Name _____

Beyond the Elements: Reactions Video Guide

1. Fire is a chemical _____.
2. To make fire, a kind of combustion, you need _____, plus heat, plus _____.
3. Those gases from the wood are complex molecules, made mostly of _____, carbon and _____.
4. The reactions also release _____, the light you see and the heat you feel. And that, at its heart, is what happens in chemical reactions, the _____ and making of bonds and the shuffling around of atoms.
5. The most popular construction material in the world has its roots in one of the oldest pyro technologies: roasting a certain kind of _____.
6. Cement is the _____, concrete is the end product.
7. Limestone is mostly _____ _____.
8. By the time it reaches the bottom and the entrance to the kiln, the _____ has transformed the calcium carbonate from the limestone into carbon dioxide gas and calcium oxide, also known as quicklime.
9. In 2016, cement production emitted about _____ of the global total of greenhouse gases, over half of that from the production of clinker.
10. Animals need _____ to grow. So do plants.
11. The nitrogen in the air doesn't do plants any direct good because it's in the form of _____, two nitrogen atoms sharing in a _____ bond.
12. From nitrogen gas and hydrogen gas, Haber could produce NH3, _____, a fertilizer itself and a starting point to produce others.
13. What were the lasting effects of the introduction of the Haber-Bosch process?
14. Scientists estimate that _____ of the nitrogen atoms in any person alive today, at one point passed through the Haber-Bosch process.
15. Cotton fiber is about _____ cellulose, a key structural component in green plants composed of carbon, hydrogen and oxygen but no nitrogen.
16. The burning nitrocellulose generates rapidly expanding gases, including carbon dioxide, carbon monoxide, water vapor and, of course, _____.
17. About half of the power of the ANFO explosion comes from nitrogen atoms reforming into nitrogen _____.

18. In chemistry, reactions tend to _____ other ingredients, transforming them into something new.
19. When you eat peppers, those capsaicin keys fit into the _____ _____ receptors in your mouth, altering their sensitivity.
20. Poisonous versus venomous: it all comes down to the _____ _____. If you bite it and get sick, it's poisonous, but if it bites you and you get sick, it's venomous.
21. There are currently at least seven drugs on the market developed out of the study of _____.
22. In 2014, they identified a peptide from another venomous snail that attacks liver _____ cells, inhibiting their growth.
23. Just as a molecule can act as both a venom and a _____, or one reaction can both help_____ the world and blow it to bits, our scientific knowledge is a powerful tool.