

Oxidation Numbers Worksheet
Chemistry
2 points

Name: _____

Date: _____ Hour: _____

- 1) What is an oxidation number? _____

- 2) What is another word that means oxidation number? _____
- 3) What is a valence electron? _____

- 4) What is the maximum number of valence electrons an atom can have? _____
- 5) What is the most stable number of valence electrons? _____
- 6) What is the name of the chemical family of atoms that have the most stable number of valence electrons? _____
- 7) What is another name for the d-block? _____
- 8) (a) Is the d-block composed of metals, nonmetals, or metalloids? _____
(b) Explain how you know. _____

- 9) Many d-block, f-block, and p-block metals can have more than one oxidation number. They must first lose their _____ electrons, then they can lose their other electrons one-by-one.
- 10) Vanadium can form four oxidation numbers, V^{2+} , V^{3+} , V^{4+} , and V^{5+} .
 - (a) Write the noble gas electron configuration shorthand for vanadium:

 - (b) How many valence electrons does vanadium have? _____
 - (c) A positive charge means the atom _____ electrons.
 - (d) Which electrons would vanadium lose to form V^{2+} ? _____
 - (e) Which electrons would vanadium lose to form V^{5+} ? _____

(f) Which of the four oxidation numbers would you predict to be the most stable?
Explain your choice. _____

11) Tungsten can form two oxidation numbers, W^{6+} and W^{2+} .

(a) Write the noble gas electron configuration shorthand for tungsten:

(b) How many valence electrons does tungsten have? _____

(c) A positive charge means the atom _____ electrons.

(d) Which electrons would vanadium lose to form W^{2+} ? _____

(e) Which electrons would vanadium lose to form W^{6+} ? _____

(f) Which of the two oxidation numbers would you predict to be the most stable?
Explain your choice. _____

12) Indium can form two oxidation numbers.

(a) Write the noble gas electron configuration shorthand for indium:

(b) How many valence electrons does indium have? _____

(c) A positive charge means the atom _____ electrons.

(d) What two oxidation numbers would you predict for indium? _____

(e) Show how indium would form these two oxidation numbers:

(f) Which of the two oxidation numbers would be more stable? Explain your choice.