



## British Science Week quiz 2015

This quiz can be played in teams or individually, and is available in two levels suitable for ages 5–8 and 8–13+

There are six rounds to the quiz:

### **Round 1: Inventions and discoveries**

Questions about life changing inventions and discoveries

### **Round 2: Physics and space**

Questions about forces, motion, energy and space

### **Round 3: Engineering**

Questions about famous feats of engineering and the way things work

### **Round 4: Chemistry**

Questions about materials, changes and chemicals

### **Round 5: Biology**

Questions about living things

### **Round 6: Science in the news**

Questions about science news from the last year





## Level 1 suggested for ages 5 to 8

### Round 1: Inventions and discoveries (Level 1)

1. What medicine that comes from a mould, did the Scottish biologist Alexander Fleming discover in 1928?
  - a) Penicillin (antibiotics)
  - b) Plasters
  - c) Soap
  
2. What did the Italian astronomer Galileo Galilei use to see mountains and craters on the Moon in 1609?
  
  
  
  
  
  
  
  
  
  
3. When was the first moving TV picture sent by the Scottish inventor John Logie Baird?
  - a) 1590
  - b) 1890
  - c) 2090
  
  
  
  
  
  
  
  
  
  
4. Thomas Edison invented the first electric light bulb in 1879. How many years ago was this?
  
  
  
  
  
  
  
  
  
  
5. On the 12 April 1981 NASA launched the first of a fleet of re-usable space craft called...
  - a) The shuttle
  - b) Space bus
  - c) Space taxi



## Round 2: Physics and space (Level 1)

1. Which force keeps your feet on the ground and brings you back down when you jump up?
  
2. Which two of the following are types of energy
  - a) Friction
  - b) Heat
  - c) Gravity
  - d) Light
  
3. Which **two** of the following are **not** planets:
  - a) Earth
  - b) Pluto
  - c) Jupiter
  - d) Uranus
  - e) The Sun
  - f) Mercury
  
4. Which is the coldest planet in the Solar System? *Bonus question: why is it the coldest?*
  
5. If a car moves at three metres every second how far will it have moved in ten seconds?  
*Bonus question: how far will it have moved in one minute?*
  
6. How many seasons are there and what are they called? *Bonus question: why are there seasons on Earth?*

### Round 3: Engineering (Level 1)

1. Give one reason why metal is good for making cars.
2. Name one material that is good at conducting heat.
3. What shapes are these?: Draw lines to connect the number to the correct letter or write the number followed by the letter e.g. 2B

1. It has got one side that curves and no edges anywhere      A. Rectangle or square

2. It has got three sides      B. Circle

3. It has got four sides      C. Triangle

4. Which of these materials: wood, plastic, glass, metal, water, rock, would you choose to make a:
  - a) Table
  - b) Window
  - c) Waterproof coat

5. The force needed to break three materials was tested and the results collected:

Material	Force (newtons)
A	3
B	2
C	6

Which material is the strongest?

*Bonus question: how much stronger is it compared to the weakest one?*



## Round 4: Materials (Level 1)

1. Name one substance that is a good conductor of electricity.
2. What instrument do we use to measure the temperature of something?  
*Bonus question: at what temperature does water freeze?*
3. What is the hot liquid rock inside a volcano called?  
*Bonus question: what is the same hot liquid rock called when it erupts out of a volcano?*
4. What is a fossil?
5. Rocks and stones on a beach that have fallen off cliffs often look round and smooth. How did they become rounded and smooth?
6. How can you turn a solid into a liquid?  
*Bonus question: can you give a common example of this?*





## Round 5: Biology (Level 1)

1. What happens to a deciduous tree in winter?
2. Name a common carnivore and herbivore.
3. Name two things plants need to grow.
4. This animal is covered in scales; it has gills, and fins and lives in water all the time. Which group of animals does this belong to?
5. A plant grows 3cm taller every two days. How tall is it after eight days?  
*Bonus: How tall is it after 2 weeks?*
6. Name two adaptations that help polar bears survive in the freezing cold of the Arctic.





## Round 6: Science in the news (Level 1)

1. The space probe Rosetta landed a probe on what last year?
  - a) The Sun
  - b) A comet
  - c) The Moon
  
2. What is the British engineer James Dyson famous for inventing?
  
3. Virgin Galactic will be the first craft to take passengers where?
  
4. In which continent was there a deadly virus outbreak last year?  
*Bonus question: what is the name of the virus?*
  
5. At 9:45am on 20 March 2015 there will be a partial solar eclipse in the UK. What happens during a solar eclipse?
  
6. In May 2014 the remains of a very large animal were dug up in Argentina. The thigh bone (the big bone at the top of your leg) was the height of an adult. What do you think they had found?





## British Science Week 2014 quiz

Level 2 suggested for ages 8 to 13

### Round 1: Inventions and discoveries (Level 2)

1. In December 1903 the Wright brothers from America were the first people to successfully do what?
  - a) Fly a powered aircraft
  - b) Row across the Atlantic Ocean
  - c) Build the first motor car
  - d) Go into space
2. In 1867 Alfred Nobel from Sweden, after who the Nobel Prizes are named, invented which material that made mining safer (and warfare more dangerous!)?
3. Which of these was invented first:
  - a) The electric vacuum cleaner
  - b) The telephone
  - c) The refrigerator
  - d) Motion pictures
4. In 1946 Dr. Percy LeBaron Spencer found a chocolate bar melted in his pocket while testing radar. In 1956 he invented a special oven to cook food using radio waves. What do we call this type of oven?
5. While out walking George de Mestral noticed that the hooks on burrs (burdock seeds) made them stick to his clothing. In 1948 he used this idea to develop which common hook and loop fastening material.





## Round 2: Physics and space (Level 2)

1. Alessandro Voltaire after who the volt is named, invented which one of the following?
  - a) Light bulb
  - b) Battery
  - c) Electric motor
  - d) Telephone
  
2. When sunlight passes into raindrops it is split up into the colours of the rainbow and reflected. What are the seven colours of the rainbow? *Bonus mark if they are in the correct order.*
  
3. What is the standard unit for measuring force?
  
4. On the 19 July 2013 Mohammed Farah ran 1,500 metres in three minutes 29 seconds. What was his average speed in metres per second (m/s)? *Formula: average speed (m/s) = distance (m) ÷ time (s)*
  
5. Conduction and convection transfers heat energy through solids and fluids (gasses and liquids). How is heat energy transferred from the Sun to Earth?
  
6. The Sun feels warmer in summer because: choose the correct letter?
  - a. The Sun grows bigger and hotter in summer
  - b. The Earth is tilted on its axis
  - c. The Earth is closer to the Sun in summer
  - d. The Sun's rays are concentrated on Earth more in summer





### Round 3: Engineering (Level 2)

1. Wood floats on water but metal sinks. Why do large metal ships float?
2. Why does sewage need to be treated before it is pumped into rivers and the sea?
3. How can you make a single sheet of paper strong enough to balance a mug of water along one edge of the paper?
4. What form of energy is used in a hydroelectric dam to produce electricity?
5. Carbon fibre is used to make things like bicycles, racing cars, aircraft? What properties make it good for these applications?
6. Name the supersonic car that will travel at over 1,000mph across the Hakskeen Pan in South Africa next year (that's three football pitches end to end every second!).





## Round 4: Chemistry (Level 2)

1. If a material is said to be a good conductor what does this mean?
2. Name the following elements from their symbol:
  - a) H
  - b) O
  - c) Na
  - d) Fe
3. Which one of the following chemical equations shows a reversible reaction:
  - a)  $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
  - b)  $2\text{NO}_2 \rightleftharpoons 2\text{NO} + \text{O}_2$
  - c)  $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$
4. What is molten rock inside a volcano called? What is it called when it erupts out of the volcano?  
*Bonus question: name one type of rock that is made when molten rock cools and solidifies?*
5. Adding baking powder (sodium hydrogen carbonate) to a sponge cake mixture makes it rise when heated? Which gas is made in the reaction that makes the cake rise?  
*Bonus question: what type of chemical reaction is this?*
6. Black ink is a mixture of different coloured inks in solution. What process can be used to separate these different coloured inks?





## Round 5: Biology (Level 2)

1. In 1859 the English naturalist Charles Darwin proposed which theory about how living things adapt to their environment?
2. What is the name given to the chemical reactions used by plants to make their own food and which requires light energy. *Bonus question: write the word equation for this reaction.*
3. Describe two adaptations of polar bears that allow them to survive in the freezing conditions of the Arctic?
4. A healthy diet requires a balance of seven nutrients. Name three of these? *Bonus question: state why each of them is required by the body.*
5. Animals and many plants reproduce by sexual reproduction that requires two parents (a male and a female). Some organisms only require one parent to make new offspring. What is this type of reproduction called?
6. Why do some animals hibernate in the winter?





## Round 6: Science in the news (Level 2)

1. What was the name of the spacecraft that delivered the probe Philae to comet 67P in November 2014? *Bonus mark: in which year was the spacecraft launched?*
2. In January 2015 a group of research scientists in Boston, Massachusetts in the USA used soil to discover a new example of a class of drugs which kill bacteria. Which class of medical drugs did this belong to?
3. In 2014 a study of hippos surprisingly found some were adding what to their usually vegetarian diet?
4. In November 2014 disaster and tragedy struck Richard Branson's quest to make the first step towards commercial space travel a reality. What was the name of the spacecraft that exploded and crashed?
5. This find in Argentina last year would have weighed about 77 tonnes, been 40m (130ft) long and 20m (65ft) tall when alive. What was it?
6. Which object in the Solar System will be photographed up close for the first time ever in July 2015 by NASA's New Horizon space probe?

