

1. A drug has been found in the school staff room! It was analysed by some scientists who found out that it has a chemical formula of $C_8H_{10}N_4O_2$. What is it, where do you think it might have been found and is anyone going to be in trouble?

The drug is caffeine. It is in tea and coffee. Nobody is in trouble! It is a drug, which is any chemical which can alter how the body is working, and is a stimulant – it makes you feel more alert.



2. What is the binary number 1011011 written in base 10?

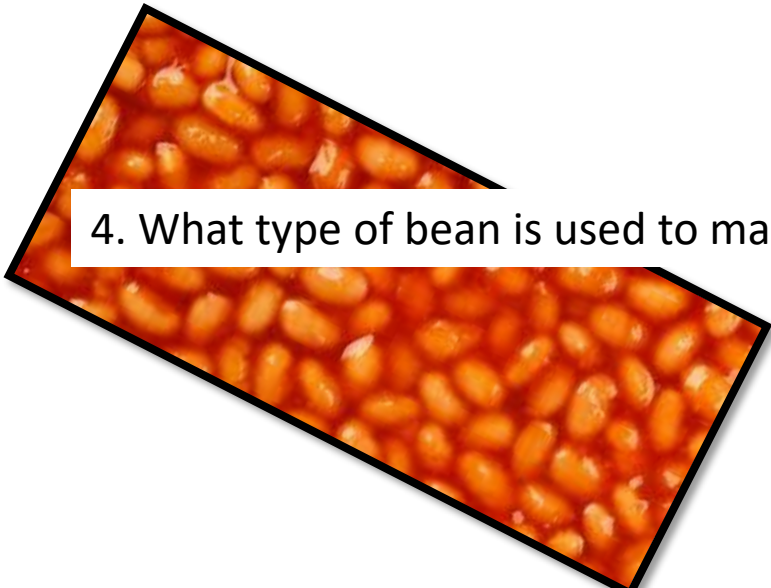
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3. What vitamin can be made when sunlight shines on our skin?

D. Needed for health and also for strong bones

4. What type of bean is used to make baked beans? From which country does it originate?

The internet tells me it is: The navy bean, haricot, pearl haricot bean, boston bean, white pea bean, or pea bean, is a variety of the common bean native to the Americas, where it was domesticated.



4. This picture was taken by the Hubble Space Telescope of the Sombrero Galaxy. It came from this website: <https://hubblesite.org/contents/media/images/2003/28/1415-Image.html>



The information includes this information:

The Sombrero lies at the southern edge of the rich Virgo cluster of galaxies and is one of the most massive objects in that group, equivalent to 800 billion suns. The galaxy is 50,000 light-years across and is located 28 million light-years from Earth.

Questions: What does the term “light year” mean and how far is 1 light year in kilometres or miles?

It is the distance light can travel through space in one year. As light goes very fast this is a very long way!
More than 9 trillion kilometres or almost 6 trillion miles.



5. The Malvern Hills can be seen for miles away. Is it true that when humans first lived in Britain, these hills did not even exist? Explain your answer with some evidence!

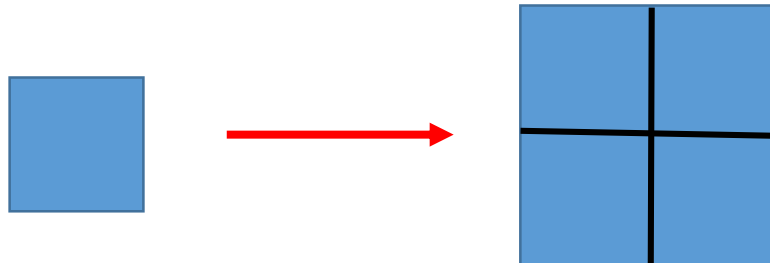
No way! The Malvern Hills are made from rock that is over 600 million years old. Modern Humans settled in Britain about 40,000 years ago. (Interestingly, the English Channel did not exist then.)



6. If you threw a red ball and a blue ball for a dog to fetch, could the dog see one better than the other? If he could, which one?

He'll see the red one (or a green one) as grey and will see the blue one very clearly. Dogs see yellow very well too.

7. If you double the length of the sides of a square how many times bigger does the area become?



4 times bigger