# Science Home Learning Task

## Year 8

### The Periodic Table

<table>
<thead>
<tr>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tutor Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Given out:</th>
<th>Monday 4 January</th>
<th>Hand in:</th>
<th>Monday 11 January</th>
</tr>
</thead>
</table>

**Parent/Carer Comment**

**Staff Comment**

**Target**
Investigating science

Welcome to your science homework booklet. This booklet is designed to give you some extra practice in the “periodic table” section of the course.

You need to carry out tasks 1, 2, 3, 4 and 5. Then choose either the bronze, silver or gold task – go on, challenge yourself.

Don’t forget to fill in the last page and ask a parent/carer to sign the box on the front.
The Periodic Table of the Elements
**TASK 1 - Metals and non-metals**

Answer each of the questions below. Use the periodic table on the previous page to help you.

1. Where in the periodic table are the **metals** found?

   _______________________________________________________
   _______________________________________________________
   _______________________________________________________

2. Where in the periodic table are the **non-metals** found?

   _______________________________________________________
   _______________________________________________________
   _______________________________________________________

3. Unscramble the metals and non-metals below using the periodic table. Then write the unscrambled name in the correct section below. **Also add 1 metal and 1 non-metal of your own to the correct section.**

   BOCARN  RINO  DOUSIM  GOXENY
   PERCOP  NARGO

   **Metals:-**
   _______________________________________________________
   _______________________________________________________
   _______________________________________________________

   **Non-metals:-**
   _______________________________________________________
   _______________________________________________________
   _______________________________________________________
4. **Metals** and **non-metals** have different properties. Write the word “**metal**” or “**non-metal**” beside each property in the table below.

<table>
<thead>
<tr>
<th>Property</th>
<th>Metal or non-metal?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shiny</td>
<td></td>
</tr>
<tr>
<td>Dull</td>
<td></td>
</tr>
<tr>
<td>Conductor of heat and electricity</td>
<td></td>
</tr>
<tr>
<td>Malleable (can be shaped)</td>
<td></td>
</tr>
<tr>
<td>Sonorous (rings when hit)</td>
<td></td>
</tr>
<tr>
<td>Low density</td>
<td></td>
</tr>
<tr>
<td>Ductile (can be made into wires)</td>
<td></td>
</tr>
<tr>
<td>Not sonorous</td>
<td></td>
</tr>
<tr>
<td>High density</td>
<td></td>
</tr>
<tr>
<td>Insulator of heat and electricity</td>
<td></td>
</tr>
</tbody>
</table>

An unknown substance is shiny, malleable, has a high density and can conduct heat and electricity. Is this substance a metal or a non-metal?

_______________________________________________________________________
_______________________________________________________________________

Explain your answer.

_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
5. Look at the table below and answer the following questions.

<table>
<thead>
<tr>
<th>Element</th>
<th>Melting point (°C)</th>
<th>Does the element conduct electricity?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>44</td>
<td>No</td>
</tr>
<tr>
<td>B</td>
<td>2440</td>
<td>Yes</td>
</tr>
<tr>
<td>C</td>
<td>217</td>
<td>No</td>
</tr>
<tr>
<td>D</td>
<td>3000</td>
<td>Yes</td>
</tr>
<tr>
<td>E</td>
<td>1780</td>
<td>Yes</td>
</tr>
<tr>
<td>F</td>
<td>120</td>
<td>No</td>
</tr>
</tbody>
</table>

a) What is the link between melting point and whether the element conducts electricity or not?
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

b) From the table above, give the letters of 3 elements that are likely to be metals. Explain your choice.
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

**TASK 2 – Groups and periods**

Answer the following questions in the spaces provided.

1. What are the columns in the **periodic table** called?

2. What are the rows in the **periodic table** called?
3. The table below shows data for the elements in group 2 of the periodic table.

<table>
<thead>
<tr>
<th>Element</th>
<th>Melting point (˚C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beryllium</td>
<td>1287</td>
</tr>
<tr>
<td>Magnesium</td>
<td>650</td>
</tr>
<tr>
<td>Calcium</td>
<td>842</td>
</tr>
<tr>
<td>Strontium</td>
<td>768</td>
</tr>
<tr>
<td>Barium</td>
<td></td>
</tr>
<tr>
<td>Radium</td>
<td>699</td>
</tr>
</tbody>
</table>

a) Describe the pattern in the melting point as you move down the group.

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

b) Use the pattern you have identified to predict the melting point of barium.
4. Look at the graph below showing the **melting** and **boiling points** for period 2 of the **periodic table**.

**KEY**

- Boiling Point
- Melting Point

---

**a)** Describe the pattern in the **melting points** and **boiling points** as you move across the **period**.

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

---

**b)** What conclusion can you make about the **elements** in the same **group** or **period**?

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________
**TASK 3 – Elements of Group 1**

1. Write down the symbols of the elements in **Group 1**. Use the periodic table to help you.

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

2. Are the elements in **Group 1** metals or non-metals? Explain your answer.

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
3. The table below shows the melting point of elements in **Group 1** and **Group 2**.

<table>
<thead>
<tr>
<th>Element</th>
<th>Group number</th>
<th>Melting point (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium</td>
<td>1</td>
<td>180</td>
</tr>
<tr>
<td>Sodium</td>
<td>1</td>
<td>97</td>
</tr>
<tr>
<td>Potassium</td>
<td>1</td>
<td>63</td>
</tr>
<tr>
<td>Rubidium</td>
<td>1</td>
<td>39</td>
</tr>
<tr>
<td>Cesium</td>
<td>1</td>
<td>28</td>
</tr>
<tr>
<td>Magnesium</td>
<td>2</td>
<td>650</td>
</tr>
<tr>
<td>Calcium</td>
<td>2</td>
<td>839</td>
</tr>
<tr>
<td>Strontium</td>
<td>2</td>
<td>764</td>
</tr>
</tbody>
</table>

a) Describe the pattern of the melting points for the **Group 1** elements.

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

b) Compare the **melting points** of the elements in **Group 1** and **Group 2**. Use the table above to help you.

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
4. **Group 1** elements are very reactive. The equation below shows the reaction between lithium and water.

\[
\text{Lithium} + \text{water} \rightarrow \text{lithium hydroxide} + \text{hydrogen}
\]

Use the equation above to predict the missing parts in the equations below.

a) Sodium + water \(\rightarrow\) ______________________ + hydrogen

b) __________________ + water \(\rightarrow\) potassium hydroxide + _______________

**TASK 4 – Group 7 elements**

1. What name is given to the elements in **Group 7**?

____________________________________________________________________________

2. List the elements that are found in **Group 7**. Use the **periodic table** to help.

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

3. **Group 7** elements are able to carry out **displacement** reactions.

a) What is meant by a **displacement** reaction?

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________
The table below shows whether reactions will occur between Group 7 elements (halide water) and Group 7 compounds in solution (potassium halide).

<table>
<thead>
<tr>
<th></th>
<th>Potassium fluoride</th>
<th>Potassium chloride</th>
<th>Potassium bromide</th>
<th>Potassium iodide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorine water</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Chlorine water</td>
<td>✗</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Bromine water</td>
<td>✗</td>
<td></td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>Iodine water</td>
<td></td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
</tbody>
</table>

b) Complete the table above to show whether a displacement reaction will happen (tick) or not (cross).
4. Complete the equations below for the following displacement reactions.

a) Chlorine + potassium bromide

__________________________________ + _______________________

b) Bromine + potassium iodide

__________________________________ + _______________________

c) Fluorine + potassium chloride

__________________________________ + _______________________

d) Bromine + sodium iodide

__________________________________ + _______________________

e) Chlorine + sodium bromide

__________________________________ + _______________________

**TASK 5 - Group 0 elements**

Find the words on the next page in the grid below.

<table>
<thead>
<tr>
<th>N</th>
<th>A</th>
<th>P</th>
<th>M</th>
<th>D</th>
<th>F</th>
<th>X</th>
<th>G</th>
<th>R</th>
<th>I</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>O</td>
<td>L</td>
<td>T</td>
<td>A</td>
<td>H</td>
<td>S</td>
<td>L</td>
<td>M</td>
<td>E</td>
<td>O</td>
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<tr>
<td>D</td>
<td>X</td>
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<td>U</td>
<td>I</td>
<td>O</td>
<td>N</td>
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<td>L</td>
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<tr>
<td>I</td>
<td>J</td>
<td>S</td>
<td>L</td>
<td>X</td>
<td>C</td>
<td>G</td>
<td>W</td>
<td>O</td>
<td>S</td>
<td>O</td>
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<tr>
<td>R</td>
<td>C</td>
<td>I</td>
<td>O</td>
<td>E</td>
<td>K</td>
<td>O</td>
<td>H</td>
<td>N</td>
<td>F</td>
<td>U</td>
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<tr>
<td>G</td>
<td>U</td>
<td>R</td>
<td>W</td>
<td>L</td>
<td>G</td>
<td>Y</td>
<td>E</td>
<td>E</td>
<td>M</td>
<td>R</td>
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<td>M</td>
<td>T</td>
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<td>A</td>
<td>Z</td>
<td>X</td>
<td>C</td>
<td>L</td>
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<tr>
<td>L</td>
<td>B</td>
<td>I</td>
<td>E</td>
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<td>B</td>
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<td>E</td>
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<td>R</td>
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<td>Q</td>
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<td>S</td>
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<td>L</td>
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<td>C</td>
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<td>N</td>
<td>K</td>
<td>G</td>
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<td>Q</td>
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<td>B</td>
<td>N</td>
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<td>V</td>
<td>I</td>
<td>T</td>
<td>C</td>
<td>A</td>
<td>E</td>
<td>R</td>
<td>N</td>
<td>U</td>
<td>U</td>
</tr>
</tbody>
</table>
Words to find:-

Argon                                                                 Low melting (point)
Colourless gas                                                           Neon
Glow                                                                 Noble gases
Helium                                                                 Unreactive
Low boiling (point)                                                     Xenon

When you have found the words above, colour those words in the grid that are physical properties of the elements in green and those words that are chemical properties of the elements in blue.
**TASK 6 – Bronze, silver or gold? Complete one task from below.**

**Bronze task**
**Keyword challenge!** Make a list of the keywords that you feel are the most important in this topic. You need to write down at least 10 keywords and explain why they are important. Write the keywords and why you chose them on the blank page provided.

**Silver task**
**How useful are they?** In this booklet you have looked at elements from **Group 1, Group 7 and Group 0** of the periodic table. Make a poster to show at least 6 of the elements from these three groups and what we use them for. Write/draw your findings on the blank page provided.

**Gold task**
**Dimitri Mendeleev** created the **periodic table** we use today in 1869. Find out about Mendeleev and how he created the pattern of the periodic table. Use the internet to help you. Write down your findings on the blank page provided.
Blank page for bronze, silver and gold tasks – If you need more paper, ask your teacher
Extra space for bronze, silver or gold task
Self Evaluation of my Homework

I am a R____________________ learner.

I know this because:
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

I believe that my effort and attitude to learning for this booklet is a:

[ ] 1  [ ] 2  [ ] 3  [ ] 4

I know this because:
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

A Responsible Learner......
- takes responsibility for their own learning
- listens to others
- works well as part of team

A Resilient Learner......
- does not give up
- rises to the challenge
- has the motivation to succeed

A Reflective Learner......
- evaluates their learning
- learns from their mistakes
- knows how they are performing and what they need to do to improve

A Resourceful Learner......
- is prepared to learn
- uses initiative and knows how to find out
- is prepared to think outside the box