

3. Put a check in each box that correctly describes the element given.

| | Metal | Metalloid | Nonmetal | Alkali Metal | Alkaline Earth Metal | Transition metal | Halogen | Noble gas | Monatomic | Diatomic |
|----|-------|-----------|----------|--------------|----------------------|------------------|---------|-----------|-----------|----------|
| Sb | | | | | | | | | | |
| Sr | | | | | | | | | | |
| Rn | | | | | | | | | | |
| P | | | | | | | | | | |
| Pt | | | | | | | | | | |
| Cs | | | | | | | | | | |
| S | | | | | | | | | | |
| Fe | | | | | | | | | | |
| Br | | | | | | | | | | |
| Ar | | | | | | | | | | |
| H | | | | | | | | | | |
| Si | | | | | | | | | | |
| B | | | | | | | | | | |
| F | | | | | | | | | | |
| He | | | | | | | | | | |
| Se | | | | | | | | | | |
| Zn | | | | | | | | | | |
| Ra | | | | | | | | | | |

4. Write in the space, “alkali metals”, “alkaline earth metals”, “transition metals”, “halogens”, or “noble gases” to indicate which group each statement is describing.

| | | |
|----|--|--|
| a. | | Elements Typically Form Colored compounds and solutions |
| b. | | Full valence shell |
| c. | | Most active (reactive) metals |
| d. | | Most active nonmetals |
| e. | | Monatomic gases |
| f. | | Diatomic elements |
| g. | | Stable and unreactive |
| h. | | 7 valence electrons |
| i. | | 2 valence electrons |
| j. | | Form ions with a +1 charge |
| k. | | Elements rarely gain or lose electrons |
| l. | | Elements tend to have multiple oxidation numbers (charges) |

| | | |
|----|--|---|
| m. | | Elements always form +2 ions when bonding with other elements |
| n. | | Have negligible electronegativity values |

5. Give 2 Expected Properties of Each Element Listed Below:

a. Sulfur

b. Calcium

c. Argon

6. Would an element with the electron configuration 2-8-6 be expected to have a low or high ionization energy? Explain your answer.

18. Group Properties: Practice Problems

Concept Task: Be able to identify an element based on group name

Practice 22

Which element is a noble gas?

- | | |
|-----------|-------------|
| 1) Neon | 3) Fluorine |
| 2) Oxygen | 4) Nitrogen |

Practice 23

Which of these element is an alkaline earth element?

- | | |
|-------|-------|
| 1) Na | 3) K |
| 2) H | 4) Ra |

Practice 24

Iron is best classified as a(n)

- | | |
|------------------------|-------------------------|
| 1) transition nonmetal | 3) alkali metal |
| 2) transition metal | 4) alkaline earth metal |

practice 25

The element in Group 17 Period 4 is a(n)

- | | |
|---------------------|-----------------|
| 1) transition metal | 3) alkali metal |
| 2) halogen | 4) noble gas |

Concept Task: Be able to identify and classify an element based on group properties.

Practice 26

Which set contains elements that are never found in nature in their atomic state?

- | | |
|-------------|--------------|
| 1) K and Na | 3) Na and Ne |
| 2) K and S | 4) Na and C |

Practice 27

Element X is a solid that is brittle, lack luster, and has six valence electrons. In which group on the Periodic Table would element X be found?

- | | |
|------|-------|
| 1) 1 | 3) 15 |
| 2) 2 | 4) 16 |

Practice 28

Element Z is in Period 3 of the Periodic Table. Which element is Z if it forms an oxide with a formula of Z_2O_3 ?

- | | |
|-------|-------|
| 1) Na | 3) Mg |
| 2) Al | 4) Cl |

Practice 29

Which of these oxides will likely form a colored solution when dissolved in water?

- | | |
|------------|--------|
| 1) Na_2O | 3) CaO |
| 2) SO_2 | 4) FeO |

8. Base your answers to parts (a-g) on the following set of elements:

Ar, Na, S, Si

- Would these elements be expected to have similar chemical properties? Explain.
- How many energy shells do all of these elements have? _____
- Which element(s) are non-metals? _____
- Which element(s) are metals? _____
- Which element(s) are metalloids? _____
- Which element has the greatest electronegativity? _____
- Which element(s) is/are brittle at STP? _____
- Which element would be expected to be most reactive? Explain.