SUPPLEMENTARY TEACHING SEQUENCES

Unit 3
SUPPLEMENTARY TEACHING SEQUENCES

PURPOSE AND *PROMPTS*

SEQUENCE 1

Complements to 100 and related facts

RESOURCES:

Resource sheet 3.1 (in this pack) as an OHT or Excel spreadsheet 3.1 (on accompanying CD-ROM)
ITP 'Area' (on the accompanying CD-ROM in ITPs Index) or 100-square OHT
Digit cards
Calculators
OHP calculator

This revises complements to 10 and 20. It is an opportunity to find out what children know and how they work out unknown facts.

STEP 1 (Using resource sheet 3.1)

Show children resource sheet 3.1 on the OHP, first revealing only 10 squares. Ask children to count the number of squares. Cover some of the ten squares and ask the children to use their cards to show how many are visible. Next, ask them to show how many are covered.

Now reveal all twenty squares and repeat.

STEP 1 (Using Excel spreadsheet 3.1)

The Excel spreadsheet can be used to revise complements to 10 and 20 as Step 1 with the resource sheet 3.1. It can also be used to go beyond 20 and to help children see the connection between facts such as $7 + 3 = 10$, $17 + 3 = 20$, $27 + 3 = 30$ and so on, up to 50.

STEP 2

This will give children a picture of pairs of numbers totalling 100. As one number is increased, the other number is decreased by the same amount.

Show a blank 100-square with 72 squares shaded in, using either an OHT or the ITP 'Area'.

Q How many squares are unshaded?

Q How did you work this out?

Can children use an efficient method to count to 100 (i.e. not counting in ones)?

Discuss possible range of methods: counted all; 10, 20, 21, 22, ...28; counted 8 to the end, and then 20 more; added 8 to get to 80 and then another 20 to 100.

Shade in a further two squares.

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Use of the grid or the ITP can also help to illustrate this.

Q As I increase the number of shaded squares, what is happening to the unshaded squares?

Record the calculation represented by the new shading as 74 + 26.

Q What other addition pairs to 100 can I make by continuing this shading pattern?

Record calculations given by the children and keep note of the calculations for later consideration.

Demonstrate another calculation and ask children to try to work out several similar shaded/unshaded problems.

Use other pre-shaded 100-squares as OHTs or use ITP 'Area', and ask children to work out the number of unshaded squares.

When asked what must be added to a number to total 100, children will often give an answer where the number of tens is too large, e.g. give children 47, response given to total 100 is 63, instead of 53.

Can the children use complements to 10 and addition of multiples of 10 to make 100? (Look out for children counting individual squares instead of in tens.)

Q How did the 100-square help you?

Collect together the earlier examples of pairs of two-digit numbers adding up to 100 and ask the children what they notice about the corresponding digits of each pair (the number of tens total nine and the ones total ten).

Now give the children some two-digit numbers, and ask what numbers need adding in order to get a total of 100.

STEP 3

This will help children practise finding complements to 100.

Paired activity 1: Climb to 100

- Child A enters a two-digit number (e.g. 24) into a calculator and passes the calculator to child B who has to add a number in order to reach the next multiple of 10 (keeping a written record of what was added).

Can children quickly identify the number needed to reach the next multiple of 10, without using aids, e.g. number lines or fingers?

- Child B then adds the multiple of 10 necessary to reach 100, enters it in the calculator (keeping a written record of what was added) and calculates the total number added.

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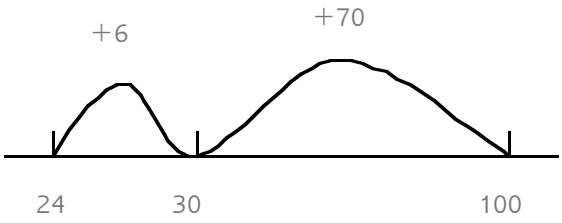
Can children quickly identify the multiple of 10 needed to reach 100 without the use of aids, e.g. a 100-square?

- If the answer is 100, record the whole calculation on an empty number line:



or as:

24 + 6 + 70 = 100

or as:

24 + 76 = 100

- Child A checks this by using the calculator to find 24 + 76.
- If the answer is not 100, child B has another attempt.
- Change roles.

As the children improve, they should try to climb from the starting number to 100 in one move. The activity can be extended by changing the target to an appropriate multiple of 100.

When the children have played the game for a while, write some of their number sentences on the board, e.g. 24 + 76 = 100, and ask how, if 100 is displayed in the calculator, they could get back to the start number of 24.

Establish that subtracting 76 from 100 would get back to 24.

100 − 76 = 24

This also provides an opportunity to revise the 'three free gifts' situation, i.e. if you know that 24 + 76 = 100, which three other number sentences do you know?

Q Looking at the two number sentences we now have, are there others we could write?

100 − 24 = 76

76 + 24 = 100

Repeat with several examples.

PURPOSE AND *PROMPTS*

This activity involves children working out (or recalling) the complement mentally.

STEP 4

Paired activity 2: Function machines

Use the OHP calculator to demonstrate how to set up a function machine: enter '−100 =' (or '100 − = ='). This should allow you to enter 36, press =, and get the response 64 (depending on the calculator, you may have to ignore the negative sign).

Ask children to work in pairs, using one calculator.

Child A enters a two-digit number and child B says its complement to 100. Child A presses '=' and the correct answer appears in the display.

Child A and child B swap roles.

Try for other multiples of 100:

e.g. enter '−200 =' (or '200 − = =')

Q If you have worked out 126 + 74 = 200, what other addition facts could you work out?

If necessary, illustrate with 226 + 74 = 300, and ask children to work in pairs to think of other facts that could be worked out.

SEQUENCE 2

Deriving new facts from known number bonds

RESOURCES:
None required

This will help to reinforce the patterns of addition facts derived from pairs of numbers adding to make 10.
Children need to see that they can use facts that they know by heart in order to solve new problems without reverting to counting.

STEP 1

Ask the children for a pair of numbers that add up to 10, say, 7 and 3. Begin a table on the board like the one below, and ask the children to help you fill it in:

10	20	30	50	70	90
7 + 3	17 + 3				

Complete the table with their responses.

Q What do you notice?

Ask the children to build up a similar table starting with a different pair of numbers that total 10.

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STEP 2

Repeat step 1 with:

10	100	1000	10 000
7 + 3	70 + 30		

Extend this to:

100	300	500	900
70 + 30	270 + 30		

STEP 3

This will help to reinforce the inverse nature of addition and subtraction and the commutative nature of addition. This will help children to recognise that the relationship between three numbers can be written in four different number sentences.

Now go back to the additions in step 1.

7 + 3 = 10

17 + 3 = 20, etc.

For each addition, ask the children if they can find the 'three free' number sentences that go with it.

e.g. 3 + 7 = 10, 10 − 3 = 7, 10 − 7 = 3

Ask children to do the same for the sets of numbers they chose in step 1.

Now look at the additions generated in step 2 and ask if they can find three further equations for each.

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UNIT 3 RESOURCE SHEET 3.1

Twenty