

# Atomic Structure & Periodic Table Worksheet

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1. The table below shows the structure of different atoms and ions. Using the periodic table, complete the table with missing values.

| Element          | Atomic Number | Proton Number | Neutron Number | Electron Number | Mass Number |
|------------------|---------------|---------------|----------------|-----------------|-------------|
| Mg               | 12            |               | 12             |                 |             |
| Mg <sup>2+</sup> | 12            |               |                |                 | 24          |
| F                |               |               | 10             |                 |             |
| F <sup>-1</sup>  |               |               | 10             |                 | 19          |

2. The table below gives the composition of three different particles X, Y, and Z.

| Particle | Proton Number | Neutron Number | Electron Number |
|----------|---------------|----------------|-----------------|
| X        | 15            | 16             | 15              |
| Y        | 15            | 16             | 18              |
| Z        | 15            | 17             | 15              |

State the evidence in the table for each of the following statements.

- a) Particle X is an atom.

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- b) Particle Y is a negative ion.

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- c) X, Y, and Z are all particles of the same element.

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- d) Particles X and Z are isotopes of the same elements.

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- e) Particles X and Z have zero charges.

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## Answers

1. The table below shows the structure of different atoms and ions. Using the periodic table, complete the table with missing values.

| Element          | Atomic Number | Proton Number | Neutron Number | Electron Number | Mass Number |
|------------------|---------------|---------------|----------------|-----------------|-------------|
| Mg               | 12            | 12            | 12             | 12              | 24          |
| Mg <sup>2+</sup> | 12            | 12            | 12             | 10              | 24          |
| F                | 9             | 9             | 10             | 9               | 19          |
| F <sup>-1</sup>  | 9             | 9             | 10             | 10              | 19          |

2. The table below gives the composition of three different particles X, Y, and Z.

| Particle | Proton Number | Neutron Number | Electron Number |
|----------|---------------|----------------|-----------------|
| X        | 15            | 16             | 15              |
| Y        | 15            | 16             | 18              |
| Z        | 15            | 17             | 15              |

State the evidence in the table for each of the following statements.

- a) Particle X is an atom.

Proton number is equal to the electron number.

- b) Particle Y is a negative ion.

Electron number is more than the proton number.

- c) X, Y, and Z are all particles of the same element.

Proton number is the same.

- d) Particles X and Z are isotopes of the same elements.

Same proton number, but different neutron number.

- e) Particles X and Z have zero charges.

Proton number is equal to the electron number.