The charged atoms (ions) involved in this story are dissolved in the fluid found inside and outside neuron cells. The main ones are sodium ($\text{Na}^+$), and potassium ($\text{K}^+$). They get in and out of neurons using gateways in the cell membrane called ion channels. There are sodium gates/channels that let sodium ions move into a neuron, and there are potassium gates/channels that let potassium ions move out of a neuron.

This is a sodium gateway...

(With even a one way valve inside the cell (shown as the blue part), so the sodium that enters the cell can’t get back out this way!)

It changes shape when the membrane its in becomes more positive, the gate opens up its middle, which lets sodium flood into a neuron.

Potassium gates operate in a similar way, but are built slightly different to recognize the size and shape of potassium ions. They work in the opposite direction though, they let potassium escape outside.

“AT REST”...(A neuron is ready to fire, but hasn’t been set off yet)

Before anything sets off a neuron, this is how the sodium and potassium are arranged...

(Note: this is one of the simpler images I found, but doesn’t show any gates. All gates would have to be closed in order to have sodium and potassium arranged like this.)
If someone was to measure the difference in charge inside and outside a neuron at this time, you’d find there is a charge of -70 mV - which is called the “resting potential”.

**DEPOLARIZATION...** (the rising part of the action potential graph shown below)

This word means something has set off the neuron. A “stimulus” stronger than “minimum threshold strength level” was detected by the neuron. If we’re talking about a sensory neuron, something set off its specially built sensor. Any other neuron, then the one in line ahead of it stimulated it. The stimulation makes sodium gates open, and sodium floods in, until the inside of the cell is holding what it can. The sodium gates close then. At that time, potassium gates open and some potassium leaves the cell. The electrical difference across the membrane rises to -30 mV. Drawing the electrical changes in a graph is called an “action potential” diagram.
A lot of sodium has entered the cell, and some of the potassium has left. Repolarization is the process of trying to undo what was done. Remember, the sodium and potassium gates are one way only, so there has to be another way of moving these ions back to where they started - sodium / potassium “pumps” found in the cell membrane. They use the energy molecule “ATP” to work, and haul sodium outside, put potassium back inside. While a neuron cell is repolarizing, it cannot fire again until its ready. This time of not being able to fire again is called the “refractory period”.

When the cell is resetting, only then does a third, minor player become involved in the story - chloride ions (Cl⁻). They rush inside during repolarization to help the cell’s inside achieve a more negative charge faster. This results in the extra low dip seen at the end of the action potential graph. When extra chloride ions are pumped out, the cell is at its -70mV resting potential again, and is ready to fire once more.