



Wider Curriculum Spring Unit Plan for Home learning

Subject: Science

Unit: Changing Materials

Year: 5

Session

Session 1

What do scientists do? How do they change our world?

- Scientists who are remembered often invent something new. Science has never been more in the news watch [newsround vaccine](#) update video.
- You are going to get a better understanding of people in science from a wide range of careers
- Use [this website](#) to research about people involved in chemistry,
- Choose one area to focus on from these on the website.



- who are making a difference to lives using science.
- Summarise your learning about people involved in chemistry; you can use the structure in **Resource 1**.

Session 2

What are particles like in different states of matter?

- Watch the particle disco video [here](#). If you are allowed, try this at home and explain what happens to an adult. What happens if the water is hotter? Predict what you think.
- In this lesson we are recapping our understanding of states of matter (solids, liquids and gases) and how scientists show differences in diagrams.
- Watch the lesson [here](#) and complete the activities described in the lesson.

Session 3

What is a thermal insulator and conductor?

- Draw a picture of the particles as they would be in ice, steam and water.
- Revise how particles change watch this [lesson here](#).
- Look at the graph and picture of cups in Resource 1 session 3. Which cup kept the tea warmest for longest? Which material might the cup be made of? Explain your thinking.
- Design an investigation testing:

What would keep my tea in my mug warmer for longer?

What material would work best?

- Design an investigation: describe your method, what you would need, what you would do, how you would record, what you would measure and how you could be sure it was accurate.

Session 4

What is a thermal insulator and conductor?

What affect will a coat have on a human and an ice man?

- Look at the cartoon in Resource session 4. Who is right? Explain your thinking,
- Watch [this clip](#) about insulators and conductors.
- Take the quiz at the bottom of [this website](#) to test your knowledge of insulators and conductors.
- If we built two snowmen next to each other and put a winter's coat on one of them, which snowman would melt first? Make a prediction to an adult in your house, explaining the scientific reasons for your prediction.
- Look at the list of examples – **Resource Session 4**
- Draw and explain 5 different examples of thermal insulators and

	<p>conductors in your home or life experiences.</p> <p>Challenge: Visit this website and an adult if you are able to conduct the experiment described using ice cubes and materials from your home.</p>
Session 5	<p>How can we separate mixtures?</p> <ul style="list-style-type: none"> • A child in Reception has spilt a bowl of water in the sandpit. How could they separate the water from the sand? Is it possible? • Watch the video lesson about separating mixtures. • Follow the lesson and complete the activities.
Session 6	<p>How can we separate mixtures?</p> <ul style="list-style-type: none"> • Watch the video lesson about separation sand, salt and water. • Follow the lesson and complete the activities

Session 7	<p>What affects how well sugar dissolves?</p> <ul style="list-style-type: none"> • Look at the cartoon in Session 7 – who do you think is right? If you can talk to someone at home about this. • Watch this video about dissolving which we will design a test about. • Watch the video (you will need the code 85747 – t login code) https://bpes.bp.com/properties-and-changes-of-materials-topic-starter • What do you think effects how well the sugar dissolves? Write predictions and what they think will affect this the most. • Design your investigation. Choose ONE thing to change in your test. • Ask an adult if you can carry out your test at home. • Record your results in chart Resource for Session 7 • Challenge: look at the table in Resource – what can you say about these results?
Session 8	<p>What is a physical and chemical change?</p> <ul style="list-style-type: none"> • Watch the video lesson about physical changes • Watch the video about chemical changes • Follow the activities are you go through the lessons.
Session 9	<p>Which changes cannot be reversed? Chemical changes</p> <ul style="list-style-type: none"> • Watch this demonstration video which shows irreversible reaction (Burning) • Watch this video about the differences in physical and chemical reactions. • Challenge: What is the difference between burning and melting?
Session 10	<p>Which changes cannot be reversed? Chemical changes</p> <ul style="list-style-type: none"> • Watch these two science demonstrations: Freaky hand and Fire extinguisher • Draw these two experiments and explain what is happening. (useful vocabulary - reversible, chemical change) • Look at the pictures in the resource Session 10 and label as reversible or irreversible reactions. Is it possible to get your original materials back? (if yes this is reversible) • Watch this lesson to learn more about different kinds of chemical changes. • Complete the activities as you go through the lesson.
Session 11	<p>How can we investigate the chemical reaction of vinegar?</p> <p>Watch this lesson about testing chemical reactions.</p> <p>Challenge: Which combination of factors would release the greatest amount of carbon dioxide? How could you find out?</p>

Session

12

Review of key learning.

Record your learning about changing materials, separating materials and

Example in Session 11 of a summary fact file from this half term's learning.

You can choose how you present your learning using a combination of diagrams, examples, definitions and explanations.

Vocabulary you have covered and should use:

State, particle, energy, solid, liquid, gas,

Physical change, Chemical change, Reversible change, Reversible change

Thermal conductivity – thermal conductor, thermal insulator

Electrical conductivity – electrical conductor, electrical insulator

Dissolving – Solvent, solution, solute, soluble, insoluble, suspension

Separating materials – sieve, filter, evaporate, condense

Science Resources

Session 1

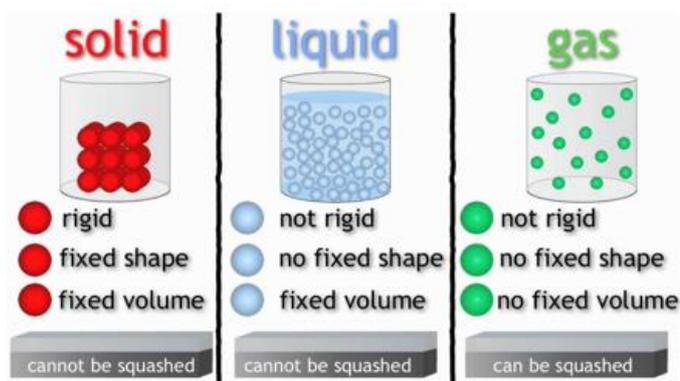
Making the Difference



Complete the following sentences and share with your teacher.

- The range of careers in chemistry includes.....
- Someone I was interested in was because.....
- Something I was surprised by was.....
- Something I have learned is.....
- I would nominate..... to have a scientist poster made about them to be shared with all my year! because.....

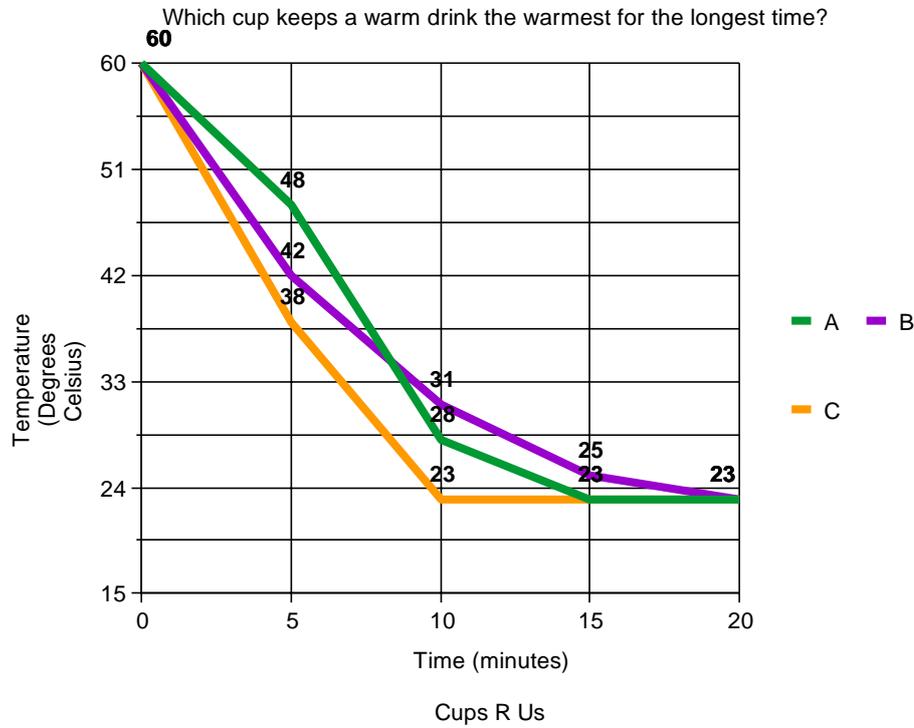
Session 2



Session 3

Resource 1

Which cup do you think is A, B or C in the picture?



Which of these do you think are shown in the graph?

How will you know
Which containers will
keep the water warm

Clue

Polystyrene cup Metal mug Pottery mug Plastic mug

Paper cup

Session 4

Who do you think is right? Why?



Examples of thermal insulators and conductors at home

- A radiator is a good example of conduction. Anything placed on the radiator, like an article of clothing, will become warm.
- Hot food will heat a stoneware or porcelain plate for a time
- .If you are cold and someone holds you to warm you, the heat is being conducted from their body to yours.
- Heat will transfer from a hot burner on the stove into a pot or pan.
- A metal spoon becomes hot from the boiling water inside the pot.
- Chocolate in your hand will eventually melt as heat is conducted from your hand to the chocolate.
- If you touch a hot stove, heat will be conducted to your finger and your skin will burn.
- Sand can conduct heat. Walking on the beach on a hot summer day will warm your feet.
- Light bulbs give off heat and if you touch one that is on, your hand will get burned.

Session 7



Example table:

Hot Water		Warm water		Cold Water	
1 tspn		1 tspn		1 tspn	
2 tspn		2 tspn		2 tspn	
3 tspn		3 tspn		3 tspn	
4 tspn		4 tspn		4 tspn	

Challenge

What can you tell from the results?

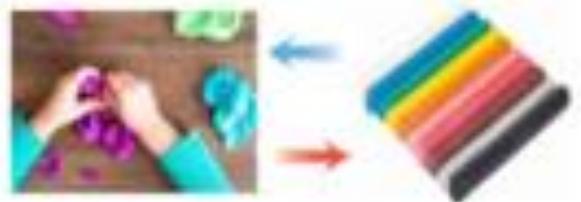
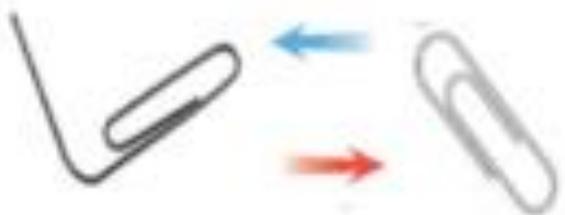
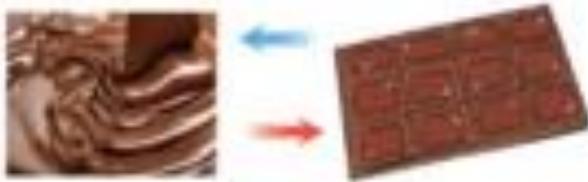
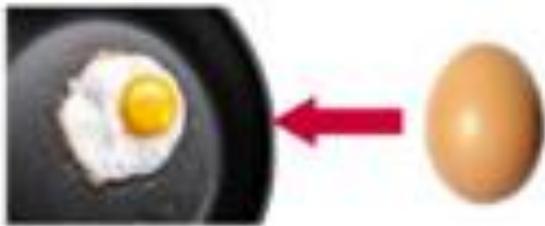
Are they reliable? What do you think?

Temperature of water (degrees Celsius)	1 st try Time to dissolve (seconds)	Average time to dissolve (seconds)			
15	30	31	20	31	
25	27	29	29	28	
35	24	27	25	25	
45	21	27	23	24	

Session 10

Which are reversible or irreversible reactions?

Are they physical or chemical reactions?

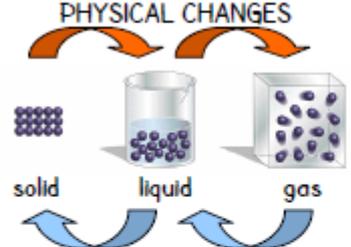


Can you think of some more examples:

What about metal items which rust? Explain how this is the same or difference from these other changes.

Session 11

Reversible and Irreversible Changes Fact Sheet

<p>PHYSICAL CHANGES</p>  <p>solid liquid gas</p> <p>Changing state from solid to liquid to gas and back again is a reversible change.</p>	 <p>When chocolate is melted it can solidify again. The change is reversible.</p>	<p>Any reaction, such as burning, that causes new substances to be formed is called a CHEMICAL CHANGE. These changes are irreversible.</p>
<p>Heating is the process of increasing the temperature. Cooling is the opposite process where temperature is decreased. We use a thermometer to measure temperature.</p> 	<p>Cooking eggs, by frying, boiling, scrambling, poaching etc., is always an irreversible change.</p> 	 <p>fuel oxygen flame</p> <p>ash smoke heat</p>
 <p>A wind turbine helps to generate electricity from renewable sources.</p>	 <p>When oil, vinegar and egg yolks are mixed together, they make a precipitate called mayonnaise. This change is irreversible.</p>	 <p>Coal, gas and oil are all fossil fuels. They non-renewable energy sources.</p>
 <p>When vitamin tablets effervesce (fizz) a gas is produced. This is an irreversible change.</p>	<p>Dissolving sugar in water is a reversible change. When the water is evaporated it leaves the sugar behind.</p> 	