

# What are negative numbers?

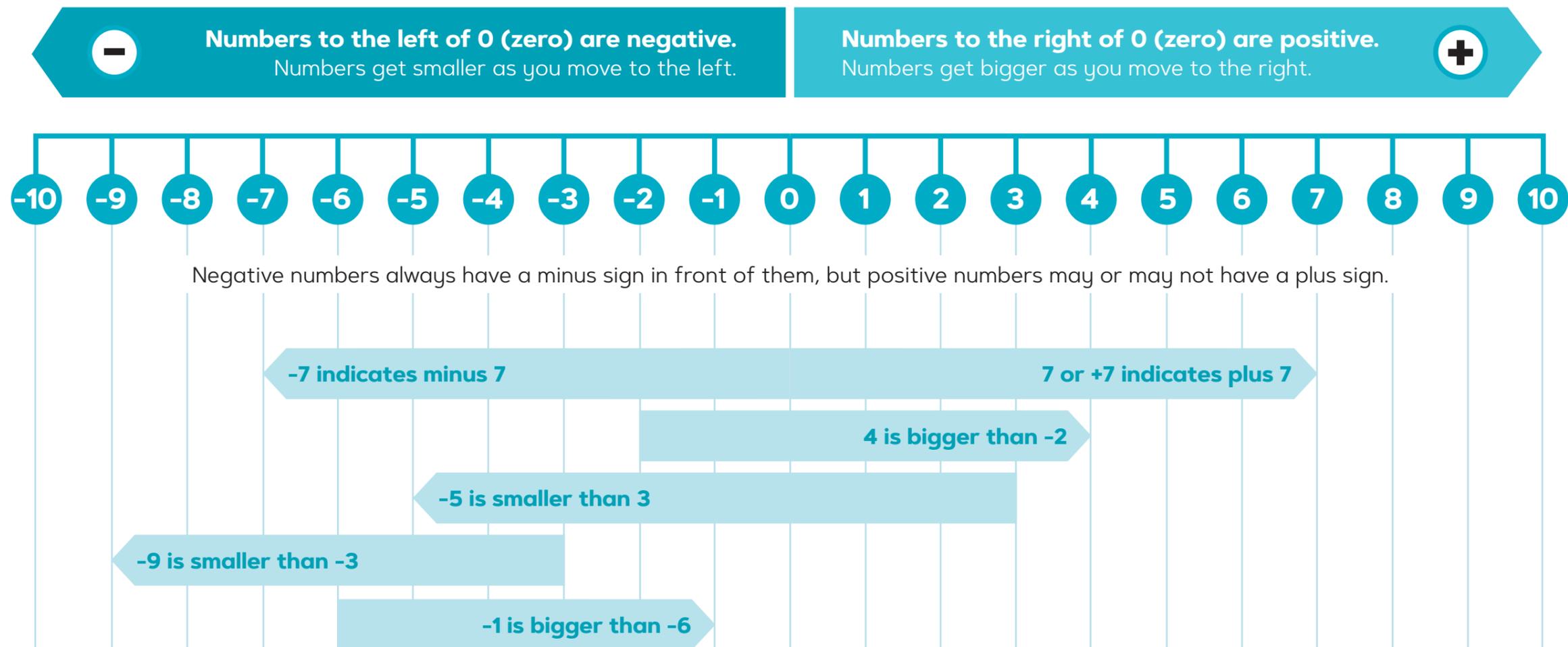
A **negative number** is a number less than zero.  
Numbers greater than zero are **positive numbers**.  
Zero is neither positive nor negative.

# When are negative numbers used?

Temperatures can be measured using negative numbers.  
Banks use negative numbers to indicate that accounts are overdrawn.  
Depths below sea level can be described using negative numbers.



## Negative numbers on the number line



### Level 5

Understand and use negative numbers in context.

## What are negative numbers?

A **negative number** is a number less than zero. Numbers greater than zero are **positive numbers**. Zero is neither positive nor negative.

## When are negative numbers used?

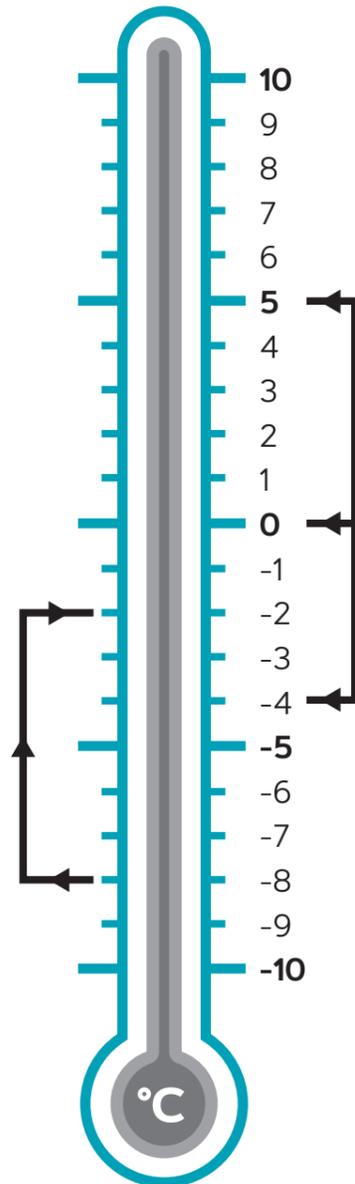
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## Negative numbers in temperature

The temperature in Moscow is  $-8^{\circ}\text{C}$  at 7.00 am and increases by  $6^{\circ}\text{C}$  during the morning.

What is the new temperature?

1. Find  $-8$  on the number line.
2. Move 6 steps upwards.
3. Record the new temperature, which is  $-2^{\circ}\text{C}$ .



The average January temperature in Dublin is  $5^{\circ}\text{C}$ . In Oslo the average January temperature is  $-4^{\circ}\text{C}$ .

What is the difference in average temperature between the two cities?

1. Find 5 and  $-4$  on the number line.
2. Count the steps from 5 to 0 and then from 0 to  $-4$  and add them together:  $5 + 4 = 9$  steps.
3. Record the total,  $9^{\circ}\text{C}$ .  
This is the difference in temperature.

## Negative numbers in the context of sea level

**Sea level is the base level for measuring heights on land or depths under the sea:**

- The base (sea) level is zero.
- Heights above sea level are positive numbers.
- Depths below sea level are negative numbers.

### Example

Mount Everest is the tallest peak on Earth at a height of 8848 m above sea level.

The Mariana Trench is the lowest point on the surface of Earth at 10 994 m below sea level.

**What is the difference in height between them?**

Mount Everest:  $+8848$  m

Mariana Trench:  $-10\,994$  m

The difference in height is  $8848 + 10\,994 = 19\,842$  m

This is almost 20 km.

## Negative numbers in bank balances

**Hannah has £35 in her bank account. She spends £60 on a new pair of jeans.**

**What is the balance in her bank account?**

Hannah has spent £25 ( $\pounds 60 - \pounds 35$ ) more than she actually has in her account, so she owes the bank £25

Her balance is now  $-\pounds 25$

**The next day Hannah puts £100 into her bank account.**

**What is her balance now?**

Hannah owed the bank £25, so she now has £75 in her account ( $\pounds 100 - 25$ ).

Her balance is now £75

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