

## Practice Problems For Understanding Oxidation Numbers

**Element Name: Beryllium**      **Element Symbol: Be**      **Atomic Number: 4**

Number of protons: 4

Number of electrons: 4

Which period or row is it located in? 2

How many electron energy levels? 2

Draw the first electron energy level and place the correct number of electrons. (2)

Draw the second electron energy level and place the correct number of electrons. (2)

How many electrons are there in the outer most energy level? 2

What is the maximum number of electrons the second energy level can hold? 8

Correlate the maximum number of electrons with the number of elements in the period. (8)

Is it easier for an element to give up two electrons or gain six electrons to fill its outer most energy level and form a chemical bond? (Give up two.)

How many electrons did this element start with? 4

If it gives up two electrons during a chemical reaction, how many electrons remain? 2

The net electrical charge is +2 because it gives away two negative charges.

**Element Name: Calcium**      **Element Symbol: Ca**      **Atomic Number: 20**

Number of protons: 20

Number of electrons: 20

Which period or row is it located in? 4

How many electron energy levels? 4

Draw the first electron energy level and place the correct number of electrons. (2)

Draw the second electron energy level and place the correct number of electrons. (8)

Draw the third electron energy level and place the correct number of electrons. (8)

Draw the fourth electron energy level and place the correct number of electrons. (2)

How many electrons are there in the outer most energy level? 2

What is the maximum number of electrons the fourth energy level can hold? 18

Correlate the maximum number of electrons with the number of elements in the period. 18

Is it easier for an element to give up two electrons or gain sixteen electrons to fill its outer most energy level and form a chemical bond? (Give up two.)

How many electrons did this element start with? 20

If it gives up two electrons during a chemical reaction, how many electrons remain? 18

The net electrical charge is +2 because it gives away two negative charges.

**Element Name: Boron**      **Element Symbol: B**      **Atomic Number: 5**

Number of protons: 5

Number of electrons: 5

Which period or row is it located in? 2

How many electron energy levels? 2

Draw the first electron energy level and place the correct number of electrons. (2)

Draw the second electron energy level and place the correct number of electrons. (3)

How many electrons are there in the outer most energy level? 3

What is the maximum number of electrons the second energy level can hold? 8

Correlate the maximum number of electrons with the number of elements in the period. 8

Is it easier for an element to give up three electrons or gain five electrons to fill its outer most energy level and form a chemical bond? (Give up three.)

How many electrons did this element start with? 5

If it gives up three electrons during a chemical reaction, how many electrons remain? 2

The net electrical charge is +3 because it gives away two negative charges.

**Element Name: Sulfur**      **Element Symbol: S**      **Atomic Number: 16**

Number of protons: 16

Number of electrons: 16

Which period or row is it located in? 3

How many electron energy levels? 3

Draw the first electron energy level and place the correct number of electrons. (2)

Draw the second electron energy level and place the correct number of electrons. (8)

Draw the third electron energy level and place the correct number of electrons. (6)

How many electrons are there in the outer most energy level? 6

What is the maximum number of electrons the second energy level can hold? 8

Correlate the maximum number of electrons with the number of elements in the period. 8

Is it easier for an element to give up six electrons or gain two electrons to fill its outer most energy level and form a chemical bond? (Gain two)

How many electrons did this element start with? 16

If it gains two electrons during a chemical reaction, how many electrons remain? 18

The net electrical charge is -2 because it gains two negative charges.

**Element Name: Fluorine    Element Symbol: F            Atomic Number: 9**

Number of protons: 9

Number of electrons: 9

Which period or row is it located in? 2

How many electron energy levels? 2

Draw the first electron energy level and place the correct number of electrons. (2)

Draw the second electron energy level and place the correct number of electrons. (7)

How many electrons are there in the outer most energy level? 7

What is the maximum number of electrons the second energy level can hold? 8

Correlate the maximum number of electrons with the number of elements in the period. 8

Is it easier for an element to give up seven electrons or gain one electron to fill its outer most energy level and form a chemical bond? (Gain one.)

How many electrons did this element start with? 9

If it gains one electron during a chemical reaction, how many electrons remain? 10

The net electrical charge is  $-1$  because it gains one negative charge.

**Element Name: Potassium            Element Symbol: K            Atomic Number: 19**

Number of protons: 19

Number of electrons: 19

Which period or row is it located in? 4

How many electron energy levels? 4

Draw the first electron energy level and place the correct number of electrons. (2)

Draw the second electron energy level and place the correct number of electrons. (8)

Draw the third electron energy level and place the correct number of electrons. (8)

Draw the fourth electron energy level and place the correct number of electrons. (1)

How many electrons are there in the outer most energy level? 1

What is the maximum number of electrons the fourth energy level can hold? 18

Correlate the maximum number of electrons with the number of elements in the period. 18

Is it easier for an element to give up one electron or gain seventeen electrons to fill its outer most energy level and form a chemical bond? (Give up one.)

How many electrons did this element start with? 19

If it gives up one electron during a chemical reaction, how many electrons remain? 18

The net electrical charge is  $+1$  because it gives up one negative charge.