

1. Write the ion symbol for the following ions:

Example: calcium = Ca^{2+}

A) phosphide = _____ B) magnesium = _____ C) rubidium = _____

D) fluoride = _____ E) aluminum = _____ F) sulfide = _____

2. Write the formulas for the compound formed by the combination of the following pairs of atoms.

Example: nitrogen and magnesium = Mg_3N_2

A) rubidium and sulfur = _____ B) aluminum and fluorine = _____

C) phosphorus and calcium = _____ D) magnesium and oxygen = _____

3. When writing chemical formulas, the _____ element always goes first, and the _____ element is written second.

Periodic Table - Element Questions & Naming & Formulas

(subtract for neutrons, the number of electrons (e-) changes to make ions)

4. What is the formula for Copper II Nitrate? _____

5. What is the formula for Strontium Phosphide? _____

6. What is the formula for Lead IV Selenide? _____

7. How many electrons would Na^+ have? _____

8. How many electrons would P^{3-} have? _____

9. What would the name of FeBr_3 be? _____

10. Write the formula for ammonium sulfate. _____

11. Write the formula or the name to go with the other:

a. Copper (II) phosphate: _____ d. calcium nitride: _____

b. Na_3PO_4 _____ e. S_2O_7 _____

c. dinitrogen monoxide _____ f. FeCl_3 _____

12. Be able to distinguish between ionic and covalent substances. Which would these be, Ionic or Covalent?



13. Be able to name compounds, ionic or covalent. Name the compounds above:

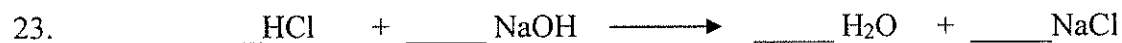
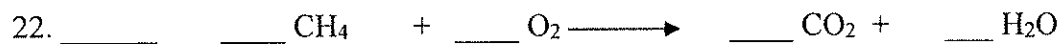
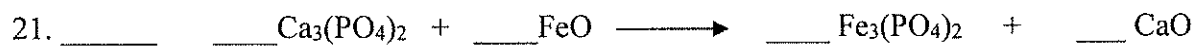
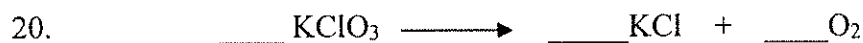
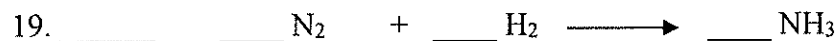
14. How do you distinguish ionic compounds from covalent?

Write and balance reactions:

15. What side of the equation are the reactants on? _____

16. What side of the equation are the products on? _____

Balance the following equations by placing the correct coefficient in front of each formula/symbol. 2nd - label what type of reaction each is: Synthesis (S), Decomposition (D), Single Replacement (SR), Double Replacement (DR), Combustion (C), Neutralization (N)



Be able to work with Lewis structures.

24. Each line on a Lewis structure represents _____ electrons shared between the atoms.

25. The _____ electrons are the ones that are shared on a Lewis Structure.

26. Atoms need _____ electrons around them to be stable, except small atoms like hydrogen that only need _____.

27. Now draw the Lewis structure for water.

28. Now draw the Lewis structure for carbon dioxide CO₂.

29. Draw the Lewis structure for nitrogen gas:

30. Organic compounds contain _____.

31. Hydrocarbons also contain _____.

32. Hydrocarbons with only single (covalent or ionic ?) bonds are called _____.

33. In a single covalent bond, (1 2 or 3 ?) electrons are (shared or lost/gained ?)

Given this chart, be able to draw any of the alkanes.

34. Draw propane below: Write its formula _____.

35. Draw hexane below: Write its formula _____.

Prefix	Number of Carbon Atoms
meth-	1
eth-	2
prop-	3
but-	4
pent-	5
hex-	6
hept-	7
oct-	8
non-	9
dec-	10

36. Draw butane, butene, and butyne, and include the chemical formula for each one.

Chemical Formula

Structural Formula

Butane _____

Butene _____

Butyne _____

Prefix	Number of Carbon Atoms
meth-	1
eth-	2
prop-	3
but-	4
pent-	5
hex-	6
hept-	7
oct-	8
non-	9
dec-	10

37. Another word for burning is _____

38. When burning hydrocarbons, like wax, the hydrocarbon combines with _____
and forms two products: _____ and _____.



High Octane - What are isomers and why do they matter?

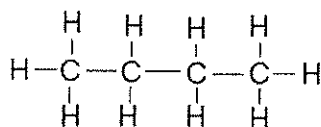
Goals:

- Discover what isomers are compared to the hydrocarbons we've already learned about.
- Draw the structural formula for isomers of hydrocarbons from the alkane family of hydrocarbons.

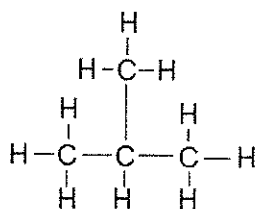
Real-World Application:

Your car isn't running right. It has an engine knock and continues to sputter along for a short time even after you turn the key off. Your mom says that you should try a higher octane gasoline. It works, but now you're wondering why you're paying extra for that type of gasoline. (Hint: It's because of isomers in the fuel. And, you may need a tuneup)

Isomers of Butane: Background Information: Work with a Partner



(molecule A)



(molecule B)

39. Explain what is different about the molecules of butane above.

40. Now describe what is the same between these molecules of butane.

41. Describe, in your own words, what an isomer of a molecule is.

Given this chart, be able to draw any of the alkanes.

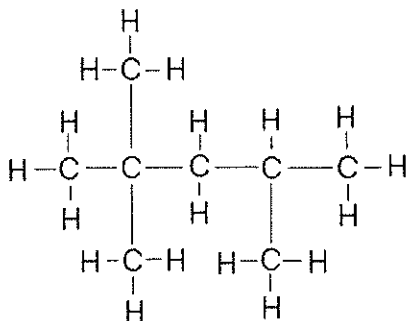
42. Draw heptane below: Write its formula _____.

Prefix	Number of Carbon Atoms
meth-	1
eth-	2
prop-	3
but-	4
pent-	5
hex-	6
hept-	7
oct-	8
non-	9
dec-	10

43. Now draw an isomer of heptane:
Write its formula _____.

44. An isomer of a hydrocarbon has (a different or the same?) structure/branching,
(a different or the same?) chemical formula, and
(a different or the same?) chemical and physical properties.

45. The following is an isomer of what alkane? Name: _____
Formula: _____

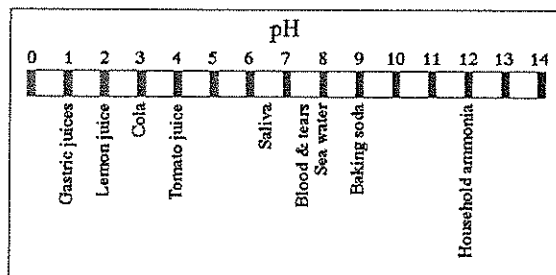


46. Draw a different isomer of the alkane in the previous question. What is its chemical formula? _____ Would it have the same properties as the one from the previous question?

Acids & Bases Review

Place the word(s) or symbol that goes with each word or words below:

47. Acid ions - _____ combines with water to form _____, hydronium ion.
48. Base ion - _____
49. Scale that measures how acidic or basic something is - _____
50. Acid/Base Indicators –(name 2) _____
51. HCl – (name & acid or base or salt?) _____
52. K₂SO₄ –(name & acid or base or salt?) _____
53. H₂SO₄ –(name & acid or base or salt?) _____
54. NH₄Cl –(name & acid or base or salt?) _____
55. NaOH –(name & acid or base or salt?) _____
56. Ca(OH)₂ –(name & acid or base or salt?) _____
57. For neutralization reactions, be able to predict the products. Show an example equation below - use HCl reacting with NaOH: _____
58. What two things are always produced in a neutralization reaction? _____



59. Acids have a pH from _____ to _____. Lower numbers mean _____ acids.
60. Bases have pH from _____ to _____. Higher numbers mean _____ bases.
61. Neutral substances have a pH of _____.
62. A change in pH number of 1 means a change in _____ ion concentration by a power of _____.
63. If an acid is changed from a pH of 6 to a pH of 3, it is _____ times _____ acidic.
64. If a base is is changed from a pH of 12 to a pH of 10, it is _____ times _____ basic.
65. Why isn't acid rain a problem in our lakes that contain limestone, but is a problem in Northern lakes in areas that only contain granite rock? _____

