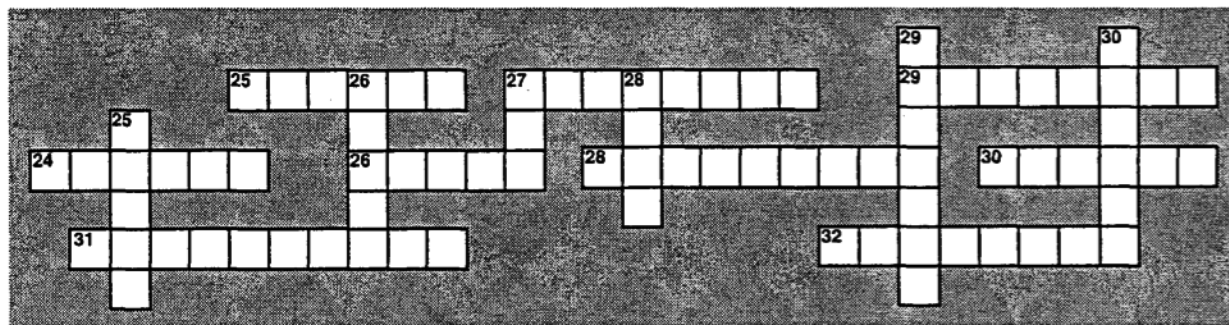
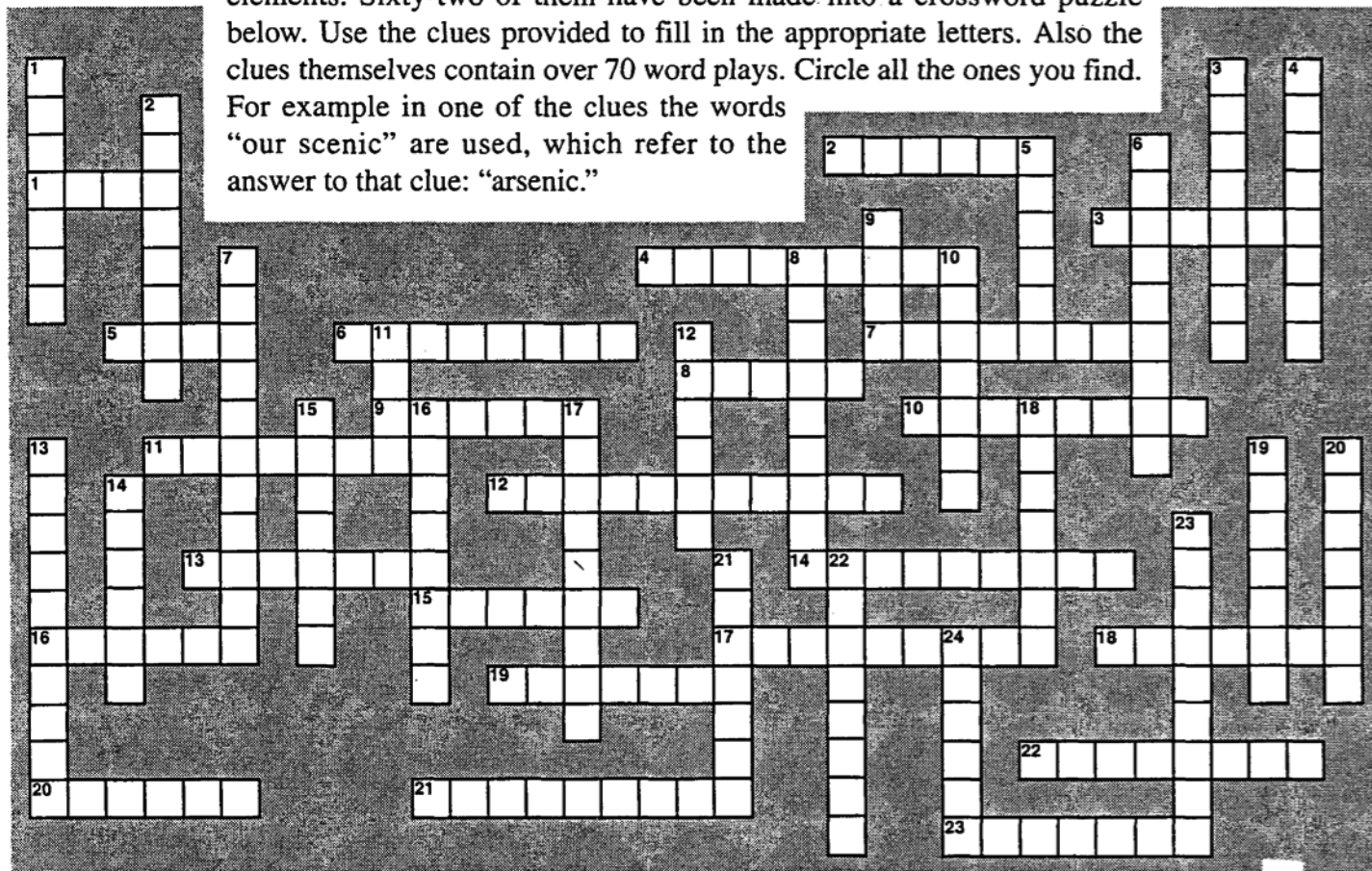


Winter Break
 Bonus Assignment
 (= 4 HW Stamps)

Due Jan 2

The Ultimate Element Crossword Puzzle

At the bottom of this page is an alphabetical listing of the first 103 elements. Sixty-two of them have been made into a crossword puzzle below. Use the clues provided to fill in the appropriate letters. Also the clues themselves contain over 70 word plays. Circle all the ones you find. For example in one of the clues the words "our scenic" are used, which refer to the answer to that clue: "arsenic."



- | | | | | | | | |
|-----------|-------------|------------|-------------|------------|--------------|------------|-----------|
| actinium | cadmium | erbium | indium | mercury | platinum | samarium | thorium |
| aluminum | calcium | europium | iodine | molybdenum | plutonium | scandium | thulium |
| americium | californium | fermium | iridium | neodymium | polonium | selenium | tin |
| antimony | carbon | fluorine | iron | neon | potassium | silicon | titanium |
| argon | cerium | francium | krypton | neptunium | praseodymium | silver | tungsten |
| arsenic | cesium | gadolinium | lanthanum | nickel | promethium | sodium | uranium |
| astatine | chlorine | gallium | lawrencium | niobium | protactinium | strontium | vanadium |
| barium | chromium | germanium | lead | nitrogen | radium | sulfur | xenon |
| berkelium | cobalt | gold | lithium | nobelium | radon | tantalum | ytterbium |
| beryllium | copper | hafnium | lutetium | osmium | rhenium | technetium | yttrium |
| bismuth | curium | helium | magnesium | oxygen | rhodium | tellurium | zinc |
| boron | dysprosium | holmium | manganese | palladium | rubidium | terbium | zirconium |
| bromine | einsteinium | hydrogen | mendelevium | phosphorus | ruthenium | thallium | |

ACROSS

- In batteries, stained glass windows, and old paint; but not in pencils, as some might lead you to believe. Also known for its density, malleability (and toxicity).
- Matches, acid rain, and a chigger repellent (and originally associated with eternal damnation), so far as we know, its molecules are square-dance-shaped.
- Pipes, wires and Ms. Liberty's skin, whether you're a seasoned cop or a brand new rookie, a penny's worth isn't what it used to be.
- In bananas, salt subs, & of course, special K cereal, but this alkali metal is also used in lavender fireworks.
- Anyone can see that, despite its total disregard for others, this member of the noble gas family has a bright future in advertising—I'd put money on it!
- Fertilizers, explosives & cryogenics, we come in contact with this gas more than any other. Long ago, at night, Trojan men would breathe in a mixture containing 80% of this gas, before going into battle!
- Crystals of its salts are known for their crisp colors, this metal puts the shine on your car bumper.
- Used in strobe lamps, this "stranger" may be a member of the royal family, but recently he has been seen on dates with such commoners as F and O!
- Used as an alloy in ball-point pens, nearly twice as dense as lead (if Dorothy's house were made of this metal, she never would have gotten anywhere!), the strong odor given off by this metal is a result of its highly toxic oxide!
- Not for sale at Arbee's, this alkali is a real go-getter in vacuum tubes and is known for its ruby-colored flame test.
- Greenish yellow in color, used in bleach, drinking water, PVC pipes (that's logical) or in WWI as the world's first war gas.
- This relatively recent addition to the table does not occur naturally, it was discovered in the all burnt-up debris analyzed from the first H-bomb explosion (the energy of which was equal to the mass lost times the speed of light squared).
- Make your silly list of pros and cons: Bill Gates, Cinderella & some top-notch super models all owe their good fortune to this metalloid.
- Used in flares, flash bulbs and magnificent incendiary bombs, but also in mag wheels & in M.O.M.
- This shiny nonmetal gives off purple vapors; at blood donor centers, this goes on before the needle goes in, and in Ohio, diner and restaurant owners add it to their salt.
- Without this noble light-weight, the Goodyear Company would never have gotten off the ground, and scuba divers would really be hurting (and doctors might be unable to heal them).
- One of the most reactive rare earth metals, (seriously) and often used in lighter flints and carbon-arc lamps, but using this toxic element in Heinz steak sauce would not be a good plan (the number of protons has little to do with an element's uses!)
- Its orange-red spectral line is how the modern day meter is defined, and—not to sound cryptic—but its fictitious ore is the Achilles' heel for the man of steel.
- Highly toxic, as are its compounds, including its oxide which has the distinct odor of garlic. Also used in transistors: think about that as you drive along our scenic highways listening to your radio!
- When the Lone Ranger photographs his horse's fillings in the mirror he must wonder why this #1 metal (in terms of electrical and heat conductivity), is still considered second best by most athletes.
- An alloying agent in steel & an active ingredient in poison ivy lotion, its silicate may be cubic but it won't last forever (sorry, girls...).
- Originally thrown away as a "fool's silver," now considered more valuable than gold, especially by recording artists (and DJ's who spin their "platters")
- Lighten up, today, this low density metal is used in batteries, tomorrow, it may be used in the matter-antimatter chamber of the U.S.S. Enterprise!
- Although this alkaline earth metal is very toxic, I know a doctor who often asks his patients to drink a nice thick shake of its sulfate (and he rarely ends up having to bury them).
- Has your car been acting up? You may want to check the antifreeze or oil or gasoline or vinyl seat covers or . . . yourself!
- This great-great-great-grand-daughter of U-238 is a dense, noble and silent killer, but do not be afraid. On the other hand, you may want to sleep with your windows open.
- WOW, This wondrous worldly stone must weigh a ton (hence the Swedish name), but this weak wire filament is so light!
- This most deadly poison was used in the Apollo program to power equipment on the lunar surface. Critical mass of this fissionable isotope can blast you to the outer limits of the solar system!
- This group V metalloid is quite versatile: from tracer bullets to fire-proofing to infrared detection. Not that I'm against cash or anything, but I should just pay off my ex-wife with this valuable stuff each month.
- One of the most metallic metals, named for its sky blue spectral lines, atomic clocks using this element are accurate to 5 sec in 300 years . . . or 1 sec in 60 years (that's easy math).
- Just ten protons short of a full deck, welders know this steel-strengthening transition metal as "Molly B. Denim."
- Albeit, the most abundant metal in the Earth's crust, yet so difficult to extract from its ore that this shiny light-weight used to be more valuable than gold. Now everyone (even all you minimum wage earners) treat it like trash!

DOWN

1. It must have taken some gall in 1871 for Mendeleev to predict the existence of this low-melting metal. Then, four years later "eka-aluminum" was discovered by a gallic chemist.
2. You're number one in our books and in the universe for that matter, the ultimate fuel and building block, but don't try to hide your genuinely explosive nature: two of the worst aviation accidents in U.S. history resulted from your reaction with oxygen.
3. One might think that Fr, Ge and Sc might somehow be alloyed together to make this metal, but no, it's an element by itself, with an atomic mass of 151.96.
4. This pale yellow gas is considered the most reactive of all the elements. Even water will ignite in its presence. And after 70 years of continuous work, chemists were finally able to isolate this element (I bet that made them smile).
5. Used for years in self-luminous paint for glow in the dark clock faces and in radiological treatment for cancer. One atom of this alkaline earth metal has as many protons as there are keys on a piano!
6. Its name is derived from the Greek neos, meaning "new" and didymos, meaning "twin," because for years no one could separate it from its next-door neighbor on the periodic table.
7. Named after the long-bearded Russian himself (who was not an MD, but without whom there would be no periodic table). Like all transuranium elements, #101 is synthesized (not found in nature) and it has no stable isotopes.
8. Similar in nature to the other alkaline earth metals (which together make up a pretty strong team in terms of their reactivity). Salts of this metal are used in flares and fireworks producing a beautiful crimson color.
9. Has more applications than you might think: from solders to makeup to printer's ink; paints, plastics, and fencing (chain-link), and yes, of course, the kitchen ____
10. The only metal that is a liquid at ordinary temperatures (ordinary for Earth, that is, not a hotter planet!), nicknamed "quick silver," used in thermometers, barometers & electrical switches, very dense, also very toxic (hard to imagine a more curious metal).
11. Some might consider it ironic that the same metal that's used in car bodies & Ferris wheels is also used to fortify our breakfast cereal. The most abundant & important metal on Earth, it's in our blood to treasure it.
12. To metals and non-metals alike, this element bonds like epoxy—generally in a very exothermic manner (in other words, it makes things burn), but, oh, what trouble we would be in without these atoms, (both the pairs down here and the trios up there).
13. Discovered in 1669 by Brandt who prepared it from urine (but that's not how it got its symbol!). This non-metal is used in matches, fertilizers and detergents.
14. This transition metal is especially known for the deep blue color its salts produce when added to glass and ceramics (as produced by the Goblin Porcelain Co., Baltimore, MD, for example).
15. Ubiquitous & unusual, named after the 7th rock from the sun, one lb of this nuclear fuel source is equivalent to 1500 tons of coal, you have to respect that!
16. The black form of this nonmetal conducts electricity better when light is shined upon it, so it is used in Xerox toner, thus without this element you can cancel any immediate plans to photocopy this page!
17. Man can easily survive (and so can woman) without Ag or Au, but take away this trace dietary mineral and you are in eminent risk of a vitamin B deficiency!
18. Irredeemably the most corrosion resistant metal, #77 was alloyed with Pt to make the standard meter bar of Paris.
19. Why is this metal used in magnets, low melting alloys, & pink antidiarrheal medication? I make it my business to know!
20. This halogen is a liquid at room temperature, and though its symbol may remind you of the cold, its compounds serve as flameproofing agents!
21. Dairy farmers see milking machines as quick extractors of this alkaline earth metal, but I bet the cows see them differently!
22. Nothing is as effective as stating the obvious, but with less than one ounce of this halogen existing on the Earth, this element isn't really where it's at!
23. Being a light weight with a high melting point, this group II metal is an ideal hardening agent in alloys. Originally, chemists tested for this element by its sweet taste, but its high toxicity makes this not such a brilliant idea!
24. Used in nichrome wire, alnico magnets, stainless steel barnacle scrapers(!), and as a catalyst for hydrogenating vegetable oil—the kind you might buy at the local five and dime.
25. A rather inactive gas, this royal family member makes up nearly 1% of our atmosphere, it is used as the inert gas in light bulbs (when N & O are gone, the filament lasts a lot longer!)
26. Hamlet's soliloquy pondered whether or not this metalloid was diatomic! The nitride of this element can be as hard as diamond, and can be used for drill bits (talk about boring!).
27. Snips can cut this metal into tiny pieces, used for solders (and soldiers), and coated onto steel cans (for beans, tennis balls, etc.) to prevent corrosion.
28. "HEY YOU! Come back here with my first place medal!" This king of metals is so malleable that a single ounce can be beaten out into a 300 ft² sheet 1,000 times thinner than paper, and so inert that jewelry dating back to ancient times still looks as good as new.
29. This close relative of Zn is used with nickel to make Nicad rechargeable batteries. It is famous for its yellow paint pigment, but it is very toxic and is one of the many poisons found in cigarette smoke.
30. Naturally, this most abundant alkali metal is used in soaps, glass and pretzels. Most carbonated drinks, however, report having very low levels of this element — which seems so dumb when you think about it.