

## Elemental Sudoku 1

by the Royal Society of Chemistry

Every row, column, and $3 \times 3$ box contains an element from groups 1, 2, 3, 4, 5, 6, 7, 0 , and a transition metal.

Each box is based on a period so the elements in groups 1, 2, $3,4,5,6,7$, and 0 in a $3 \times 3$ box come from the same period apart from the transition metal. The transition metal could be any transition metal, but Fe is used in the answer grid so you might find it easier to check your answers if you use Fe as well.

For example in the top right $3 \times 3$ box the group 1 element must be in the bottom row,
since there is already a group 1 element (Li and Na ) in the top two rows. The group 1 metal must clearly go in the only space available in the bottom row of that $3 \times 3$ box. The other elements in the box are from period 2 so the group 1 metal must be Li (not Na or K).

| Li |  |  | Ar | Al |  |  |  | Be |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| N | F |  |  |  | Na |  |  |  |
|  |  |  | P |  | Cu |  | O | C |
| Cl |  | Si |  |  | Ne | P | Mn |  |
|  |  | Al |  | Li |  | Si |  |  |
|  | P | Na | C |  |  | Al |  | S |
| B | O |  | Cl |  | Si |  |  |  |
|  |  |  | S |  |  |  | F | Ni |
| Ne |  | F |  | P | Mg |  |  | B |

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## Elemental Sudoku 2

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Every row, column, and $3 \times 3$ box contains an element from groups 1, $2,3,4,5,6,7,0$, and a transition metal.

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|  | O | Li |  | B |  |  | Be |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Fe | N |  |  |  | Ne | Li |  | F |
|  |  | Ni |  |  | S |  | Cl | Ar |
|  |  | Al | Mg |  | Ag | P |  |  |
| P | Cl |  | Al |  |  | Co |  |  |
| K | Zn |  | Br |  |  |  | Kr |  |
| Kr |  | Ca | Ge |  |  |  | Se |  |
|  | Ge |  |  | K |  | Ca | As |  |



## Elemental Sudoku 3

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| Be |  |  | Cl |  |  |  | As |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| F |  |  | Na | Si |  |  |  | Se |
| Cu |  |  | Po |  |  | Sr | Sn |  |
|  | I |  |  | Ba |  |  | Xe |  |
|  | Sr |  | Rn |  | Cs |  |  | In |
| Ne |  | C | Cr |  |  |  |  |  |
| O |  |  | Si | Ar |  |  |  |  |
|  | Zn |  |  |  | Al |  |  | Kr |



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elements in the box are from
period 2 so the group 1 metal must be Li (not Na or K).

| Li | $\mathbf{C}$ | Fe | Ar | Al | $\mathbf{S}$ | $\mathbf{F}$ | $\mathbf{N}$ | Be |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| N | F | $\mathbf{O}$ | $\mathbf{M g}$ | $\mathbf{S i}$ | Na | Fe | $\mathbf{B}$ | $\mathbf{N e}$ |
| $\mathbf{B e}$ | $\mathbf{B}$ | $\mathbf{N e}$ | P | $\mathbf{C l}$ | Cu | $\mathbf{L i}$ | O | C |
| Cl | $\mathbf{M g}$ | Si | $\mathbf{B}$ | $\mathbf{I}$ | Ne | P | $\mathbf{M n}$ | $\mathbf{N a}$ |
| $\mathbf{S}$ | $\mathbf{A r}$ | Al | Fe | Li | $\mathbf{N}$ | Si | $\mathbf{M g}$ | $\mathbf{C l}$ |
| $\mathbf{F e}$ | P | Na | C | $\mathbf{B e}$ | $\mathbf{F}$ | Al | $\mathbf{A r}$ | S |
| B | O | $\mathbf{B e}$ | Cl | $\mathbf{F e}$ | Si | $\mathbf{N e}$ | $\mathbf{L i}$ | $\mathbf{N}$ |
| $\mathbf{C}$ | $\mathbf{L i}$ | $\mathbf{N}$ | S | $\mathbf{A r}$ | $\mathbf{A l}$ | $\mathbf{B e}$ | F | Ni |
| Ne | $\mathbf{F e}$ | F | $\mathbf{N a}$ | P | $\mathbf{M g}$ | $\mathbf{O}$ | $\mathbf{C}$ | B |



## Elemental Sudoku 2

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Every row, column, and $3 \times 3$ box contains an element from groups 1, $2,3,4,5,6,7,0$, and a transition metal.

Each box is based on a period so the
elements in groups 1,
$2,3,4,5,6,7$, and 0 in a $3 \times 3$ box come
from the same period
apart from the
transition metal. The transition metal could be any transition metal, but Fe is used in the answer grid so you might find it easier to check your answers if you use Fe as well.

| $\mathbf{F}$ | O | Li | $\mathbf{F e}$ | B | $\mathbf{C}$ | $\mathbf{N e}$ | Be | $\mathbf{N}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{B}$ | N | $\mathbf{C}$ | $\mathbf{O}$ | $\mathbf{B e}$ | Ne | Li | Fe | F |
| Fe | $\mathbf{B e}$ | $\mathbf{N e}$ | $\mathbf{L i}$ | $\mathbf{N}$ | F | $\mathbf{O}$ | Be | C |
| $\mathbf{M g}$ | $\mathbf{N a}$ | Ni | $\mathbf{P}$ | $\mathbf{S i}$ | S | $\mathbf{A l}$ | Cl | Ar |
| $\mathbf{S i}$ | $\mathbf{A r}$ | Al | Mg | $\mathbf{C l}$ | Ag | P | $\mathbf{N a}$ | $\mathbf{S}$ |
| P | Cl | $\mathbf{S}$ | Al | $\mathbf{A r}$ | $\mathbf{N a}$ | Co | $\mathbf{S i}$ | $\mathbf{M g}$ |
| K | Zn | $\mathbf{A s}$ | Br | $\mathbf{S e}$ | $\mathbf{C a}$ | $\mathbf{G e}$ | Kr | $\mathbf{G a}$ |
| Kr | $\mathbf{G a}$ | Ca | Ge | Fe | $\mathbf{A s}$ | $\mathbf{B r}$ | Se | $\mathbf{K}$ |
| $\mathbf{S e}$ | Ge | $\mathbf{B r}$ | $\mathbf{K r}$ | K | $\mathbf{G a}$ | Ca | As | $\mathbf{F e}$ |



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| Be | 0 | Li | Cl | AI | Fe | Kr | As | Ge |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B | N | Fe | Na | Si | Ar | Br | Ca | Se |
| F | C | Ne | P | S | Mg | Ga | K | Fe |
| Cu | Xe | In | Po | Bi | At | Sr | Sn | Rb |
| Rb | 1 | Te | TI | Ba | Pb | Fe | Xe | Sb |
| Sn | Sr | Sb | Rn | Fe | Cs | Te | I | In |
| Ne | Li | C | Cr | Cl | S | As | Ga | Ca |
| $\bigcirc$ | B | Be | Si | Ar | P | K | Fe | Br |
| N | Zn | F | Mg | Na | Al | Ge | Se | Kr |

