Lesson - Place value to 100

Year: Year 2

Hello, I am Otto! Every two-digit number is made of tens and ones. In this chapter you partition numbers, read and write them in words, compare and order them, and count in steps of 2, 3, 5 and 10. The place of a digit tells us how much it is worth.

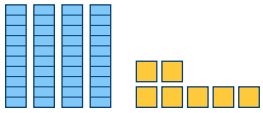
Starter activity

Take a big handful of counters and make groups of ten. Put each group of ten in a cup. How many cups are full? How many single counters are left over? If you have 4 full cups and 7 single counters, the number is 47. Try again with a different handful!

Tens and ones

Definition: tens and ones

Every two-digit number has **tens** and **ones**. Look at 47. The 4 is in the tens place. It means 4 tens, or 40. The 7 is in the ones place. It means 7 ones, or 7.



Tens	Ones
4	7

Definition: partition

To **partition** a number means to split it up. We can partition 47 into tens and ones: 47 = 40 + 7. We can also partition it in other ways, such as 30 + 17 or 20 + 27.

Key fact: the value of a digit

The same digit can have different values. In 55, the first 5 is worth 50 and the second 5 is worth 5. In 73, the 7 is worth 70 and the 3 is worth 3. The value depends on the place.

Worked example 1

What is the value of the 6 in 62? What is the value of the 6 in 26?

In 62 the 6 is in the tens place, so it is worth **60**. In 26 the 6 is in the ones place, so it is worth **6**.

Numbers in words

Rule: reading and writing numbers in words

Learn the tens words: twenty, thirty, forty, fifty, sixty, seventy, eighty, ninety. For two-digit numbers, write the tens word, a hyphen and the ones word: 47 is forty-seven. 100 is one hundred.

Worked example 2

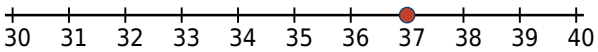
Write 68 in words, and write "ninety-three" in digits.

68 is **sixty-eight**. Ninety-three is 90 + 3 = **93**.

Number lines and 100 squares

Method: placing a number on a number line

1. Look at the numbers at the start and the end of the line.
2. Work out what each step is worth.
3. Count on from the start, or find the nearest ten, and put the number in place.



37 is between 30 and 40. It is 7 steps after 30 and 3 steps before 40, so it is nearer to 40.

Key fact: using a 100 square

On a 100 square, the numbers in a column go up by 10 as you move down. The numbers in a row go up by 1 as you move right. So the number below 34 is 44, and the number above it is 24.

Worked example 3

Which number is 10 more than 47, and which number is 10 less?

10 more: 47 + 10 = **57**. 10 less: 47 − 10 = **37**. Only the tens digit changes.

Comparing numbers

Rule: comparing two-digit numbers

1. Compare the tens digits first. The number with more tens is bigger.
2. If the tens are the same, compare the ones.
3. Use the signs > (greater than), < (less than) and = (equal to).

Worked example 4

Compare 47 and 74. Compare 52 and 58.

47 and 74: 4 tens is less than 7 tens, so 47 < 74. 52 and 58: the tens are the same, and 2 ones is less than 8 ones, so 52 < 58.

Watch out

Do not just look at the last digit! 29 is smaller than 31, even though 9 is bigger than 1. Always compare the tens first. The signs > and < always open towards the bigger number.

Ordering numbers

Method: ordering numbers

1. Look at the tens digits of all the numbers.
2. Put the numbers with the fewest tens first.
3. If two numbers have the same tens, order them by the ones.

Worked example 5

Order 63, 36, 66, 33 from smallest to biggest.

Tens 3: 33, 36. Tens 6: 63, 66. In order: **33, 36, 63, 66**.

Counting in steps

Key fact: counting in steps

- In 2s: 2, 4, 6, 8, 10, 12 … (even numbers)
- In 3s: 3, 6, 9, 12, 15, 18 …
- In 5s: 5, 10, 15, 20, 25 … (end in 0 or 5)
- In 10s: 10, 20, 30, 40 … (the tens digit goes up by 1)

Worked example 6

Count on in 3s from 12. Write the next four numbers.

12, 15, 18, 21, 24. The next four numbers are **15, 18, 21, 24**.

Worked example 7

Find the missing number: 35, 40, 45, __, 55.

The steps are 5. 45 + 5 = **50**.

Did you know?

The number 100 is called a "hundred" and is written with a 1 and two 0s. It is the first three-digit number we meet in Year 2. People use base ten, with groups of ten, probably because we have ten fingers. The Babylonians used groups of 60, which is why there are 60 minutes in an hour!

Otto's tip

To compare numbers, say them out loud and think about money: 47p is less than 74p. To count in tens, look at the tens digit, which goes up by 1 each time. Use a 100 square if you get stuck, and check that each answer is in the right place.