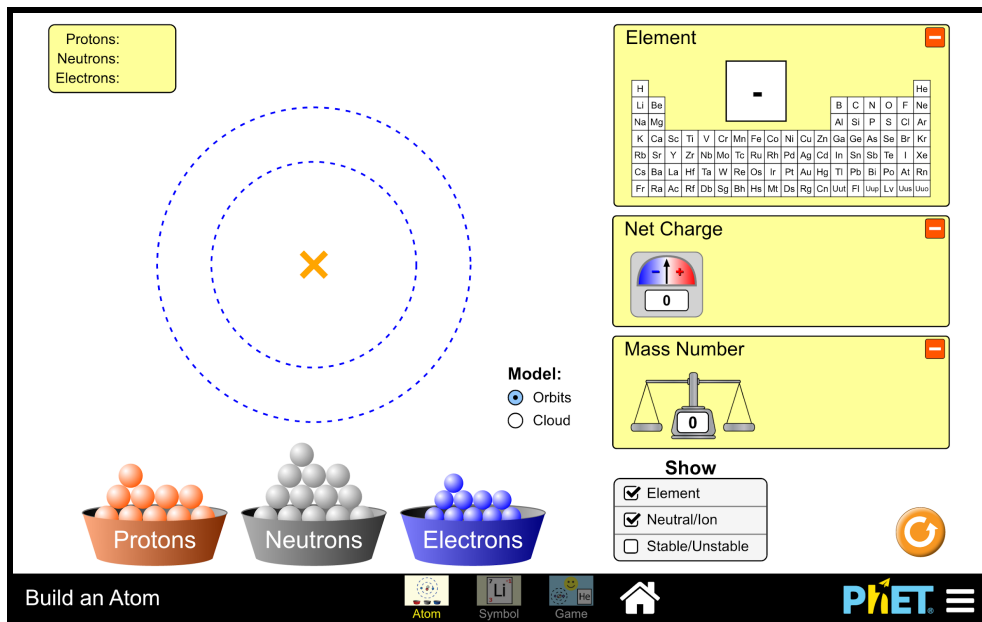


Name:
Date:
Lesson: 1.6

Build An Atom Discovery Activity

Procedure:

1. Log in to Google Classroom and Click the "BUILD AN ATOM" link in the 1.4 Materials.
2. Click on the Play Button (circle with a triangle in it) in the middle of the screen.
3. Make sure the "Atom" tab on the bottom is highlighted. You will be doing the game as part of your assessment at the end.
4. GETTING FAMILIAR WITH THE PROGRAM



1) BUILD YOUR FIRST ATOM

Clear everything using the Reset button. You will keep adding to this diagram until you get to section 2.

a) Drag ONE proton from the Proton bucket over to the X in the center of the atom.

Element Symbol?	Element Name?	Location?

b) Click the green + signs to the right of Net Charge, Mass Number and Symbol and record their values below.

Net charge? (+, -, or neutral)	Mass Number

What did you discover about the proton?

A proton has a mass of _____ atomic mass unit, a charge of _____ and goes in the _____ of the atom.

c) Keep the proton in the atom and drag ONE neutron to the center of the atom where your proton sits alone. Record the information that shows:

Element Symbol?	Mass Number	Net charge? (+, -, or neutral)

1. Did adding the neutron change the identity of the element? _____
2. Did adding the neutron change the charge of the element? _____

What did you discover about the neutron?

A neutron has a mass of _____ atomic mass unit, a charge of _____ and goes in the _____ of the atom.

d) Keep the proton and the neutron in the atom and drag ONE electron to the atom. You may have to do this a few times before it stays. Try dropping it in a few different places.

1. Where does the electron immediately go? _____
2. Record the information that shows up:

Element Symbol?	Mass Number	Net charge? (+, -, or neutral)

1. Did adding the electron change the identity of the element? _____
2. Did adding the electron change the charge of the element? _____

e) Drag A SECOND electron to the atom and let it go.

1. Where does the electron immediately go? _____
2. Record the information that shows up:

Element Symbol?	Mass Number	Net charge? (+, -, or neutral)

What did you discover about the electron?

An electron has a mass of _____ atomic mass unit, a charge of _____ and goes in the _____ of the atom.

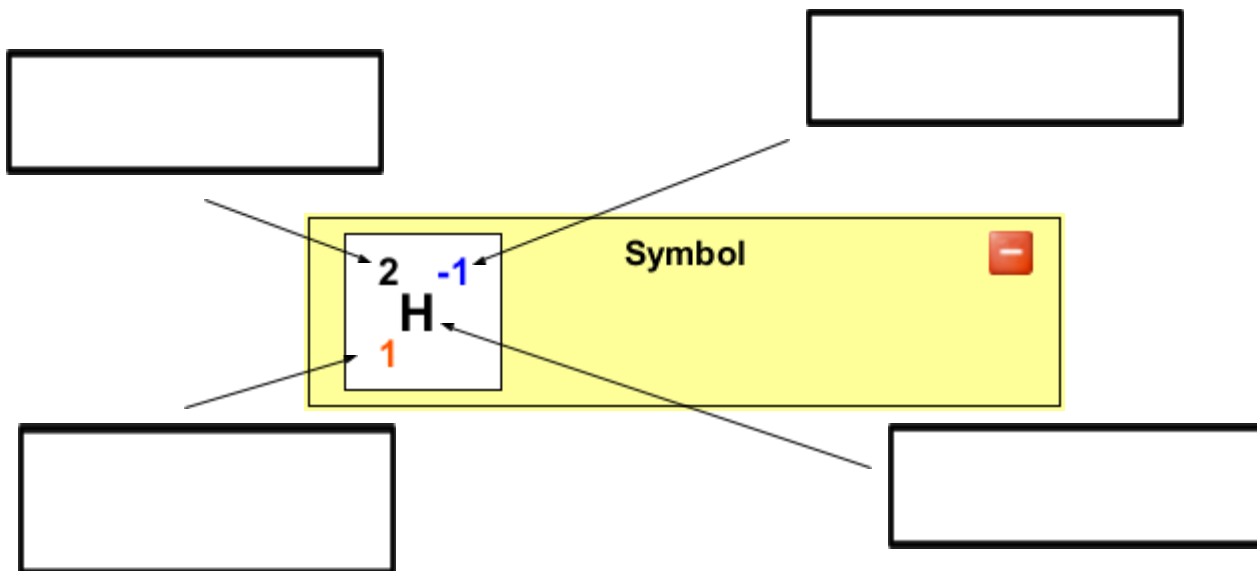
f) What has to be true of the number of electrons compared to protons in order for the atom to have no charge?

g) Drag a third electron to the atom and let it go.

1. Where does the electron immediately go? _____

2) What Does The Symbol Mean?

- Click the Symbol Tab on the bottom of the screen.
- Fill in the blanks and label the diagram below with what each part of the symbol means.
 - If you are unsure, change some of the subatomic particles to see what else changes with it.
- Give the vocabulary word and its definition in terms of subatomic particles.



3) Build More Elements – Using your bucket of protons, neutrons, and electrons, build the atoms shown below based on their symbol. Fill in the information about the number of protons, neutrons, and electrons for each. You can choose *not* to use the computer for this part if you would like.

You may want to use an actual periodic table to help you with the element names. There might also be more numbers on here that can help you figure out how many protons, neutrons, and electrons you will need. Here is a link to one that might be helpful.

<https://pubchem.ncbi.nlm.nih.gov/periodic-table/>

Symbol	Element Name	Protons	Neutrons	Electrons
${}^3_1\text{H}^0$				
${}^4_2\text{He}^0$				
${}^5_2\text{He}^0$				
${}^6_3\text{Li}^0$				
${}^6_3\text{Li}^{+1}$				
${}^8_3\text{Li}^0$				
${}^7_4\text{Be}^0$				
${}^9_4\text{Be}^0$				
${}^9_4\text{Be}^{+2}$				
${}^9_5\text{B}^0$				
${}^{10}_5\text{B}^0$				
${}^{10}_5\text{B}^{+3}$				
${}^{11}_5\text{B}^0$				

4) Build an Atom Challenge! Make the following atoms and fill in the information: Use the description as a clue to get started.

a) A NEUTRAL atom of OXYGEN with more neutrons than protons.

Symbol	Element Name	Protons	Neutrons	Electrons	Stable or Unstable?

b) A -3 charged ION of NITROGEN with more neutrons than protons.

Symbol	Element Name	Protons	Neutrons	Electrons	Stable or Unstable?

c) A +4 ION of CARBON with fewer neutrons than protons.

Symbol	Element Name	Protons	Neutrons	Electrons	Stable or Unstable?

d) A -1 ION of HYDROGEN with more neutrons than protons.

Symbol	Element Name	Protons	Neutrons	Electrons	Stable or Unstable?

e) A stable ion of Lithium with a charge of +1.

Symbol	Element Name	Protons	Neutrons	Electrons	Stable or Unstable?

5) Wrapping it up – use the information from the work you did as evidence to support your answers.

a) What does changing the number of protons do to the atom?

b) What does changing the number of neutrons do to the atom?

c) What does changing the number of electrons do to the atom?

d) Under what conditions can an atom be unstable?

6) The Game - Yes you have to do all four levels.

- a) Click the Game tab on the upper left corner of the window.
- b) Start at Level 1. **Timer On. Recommended Sound Off.**
- c) Click Start.
- d) Finish all the questions.
- e) Copy your score and time in the chart below.
- f) Move on to Level 2. Repeat the process.
- g) Continue until you have completed all four levels.



You will need to use your Periodic Table to do some of this.

Self Check

Level	1	2	3	4
Score				
Time				