Dual coding

- https://www.learningscientists.org/videos
- Can you create a picture equation for each of the paper 1 Physics equations you need to learn?

Example:

work done = force × distance

VISUALS

When you have the same information in two formats — words and visuals — it gives you two ways to remember the information later on.

Combining these visuals with words is an effective way to study.

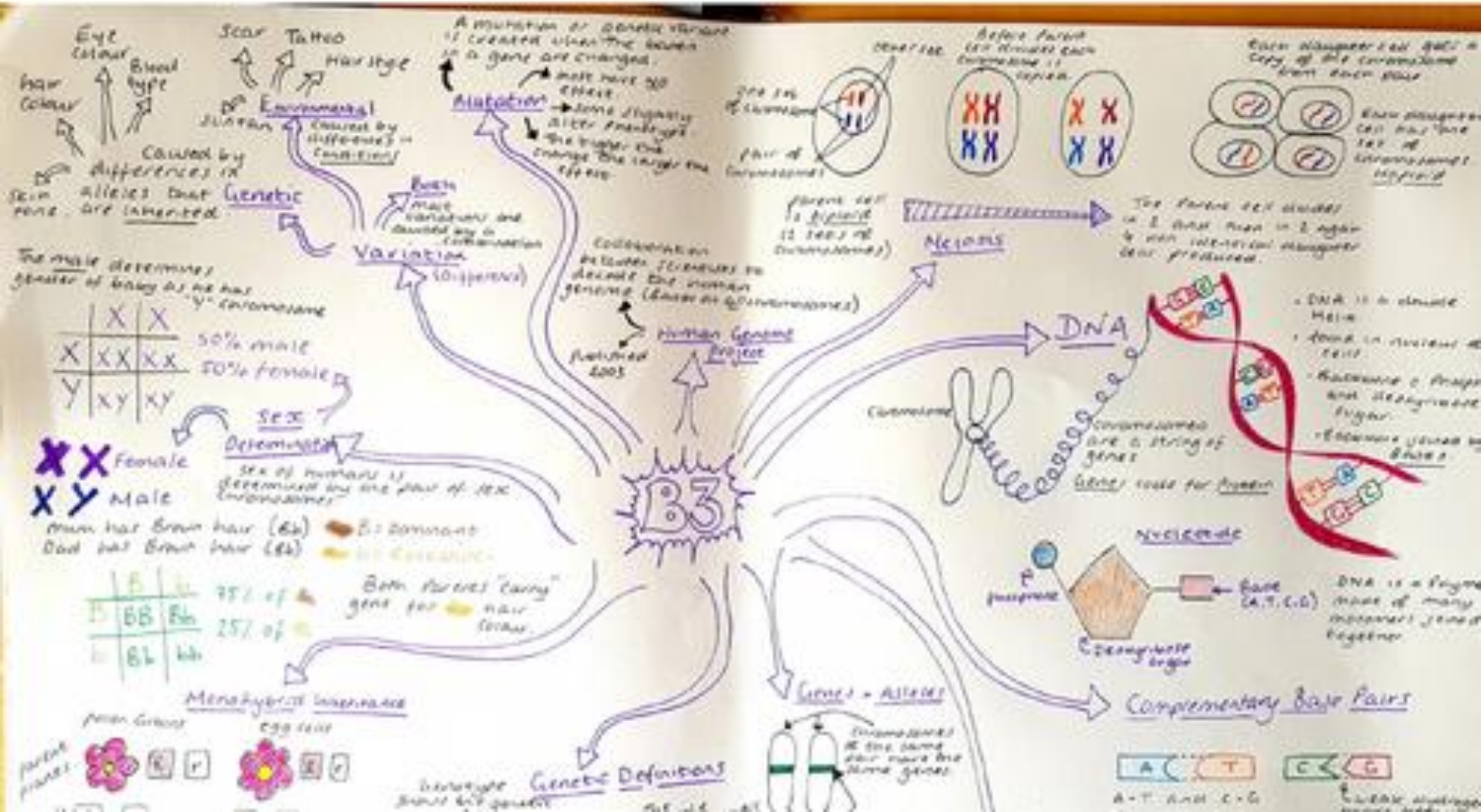
Now make your own picture equation for each of these 11 paper 1 equations. If you are struggling for ideas of your own the noun generator website may be useful : https://thenounproject.com/search/?q=energy

1	P1	work done = force x distance	$W = F\ s$
2	P1	kinetic energy = 0.5 x mass x (speed)^2	$E_k = ½\ m\ v^2$
3	P1	gravitational potential energy = mass x gravity x height	$E_p = m\ g\ h$
4	P1	power = work done / time = energy / time	$P = W / t$
5	P1	efficiency = useful output / input	$Eff = Out / In$
6	P4	charge = current x time	$Q = I\ t$
7	P4	potential difference = current x resistance	$V = I\ R$
8	P5	power = potential difference x current	$P = V\ I$
9	P5	power = (current)^2 x resistance	$P = I^2\ R$
10	P5	energy transferred = charge flow x potential difference	$E = Q\ V$
11	P6	density = mass / volume	$\rho = m / V$

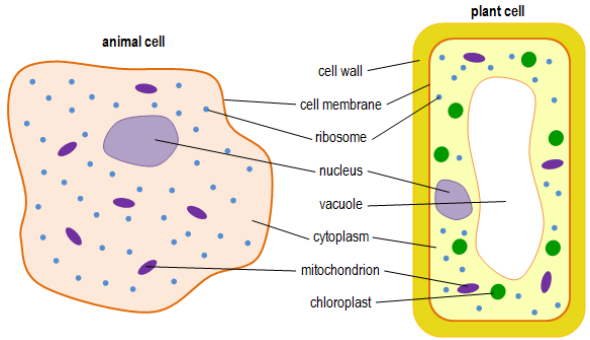
Dual coding biology

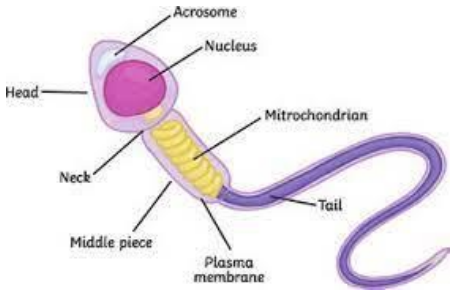
Now you know what dual coding is. Now create a revision poster for the Cells topic of Biology.

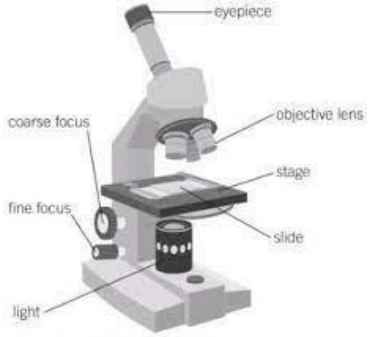
Here are some images you can use to help you with this topic

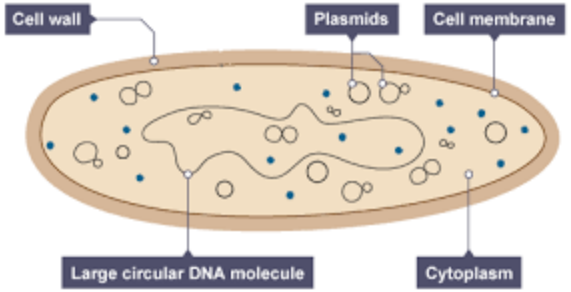

B3
Variation
Genetic
Environmental
Mutation
Sex Determination
Human Genome Project
Meiosis
DNA
Nucleotide
Complementary Base Pairs
Genes + Alleles
Genetic Definitions
Monohybrid Inheritance
Eye Colour
Blood Type
Hair Colour
Scar
Tattoo
Hair Style
Caused by differences in alleles that are inherited
Caused by differences in conditions
A mutation or genetic variant is created when the bases in a gene are changed.
Female
Male
Mum has Brown hair (Bb)
Dad has Brown hair (Bb)
Both parents "carry" gene for hair colour.
75% of
25% of
Parent gametes
Egg cells
Chromosome
Base (A, T, C, G)
A - T and C - G

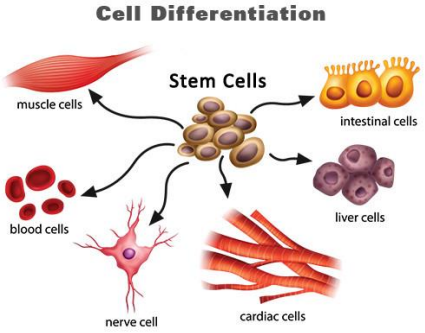
Biology Cells

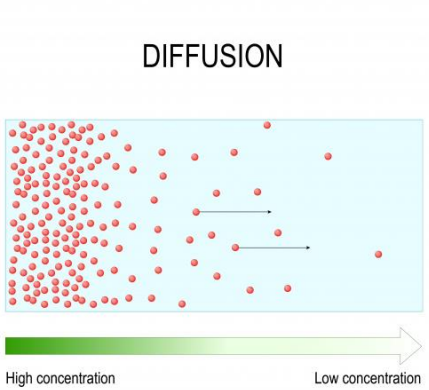












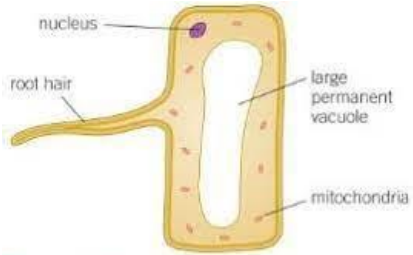
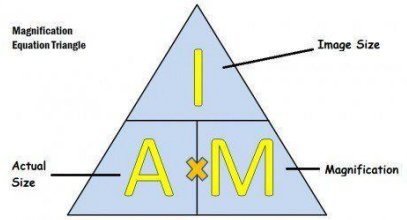
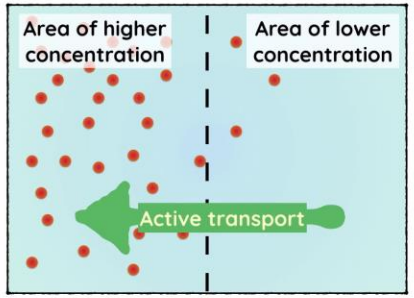


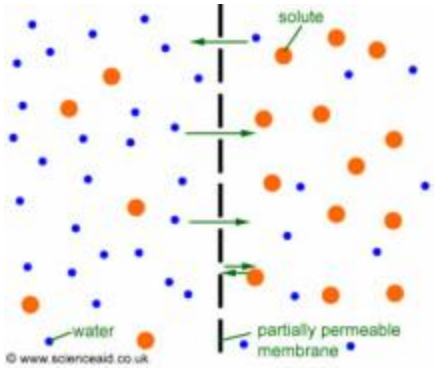
Figure 1 *A root hair cell*

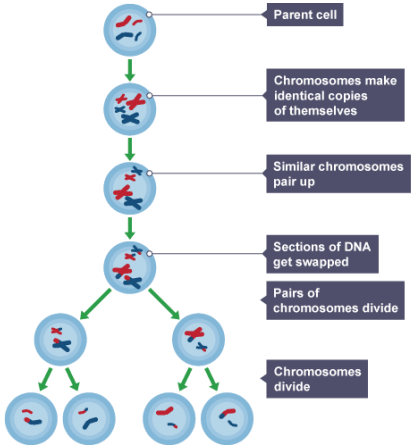




Energy is required to go against the the concentration gradient

ATP
The energy currency of cells

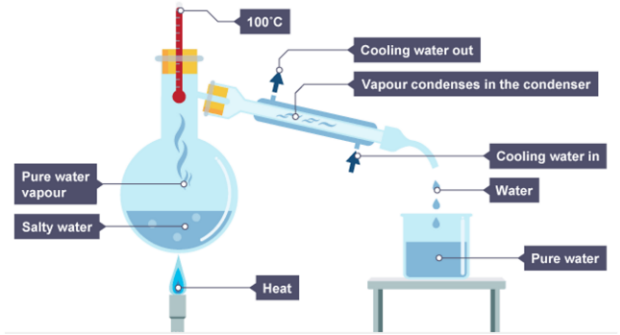




Dual coding Chemistry

Now create a revision poster for the
Atomic structure topic of Chemistry.

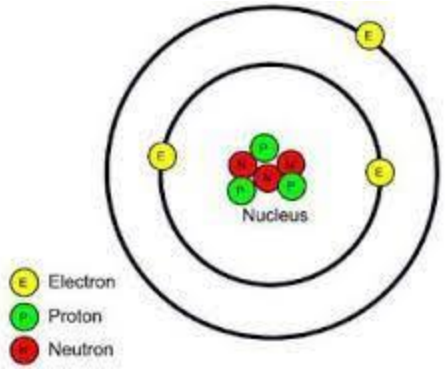
Here are some images you can use to help you with this topic



Groups	1	2											3	4	5	6	7	0	Periods
																		He	1
	Li	Be											B	C	N	O	F	Ne	2
	Na	Mg											Al	Si	P	S	Cl	Ar	3
	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	4
	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	5
	Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	6
	Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Nh	Fl	Mc	Lv	Ts	Og	7

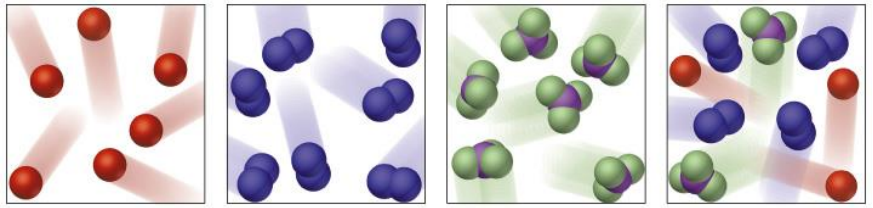
H

Metals | Non-metals

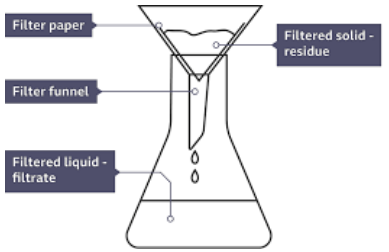


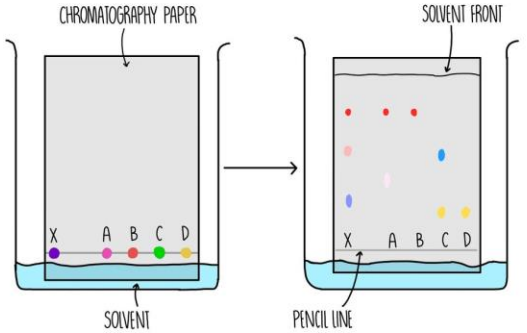
ATOMIC PARTICLE	CHARGE	MASS
PROTON	+ 1	1
NEUTRON	0	1
ELECTRON	- 1	$^1/_{2000}$

Crystallisation



(a) Atoms of an element | (b) Molecules of an element | (c) Molecules of a compound | (d) Mixture of elements and a compound



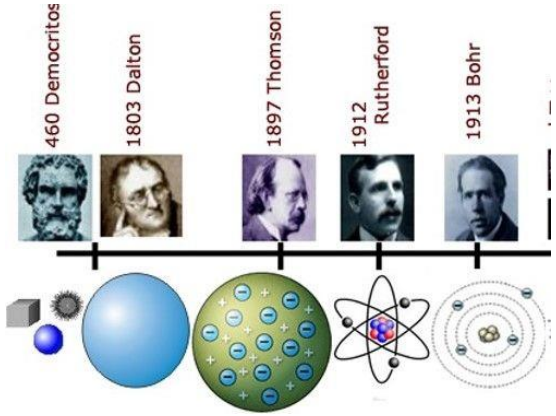


Newlands 1864

groups ↓

H	Li	Be	B	C	N	O
F	Na	Mg	Al	Si	P	S
Cl	k	Ca	Cr	Ti	Mn	Fe

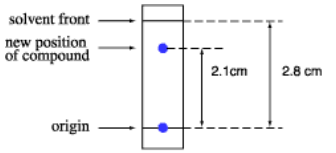
- Order of mass 'octaves'
- no gaps
- properties mixed up



Mass number 23

Na

Atomic number 11



$R_f = \frac{2.1}{2.8} = 0.75$