The Reactivity Series

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If you react various metals with water and/or acid you get an order of reactivity like this. There are various versions of this floating around. I took this one on the left from a text book. The revision guide has the version on the right - note they have added in carbon and hydrogen (obv not metals)...

Order of reactivity
potassium
sodium
lithium
calcium
magnesium
aluminium
zinc
iron
tin
lead
copper
silver
gold

Potassium
Sodium
Lithium
Calcium
Magnesium
Carbon
Zinc
Iron
Hydrogen
Copper

For metals:

- Their reactivity is a measure of how easily they lose electrons to become positive ions
- You get the same order if you react the metals with water or with acid

bubbles!

As you know some metals react with acids to produce a salt and hydrogen gas:

metal + acid → salt + hydrogen gas

The rate of the bubbles coming of tells us about the speed of the reaction - more bubbles, faster reaction.

You can investigate the rate of reaction by looking at the temperature change in the solution. You have to make sure you start with the same mass and same surface area of metal - then the higher them temp the faster the reaction.

Metals also react with water:

metal + water → metal hydroxide + hydrogen

More reactive metals react with water and less reactive ones don't...

$$Ca_{(s)} + 2H_2O_{(l)} \rightarrow Ca(OH)_{2(aq)} + H_{2(g)}$$