

Revision Game

Aims

This game is intended for use in a revision lesson but can easily be adapted for any topic where a detailed knowledge of key terms is needed such as bonding and structure.

Prior Knowledge

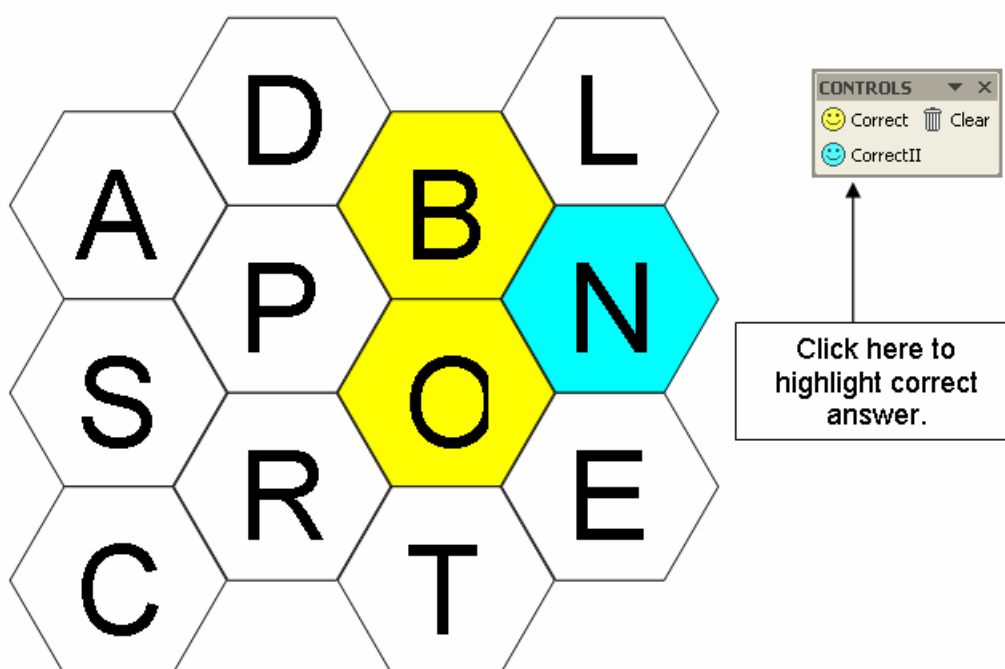
The students will need to have learnt the key definitions previously.

How to use the Game

Open the game as you would a normal word document; you will be asked if you wish to use macros, select 'enable macros'. If you do not see a control box on the screen select 'View – Toolbars – Controls' from the menu. This box may be moved around. To play the game without all the Word Processor features distracting the students select 'View – Full Screen' from the menu.

Students are organised into two teams (blue and yellow). Each team then picks a letter and is given a definition for which they must give the correct term. If they get the term correct the hexagon is shaded in with their colour by selecting the hexagon and pressing the appropriate button. If they are incorrect the same letter is used again for an additional question which is open to both teams. The first team to make a complete chain stretching across or up the board wins the game.

The game can be started again by pressing the clear button.



I

Adapting the Game

Any combination of letters can be used in the game. It is probably desirable to change the letters round if using it more than once with the same group.

Simply click into the relevant cell and erase the current letter replacing it with a new one.

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Suitable Questions (for A2 Revision)

A

What A is a compound of Aluminium that is covalent? **Aluminium Chloride**
What A is an organic compound containing a ring structure? **Aromatic**
What A is an acid used to make proteins? **Amino Acid**
What A is the solution used to test for aldehydes? **Ammoniacal Silver Nitrate**
What A is an oxide that can behave as both an acid and a base? **Amphoteric**
What A is a carbon atom which has four different groups of atoms attached? **Asymmetric**
What A is the number of particles present in one mole of a substance? **Avogadro number**

B

What gas is orange, brown in colour? **Bromine**
What B is a metal whose salts burn with a green flame? **Barium**
What B is a proton acceptor? **Base**
What B is an oxide that reacts with an acid to give a salt? **Basic**
What B is the compound formed by the action of nitrous acid on phenylamine in con hydrochloric acid? **Benzenediazonium chloride**
What B can be used to describe the nucleophilic substitution of a primary haloalkane?
Bimolecular
What B is made from a solution of sodium chlorate(I) **Bleach**
What B is a concentrated solution of sodium chloride? **Brine**
What B is used for filtration under reduced pressure? **Buchner Funnel**
What B is a solution of almost constant pH on the addition of small amounts of acid or base?
Buffer

C

What C is the intermediate in nucleophilic substitution? **Carbocation**
What C is a substance that induces cancer? **Carcinogen**
What C is a substance that provides an alternative route for a reaction? **Catalyst**
What C is the electrode at which reduction occurs? **Cathode**
What form of isomerism occurs due to restricted rotation about a double bond? **Cis-trans**
What C can be used for following the progress of potassium manganate (VII) reactions?
Colorimeter
What C is the oxidation of sulphur dioxide with oxygen? **Contact Process**
What C is the number of nearest neighbours an ion has in a complex? **Coordination No**
What C is the reaction between a diazonium compound and a phenol in alkaline solution?
Coupling reaction

D

What D is the anomalous characteristic of ice? **Density**
What D is used to test for carbonyl compounds? **2,4-dinitrophenylhydrazine**
What D is conc sulphuric acid good at bringing about? **Dehydration**
What D is the property shown by some salts of absorbing enough water from the atmosphere to form a solution? **Deliquescence**
What D is a characteristic of benzene? **Delocalised electrons**
What D is responsible for the acidity of transition metals in aqueous solution? **Deprotonation**
What D is an intermediate in the manufacture of azo dyes? **Diazonium compound**
What D is an acid with two replaceable hydrogen atoms per molecule? **Dibasic**
What D is reaction where the same element simultaneously undergoes oxidation and reduction? **Disproportionation**
What D is a reaction where the forward and reverse reactions both occur at the same rate?
Dynamic equilibrium

E

What E is the arrangement of two electrodes dipping into electrolyte solutions?
Electrochemical cell
What E is the decomposition of an electrolyte by the passage of current? **Electrolysis**

What E is boron trifluoride? **Electron deficient**
What E is the tendency of an atom in a covalent bond to attract electrons? **Electronegativity**
What E is responsible for the colour of transition metal complexes? **Electron transition**
What E is a species that seeks out areas of high electron density? **Electrophile**
What E is the mechanism by which the nitronium ion reacts with benzene? **Electrophilic Substitution**
What E is the reaction of alcoholic potassium hydroxide with a haloalkane? **Elimination**
What E is the formula of a compound expressed in its lowest whole number ratio? **Empirical formula**
What E is the non-superimposable mirror image of a chiral molecule? **Enantiomer**
What E tells us the position of equilibrium? **Equilibrium constant**
What E is a compound formed by the reaction of an alcohol and an acid? **Ester**

F
What F is the most electronegative of all the elements? **Fluorine**
What F is an alkaline solution of copper(II) tartrate? **Fehlings solution**
What F is the region of the IR spectrum which is characteristic of a compound although the peaks may not be identifiable? **Fingerprint**
What F is a reaction initiated by uv light? **Free radical substitution**
What F is the reaction of benzene with a halogen forming a halogenoalkane? **Friedel-crafts**
What F is the atom or group of atoms that determines the characteristics of an organic compound? **Functional group**

G
What G is a form of isomerism? **Geometric**
What G is a structure where the bonding is of a similar strength throughout the crystal? **Giant**
What G is a reagent that can be used to make alcohols or carboxylic acids? **Grignard**

H
What H is an equation that includes electrons? **Half equation**
What H is a group of ions that can be tested for with silver nitrate solution? **Halide**
What H is a law based on the law of conservation of energy? **Hess's law**
What H is an equilibrium where all the species are in the same state? **Homogeneous**
What H is the splitting of a covalent bond forming radicals? **Homolytic**
What H is an especially strong dipole-dipole attraction? **Hydrogen bond**
What H is the reference electrode used to measure electrode potentials? **Hydrogen**
What H is something that is attracted to water? **Hydrophilic**

I
What I is a purple solid at room temperature? **Iodine**
What I is a solution of a weak acid used in titrations? **Indicator**
What I is another name for a Van der Waals force? **Induced dipole attraction**
What I is the drawing of charge towards or release of charge from substituent groups? **Inductive effect**
What I is the effect responsible for the stability of Pb in +2 oxidation state? **Inert pair effect**
What I is a force between molecules? **Intermolecular force**
What I is used as a test for a CH₃ group attached to a carbonyl carbon? **Iodoform**

K
What K is a temperature scale? **Kelvin**
What K is the study of reaction rate? **Kinetics**
What K is often a limiting factor in the likelihood of a reaction? **Kinetic Stability**
What K is the ionic product of water? **K_w**

L
What L is a strong reducing agent? **LiAlH₄**
What L is the rechargeable cell used in a car? **Lead-Acid battery**
What L is an atom, ion or molecule bonded to a central metal ion via a dative covalent bond? **Ligand**

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What L is the swapping of ligands? **Ligand exchange**
What L is a non-bonding pair of electrons? **Lone pair**

M

What M is a highly polarising ion? **Magnesium ion**
What M is an ion that is highly oxidising? **Manganate(VII)**
What M is a rule governing the products formed when hydrogen halides are added to unsymmetrical alkenes? **Markovnikov's rule**
What M is a graph showing the distribution of energies within a sample of gas? **Maxwell-Boltzmann**
What M is an azo dye used as an acid-base indicator? **Methyl Orange**
What M is an acid with one replaceable hydrogen atom per molecule? **Monobasic**
What M is a small molecule that can be polymerised? **Monomer**

N

What N is the name for a mixture of conc nitric and sulphuric acids? **Nitrating mixture**
What N is a compound containing the $-\text{CN}$ group? **Nitrile**
What N tells us about hydrogen environments? **NMR**
What N is the mechanism for the addition of CN^- to a carbonyl? **Nucleophilic**
What N is a polyamide? **Nylon**

O

What O is a species that is readily reduced? **Oxidising agent**
What O occurs at the anode? **Oxidation**
What O is the shape of sulphur hexafluoride? **Octahedral**
What O is a characteristic of chiral molecules? **Optical Activity**
What O shows the most likely location of an electron? **Orbital**

P

What P is the reagent used to test for alcohols? **PCl_5**
What P is the ability of a metal ion to distort electron clouds? **Polarisation**
What P is how easily an ions electron clouds can be distorted? **Polarisability**
What P is a separation of charge in bonds between atoms of different electronegativity?
Permanent dipole
What p is a measure of the acidity of a solution? **pH**
What P is an aromatic alcohol? **Phenol**
What P is a bond formed by the sideways overlap of p-orbitals? **Pi**
What P is a molecule with an uneven distribution of electrons? **Polar molecule**
What P is an alcohol that can be oxidised to an acid? **Primary**
What P is the shape of PH_3 ? **Pyramidal**

R

What R is an equimolar mixture of the two forms of a chiral compound? **Racemic**
What R is a species with a single unpaired electron? **Radical**
What R is the proportionality constant in the rate equation? **Rate constant**
What R is the slowest step in a reaction? **Rate determining step**
What R is the technique used to purify solid substances? **Recrystallisation**
What R is a substance that donates electrons in a redox reaction? **Reducing agent**
What R is a reaction that can proceed in two directions? **Reversible**

S

What S is the element that occurs naturally in 8 membered rings? **Sulphur**
What S is used to connect two solutions in an electrochemical cell? **Salt bridge**
What S is a compound that contains no double or triple bonds? **Saturated**
What S is a bond formed by the head on overlap of orbitals? **Sigma**
What S is the replacement of one atom or group of atoms by another? **Substitution**
What S are conditions of 298K and 1atm pressure? **Standard**
What S is used as an indicator in iodine/thiosulphate titrations? **Starch**
What S is the branch of chemistry concerned with molecular shapes? **Stereochemistry**
What S is changed from a solid to a gas without a liquid state? **Sublimation**

T

What T is the shape of the boron trifluoride molecule? **Trigonal Planar**

What T is the breaking up of a substance using heat? **Thermal decomposition**

What T is a term of comparison between reactants and products in a chemical reaction?

Thermodynamic stability

What T is the high-energy state through which reactants must pass in order to become products? **Transition state**

U

What U is a reaction where the rate determining step involves only one species?

Unimolecular

V

What V is a term sometimes used to describe outer shell electrons? **Valence**

What V is a weak and short range intermolecular force? **Van der Waals force**

W

What W are water molecules that are incorporated into the crystal lattice of many inorganic salts when they crystallise from aqueous solution. **Water of crystallisation.**

What W is an acid that is only very slightly dissociated? **Weak acid**

Z

What Z is the ion formed by amino acids? **Zwitterion**
