1 Mental addition

Target

- **To add a pair of two-digit numbers, such as 78 + 56**

Current understanding

Pupils should already be able to:

- recall addition facts to 20;
- add a multiple of 10 to a whole number, such as 67 + 30.

Common errors

Pupils may calculate:

- 58 + 26 = 74 instead of 84;
- 34 + 29 = 34 + 30 + 1 instead of 34 + 30 – 1.

In 46, pupils may refer to the digit 4 rather than its value, 40.

What to do

Vocabulary

digit

What you need

Number line marked 0 to 100

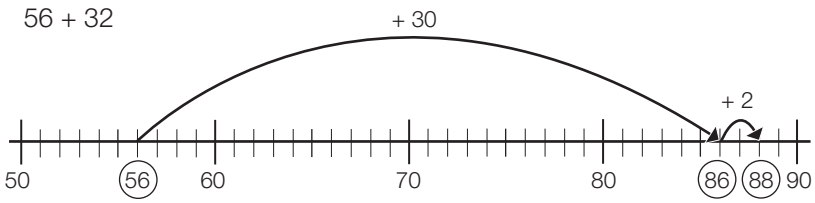
Make sure that the pupil understands the target.

Check that you are clear about the following stages of increasing difficulty in adding a pair of two-digit numbers:

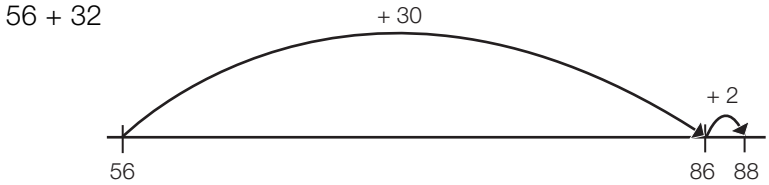
Stage 1	46 + 50	adding tens
Stage 2	43 + 52	units within 10
Stage 3	43 + 58	units greater than 10
Stage 4	63 + 52	tens greater than 100
Stage 5	63 + 58	units greater than 10 and tens greater than 100

For each stage:

- Try a question, then demonstrate as necessary using a 0 to 100 number line. For example, for stage 2:



- Give the pupil similar examples to try.
- When the pupil is confident in using a marked number line, try some examples with first you and then the pupil drawing an empty number line.



- When the pupil is confident, ask them to explain their working without a number line. For example:

  56 + 32 = 86 + 2 = 88

  or 56 + 30 = 86
  86 + 2 = 88

- Practise further examples so that the pupil can explain the calculation without any written support.
- Move on to the next stage in the progression and repeat the process.

At the end of stage 5, use the key questions to check that the pupil has reached the target and is confident.

Key questions

23 + 44

46 + 38

74 + 87

63 + 58

56 + 43 + 8

I have 76p and you have 47p. How much do we have altogether?
How did you work out the answer?

Discuss the methods the pupil uses. For example:

63 + 58 = (63 + 50) + 8 = 113 + 8

or 63 + 58 = (60 + 50) + (3 + 8) = 110 + 11

or 63 + 58 = (63 + 8) + 50 = 71 + 50

2 Mental subtraction

Target

- **To subtract a pair of two-digit numbers, such as 73 – 48**

Current understanding

Pupils should already be able to:

- recall subtraction facts within 20;
- subtract a multiple of 10 from a whole number, such as 68 – 50.

Common errors

Pupils may calculate:

- 73 – 48 = 35 instead of 25;
- 74 – 29 = 74 – 30 – 1 instead of 74 – 30 + 1.

What to do

Vocabulary

digit
difference

What you need

Number line
marked 0 to 100

Make sure that the pupil understands the target.

Check that you are clear about the following stages of increasing difficulty in subtracting a pair of whole numbers:

Stage 1 86 – 50 subtracting tens

Stage 2 86 – 5 units within 10

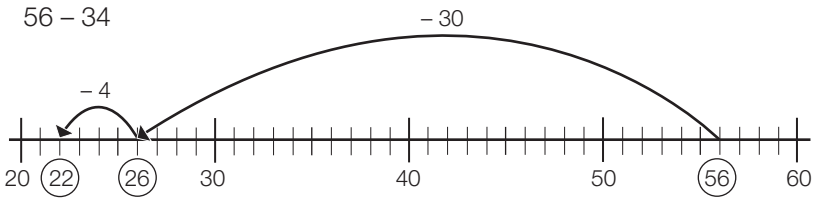
Stage 3 86 – 8 units cross 10 boundary

Stage 4 78 – 52 tens and units within 10

Stage 5 93 – 58 units cross 10 boundary

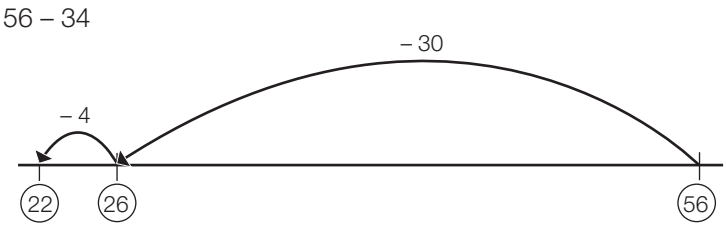
For each stage:

- Demonstrate an example using a 0 to 100 number line. For example, for stage 4:



- Give the pupil similar examples to try.

- When the pupil is confident in using a marked number line, try some examples with first you and then the pupil drawing an empty number line.



- When the pupil is confident, ask them to explain their working without a number line. For example:

  56 – 34 = 26 – 4 = 22

  or 56 – 30 = 26
  26 – 4 = 22

- Practise further examples so that the pupil can explain the calculation without any written support.
- Move on to the next stage in the progression and repeat the process.

At the end of stage 5, use the key questions to check that the pupil has reached the target and is confident.

Key questions

68 – 25

93 – 58

67 – 18

165 – 137

In a school hall there are 83 pupils. 38 leave.
How many are left?
How did you work out the answer?

Discuss the methods the pupil uses. For example:

93 – 58 = (93 – 50) – 8 = 43 – 8

or 93 – 58 = (93 – 60) + 2 = 33 + 2

or 93 – 58 + 2 (to 60) + 33 (to 93)
answer: 35 (by counting on)