Science 10 Unit 2 Worksheet

Chapter 5, Part 1.

1. Work (_____) = Force (_____) X distance (_____).
2. Force is measured in newtons and measures how hard something is _____ or _____.
3. Distance is measured in _____ and refers to the distance something is moved.
4. Joules are the same units of measure _____.
5. _____ is explained as the ability to do _____.
6. The amount of _____--__ relates to the amount of _____ that can be done in Joules.
7. The rate at which energy is _____, _____, or _____ is called _____.
8. Write the equation for Power:

9. One Joule per second is measured by units called _____.
10. The energy of a battery can be measured by the equation: Energy = _____ X _____ X _____
11. Read the "Did you Know" passage on page 91.
12. The amount of energy used in a home is measured by a unit called _____.
13. Write the equation for a Kilowatt hour:

14. Briefly describe how an electric utility meter works:

Part 2.

15. In what form does most of the lost and wasted energy disappear as? _____.
16. _____ is the ability of a device to convert _____ into other forms of _____.
17. Write an equation to represent Efficiency:

18. Any device that converts electrical energy to another form of energy produces _____.

19. Devices used for heating purposes can be _____ because _____.

20. What is the purpose of the *Energuide* label found on new appliances? Read Activity 5D on p 97.

Part 3.

21. Describe two characteristics of household circuits:

22. The number of changes of direction of current in an alternating household current per second is called the _____ and is measured in _____.

23. Household electricity is supplied by _____ wires. One wire is said to be _____ and the other two wires are called _____.

24. Voltage difference between the two hot wires is _____ , and between the neutral is _____.

25. What is the purpose of a household electrical service panel and circuit breakers?

26. Describe how does a circuit breaker works:

27. How many circuit breakers does a typical 240 volt branch circuit have? _____. Why?

28. What is the difference between a fuse and a circuit breaker?

29. The outlets and switches in a circuit are connect in _____ while the circuit breaker itself is connected in _____.

30. Household electrical outlets are said to be _____. The wide prong is connected to the _____ conductor while the hot conductor is connected to the _____ prong.

31. Why are polarized plugs much safer for electrical appliances such as lamps?

32. Why are grounding circuits a necessary safety feature of electrical circuits?

33. Devices which sense extremely small differences in current between in the hot wire and neutral wires of a circuit are called _____. They are commonly found in _____.

34. To prevent circuit overload, for a 15A breaker the sum of the load must be less than _____.

35. A 15A breaker can handle a power of _____+1800 Watts.

36. Briefly list and describe the safety check list found on pages 107 and 108:

Chapter 7, Part 4.

37. _____ from the sun is one example of _____.

38. The colours of a rainbow make up the _____ of light.

39. List several other forms of electromagnetic radiation: _____.

40. Briefly describe electromagnetic radiation:

41. Electromagnetic waves that are produced by a vibrating particle have the _____. When the frequency of the waves increase, their _____ decreases.

42. Draw a diagram to explain what wavelength is:

43. Electromagnetic radiation of different _____ and _____ are called different names.

44. The variety of types of electromagnetic radiation are called the _____.

45. Radio waves have _____ and _____, while X rays have _____ and short _____.

46. As the _____ of the electromagnetic radiation _____ so does its _____.

47. _____ and _____ are harmful to living things because of their high _____.

Part 5.

48. Atoms which emit radiation from their _____ are referred to as _____.

49. The force which holds the protons of a nucleus together is called the _____.

50. The three types of radiation naturally occurring in radioactive nuclei are:

51. A _____ may be used to detect _____ and some of their properties.
52.

53. Alpha and Beta radiation consist are made of _____. Alpha particle have a _____ charge, while Beta particle have a _____ charge. Both are affected by _____ and _____ fields.

54. _____ is a form of electromagnetic radiation and is _____ made of particles.

55. _____is a more penetrating source of radiation much like _____.

56. The _____ in the nuclei of an element's atom is indicated by the _____.

57. All of the protons and neutrons in a nucleus are indicated by the _____.
58.
59. Atoms of an element which have different mass numbers are called _____.

60. List several elements which commonly have isoptopes? _____.

61. _____ is caused by unstable nuclei of isotopes which _____.

62. When the nucleus of a radioactive isotope emits alpha particles this called _____.

63. When Uranium 238 undergoes alpha decay, the _____ is always _____ than the mass number of the parent nucleus and _____ than the parent's atomic number.

64. _____ refers to a change in the type of nucleus of an atom..

65. In Beta decay, the _____ of the parent _____ by one and a new element forms.
66. Why is there no change in the type of nucleus in gamma decay?

67. The radioactivity of samples are measured in units called _____.

68. The amount of time it takes for a sample of a _____ to decay is its _____.

Part 6.

69. Hazardous types of radiation such as _____ ,short _____ ultraviolet and _____ radiation can knock _____ from atoms. The atoms from which electrons have been removed are called _____. Exposure to ionizing radiation can result in _____ and eventually a condition called _____.

70. Hereditary material of cells may also be altered and these are called _____.

71. The effects of ionizing radiation may be measure in units called the _____ and the _____.

72. Lead is a good radiation shield because _____ does not penetrate and _____ energy.
73. In the event of an atomic bomb, how much radiation will eventually kill an individual? _____

74. Briefly describe four things you can do and why to protect yourself from radiation:

75. Read the profile on page 148. Who was Marie and Pierre Curie?

76. Describe four useful applications of radiation found today in medicine:

77. Read the career panel found on page 150.

Part 7.

78. What is the equation for Einstein's *Special Theory of Relativity* ? _____

79. What do the E, the m, and the c represent in the equation? _____

80. An _____ radioactive nucleus has _____ than its _____ products.

81. Italian scientist _____ realized that since _____ have no charge, it might be possible to make new elements with greater _____ than the original.

82. The process by which a _____ is split into pieces is called _____.

83. The energy released in this process is a result of a _____ as seen in figure 7.22.

84. What is a Nuclear reaction?

85. What is a moderator? Give two examples of nuclear moderators.

86. The _____ in which a chain reaction can sustain itself is called the _____.

87. Too many nuclear fissions and the release of energy can cause a _____. To keep the chain reaction under control, _____ absorb neutrons in the reaction. Energy released from such reactions is often used to produce _____ and generate _____.

88. List some of the problems with nuclear reactors? Read *the Chernobyl Accident* on page 156.

89. What is nuclear fusion?

90. A _____ is an example of an uncontrolled fusion reaction. These bombs require a _____ to produce temperatures high enough to cause _____.

91. Refer to figure 7.25. Using the back of this worksheet, sketch a diagram showing the relationships between the different types of radiation.