JEOPARDY!

Bigger or Smaller?

Atoms

Charge it

Close to you

Grab Bag

Big or small?	Atoms	Charge it	Close to you	Word play	Grab Bag
$100	**$100**	**$100**	**$100**	**$100**	**$100**
$200	**$200**	**$200**	**$200**	**$200**	**$200**
$300	**$300**	**$300**	**$300**	**$300**	**$300**
$400	**$400**	**$400**	**$400**	**$400**	**$400**
$500	**$500**	**$500**	**$500**	**$500**	**$500**

Q: Which number is bigger?

$$2 \times 10^5 \text{ or } 3 \times 10^4 \text{ ?}$$

$100

$$\cdot 2 \times 10^5$$

$100

Q: Which has smaller mass:

A proton or an electron?

$200

Electrons are smallest. Protons and neutrons are about 1800 times bigger than electrons.

$200

Q: Which has a greater charge, a sodium(Na) ion or calcium(Ca) ion ?

$300

- **Calcium ions have a charge of +2**
- **(sodium is only +1)**

$300

Q: Which is smaller, the wavelength of visible light, or the radius of an atom?

$400

Atoms are smaller than the wavelength of visible light. Visible light is on the order of 40-70 times bigger than atoms

$400

Q: Which is bigger an atom of carbon or an atom of silicon?

$500

• **Silicon is bigger. It has electrons in the third energy level/quantum shell.**

•**Carbon only has electrons in the second shell.**

$500

Q: Describe the structure of an atom.

$100

Electrons on the outside, protons and neutrons in the center (nucleus)

$100

Q: True or false:

The number of neutrons is always the same as the number of protons.

$200

False

$200

Q: List the order of discovery of the three major parts of the atom

$300

Electrons first- J.J. Thompson

Then protons- Ruthford

Then neutrons- Chadwick

$300

Q: How many valence electrons are in carbon?

$400

Four

$400

Q: What force hold electrons and protons together?

$500

Electrostatic attraction between positive charged protons and negatively charged electrons

$500

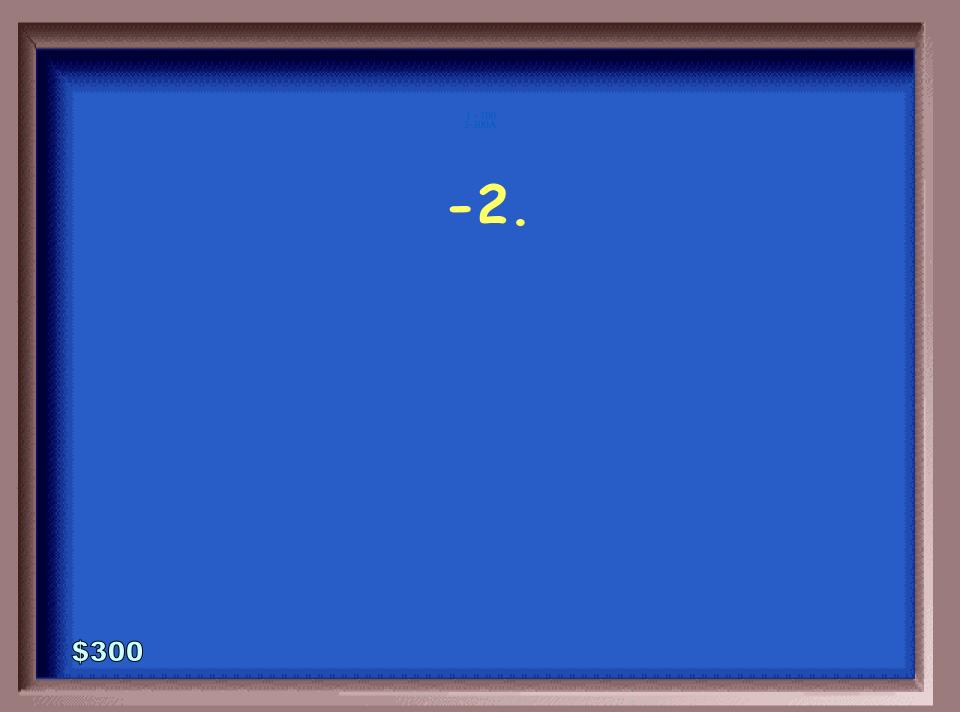# Q: In general, all non metals form ions that have what kind of a charge?

$100

Negative(anion)

$100

Q: What is the charge on a K ion?

$200

1 - 100
3-200A

+1

$200

Q: What is the charge on a S ion?

$300

-2.

$300

Q: What is the charge on a helium ion (He)

$400

Nothing- helium has a full shell. It doesn't make ions

$400

Q: What is the charge on a nitrate ion (NO_3^{xxx})

$500

1 - 100
3-500A

-1

$500

Q: What kind of bond is formed between a metal and non-metal?

$100

Ionic bond

$100

Q:What kind of bond forms between a non-metal and a non-metal

$200

Covalent bonds (polar or non-polar

$200

What type of compound is CH_4?

What kind of bond is found in CH_4?

$300

Molecular compound Covalent bond

$300

4-400

Q: What kind of compound is NH_4OH ?

$400

This is a ionic compound. The ammonium ion (+1) and the hydroxide ion (-1) create an ionic bond.

$400

Q: What is the difference between a single bond and a triple bond?

$500

Single bond- shares one pair of electrons. Triple bond shares three pairs of electrons

$500

Q: What is the definition of isotope?

$100

Isotopes are atoms of the same element that have different masses because they have different number of neutrons. This impacts some physical properties, but not chemical ones.

$100

Q: Write the definition of polyatomic ion

$200

Q: Polyatomic ion is a group of non-metal atoms that bond together to form a single charged particle. These particles then create ionic bonds. For example OH^{-1}.

$200

Q: What is the definition of a solid?

$300

Solid is a physical state of matter. The atoms are packed closely together, and have limited ability to move (they vibrate in place, but can't move in space). Fixed volume, fixed shape. For example, Salt and Sand.

$300

Q: What is definition of cation?

$400

Cation is a positively charged ion due to the loss of valence electrons. Metals form cations. For example, NH_4^{+1}

$400

5-500

What is definition electrostatic force?

$500

Electrostatic force is one of the fundamental forces of the universe that explains the attraction of opposite charges, and the repulsion of alike charges. It is responsible for the association of electrons and protons.

$500

Q: What is the atomic number?

$100

Atomic number is the number of protons in an atom. It is listed above the element on the periodic table.

$100
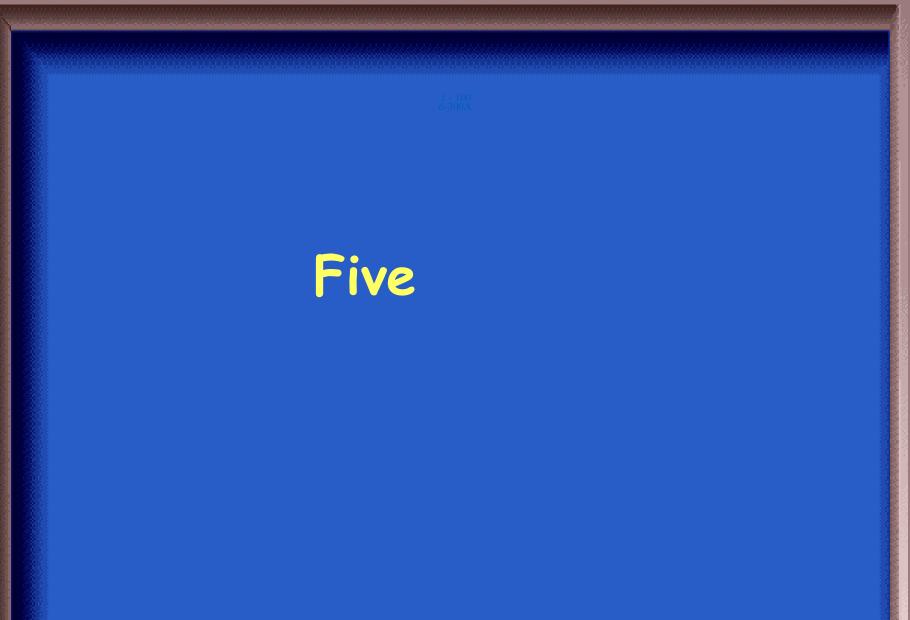
Q: Draw the Lewis structure for water (H₂O)

$200

See board or notes or book

$200

Q: How many valence electrons are in P?

$300

Five

$300

Q: What kind of compound is $SiCl_4$

$400

Molecular- we treat semi metals as if they were non-metals

$400

Q: What element has an isotope with 8 neutrons and 6 protons?

$500

$$^{14}C$$

$500

Final Jeopardy

Category

Contestants: Please place your wagers. Remember, you can not bet more than the amount of your current winnings.

Q: Describe how science creates new knowledge?