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| *Inside the atom are nucleons classwork*  CλeMis+ry | https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcRKEnCvtnzhO-zW3IHYim9DadMkXlAJTDMG97lNuDb8mP-qwSOvvQ | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Period\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

notes [save! memorize by Friday!]:

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| Each figure is a flawed attempt to show what a single atom looks like. None are correct. But we like them because they are easy ways to draw something that is undrawable.  Directions: Above each box, label the NUCLEONS and the ELECTRONS | | | | | | |
| https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcTuMpZakm2tf6CAOzabcgjFCjIvUUUzdN2jZ0-d_FjAI80PemQ80A |  | https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcSH4UPdD01yb-XlzLliQAlUsz3cT6a0VEHKGBV32n0JhMbh0zvt |  | http://www.fastbleep.com/assets/notes/image/11012_1.jpg |  | https://encrypted-tbn1.gstatic.com/images?q=tbn:ANd9GcQMQwYmKB_T182SfSPvBHOztAPdYzdLAmVb351-ZdvwLm0A3cF- |

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| If this atom has \_\_\_\_ **protons** and \_\_\_\_ **neutrons** it is the element \_\_\_\_\_\_\_\_\_.  https://encrypted-tbn2.gstatic.com/images?q=tbn:ANd9GcRDxOEKT4DQfUUWDkuBZFNlwmygTpB067IDlBciwXnvHu114Uf4aQMass number \_\_\_\_\_\_\_  Symbol of the element \_\_\_\_\_\_ |  | If this atom has \_\_\_\_ **protons** and \_\_\_\_ **neutrons**  it is the element \_\_\_\_\_\_\_\_\_.  https://encrypted-tbn2.gstatic.com/images?q=tbn:ANd9GcRDxOEKT4DQfUUWDkuBZFNlwmygTpB067IDlBciwXnvHu114Uf4aQAnd it weighs \_\_\_\_\_\_\_ a.m.u.  Symbol of the element \_\_\_\_\_\_ |  | If an atom has 22 protons it is the element \_\_\_\_\_\_\_\_\_.  If the atomic number is 34 the atom must have \_\_\_\_\_\_ protons.  If an atom has 79 protons it is the element \_\_\_\_\_\_\_\_\_.  If the atomic number is 85 the atom must have \_\_\_\_\_\_ protons. |

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| mass number rule: |  | charge rule: |

1. If an atom has 12 protons and 10 neutrons, how many nucleons does it have? \_\_\_\_\_\_\_\_\_\_\_\_
2. If an atom has 5 protons and 6 neutrons what is the mass of the atom? \_\_\_\_\_\_\_\_
3. If an atom is oxygen how many protons does it have? \_\_\_\_\_\_\_\_
4. If an atom has 4 protons what element is it? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. If an atom weighs 12 amu's how many nucleons does it have? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. If an atom has 2 protons and it has 5 nucleons, how many neutrons does it have? \_\_\_\_\_\_\_\_\_\_\_\_
7. If an atom has 40 nucleons and has 10 neutrons, how many protons does it have? \_\_\_\_\_\_\_\_\_\_\_\_
8. For an atom with atomic number =9, charge of zero, and 10 neutrons…
   1. mass number \_\_\_\_\_\_\_
   2. number of protons? \_\_\_\_\_\_
   3. number of electrons \_\_\_\_\_\_
   4. symbol of the element, with highLow numbers \_\_\_\_\_\_
9. For an atom with 14 protons and 15 neutrons and 18 electrons
   1. mass number \_\_\_\_\_\_
   2. atomic number \_\_\_\_\_\_
   3. number of electrons \_\_\_\_\_\_
   4. symbol of the element \_\_\_\_\_\_
   5. charge of the atom \_\_\_\_\_\_
   6. symbol of the element, with highLow numbers \_\_\_\_\_\_
10. For a neutral atom with mass number of 47, 25 neutrons, and 22 electrons
    1. atomic number \_\_\_\_\_\_
    2. number of protons \_\_\_\_\_\_
    3. number of electrons \_\_\_\_\_\_
    4. symbol of the element, with highLow numbers \_\_\_\_\_\_
11. For an atom with mass number 55, and has 25 protons and 23 electrons
    1. charge \_\_\_\_\_\_
    2. atomic number \_\_\_\_\_\_
    3. number of neutrons \_\_\_\_\_\_
    4. symbol of the element, with highLow numbers \_\_\_\_\_\_

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| https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcQKqu6GRuBsVmXccvhYUzX5vT9FK30R7cesCqY2p8G7nMjJXhrUxAHomework:   1. If an atom has 12 protons and 10 neutrons, it has a mass of \_\_\_\_\_\_ and it is the element \_\_\_\_\_\_\_\_\_\_. 2. If an atom has 1 proton and 0 neutrons, and 2 electrons, what is the highLow symbol of the atom? \_\_\_\_\_\_\_\_ 3. If an atom is helium how many protons does it have? \_\_\_\_\_\_\_\_\_\_\_ 4. If an atom has 10 protons what element is it? \_\_\_\_\_\_\_\_\_\_\_\_\_\_ 5. If the atom’s mass number is 18 how many nucleons does it have? 6. If an atom has 12 protons and it has 25 nucleons, how many neutrons does it have? \_\_\_\_\_\_\_\_\_\_\_\_ 7. If an atom has 20 nucleons and has 9 neutrons, how many protons does it have? \_\_\_\_\_\_\_\_\_\_\_\_ 8. If an atom has 1 proton and 0 neutrons what element is it? \_\_\_\_\_\_\_\_ 9. If an atom has 22 protons and 20 neutrons, and 20 electrons, write the highLow symbol with charge \_\_\_\_\_\_\_\_\_\_. 10. If an atom has 8 proton and 11 neutrons what is the mass of the atom? \_\_\_\_\_\_\_\_ 11. If an atom is magnesium how many protons does it have? \_\_\_\_\_\_\_\_\_\_\_ 12. If an atom has 15 protons what element is it? \_\_\_\_\_\_\_\_\_\_\_\_\_\_ 13. If an atom mass number is 28 amu's and there are 12 neutrons, what element is it? 14. If an atom has 6 protons and it has 10 nucleons, how many neutrons does it have? \_\_\_\_\_\_\_\_\_\_\_\_ 15. If an atom has 1 nucleon and has zero neutrons, how many protons does it have? \_\_\_\_\_\_\_\_\_\_\_\_ 16. If an atom has 92 protons, 91 electrons, and 146 neutrons write the symbol, with highLow numbers and charge \_\_\_\_\_\_\_\_ | https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcQKqu6GRuBsVmXccvhYUzX5vT9FK30R7cesCqY2p8G7nMjJXhrUxAHomework:   1. If an atom has 12 protons and 10 neutrons, it has a mass of \_\_\_\_\_\_ and it is the element \_\_\_\_\_\_\_\_\_\_. 2. If an atom has 1 proton and 0 neutrons, and 2 electrons, what is the highLow symbol of the atom? \_\_\_\_\_\_\_\_ 3. If an atom is helium how many protons does it have? \_\_\_\_\_\_\_\_\_\_\_ 4. If an atom has 10 protons what element is it? \_\_\_\_\_\_\_\_\_\_\_\_\_\_ 5. If the atom’s mass number is 18 how many nucleons does it have? 6. If an atom has 12 protons and it has 25 nucleons, how many neutrons does it have? \_\_\_\_\_\_\_\_\_\_\_\_ 7. If an atom has 20 nucleons and has 9 neutrons, how many protons does it have? \_\_\_\_\_\_\_\_\_\_\_\_ 8. If an atom has 1 proton and 0 neutrons what element is it? \_\_\_\_\_\_\_\_ 9. If an atom has 22 protons and 20 neutrons, and 20 electrons, write the highLow symbol with charge \_\_\_\_\_\_\_\_\_\_. 10. If an atom has 8 proton and 11 neutrons what is the mass of the atom? \_\_\_\_\_\_\_\_ 11. If an atom is magnesium how many protons does it have? \_\_\_\_\_\_\_\_\_\_\_ 12. If an atom has 15 protons what element is it? \_\_\_\_\_\_\_\_\_\_\_\_\_\_ 13. If an atom mass number is 28 amu's and there are 12 neutrons, what element is it? 14. If an atom has 6 protons and it has 10 nucleons, how many neutrons does it have? \_\_\_\_\_\_\_\_\_\_\_\_ 15. If an atom has 1 nucleon and has zero neutrons, how many protons does it have? \_\_\_\_\_\_\_\_\_\_\_\_ 16. If an atom has 92 protons, 91 electrons, and 146 neutrons write the symbol, with highLow numbers and charge \_\_\_\_\_\_\_\_ |

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Warm-up:

The tininess of atoms: get a pair of scissors, cut a paper in half as many times as possible.\*

the skin of an atom has one or more electrons

the middle of an atom has protons and neutrons.

the mass is measured in a.m.u.

Both protons and neutrons weigh ~ one a.m.u. each.

Every time you add a proton that is a new element.

The mass number of an atom is P + n = mass number

The charge is charge = P - e

shorten the length by half, 31 times.

You will have the size of a single atom.

assumptions: aluminum atom radius is 0.143 nm

28 cm / 2^n = 0.143 x 10-7 cm