Lesson - Addition and subtraction within 20

Year: Year 1

Hello, I am Otto! Adding and taking away are two of the most useful things in maths. We use them when we share sweets, count money and play games. In this chapter we add and subtract with numbers up to 20.

Starter activity

Take 8 buttons and put them on a plate. Now put 5 more buttons on the plate. How many buttons are there now? Next take 4 buttons away. How many are left? Say the sums out loud: "8 and 5 more is 13. 13 take away 4 leaves 9."

Adding: putting together

Definition: addition

Addition means putting two groups together to find the total. We use the sign **+** (plus). The sign **=** means "is the same as". The answer is called the **total** or the **sum**.



3 blue dots and 4 red dots make 7 dots altogether. We write **3 + 4 = 7**.

Rule: adding in any order

You can add numbers in any order. 3 + 4 gives the same answer as 4 + 3. So if one way is hard, try the other way. It is easier to start with the bigger number and count on the smaller number.

Example 1

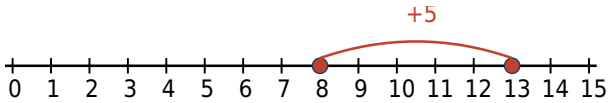
Work out 2 + 6.

Start with the bigger number, 6. Count on 2: 7, 8. So 2 + 6 = **8**.

Counting on with a number line

Method: adding on a number line

1. Find the first number on the number line.
2. Hop forward as many steps as the second number.
3. The number where you land is the total.



8 + 5: start on 8 and hop 5 steps to land on 13.

Example 2

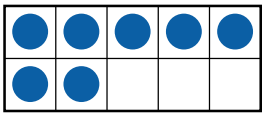
Work out 9 + 4.

Start on 9. Hop 4: 10, 11, 12, 13. 9 + 4 = **13**.

Number bonds

Definition: number bond

A **number bond** is a pair of numbers that add to make a certain number. The pair 6 and 4 is a number bond to 10, because 6 + 4 = 10.



There are 7 counters in the ten frame, so 3 spaces are empty. 7 + 3 = 10.

Key fact: number bonds to 10

- 0 + 10, 1 + 9, 2 + 8, 3 + 7, 4 + 6, 5 + 5
- Each bond works both ways, so 9 + 1 = 10 too.
- Learn these well. They help with every sum!

Method: bridging through 10

1. Look at 8 + 5. How many more does 8 need to make 10? It needs 2.
2. Split the 5 into 2 and 3.
3. 8 + 2 = 10. Then 10 + 3 = 13.

Example 3

Work out 7 + 6.

7 needs 3 more to make 10. Split 6 into 3 and 3. 7 + 3 = 10. 10 + 3 = 13. So 7 + 6 = **13**.

Subtracting: taking away

Definition: subtraction

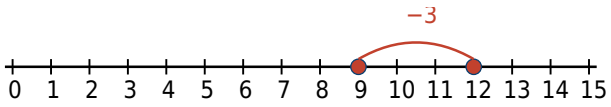
Subtraction means taking some away, or finding how many are left. We use the sign **−** (minus). The answer is called the **difference** or the number left.



There were 8 dots. We cross out 3. There are 5 left. We write **8 − 3 = 5**.

Method: counting back

1. Find the first number on the number line.
2. Hop backwards for the number you take away.
3. The number you land on is the answer.



12 − 3: start on 12 and count back 3: 11, 10, 9. The answer is 9.

Example 4

Work out 15 − 4.

Start on 15. Count back 4: 14, 13, 12, 11. 15 − 4 = **11**.

Watch out

Subtraction does NOT work in any order. 5 − 3 = 2, but 3 − 5 is not the same. Always start with the bigger number and take the smaller number away.

Addition and subtraction are linked

Key fact: fact families

Three numbers can make four facts. Take 4, 6 and 10.

- 4 + 6 = 10
- 6 + 4 = 10
- 10 − 4 = 6
- 10 − 6 = 4

Example 5

Use 7 + 5 = 12 to write another addition and two subtractions.

5 + 7 = 12. 12 − 5 = 7. 12 − 7 = 5.

Word problems

Method: solving a word problem

1. Read the story slowly. Draw a picture if it helps.
2. Decide: are things put together (add) or taken away (subtract)?
3. Write the number sentence and work it out.
4. Write the answer with a word, for example "7 apples".

Example 6

There are 9 ducks on a pond. 6 more ducks come. How many ducks are there?

Ducks come to join, so we add. 9 + 6 = 15. There are **15 ducks**.

Example 7

Ali has 14 sweets. He eats 5. How many are left?

He eats some, so we take away. 14 − 5 = 9. Ali has **9 sweets** left.

Did you know?

The plus sign + and the minus sign − are only about 500 years old. Before that, people wrote the words "plus" and "minus" in full. The equals sign was invented because the inventor thought two parallel lines are the best picture of "the same".

Otto's tip

Check your answer by going backwards. If 9 + 4 = 13, then 13 − 4 should be 9. If it is, you are right!