Can I partition a two-digit number into tens and ones (units) and use this to create related addition and subtraction sentences?
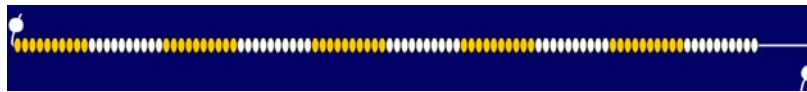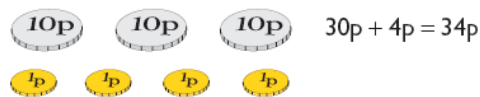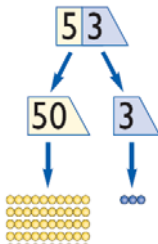
Teaching guidance

Key vocabulary

number, tens, ones/units, digit, value, partition, split, recombine, place value, two-digit number

Models and images, resources and equipment

Practical resources that partition into tens and ones

$$30p + 4p = 34p$$

$$10 + 10 + 4$$
$$= 20 + 4$$
$$= 24 \text{ balloons}$$

Place value cards

Have a large teacher set and smaller class sets for children to pick up and use. Use practical equipment alongside place value cards (e.g. straws bundled in tens and ones) to help children appreciate the size of numbers.

Place value chart

10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9

Point to a tens number and a units number and ask the children what two-digit number this makes. Explore what happens with the 'teens' numbers.

Teaching tips

- Use practical resources and equipment that you can partition into tens and ones alongside the use of place value cards to help children appreciate the relative size of each digit in a two-digit number. For example, you could use art straws bundled into tens and ones, rods of tens and ones, 10p and 1p coins or a 100-bead string to help children appreciate the difference in size of the '3' digits in a number such as 33.

- Use place value cards to give children practical experience of selecting, combining and partitioning two-digit numbers. Experiences of ICT images alone are not sufficient.
    - Make or buy sets that are different colours so that children sitting next to each other do not muddle their sets.
    - Have a large teacher set and smaller class sets for children to pick up and use.
    - Ask addition and subtraction questions such as:
        - 26 subtract 6? (Put the 6 card behind your back.)
        - 20 add 6? (Put the 6 card back.)
        - 26 subtract 20? (Put the 20 card behind your back.)
        - 6 add 20. (Put the 20 card back.)
    - Occasionally stop and show how you can represent these questions mathematically by writing the number sentences:
        - 26 - 6 = 20 and 20 + 6 = 26
        - 26 - 20 = 6 and 6 + 20 = 26

- Model how place value questions can be recorded as number sentences. Help children to recognise that all of the following are examples of place value questions and that counting should not be needed to solve them.

14 = 10 + 4	14 - ☐ = 4
10 + 4 = ☐	14 - ☐ = 10
10 + ☐ = 14	☐ - 4 = 10
4 + ☐ = 14	☐ - 10 = 4
☐ + 10 = 14	

- Look out for children who:
    - record incorrectly numbers they hear, for example hear 31 but reverse the digits and record 13;
    - interpret the two digits in a two-digit number as separate single-digit numbers, for example associate 47 with 4 and 7 not with 40 and 7, as they do not have a secure understanding of place value;
    - associate combining with joining together rather than with addition, for example write 40 combined with 2 as 402 rather than 40 + 2 = 42;
    - recognise from saying a number how it can be partitioned, for example that 73 can be partitioned as 70 and 3, but are confused by the 'teens' as how they are said does not help with partitioning.

- Help children to recognise when they can use knowledge of place value in calculation, for example:
  - to add 40 to 38;
  - to subtract 23 from a number they can count back 2 tens and then 3;
  - when calculating 14 + 8 the last jump can be seen as a known place value fact (recombining 20 and 2 to make 22).

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        +6              +2

14                 20       22
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