

# Tectonic Boxes Game

This game is designed to practice answering Oil, Earth and Atmosphere questions. They are based on the AQA C1b Module but other syllabuses may group these topics differently.

This game can be played with 2 or 3 players. The following pages contain the game board, and 3 question sheets with 3 separate sets of true and false questions. Rules for playing the game are included on the playing board.

There are 3 games in this series available from GamePlan Games. All the games use the same 'True or False' questions, but each game offers a different playing objective. You can renew your motivation for learning the same facts by playing a different game. If you would like some new questions, why not buy the "Round the Block" game from our website?

Here is a summary of the Oil, Earth and Atmosphere games, which are available for FREE download from [www.GamePlanGames.co.uk](http://www.GamePlanGames.co.uk)

Game	No. of players	No. of sheets	Playing objective
Tectonic Boxes	2 or 3	1	To claim the most boxes
Alkene and Alkane Beetle	1, 2 or 3	1 each	To answer up to 4 questions correctly in a row.
Battle of the Vegetable Oils	2	1 each	To guess positions of your opponent's 3 Vegetable Oils

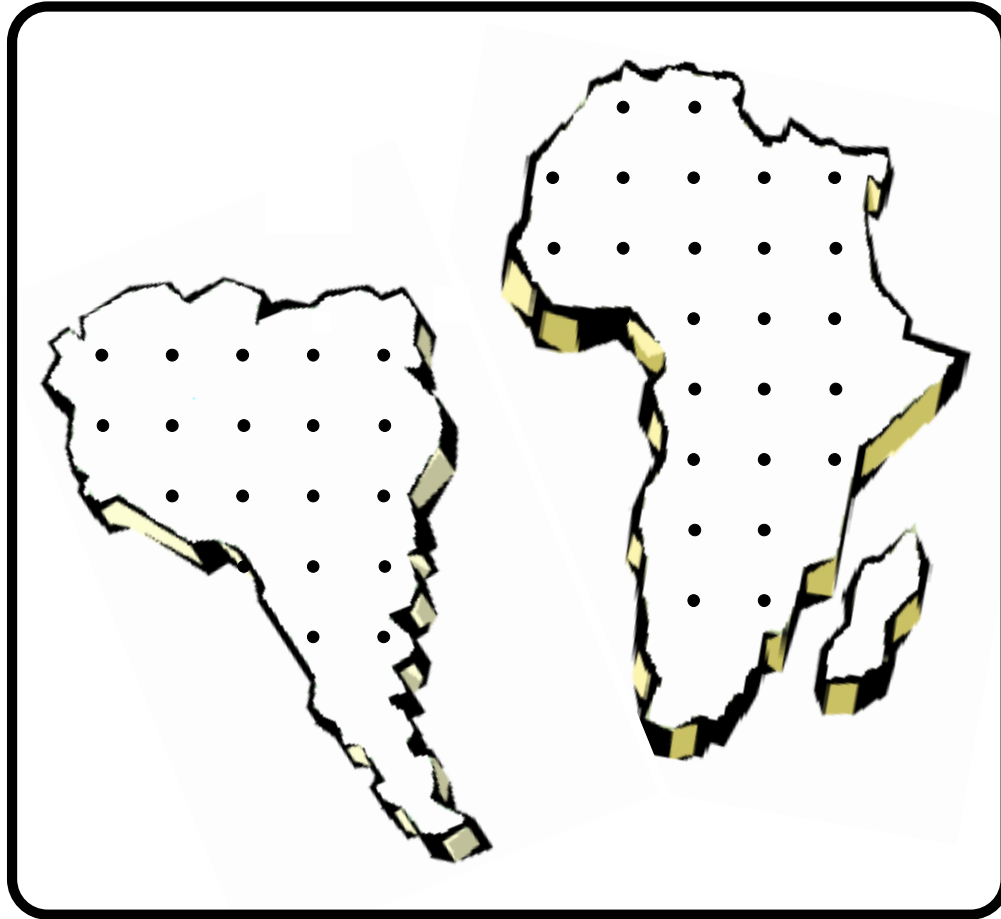
You can also download and print off the Revision Sheet which is designed to help you to understand why an answer you thought was right is actually wrong.

### The March Riddle

My first as a number, helps food by preserving,  
My second's in plastic, not biodegrading,  
My third's top and tailing, gas orange when glowing,  
My fourth becomes an 'e', for 'double bond' showing  
My whole on an island, despised and maltreated,  
'Till the Cyclops gave Zeus, his thunderbolts heated.

Please use the "Contact us" button on the web site to send your solution.  
Try and be first with the correct answer.

## Tectonic Boxes Game



### Scoring

Players take it in turns to ask their opponent True or False questions from the question sheets.

A player answering correctly gets to join any two dots with a line.

The object of the game is to enclose as many boxes as possible – this does not have to be one box at a time – a player adding the last line to enclose an area puts initials in all the captured boxes.

The winner is the person with their initials inside the most boxes.

## Oils, Earth & Atmosphere A – True or false?

1. The outermost layer of the earth is the mantle.
2. Polymers have small molecules.
3. Bromine is a halogen.
4. Vegetable oil can be burned as an emulsion.
5. Butane is a polymer.
6. Vegetable oils can be mixed with vinegar to make mayonnaise.
7. Earth's early atmosphere contained small quantities of carbon dioxide.
8. Earth's present atmosphere contains large quantities of nitrogen.
9. Tectonic plates move because of convection currents.
10. Hydrocarbons with large molecules can be broken down by hydrogenation.
11. One use of polythene is to make plastic bags.
12. Burying waste polythene is a bad way to get rid of it because it will not dissolve in water.
13. When cardboard and paper are buried they ignite spontaneously.
14. The best way to find out which dyes are in children's drinks is to ask mums at a toddler group.
15. Heating oils to smoking point damages them.
16. A hydrogenated oil is made by heating an unsaturated oil with hydrogen in the presence of a catalyst.
17. Carbon dioxide in the air is removed by the destruction of forests.
18. The interior of the earth remains hot because of earthquakes.
19. The interior of the earth remains hot because of natural radioactive processes.
20. Tectonic plates move apart by a few centimetres per day.
21. Wegener's theory of crustal movement is called continual shrinking.
22. New mountains replace older ones which are destroyed by weathering and erosion.
23. The new theory which used Wegener's ideas was called Plate Tectonics.
24. The mantle has a radius of 3500 kilometres.
25. The earth's atmosphere now has about 1% carbon dioxide.
26. Helium is used in airships because it is dense.
27. Plastic can be remoulded if it is made from a thermo setting polymer.
28. Light sensitive polymers are being used to make a new type of sticking plaster.
29. Bromine reacts with alkanes and goes clear.
30. Cracking is a way of splitting large hydrocarbons into smaller ones.
31. Polypropene is used for making ropes.
32. Alkanes join together to form polymers.
33. Polymers have small molecules.
34. The earth's atmosphere has been stable for the last 200 million years.
35. Rocks cemented together under the sea are called Metamorphic.
36. Ethanol is made by mixing ethene with water.
37. Slime can be made by adding borax to PVA glue.
38. Alcohol is made by mixing fruit or grain with sugar.
39. Distillation is when a vapour changes into a liquid.
40. The radius of the earth's core is larger than the radius of the mantle.

### Answers

True	False
3, 6, 8, 9, 11, 15, 16, 19, 22, 23, 27, 28, 30, 31, 34, 37	1, 2, 4, 5, 7, 10, 12, 13, 14, 17, 18, 20, 21, 24, 25, 26, 29, 32, 33, 35, 36, 38, 39, 40



## Oils, Earth & Atmosphere B- True or false?

1. Propane is an alkane.
2. The outermost layer of the earth is the crust.
3. Carbon dioxide dissolves in sea water to form carbohydrates.
4. Vegetable oils are useful foods because they contain a lot of energy.
5. One use of polythene is to make ropes.
6. Vegetable oils can be mixed with liquids to make emulsions.
7. Earth's present atmosphere contains small quantities of Carbon dioxide.
8. Wegener's idea of land masses moving apart is called the radiation process.
9. Convection currents need a source of heat.
10. Hydrocarbons with large molecules can be broken down by polymerisation.
11. Burying waste polythene is a bad way to get rid of it because it is not biodegradable.
12. When cardboard and paper are buried they release sulphur dioxide gas.
13. The best way to find out which dyes are in children's drinks is to do an internet search.
14. Heating oils to smoking point turns them into margarine.
15. Carbon dioxide in the air is removed by plant activity.
16. The interior of the earth remains hot because of friction between moving plates.
17. Wegener's theory of crustal movement is called Continental drift.
18. Scientists now believe that mountains were formed by magma rising from the sea floor.
19. New mountains replace older ones which are destroyed by earthquakes.
20. Wegener's theory was not believed by other scientists because he could not explain how continents moved.
21. The atmosphere is almost entirely solid and flows very slowly.
22. The crust has a thickness of about 6 kilometres under oceans and 35 kilometres under continents.
23. The earth's atmosphere now has about 0.04% noble gases.
24. Hydrogen is not used in airships because it is explosive.
25. Plastic used for the handle of a grill pan would be best made of a thermo softening polymer.
26. Light sensitive polymers are being used to make a new type of sticking plaster.
27. Bio diesel can be made from oil seed rape.
28. The Core is at the centre of the earth.
29. Polymers are very long and can be natural or manmade.
30.  $C_2H_6$  is called ethane.
31. Preservatives make foods look nicer.
32. Plants release oxygen into the air by photosynthesis.
33. Cracking involves passing vaporised hydrocarbons over a hot catalyst.
34. Bromine is not very reactive.
35. Poly(ethanol) makes a jelly like substance or slime.
36. Slime can be made by adding bromine to PVA glue.
37. Vegetable oils come from seeds, fruits and nuts.
38. Plastics are formed in cracking reactions.
39. Tectonic plates are made of crust and upper mantle.
40. Volcanoes are believed to have created the early atmosphere.

### Answers

True	False
1, 2, 4, 6, 7, 9, 11, 13, 15, 17, 20, 22, 24, 26, 27, 28, 29, 30, 32, 33, 35, 36, 37, 39, 40	3, 5, 8, 10, 12, 14, 16, 18, 19, 21, 23, 25, 31, 34, 38



## Oils, Earth & Atmosphere C- True or false?

1. Vegetable oil can be burned as a fuel.
2. The shrinking earth theory explains how volcanoes created mountains.
3. Vegetable oils cook food at a higher temperature than water.
4. One use of polythene is to make pans.
5. E numbers are illegal food additives.
6. Earth's early atmosphere contained small quantities of methane.
7. Wegener suggested that the African and American plates are moving apart.
8. Tectonic plates move as the earth's crust shrinks.
9. At plate boundaries there are often volcanic eruptions.
10. One use of polythene is to make milk crates.
11. When cardboard and paper are buried they are broken down by micro-organisms.
12. Chromatography is used to separate dyes.
13. The best way to find out which dyes are in children's drinks is write to manufacturers listed in Yellow Pages.
14. A hydrogenated oil is saturated.
15. Carbon dioxide in the air is removed by eruption of volcanoes.
16. Food wrapping is best if it is transparent.
17. Decomposition of igneous rocks makes volcanoes release carbon dioxide.
18. Tectonic plates move apart by a few centimetres per year.
19. Wegener's theory of crustal movement is called subduction.
20. Scientists now believe that mountains were formed by large-scale movements of the earth's crust.
21. New evidence to support Wegener's theory was that Polar ice caps were melting.
22. The core of the earth contains the elements nitrogen and oxygen.
23. The earth's atmosphere now has 21% oxygen.
24. Argon is used in light bulbs because it is unreactive but glows.
25. Ph sensitive polymers are being used to make a new type of sticking plaster.
26. Plastics are made of many monomers joined into long chains.
27. A saturated hydrocarbon has double bonds between its carbon atoms.
28. Renewable fuels are called 'carbon neutral'.
29. Liquids that pour easily are called viscous.
30. Vegetable oils can be mixed with other oils to make Bio diesel.
31. Hydro gel is used by dentists for crowns and fillings.
32. Noble gases are in group 0 of the Periodic table.
33. Cracking involves pouring a hydrocarbon over a cold catalyst.
34. Ethanol is made by reacting ethene with steam.
35. Poly(ethanol) is used to make gutters and water pipes.
36. Ethanol is made by fermenting fruit or grain with yeast but excluding oxygen.
37. Vegetable oils come from the roots and leaves of plants.
38. The earth's atmosphere now has 78% nitrogen.
39. Micro organisms break down waste polythene.
40. Oceans were formed by water vapour condensing as it cooled.

### Answers

True	False
1, 3, 6, 7, 9, 11, 12, 14, 16, 18, 20, 23, 24, 26, 28, 30, 32, 34, 36, 38, 40	2, 4, 5, 8, 10, 13, 15, 17, 19, 21, 22, 25, 27, 29, 31, 33, 35, 37, 39

