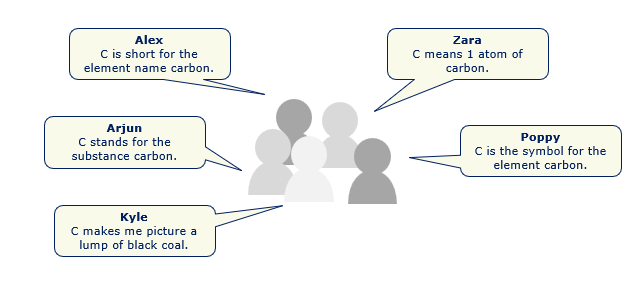
**What does C represent?**

Who do you agree with, and why?



*Chemistry > Big idea CPS: Particles and structure > Topic CPS2: Elements and compounds > Key concept CPS2.2: Symbols and formulae*

|  |
| --- |
| **Diagnostic question** |
| **What does C represent?** |

**Overview**

|  |  |
| --- | --- |
| Learning focus: | A chemical formula provides information on the composition of a substance. |
| Observable learning outcome: | Describe what an element symbol represents. |
| Question type: | talking heads |
| Key words: | element, symbol |

**What does the research say?**

A review of research on students’ understanding of chemical formula (Taskin and Bernholt, 2012) reports research that observed that only a minority of students could identify the different meanings of element symbols. Many students thought simply that the symbol was an abbreviation of the name of the element. A research study (Al-Kunifed, Good and Wandersee, 1993) found that students were influenced by pre-existing experiences of symbols in everyday life and mathematics.

Solely regarding an element symbol as a shorthand way of writing an element name means that students, when seeing an element symbol, may not be prompted to recall or picture macroscopic information about the element. Additionally, lack of recognition that an element symbol can represent an atom (or atoms) of an element may make the understanding of chemical formulae more difficult.

**Ways to use this question**

This task is intended for discussion in pairs or small groups. It can be done as a pencil and paper exercise or projected onto a screen. In this question students should be discouraged from seeking one correct answer. Instead they should discuss the merits of each suggestion.

**Expected answers**

In some ways, all the responses could be argued as correct. However, Alex’s answer, that an element symbols is ‘short for the name of the element’ is the most simplistic and not true for all elements where the symbol could be based on a Latin version of the name.

**How to respond - what next?**

If students have misunderstandings about the different things that an element symbol can represent, make clear during future teaching what is being represented.

**Acknowledgments**

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Images: None

**References**

Al-Kunifed, A., Good, R. and Wandersee, J. (1993). Investigation of high school chemistry students' concepts of chemical symbol, formula and equations: Students' prescientific conceptions. ERIC Document ED376020.

Taskin, V. and Bernholt, S. (2012). Students' understanding of chemical formulae: A review of empirical research. *International Journal of Science Education,* 36(1)**,** 157-185.