Year 7 Science: Home Learning Week 8

Hello Year 7, more from the BBC Bitesize lessons this week and an optional practical to create bubbles within bubbles. As always, follow the instructions carefully, get permission from an adult before doing anything and clean up after yourself when you're finished!

Stay at home & stay safe

Miss Johnston ☺

Task	Description
1	Watch the BBC Bitesize lessons on Tuesday (biology), Wednesday (chemistry) and Thursday (physics). Here's a link to the daily lessons page: https://www.bbc.co.uk/bitesize/tags/zf9yy9q/year-7-lessons/1 If you have trouble watching online, you can access the Bitesize lessons via the red button on your TV remote. Just switch the TV to BBC1, press the red button and the Bitesize options should come up…
2	**Biology** a) Visit BBC Bitesize, revise your knowledge and complete the quizzes on unicellular and multicellular animals: https://www.bbc.co.uk/bitesize/guides/z9hyvcw/revision/1 b) Give a definition and an example for each of the following: i. unicellular ii. multicellular c) What are the similarities and differences between: i. plant cells and animal cells ii. bacteria and protozoa iii. protozoa and plant cells
3	**Chemistry** a) Visit BBC Bitesize, revise your knowledge and complete the quizzes on renewable and non-renewable energy sources: https://www.bbc.co.uk/bitesize/guides/zggk87h/revision/1 b) Give a definition and an example for each of the following: i. renewable energy ii. non-renewable energy c) Watch this video clip: https://www.bbc.co.uk/bitesize/guides/zggk87h/video d) The video shows us examples of home-made methods of capturing renewable energy. What did you think of them? Were you surprised by how they worked? What are the advantages and disadvantages of these?
4	**Physics** a) Visit BBC Bitesize, revise your knowledge and complete the quizzes on light: https://www.bbc.co.uk/bitesize/guides/zq7thyc/revision/1 b) Explain what the following terms mean and give an example for each one: i. Transparent ii. Translucent iii. Opaque iv. Reflection v. Refraction c) If you put a pencil into a beaker of water, it appears to bend at the surface of the water. Why does this happen?

Practical details

Double Bubble!

About this activity

Soap bubbles are a thin layer of water particles mixed with washing-up liquid. Mixing washing up liquid with water forms a stretchy and sticky solution. When you blow on this, the chemical bonds in the bubble solution are sticky enough to hold together but will also stretch, which is how a bubble is formed. Adding sugar to the solution gives the bubble wall even more strength, flexibility and stability. It also slows down the evaporation of water so that the bubbles last longer.

Blowing a bubble inside a bubble causes the outer bubble to expand. As the inner bubble grows, the fixed volume of air in the outer bubble becomes compressed; it pushes against the outer bubble wall, making the bubble bigger.

As time passes the water in the bubble solution evaporates making the bubble wall thinner. Because the walls of bigger bubbles are thinner to start off they should pop faster than smaller bubbles.

Parents & carers – why do this?

Children love bubbles and these stay in one place, although I'd recommend this activity for a sunny day outdoors, just in case! This activity links to the Key stage 2 topic Properties of Materials and allows children to make their own bubble solution by following a simple scientific procedure, as well as supporting the development of hand-eye co-ordination and scientific observation skills.

Safety

- This activity is not suitable for children who are seriously allergic or sensitive to soap or detergent products.
- Do not taste or drink the bubble mixture.
- Should any washing-up liquid get in someone's eye, rinse with water by getting them to lie on their back on a table or near a sink and gently pouring cool water from a jug, or similar, over the open eye continuously for 10 minutes.
- Wash your hands thoroughly after practical work.

Equipment & materials

- 1 cup
- 1 straw
- ½ teaspoon of sugar
- 1 teaspoon of washing-up liquid
- 3 or 4 jugs containing warm water
- 1 tablespoon and 1 teaspoon

Method

1. Place 2 tablespoons and 2 teaspoons of warm water into a cup.
2. Add ½ teaspoon of sugar and stir it until dissolved.
3. Add 1 teaspoon of washing-up liquid and stir well.
4. Wet a small section of desk by dipping your fingers into the bubble mixture and spreading it over approximately $10cm^2$.
5. Submerge one end of the straw in the bubble solution so that it's completely coated.
6. Place the coated end of the straw vertically onto the wet section of your desk, then, through the other end of the straw blow a fairly large bubble.
7. Dip the straw back into the bubble solution, then, aiming for the centre of the first bubble, gently push it inside.
8. Gently blow a second bubble on the surface of the desk inside the first bubble.
9. Try blowing a third bubble inside the inner bubble and possibly even a fourth inside the third bubble.

Expected observations and results

When you blow into the straw a bubble will be produced on the desk. Inserting the coated straw into this bubble does not burst it. When you blow again, a second bubble will form inside the first bubble. As the second bubble is blown the first bubble will expand slightly in size.

Notes

- If you live in a hard water area you may need to use distilled water or collected rainwater.
- You must use a smooth surface such as a table or tray. Alternatively, use laminated card or a plastic tablecloth.
- If, when you attempt to blow the inner bubble, you do not aim for the centre of the outer bubble, the new bubble is likely to touch and merge with the original bubble.

Possible further activities

- Who can blow the biggest bubble? Coat a small plastic ruler with bubble solution and slide it vertically into the middle of your bubble to measure its height.
- Do larger bubbles take longer to pop?
- Investigate which, if any, of the ingredients makes the bubbles last longer.