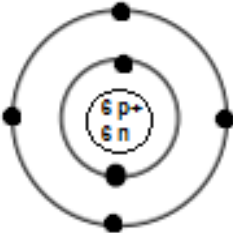



Lewis Dot Diagram Worksheet

Use the Bohr models to determine the number of valance electrons. Once you have found the number of valance electrons, place them around the elements symbol.

| Element | Atomic # | Atomic Mass | Protons | Neutrons | Electrons | Valance Electrons | Number of energy levels | Bohr Model | Lewis Dot |
|----------|----------|-------------|---------|----------|-----------|---------------------------------------|-------------------------------|---|---|
| Carbon | 6 | 12 | 6 | 6 | 6 | 4 (group 14, 4 in the ones palace) | 2 (2 nd period) |  |  |
| Hydrogen | 1 | 1 | 1 | 0 | | | | | H |
| Lithium | 3 | 7 | 3 | | 3 | | | | Li |

| Element | Atomic # | Atomic Mass | Protons | Neutrons | Electrons | Valance Electrons | Number of energy levels | Bohr Model | Lewis Dot |
|-----------|----------|-------------|---------|----------|-----------|-------------------|-------------------------|------------|-----------|
| Magnesium | 12 | 24 | 12 | 12 | | | | | Mg |
| Boron | 5 | 11 | 5 | | 5 | | | | B |
| Helium | 2 | 4 | | 2 | 2 | | | | He |
| Oxygen | 8 | 16 | 8 | | 8 | | | | O |

Making Ions – Remember that atoms want a filled outer orbital to be in the most stable state. Complete the chart below showing what happens for each of the atoms to become an ion.

| Element | Lewis Dot | # of Valance e- | Cation or anion? | Gain/Lose e- | Draw ion | Name of ion |
|---------|------------------------|-----------------|------------------|--------------|------------------|-------------|
| Na | $\cdot \text{Na}$ | 1 | Cation | Loses 1 | Na^{+1} | Sodium ion |
| S | $\cdot \text{S} \cdot$ | 7 | Anion | Gains 2 | S^{-2} | Sulfide |
| Cl | | | | | | |
| Be | | | | | | |
| Al | | | | | | |
| Ne | | | | | | |
| K | | | | | | |
| N | | | | | | |
| O | | | | | | |
| Ca | | | | | | |
| P | | | | | | |
| B | | | | | | |

| PERIODIC TABLE ELEMENTS | | | | | | | Describe the pattern of the Lewis dot structures of the first 18 elements |
|-----------------------------|--------------------------------|--------------------------------|------------------------------|--------------------------------|----------------------------|-------------------------------|---|
| HYDROGEN 1 H · | | | | | | | HELIUM 2 He · |
| LITHIUM 3 Li · | BERYLLIUM 4 Be · | BORON 5 B · | CARBON 6 C · | NITROGEN 7 N · | OXYGEN 8 O · | FLOURINE 9 F · | NEON 10 Ne · |
| SODIUM 11 Na · | MAGNESIUM 12 Mg · | ALUMINIUM 13 Al · | SILICON 14 Si · | PHOSPHORUS 15 P · | SULFUR 16 S · | CHLORINE 17 Cl · | ARGON 18 Ar · |

How could you use this pattern to predict how the element may behave in a chemical reaction?

| PERIODIC TABLE ELEMENTS | | | | | | | | | |
|-------------------------------|----------------------------------|----------------------------------|--------------------------------|----------------------------------|-------------------------------|---------------------------------|-------------------------------|-----------------------------|------------------------------|
| HYDROGEN 1 H | LITHIUM 3 Li | BERYLLIUM 4 Be | BORON 5 B | CARBON 6 C | NITROGEN 7 N | OXYGEN 8 O | FLUORINE 9 F | NEON 10 Ne | HELIUM 2 He |
| SODIUM 11 Na | MAGNESIUM 12 Mg | ALUMINIUM 13 Al | SILICON 14 Si | PHOSPHORUS 15 P | SULFUR 16 S | CHLORINE 17 Cl | ARGON 18 Ar | NEON 10 Ne | HELIUM 2 He |

Describe the pattern of the Lewis dot structures of the first 18 elements (include periods and groups/families)?

How could you use this pattern to predict how the element may behave in a chemical reaction?
