – hold up a pencil 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. Homework – Ask the children to write two number stories using the numbers 50 and 10, one for addition and one for subtraction. **By the end of the lesson, children should be able to:** • **choose and use appropriate operations and ways of calculating to solve a given word problem;** • **explain and record how the problem was solved;** • **make up 'number stories' to reflect statements.** (Refer to supplement of examples, section 5, page 61 and 67.)

Planning sheet	Day Three (page 1 of 2)	Unit 3 *Money and 'real life' problems*	Term: *Autumn*	Year Group: *3*

Oral and Mental

Objectives and Vocabulary	Teaching Activities
Partition three-digit numbers into multiples of hundreds, tens, ones. VOCABULARY multiple hundreds tens ones partition more than less than	• 'Partitioning Aerobics' Introduce a movement for each multiple e.g. ones – bend knees tens – twist waist hundreds – reach up. Practise e.g. say 20. Children do two waist twists and count '10, 20', (not twenty knee bends). Say numbers and children show them through movement starting with the biggest multiple first, i.e. 100s, 10s then 1s. Encourage the children to count as they move. • Extend by including calculations e.g. 'My start number is 241, show me 10 more than this number'.

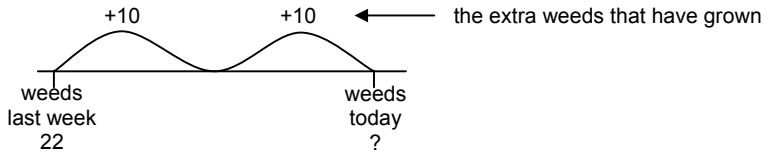
Main Teaching

Objectives and Vocabulary	Teaching Activities
Choose and use appropriate operations to solve word problems and appropriate ways of calculating: mental or mental with jottings. VOCABULARY more less most least solution number line RESOURCES Resource sheet 3.1	• Ask for a few volunteers to read their number stories they wrote for homework and solve them as a class. • On the board write the problem: Janet has 8 sweets more than Peter. She has 12 sweets. How many does Peter have? Underneath write two possible answers: 8 + 12 = 20 He has 20 sweets 12 – 8 = 4 He has 4 sweets **Q** Which solution is correct? Why? Why can Peter not have 20 sweets? Discuss. • Return to the original problem – re-reading for meaning. **Q** Who has the most sweets? How do we know Janet has more sweets? **Q** How many sweets does Janet have? **Q** What do we know about Peter? Can he have more than 12 sweets? **Q** How does this information help us to imagine the problem? • Model drawing the problem or using two towers of cubes. Then show the problem on a number line, showing the 8 extra sweets that Janet has. Children show the answer with the correct number of movements.  • Repeat with a new problem: There are 20 more weeds in the garden today than last week when I counted 22. How many today? **Q** Which solution do you think is right? Why? Why is the wrong one wrong? 22 – 20 = 2 There are 2 weeds in the garden. 22 + 20 = 42 There are 42 weeds in the garden.

Plenary

Teaching Activities/ Focus Questions
• Invite a child to record on the board their picture/number line without speaking. Ask the rest of the class to find the problem they think has been represented. **Q** What calculation might you write to go with this image? **Q** Did drawing a picture/number line help you to solve the problem? • Repeat with another child. **By the end of the lesson, children should be able to:** • **choose and use appropriate number operations and ways of calculating to solve a given word problem;** • **explain and record how the problem was solved.** (Refer to supplement of examples, section 5, pages 61 and 67.)

Planning sheet	Day Three (page 2 of 2)	Unit 3 *Money and 'real life' problems*	Term: *Autumn*	Year Group: *3*

Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/ Focus Questions**
			• Represent the information to support; 22 Last week's weeds — 20 Extra grown today Move on to model the calculation on a number line:  **Q** When were there the most weeds? Last week or today? **Q** How many more weeds are there today? **Q** How do we count them on the number line? What leaps/jumps shall we take? • Ask children to use Resource sheet 3.1 (from yesterday). Ask them to choose problems they did not tackle yesterday and represent them either as a picture or on a number line, to help them understand the calculation needed.	

Planning sheet	Day Four	Unit 3 *Money and 'real life' problems*	Term: *Autumn*	Year Group: *3*

Oral and Mental

Objectives and Vocabulary	Teaching Activities
Recognise all coins and notes. Use £.p. notation. VOCABULARY pounds pence altogether RESOURCES: Whiteboards Money	• Ask the children to imagine combinations of notes and coins. **Q** In my purse I have three £1 coins and two 10p coins. How much altogether? Ask the children to record the total amount of money e.g. £3.20 on their whiteboards. • Repeat with other combinations, introducing 50p and 20p coins when the children are confident. **Q** I have a £5 note, a 50p coin and a 10p coin. How much do I have?

Main Teaching

Objectives and Vocabulary	Teaching Activities
Solve problems involving 'real life' money, including funding totals and giving change. VOCABULARY total altogether change pence pound price two-digit three-digit decimal point RESOURCES Free supermarket prices leaflet (e.g. those that come enclosed in free local newspapers) OHP calculator Money OHP money/large coins	• Discuss the supermarket leaflet advertising its prices. **Q** What is the most expensive item? **Q** What can you buy for up to £1? **Q** What is the price of two…? **Q** Where is a price written with just a pence sign/just a pound sign? **Q** Where is a two-digit price/three-digit price? What do you notice about two-digit prices?… three-digit prices? • Pose the question: 'I have £2 to spend – what items could I buy?' • Show children how to record the prices and running total.

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

Q How much have I spent altogether?

Q 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.

Plenary

Teaching Activities/ Focus Questions

• Act as a 'shopkeeper'.

Ask a few children to bring up their lists that they have written in the lesson.

Check the total on the OHP calculator, emphasising the decimal point.

Take £3 off the child.

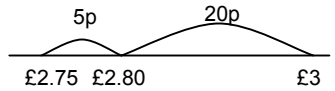
Discuss if it is fair for 'shopkeeper' to keep £3.

Q What change will you need?

Q What coins will make up your change?

• Invite remaining children up and model giving the appropriate change by counting up from the amount to £3.

• Show this on a number line, e.g.



By the end of the lesson, children should be able to:

- **find totals and;**
- **decide what to buy within a fixed amount.**

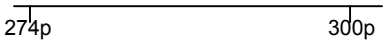
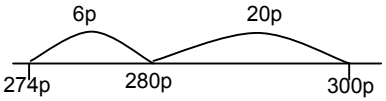
(Refer to supplement of examples, section 5, page 69.)

Planning sheet	Day Five	Unit 3 *Money and 'real life' problems*	Term: *Autumn*	Year Group: *3*

Oral and Mental

Objectives and Vocabulary	Teaching Activities
Round up any three-digit number to the next multiple of 100. VOCABULARY multiple of 100 difference RESOURCES Soft ball	• Hold a ball and say a number less than 10 below a multiple of 100, e.g. 293. Pass the ball to a child and ask them to say the next multiple of 100, e.g. '300'. As the ball is thrown back to the teacher, the class say the difference '7'. • Repeat with similar examples.

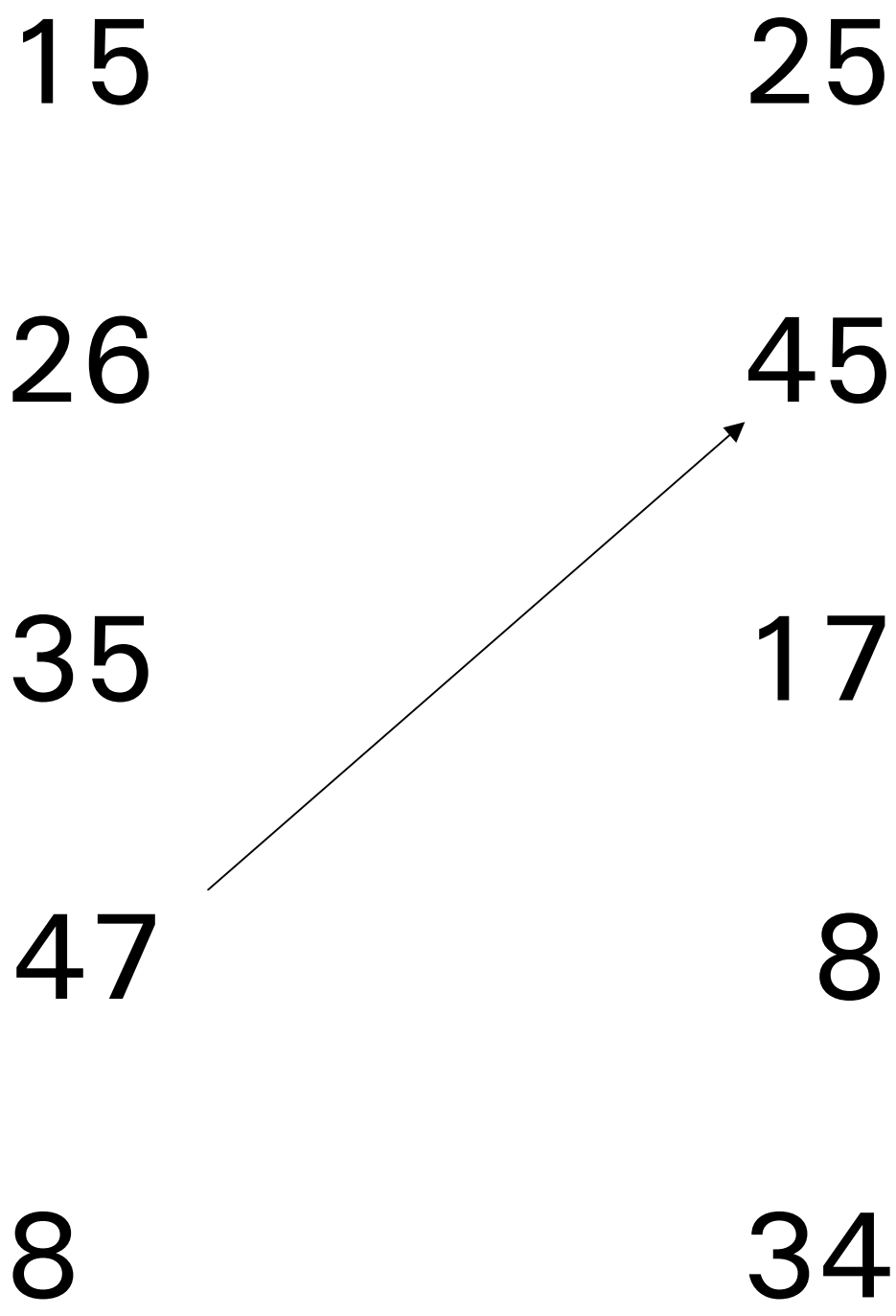
Main Teaching

Objectives and Vocabulary	Teaching Activities
Find totals, give change and work out which coins to use. Understand and use £. p notation. VOCABULARY change pounds pence multiples of 10, 100 RESOURCES Money Resource sheet 3.2a Resource sheet 3.2b	• Remind the children that £1 = 100p by exchanging to ten 10p coins and each 10p for ten 1p coins. Record on the board: One pound equals 100 pence. **Q** How many pence in £2? £3? **Q** How many pence in £3.50? Use children's work from yesterday to convert from pounds to pence. Ask the children to convert all their own totals from yesterday to pence. **Q** How did I give the change yesterday? Emphasise that counting on was used. Establish they were counting on to £3/300p. Model on a number line. **Q** How much have I spent? (e.g. £2.74) How much is this in pence? **Q** How much did I give the shopkeeper? (£3) How much is this in pence? Draw on the board:  **Q** What is the next multiple of 10 after 274? Mark this on the number line. • Discuss what jumps would be taken to move from 274 to 280. Mark this on the number line. **Q** Where would you move to next? Encourage children to move straight to the multiple of 100 rather than each 10 before it. Record this on the number line. Identify the difference/change as 26p. **Q** What coins would I have if this were my change? Model how this can be recorded.  Change: 26p = 20p + 5p + 1p Repeat using children's examples. • Ask children to find the change from £3 using the totals they found yesterday, drawing number lines to help, and recording the coins they would receive as change.

Plenary

Teaching Activities/ Focus Questions
• Give each pair of children a card from Resource sheet 3.2b. Shuffle the cards from Resource sheet 3.2a. read these cards one at a time, and ask the children to hold up their card if it goes with the amount you've just read to make £3. Draw number lines on the board for any they are unsure of. **Q** If I had paid £2.79, what would my change be from £3, £4, £5? **By the end of the lesson, children should be able to:** • **convert pounds to pence;** • **give change from a specified total.** (Refer to supplement of examples, section 5, page 69.)

Match the numbers to their near doubles.



1. I went to the shop with £43, spent some money on toys and came home with £37.
   How much did I spend?

2. My mum said that she would double my pocket money next month because we're going on holiday. This month I had £9. How much will I have next month?

3. I've lost 30 of my 100 marbles.
   How many do I still have?

4. My brother has saved £8 more than me. I have £48.
   How much does my brother have?

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

6. My sister has 27p, my brother has 32p and I have 10p.
   How much have we got to spend today?

7. My friend has ten cars. I have six.
   How many have we got altogether?

8. I have 20 sweets in my bag. I drop 5.
   How many are left?

9. There are 15 sheep in one field and 16 sheep in the next.
   How many sheep are there altogether?

296p (£2.96)	275p (£2.75)	250p (£2.50)
280p (£2.80)	285p (£2.85)	230p (£2.30)
290p (£2.90)	270p (£2.70)	260p (£2.60)
299p (£2.99)	287p (£2.87)	295p (£2.95)
291p (£2.91)	281p (£2.81)	279p (£2.79)

4p (£0.04)	25p (£0.25)	50p (£0.50)
20p (£0.20)	15p (£0.15)	70p (£0.70)
10p (£0.10)	30p (£0.30)	40p (£0.40)
1p (£0.01)	13p (£0.13)	5p (£0.05)
9p (£0.09)	19p (£0.19)	21p (£0.21)

16 + 17

25 + 6

9 + 9

34 + 4

35 + 37

159 – 4

62 – 7

7 + 46

45 + 46

5 + 124