

Year 5 Science: Home Learning Week 3

Hello Year 5, I hope you're well and had a good Easter. I'm missing our Science lessons! I'd like to keep working on our Changes of Materials topic and will try to include an optional fun practical activity for you each week. This week focusses on physical & chemical changes. You should try to complete tasks 1 & 2, the rest are optional.

There are also some "live lessons" this week from the Field Studies Council, they're totally optional but look like they'll be fun and interesting!

Stay at home & stay safe

Miss Johnston ☺

Task	Description
1	Visit BBC Bitesize, read the information and watch the video clips: https://www.bbc.co.uk/bitesize/topics/zcvv4wx/articles/z9brcwx
2	In your book or on a piece of paper explain why: a) Baking a cake is a <u>chemical change</u> b) Melting ice is a <u>physical change</u>
3	Can you think of other every day examples of chemical changes and physical changes? Make a list and try to explain how you know what type of change it represents. try to find three examples of each.
4	What does the word "substance" mean? Use a dictionary to find out.
5	Create a poster for a pupil in year 5 next year, explaining the difference between chemical changes and physical changes.
6	OPTIONAL PRACTICAL ACTIVITY: Making ice-cream without a freezer If you wish, you can carry out the practical activity on the next page. <u>Please ask permission from an adult before you do this, do not waste food and do not be tempted to pop out to the shop to buy ingredients!</u> After you have done the practical activity, answer the following questions: a) When you added the salt to the ice cubes, a change occurred. What happened? b) Was the change in the salt & ice bag a chemical change or a physical change? Why do you think this? c) Was the change in the ice-cream bag a chemical change or a physical change? d) Adding salt (sodium chloride) to water lowers the freezing point of the solution. Can you use this information to explain why adding salt to ice causes it to freeze?

Practical details

Safety

Children must wash their hands with soap and water before the activity

Children must wear winter gloves during the shaking stage because the ice and salt mixture gets very cold; as low as -7 °C

Equipment & materials

- 1 tablespoon of full fat milk
- 1 tablespoon of double or whipping cream
- 2 level teaspoons of sugar
- ¼ teaspoon of vanilla extract
- 2 x tablespoons
- Kitchen towel
- Winter gloves (1 pair each)
- 6-8 large ice cubes
- 3 heaped tablespoons of salt
- Small zip/resealable food bag
- Large food bag
- 1 x teaspoon for measuring
- 2 teaspoons for eating
- Equipment per table
- 4 small bowls (for ingredients and salt)
- Tray or large bowl

Notes:

Try to use good quality food bags otherwise they split during the shaking stage

Make sure that the tablespoon used to measure the salt does not get used to measure other edible ingredients

Having a bowl/tray on the table for the used salt ice/water bags is useful

Method

1. Put 1 tablespoon of full fat milk into a small zip/re-sealable food bag
2. Put 1 tablespoon of double or whipping cream into the same food bag
3. Add 1 level teaspoon of granulated sugar and ¼ teaspoon of vanilla extract
4. Securely seal the bag and give it a little shake to mix the ingredients
5. Place the ice cubes and salt into the larger food bag and shake it
6. Place the smaller, sealed ingredients bag inside the larger bag containing the ice/salt mixture, seal/knot the larger bag
7. Put on winter gloves and shake the bags until ice cream has formed (approximately 10 minutes)
8. Remove the small bag containing the ice cream, discard the large bag, wipe off any excess salt water, open and serve

Be aware when doing this practical

Don't be tempted to take the smaller ingredients bag out of the salt/ice bag too soon or the ice cream will not have frozen properly. If, after ten minutes, the ingredients don't appear to have frozen, add more salt and ice to the ice bag and re-shake.

Expected observations and results

Gradually the liquid ingredients will freeze and change in to solid ice cream.

Conversely the ice in the large bag will slowly melt.

Possible further activities:

- Observe what happens if you don't shake the ingredients
- Compare the temperature of the ice before adding the salt and then after 5 mins
- Observe how the ice cream mixture changes during the freezing time. Record the changes at different intervals e.g. 2, 4, 6, 8 mins
- Make ice cream without adding salt to the ice and compare the results
- Using alternatives to milk and cream e.g. yoghurt, lactose free dairy products, dairy free alternatives
- Use large salt crystals (used in salt grinders) instead of table salt. Compare the time taken for the ice cream to freeze and the texture of the ice cream

Background notes

Water freezes at 0°C. Adding salt to ice lowers the temperature at which water freezes and forces the ice to melt. The energy needed to melt the ice is taken from the surroundings and hence the temperature goes down. This means that the children will observe the ice melting even though the temperature is going down. This drop in temperature (to around -7°C) is cold enough to freeze the ice cream.

This science is used in everyday life when we salt roads on very cold days to help stop ice from forming and to melt any ice/snow already there.

Shaking the ingredients improves the texture making a smoother ice cream by adding air bubbles and by evenly distributing the tiny ice crystals.