Development of atomic theory worksheet answer key

ATOMIC STRUCTURE WORKSHEET

Complete the table. There is enough information given for each element to determine all missing numbers.

Symbol	Atomic Number	Mass Number	Number of Protons	Number of Electrons	Number of Neutrons
^{23}Na					
K		40		19	
			38	38	52
F					10
	20	41		18	
	50			50	72
^{131}I					
^{26}Mg					
		109	47	46	
	1	2		1	
^{36}S					
	26			23	32
^{27}Al					
	2	4		2	
Cr		53			

Name ______ Magic Square Atomic Structure and Theory

Directions: Put the number of the definition from the list below into the square with the appropriate term. Check your answers by adding the numbers to see if all the sums of all rows, both across and down add up to the same number, the Magic #.

Democritus	Dalton	Thomson	Chadwick	Total
____	____	____	____	____
Rutherford	Proton	Atom	Bohr	
____	____	____	____	____
Wave Model	Neutron	Nucleus	Alpha particle	
____	____	____	____	____
Electron	Model	Energy levels	Electron cloud	
____	____	____	____	____
Total ____	____	____	____	

Magic Number ___

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]
8. [illegible]
9. [illegible]
10. [illegible]
11. [illegible]
12. [illegible]
13. [illegible]
14. [illegible]
15. [illegible]
16. [illegible]
17. [illegible]
18. [illegible]

Atomic Statistics Chart Worksheet

Name KEY

Date ______ Period ______

Definitions:

1) Atomic number Represents the number of protons in an atom's nucleus.
2) isotopes Atoms of the same element with different masses.
3) mass number Total of protons and neutrons in an atom.
4) average atomic mass A weighted average of the different isotopic masses of an element's atoms
5) proton Subatomic particle with a mass of 1 AMU and a charge of +1
6) electron Subatomic particle with a mass of 0 AMU and a charge of –1

7) Complete this chart for the following NEUTRAL atoms using your periodic table:

Element	Nuclear Symbol	Electrons	Protons	Neutrons	Isotope Name	Atomic Number	Mass Number
Xenon	$^{133}_{54}Xe$	54	54	79	xenon-133	54	133
Iodine	$^{126}_{53}I$	53	53	73	Iodine-126	53	126
tin	$^{120}_{50}Sn$	50	50	70	tin-120	50	120
gold	$^{200}_{79}Au$	79	79	121	gold-200	79	200
mercury	$^{120}_{80}Hg$	80	80	120	mercury-200	80	200
Sodium	$^{22}_{11}Na$	11	11	11	Sodium-22	11	22

8) Copper has 2 main isotopes, Cu-63 and Cu-65. Look up copper's atomic mass on the periodic table.

a) Which isotope, Cu-63 or Cu-65, is most abundant in nature? Cu-63

b) Explain how you can tell. The average atomic mass is closest to the Cu-63 isotope mass indicating Cu-63 has the highest percentage

9) Boron has 2 main isotopes, Boron-10 and Boron-11. Which isotope is more abundant in nature and how can you tell? B-11 is more abundant. I can tell by comparing the mass numbers of the isotopes with the average atomic mass on P.T.

Atomic Theory Timeline Poster NAME: ______

Key

Democritus 400 B.C.	**"Round Sphere"** - matter consisted of invisible particles called atoms and the void (empty space); atoms are indestructible and unchangeable
Dalton 1803	**Billiard Ball Model** - **atoms** are very small, indivisible objects
Goldstein 1886	**Cathode Ray** - an **anode ray** is a beam of positive ions that is created by certain types of gas discharge tubes
J.J. Thomson 1897	**Plum Pudding Model** - determined that the atom was made of smaller particles, a positive core with negatively charged particles throughout
Einstein 1905	**Photo Electric Effect** - when electrons are "ejected" from the surface of a metal, a **photon** is released as a set amount of light energy
Millikan 1909	**"Falling drop method"** - determined the charge of an **electron** and that quantity was constant for all electrons
Rutherford 1911	**Planetary Model** - the Gold Foil Experiment determined that the atom has a dense, positively charged **nucleus** with a cloud of electively charged particles surrounding the nucleus
Bohr 1913	**Bohr's Model** - electrons have a stable **orbitals** around the nucleus in fixed size and energy
Schrodinger 1926	**Electron Cloud Model** - a dense nucleus surrounded by an **electron cloud** at various levels in orbitals
Chadwick 1932	**Neutron** - determined that neutrally charged **neutrons** have the same mass as **protons**; protons and neutrons accounted for the mass of the atom

Skills worksheet concept review section the development of atomic theory answer key. Development of atomic theory worksheet pdf answer key. Worksheet development of atomic theory answer key true or false. Development of atomic theory worksheet. What is the development of the atomic model.

Transcript Chemistry: Development of the Atomic Theory Directions: Fill in the blanks on the right with the information in the chart below. Word List atom atomic number Bohr Chadwick conservation of matter Dalton definite proportions electron energy level isotopes Lavoisier mass number multiple proportions neutron nucleus Planck proton Proust quantum Rutherford subatomic particle Thomson More than 2000 years ago, Greek philosophers proposed the existence of very small, indivisible particles, each of which was called a(n) __(1)__. The theory that such particles existed was supported, much later, by __(2)__, who proposed, in his law of __(3)__, that matter cannot be created or destroyed. Then __(4)__ proposed, in his law of __(5)__, that the ratio of the masses of elements in any given compound is always the same. The law of __(6)__, proposed soon after, states that the masses of one element that combine with a fixed mass of another element in different compounds are in simple, whole-number ratios. An atomic theory based on these laws was developed by __(7)__. It was later proposed that the atom was not indivisible, but is made up of smaller particles, each of which is called a(n) __(8)__. These particles include the negatively-charged __(9)__, discovered by __(10)__; the positively-charged __(11)__; and the uncharged __(12)__, discovered by __(13)__. The latter two particles are present in the __(14)__, or center, of the atom, which was discovered by __(15)__ in his gold foil experiment. The number of positively-charged particles in an atom is called its __(16)__. The sum of the positively-charged particles and the uncharged particles is called the __(17)__ of the atom. Atoms that have the same number of positively-charged particles but different numbers of uncharged particles are called __(18)__. The Danish physicist __(19)__ proposed a model of the atom in which the electrons orbit the nucleus without losing energy. He called each possible orbit a(n) __(20)__. He based his theory, to some extent, on the work of __(21)__, who proposed that light is made up of units of energy of a definite amount, each of which is called a(n) __(22)__ of energy. Answers: 1. atom 9. electron 17. mass number 2. Lavoisier 10. Thomson 18. isotopes 3. Conservation of Mass 11. proton 19. Bohr 4. Proust 12. neutron 20. energy level 5. definite proportions 13. Chadwick 21. Planck 6. multiple proportions 14. nucleus 22. quantum 7. Dalton 15. Rutherford 8. subatomic particles 16. atomic number Historical Development Match the concept, theory, or discovery in Column I with the scientist most closely associated with it. Some scientists may be used more than once and some not at all. Column I __a_ Column II 1. Determined that most of the atom is empty (a) Rutherford ___m__ 2. (b) Becquerel ___a___ 3. Worked extensively with cathode ray tubes to decipher the structure of the atom Planetary model of the atom __ a __ 4. Gold-foil experiment (d) Crooks __ m__ 5. Tried to explain the nature of cathode ray tubes (e) Chadwick __ p__ 6. Discovered Radium and Polonium (f) __ e__ 7. Discovered neutron (g) Democritus ___ m__ 8. Charge to mass ratio of electron (h) Einstein __ i__ Charge on the electron (i) Millikan __ b__ 10. Discovered radioactivity (j) Moseley ___f__ 11. First modern atomic theory (k) Planck __ g__ 12. Coined the word “atom” (l) __ q__ 13. Law of definite composition (m) J. J. Thomson __ n__ 14. Law of conservation of mass (n) Lavoisier __ m__ 15. Plum pudding model of the atom (o) Gay Lussac __ f__ Law of multiple proportions (p) Madam Curie __ m__ 17. Discovered electron (q) __ l__ Claimed that there are only four elements 9. 16. 18. (c) Bohr Dalton Aristotle Proust

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