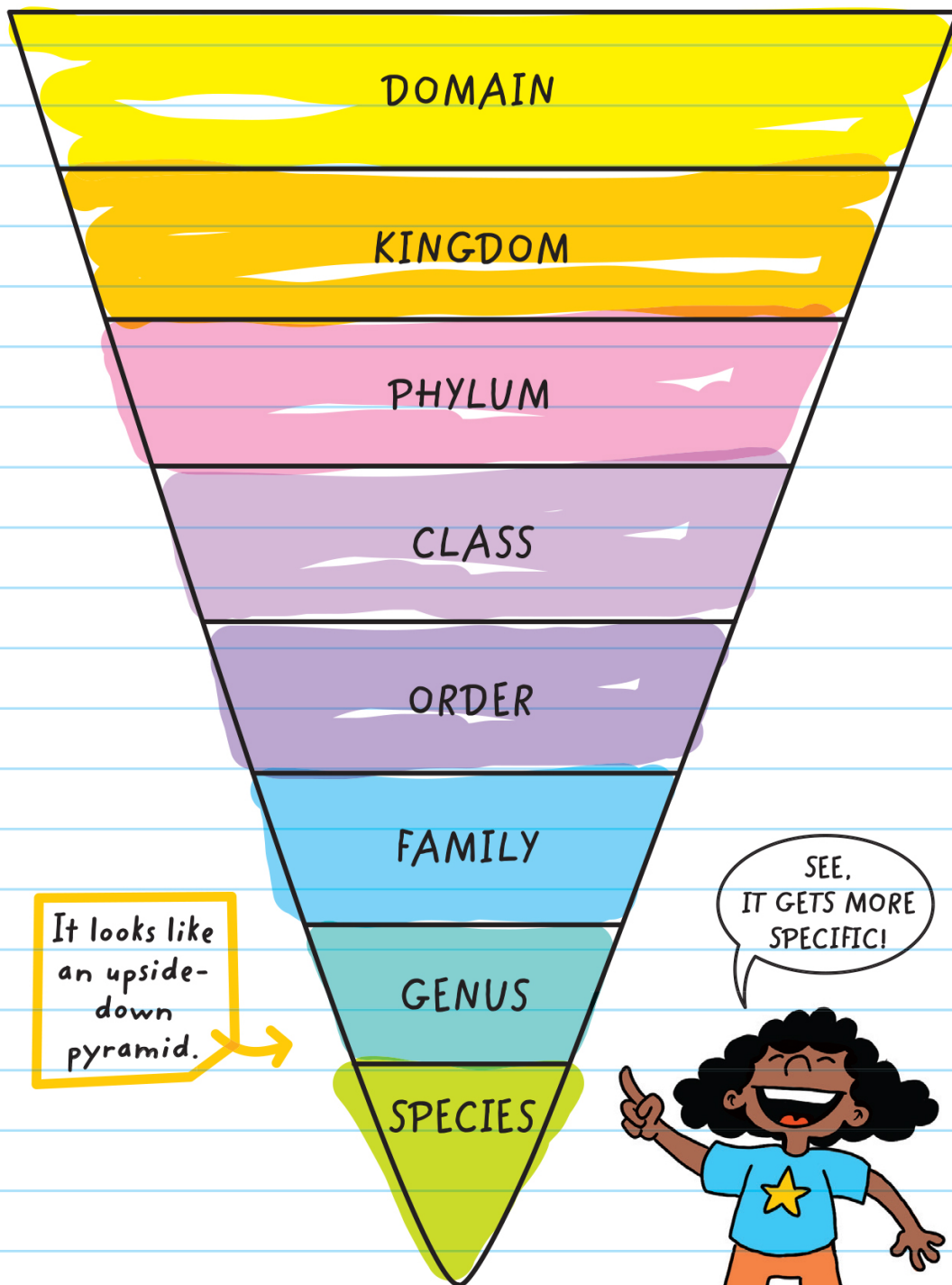


The order of categories from the broadest (at the top) to the most specific (at the bottom):



FUNGI

- From the Eukarya domain
- Single-celled or multicellular organisms
- Are decomposers
- Mainly live in soil

break down and
recycle nutrients
back into the
environment

PLANTAE



- Also known as the **PLANT KINGDOM**
- From the Eukarya domain
- Multicellular organisms
- Earth's primary producers of oxygen.
Plants are crucial to the life of almost every other organism.

ANIMALIA

- Also known as the **ANIMAL KINGDOM**
- From the Eukarya domain
- Multicellular organisms
- Breathe oxygen during the process of metabolism



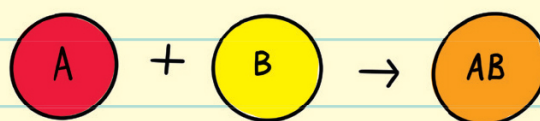
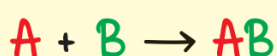
CHEMICAL REACTIONS

There are four different types of chemical reactions.

TYPES OF CHEMICAL REACTIONS

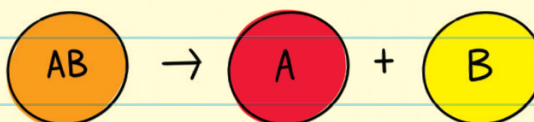
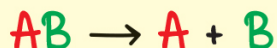
COMBINATION REACTION

Two or more reactants (atoms) form a product (molecule).



DECOMPOSITION REACTION

A molecule (reactant) becomes two or more simpler molecules or atoms (products).



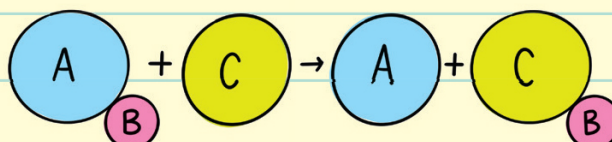
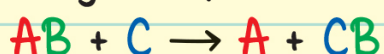
COMBUSTION REACTION

Hydrocarbon + oxygen become carbon dioxide and water.

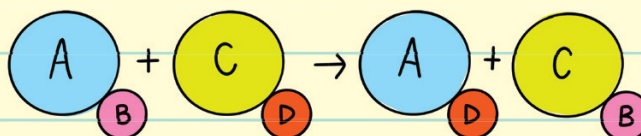
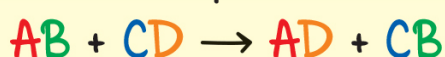
DISPLACEMENT REACTION

A reactant replaces an atom in another reactant.

Single-displacement:

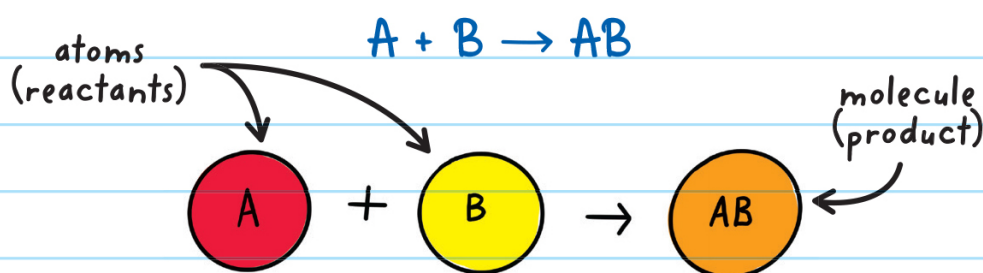


Double-displacement:



COMBINATION REACTIONS

The most common reaction is a combination reaction. This is where two or more reactants combine to form a molecule. If there are many reactants, then it is likely that more than one product will be created.

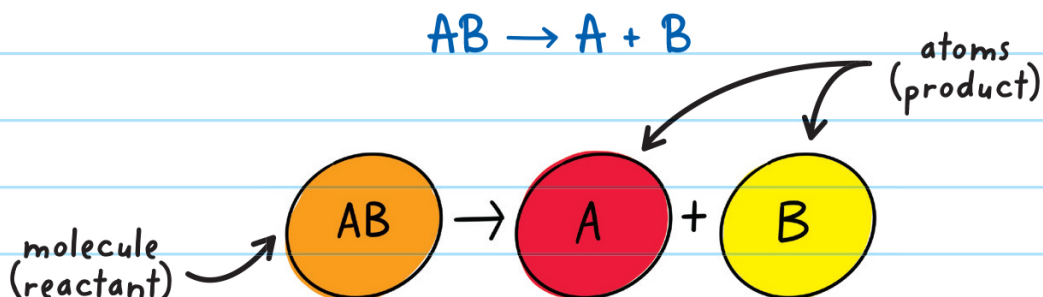


An example of combination reaction is the reaction that creates water: two hydrogen atoms and one oxygen atom reacting to form water.

DECOMPOSITION REACTIONS

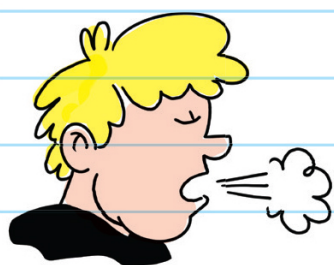
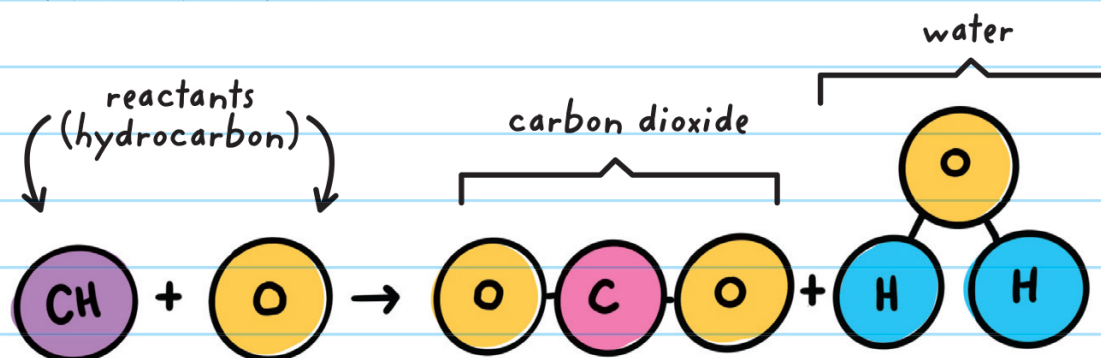
Decomposition reactions are the opposite of combination reactions. These reactions occur when a complex molecule is broken down into simpler molecules or atoms.

In this case, the molecule is the reactant, and the atoms are the products.



COMBUSTION REACTIONS

Combustion reactions are chemical reactions in which the reactants include a molecule and oxygen. If the reactant is a hydrocarbon, the products will always include carbon dioxide and water.

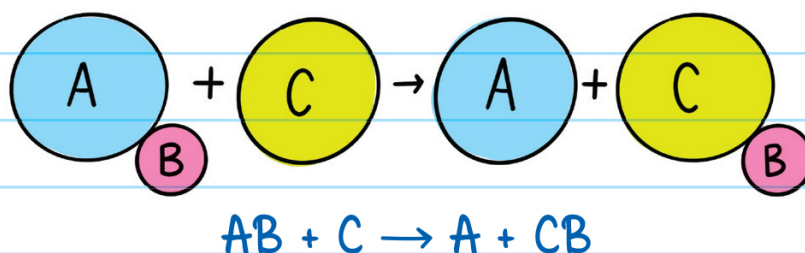


A combustion reaction is the reason humans breathe out carbon dioxide!

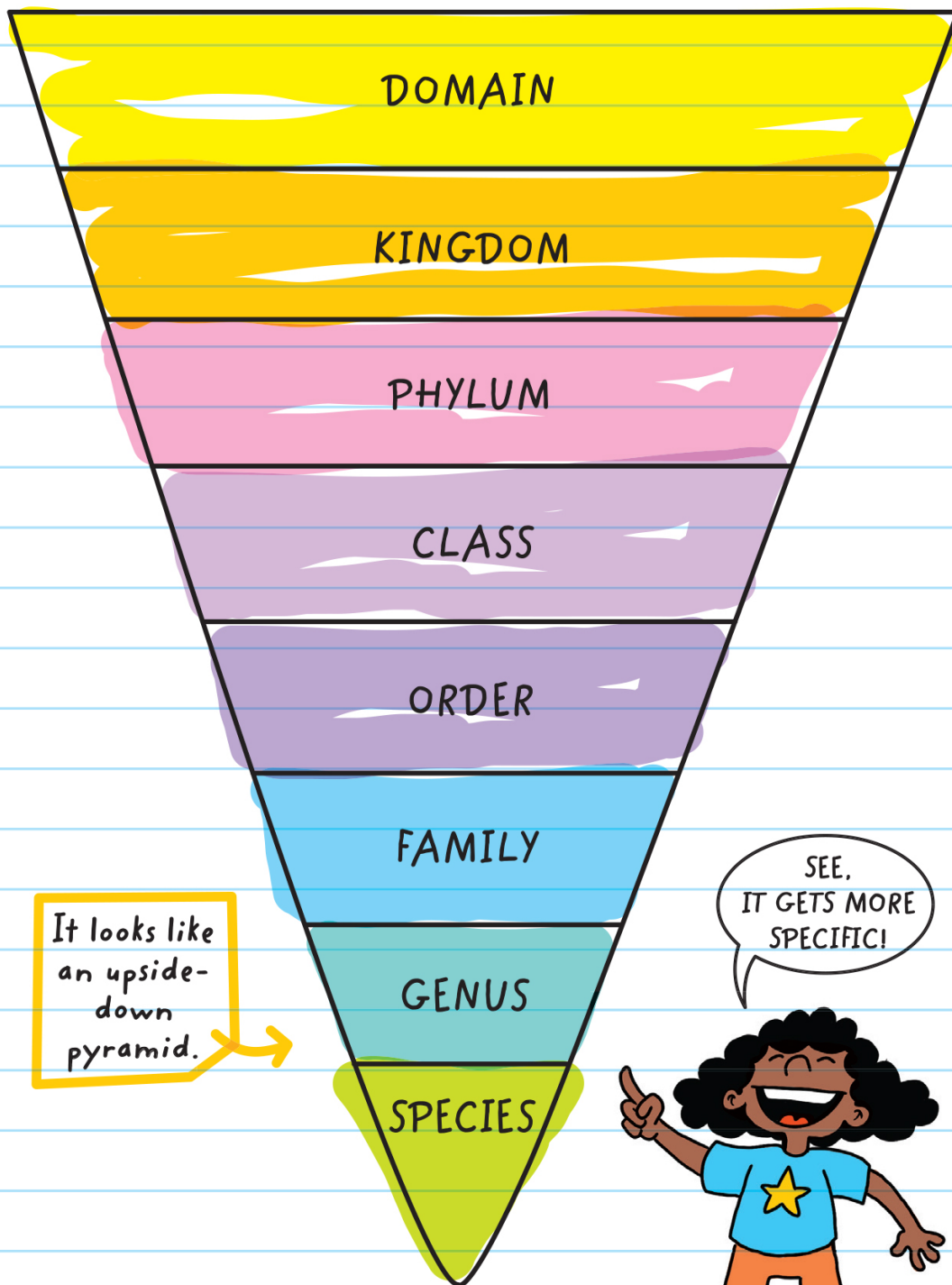
DISPLACEMENT REACTIONS

Displacement reactions are those in which one or more reactant element replaces another element within a compound.

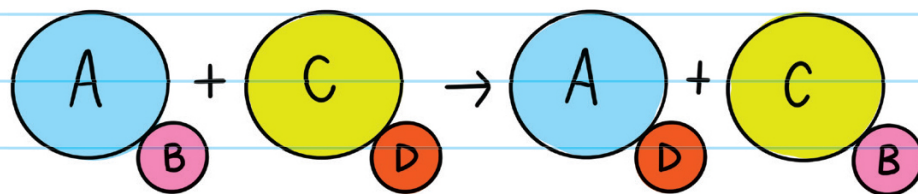
This is a single-displacement reaction, in which one element replaces another.



The order of categories from the broadest (at the top) to the most specific (at the bottom):



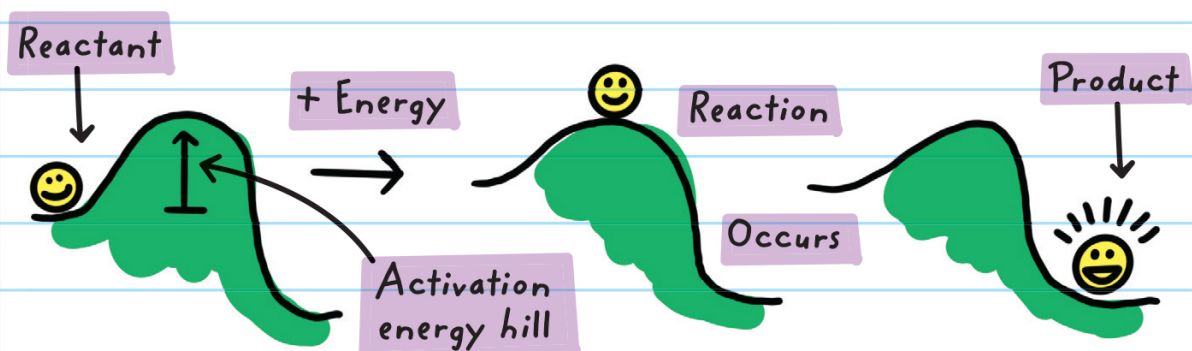
This is a double-displacement reaction, in which two elements replace each other.



ENZYME

Chemical reactions don't just happen randomly. Often, the reactants must have a certain level of energy for the reaction to take place. Otherwise, any atom that was near another atom would be able to bond with it, which could have bad consequences. The amount of energy needed to start a chemical reaction is referred to as **ACTIVATION ENERGY**.

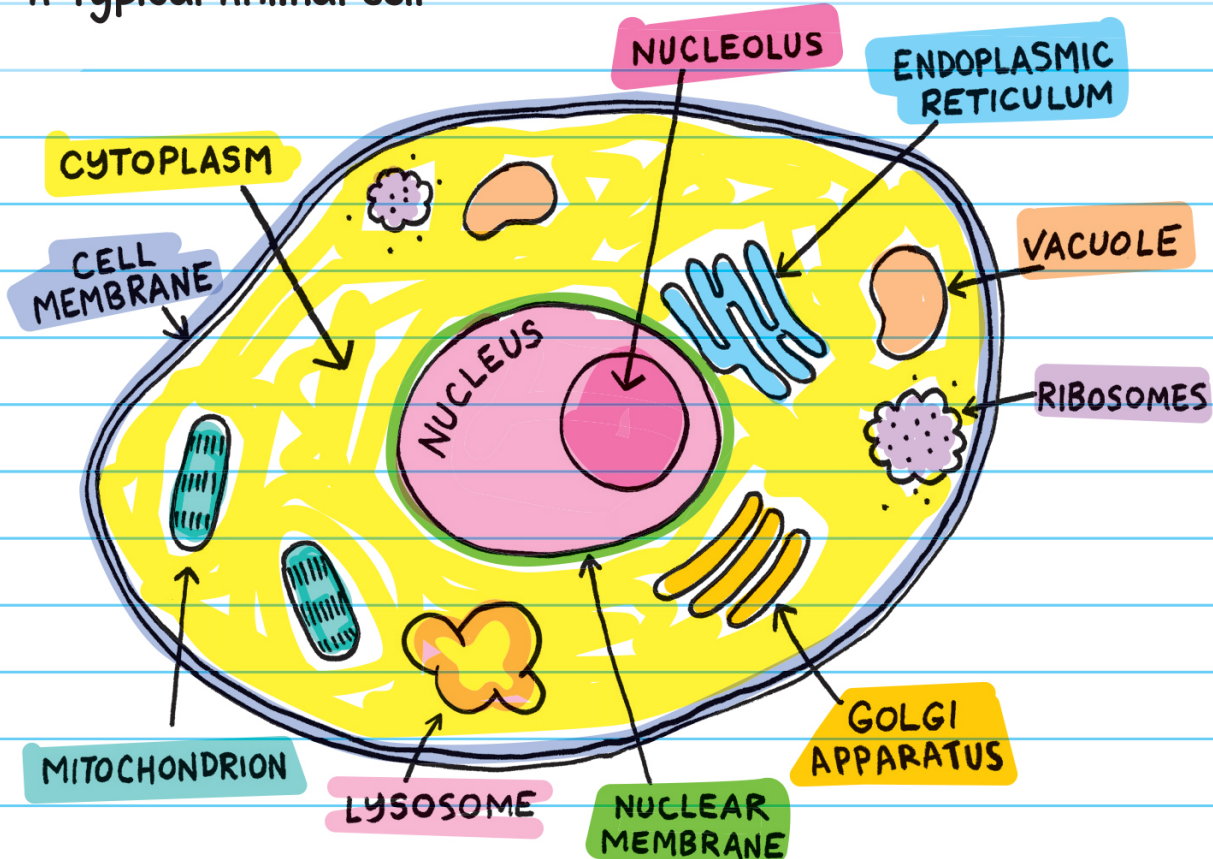
A chemical reaction is like a hill that reactants need to climb. At the bottom of the hill there are two or more reactants. In order for the reactants to become a product, the reactants must climb the hill, reach the peak, and roll down the other side. That peak is the activation energy required.



ANIMAL CELL ORGANELLES

Animal cells are similar in the organelles that they contain:

A Typical Animal Cell



A typical animal cell is made up of these organelles:

1. Cell Membrane

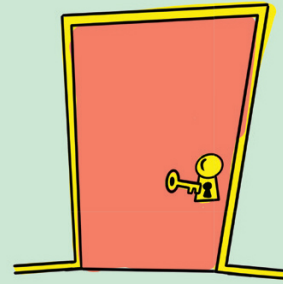
The outer boundary of the cell in humans and animals is called the **CELL MEMBRANE**. The cell membrane is

SEMIPERMEABLE. It is also flexible, giving the cell the ability to stretch and bend in many ways.

SEMIPERMEABLE

Allowing some things to selectively pass through.

Cells are similar to houses. In order to get into a house with a locked door, you need the key that fits the lock. Materials can get into cells only if they have the correct key to open the cell's door.



2. Cytoplasm

Within the cell membrane, a jellylike substance exists in which all the organelles float. This substance is the **CYTOSOL**. The cytosol is mostly made of water; however, the cytoplasm also contains a **CYTOSKELETON**, which is a network of protein fibers and tubes that maintain the structure of the cell and help move organelles within it.

The cytoplasm acts as cushions to the organelles and like a road system to transport proteins, metabolites, and other substances.

3. Ribosome

A **RIBOSOME** is a small organelle that produces proteins. The proteins are based on information given to the ribosomes by the organism's nucleic acids. Ribosomes are told which types of protein to make according to the cell that they reside in.