

N3.2

Decimals and money

objectives

- Use a calculator effectively; enter numbers and interpret the display in different contexts (decimals, money).
- Convert pounds to pence, and vice versa.
- Solve word problems.

starter

Vocabulary

convert
pounds
pence

Resources

mini-whiteboards

Start with some questions.

Q How many pence are equivalent to £1? (100p) To £7? (700p)

Q How many pounds are equivalent to 400p? (£4) To 1200p? (£12)

Ask pupils to include units in their answers, and not say merely 100 or 700.

Q What does 'converting' from pounds to pence mean?

Q How would you explain to a friend how to change pounds to pence?

Establish that you could tell the friend to multiply the number of pounds by 100 to obtain the number of pence, or to divide the number of pence by 100 to obtain the number of pounds.

Explain that each penny is one hundredth of a pound, so that 37p is 37 hundredths of a pound. Write on the board $37p = £0.37$. Stress that, when we write amounts of money, either the pounds sign or p (for pence) is used, but not both.

Q What would 52p be in pounds? (£0.52)

Write on the board £0.49. Point to it and ask:

Q What would this be in pence? (49p)

Q What is 60 pence converted to pounds? (£0.60)

Q What would 3p be in pounds? (£0.03) What about 8p? (£0.08)

Draw attention to the noughts or zeros in the last example: no whole pounds, no tenths of a pound, but just eight hundredths of a pound, or 8 pence.

Discuss amounts of more than £1.

Q How would you change 467p to pounds?

Establish that 400p of the 467p converts to £4, and there is another 67p remaining, so that $467p = £4.67$.

Write on the board one of the forms £6.32 and 632p. Ask pupils to provide the other form. Repeat with £14.60, 213p, 99p, £3.07, 1500p.

main activity

Vocabulary

estimate
approximate
round
check
inverse

Resources

OHP calculator
calculators

Tell the class that you want to do the calculation $24p + 47p$ on a calculator.

Q What should I key in?

Stress that, because both amounts are in pence, $24 + 47 =$ can be keyed in. Before pressing the equals sign, ask:

Q What answer will I get? How did you work that out? Could you have done it another way?

Acknowledge the mental methods used.

Write on the board $£4.24 + £6.47$ and ask pupils to use their calculators to work out the answer.

Q What is the answer? What does your display show? Is it a sensible answer? Why?

Now write on the board $£5.43 + £8.27$. Remind pupils to clear their display before entering their calculation.

Q What does the display show this time? Is the answer about right?

Establish that the display of 13.7 represents $£13.70$ in the context of money. Repeat with $£2.51 + £8.19$, then $£3.72 + £17.28$. In the latter case, make sure that pupils understand that the display of 21 means $£21$ in the context of money, and that there are no pence.

Q How would you key in four pounds and seven pence?

Use your OHP calculator to explain and illustrate the difference between $£4.70$ (4.7 on the display) and $£4.07$ (4.07 on the display).

Q What if you wanted to add 87p to £5.36 on your calculator?

Establish that amounts under $£1$ must be entered in the form of pounds and pence, so that both amounts are in the same units. So 87p would be entered as 0.87, since there are no pounds.

Remind pupils how to proceed if they think they have made a mistake entering a calculation. A safe way is to clear the display, and repeat the calculation over again.

Q How can you check your answer?

Establish that there are two ways to do this: by approximating the amounts to create an estimate, or by doing an inverse or 'opposite' calculation. Talk through a couple of examples of each.

Write $£9.27 - £4.85$ on the board.

Explain that when each amount is rounded to the nearest pound, the calculation would be $£9 - £5 = £4$. This is the estimated answer. Do the calculation on the OHP calculator, and say that the displayed answer of $£4.42$ can be assumed to be correct.

Clear the display and start again. Get pupils to do the calculation on their own calculators as you demonstrate on the OHP calculator. Key in $£9.27 - £4.85$, then press = to make $£4.42$ appear in the display. Now enter $+ £4.85 =$, and check to make sure that the display shows the original $£9.27$.

Write $£32.87 + £20.53$, and repeat the two checks.

Q What is your estimate? Explain how you did it.

Establish an estimate of $£33 + £21 = £54$. Then do the calculation on the calculator, this time subtracting $£20.53$ to get back to the original $£32.87$.

other tasks

Springboard 7

Units 2 and 10

Unit 2 section 6: Calculating with money

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| 1 Pounds and pence | page 87 |
| 2 Checking your bill | page 88 |
| Star challenge 9: Find the mistakes | page 89 |

Unit 10 section 6: Money and 'real life' problems

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| 2 Choosing the correct operation (+, -, ×, ÷) | page 350 |
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plenary

Vocabulary

show your working

Resources

mini-whiteboards

Write a problem on the board and work it through with the whole class.

Ali has already saved £83.06.

He was given a further £28.60 for his birthday.

How much money does he have now?

Q What calculation do you need to do? Explain why.

Q Can you do the calculation mentally, or would it be better to use a calculator?

Q What is your estimate of the calculation?

Q What keys on your calculator would you press to show the total of £83.06 and £28.60?

Q What does the answer in the display mean in the context of the question?

Q How can you check your answer?

Stress that there are two ways to check: by rounding each amount to create an estimate, or by carrying out the inverse calculation to 'undo' it, and so get back to the original amount.

Q What would you write down to 'show your working'?

Model for pupils how to 'show your working' by writing the calculation in horizontal form, with the answer:

$$83.06 + 28.60 = 111.66. \text{ Answer: } £111.66$$

Remember

- If the answer to a question is a sum of money, remember to put the £ sign (if it is in pounds) or p (if it is in pence), but not both.
- Show your working by writing the calculation in horizontal form, with the answer.