

1. What is the most abundant stuff on earth? iron
2. Where are some places that iron are found? core of earth and blood
3. How many electrons does iron have? 26
4. What happens when some of iron's electrons are shared between atoms?
vice-like bond, very strong
5. What temperature breaks the electron bonds of iron? 2800 degrees F
6. What happens to the bonds when they are heated? the float in liquid (soup)
7. Is iron endlessly recyclable? yes
8. How much of the earth's crust is iron ore? 5%
9. What must be stripped off the top of the ore in open pit mining?
waste material
10. Where did iron come from? an ancient star's super nova
11. How much of the earth's core is iron? 98%
12. What is the chemical composition of iron ore? iron oxide
13. What percentage of iron ore is magnetite? 22%
14. What percentage of iron ore is hematite? 65%
15. What color is hematite? red
16. What color is magnetite black
17. Why do the boulders need to be reduced to powder?
for magnets to separate iron
18. Why is iron made into pellets? ease of transport
19. Why does the iron need to be 100% pure? strength
20. How do impurities get removed from iron? blast furnace
21. How much carbon does it take to make steel? no more than 2%
22. How much stronger are the new enhanced and advanced steels?
5% to 6% stronger
23. Do the new steels weigh heavier? no
24. What country produces more iron than the USA? China
25. Historically, what products went hand-in-hand with the development of steel? weapons
26. Historically, what was the source of the first iron used? meteorites
27. How did the ancient blacksmiths get their fires hot enough to purify iron?
added air/oxygen to coal furnaces
28. What does the higher temperatures remove from iron ore?
oxide which is removed with waste gases from furnace
29. What is another name for the pure iron? wrought iron
30. What technique changed weapons in the 16th century?
rolling iron for musket barrels
31. How is cast iron formed? liquified and poured into molds
32. What is the major problem with cast iron? brittle
33. In 1856, what did Henry Bessemer discover? steel
34. How were the helmets of WWI formed? stamping

35. What are the major alloys for the precise M-16 rifle barrels?
____chromium and molybdenum (chrome moly)_____
36. What is the most curious property of iron? _____magnetism_____
37. Are super magnets permanent? ____yes____
38. Are electromagnets permanent? ____no_____
39. Is iron a vital mineral for humans? __yes_____
40. How come iron doesn't turn to rust inside our bodies? ____It is in a heme cage_____
41. What is the major weakness of iron? __rust____
42. How many electrons orbit the iron nucleus farther away? ____2_____
43. What molecule needs extra electrons? _____oxygen_____
44. How does iron oxide (rust) displace parent iron molecule?
____rust molecule is bigger than iron molecule. Rust displaces iron_____
45. What is an industry that relies on iron oxide (rust)? ____pigment manufacturers_____
46. What percentage of iron is on Mars' crust? ____14%_____
47. Why are companies interested in mining Mars for iron? __easier to mine_____
48. What is the mother lode for iron? ____asteroids_____