

Introduction to the elements: the Periodic Table

The conventional Periodic Table is an organiser that arranges the chemical elements into Groups (columns) and Periods (rows)

1. **Arrange** your samples on an enlarged copy of the Periodic table.
 - (a) How many elements are there in the Periodic Table? _____
 - (b) How many elements are there in your collection? _____

2. **Suggest** an explanation for the absence of elements in Group
 - (a) 1
_____.
 - (b) 17 (7A)/ 18 (8A)
_____.

3. **Organise** the element collection into their Periods. (Hint! Check their atomic numbers!)
 - (a) How many periods are represented by the collection? _____
 - (b) What might be an explanation for the lanthanide elements being shown at the bottom of a 'conventional' representation of the Periodic table?
_____.

4. **Suggest** an explanation for the absence of elements in the collection from Period 7. What are some characteristics common to these 'heavy' elements?
_____.

5. Check images under '*alternative representations of the periodic table*' online.
- (a) **Compare and contrast** these representations with the conventional Periodic Table.
 - (b) **Suggest one advantage** for three examples of an alternative visualisation.
6. Early attempts by Johann Wolfgang Döbereiner (1780-1849) and Johan Friedrich Gmelin (1748-1804) to organise the known elements of their time according to similarities of their chemistry found 'triads' (groups of three), tetrads (4s) and a pentad (5).
- (a) **Find** examples in your collection of elements that can be arranged to form **triads**.
 - (b) For each these examples, identify similar physical properties (e.g., appearance, visually or density by measurement)

Modelling Mendeleev –

A recommended teacher resource:

<https://www.nsta.org/science-teacher/science-teacher-october-2019/patterns-puzzles-and-periodic-table>

PDF copy of the cards here:

https://www.wpi.edu/sites/default/files/docs/Events/Annual-Events/AweSTEM/puzzle_print.pdf

Activity Author: Annie Termaat, Blue Gum Community School, ACT. More activities and resources available at elementsets.net.