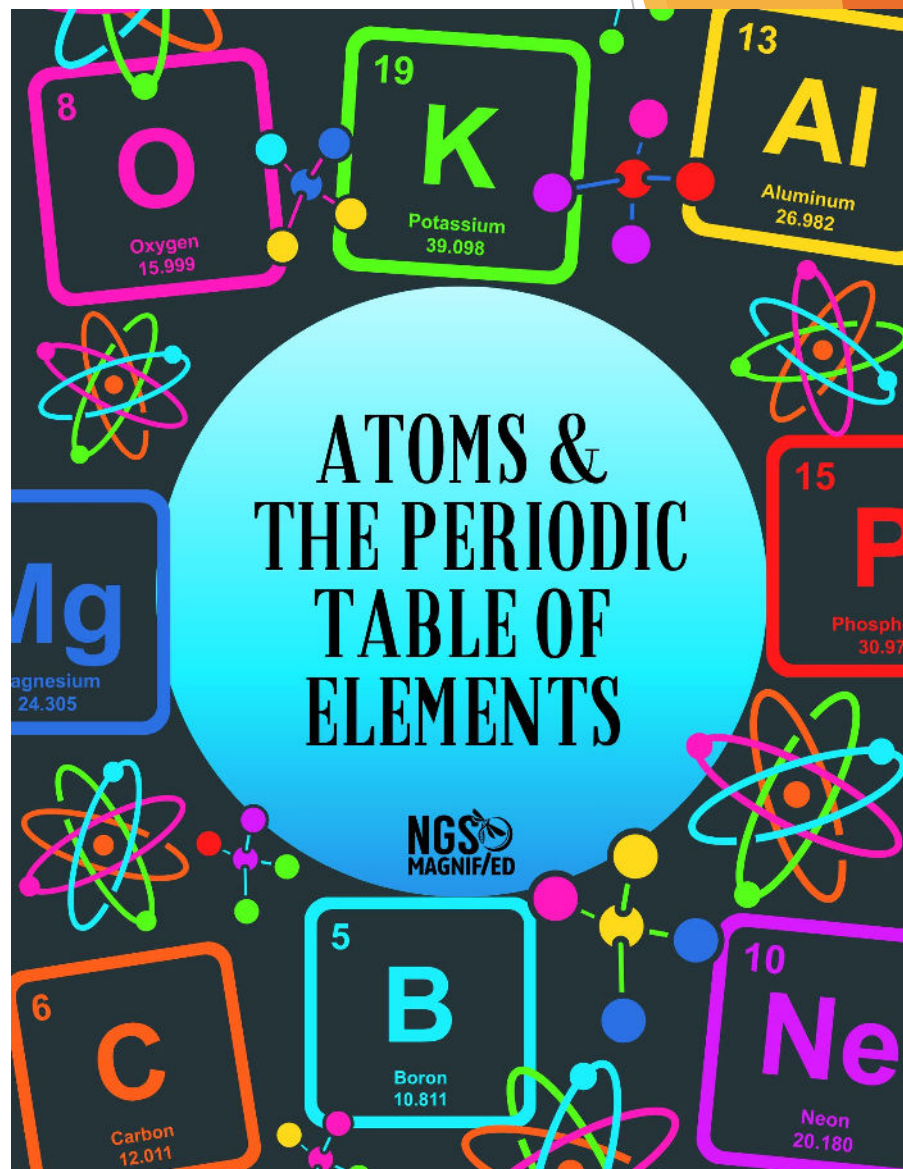


Atoms & The Periodic Table

Atoms & The Periodic Table Unit includes:

- Print and digital Interactive Notebooks
- Editable Resources, including notes, PowerPoints, and test
- Instructional Videos
- Teacher-led Demos & Guided Inquiry Labs
- Task Cards & Digital Task Cards
- Study Guides



Suggested Pacing Guide

The following is a **suggested pacing guide** for my COMPLETE COURSES (Earth, Life or Physical Science) which are based on 50-minute class periods. There are three variations below. Each variation is based on the **number of sections in your SCIENCE INTERACTIVE NOTEBOOK chapter**.

Based on a **4-Section Chapter**

Day	Lesson/Activity	Engage	Explain	Explore	Elaborate	Evaluate
1	• Teacher Demo	x				
	• Section 1 Notes – INB input		x			
	• INB Activity – INB output (homework if not completed in class)			x		
2	• Mini-quiz					x
	• Section 2 Notes – use PowerPoint		x			
	• INB Activity			x		
3	• Mini-quiz					x
	• Guided Inquiry Lab – Student Led			x		
	• Section 3 Notes – use PowerPoint		x			
4	• INB Activity			x		
	• Mini-quiz					x
	• Section 4 Notes – use PowerPoint		x			
5	• INB Activity			x		
	• Mini quiz					x
	• Science Stations				x	
6	• Science Stations				x	
	• Final draft and testing for Creation Station (STEM)				x	x
	• Task Card Review (game-style, full class, partner)				x	
7	• Chapter Test					x
	• Have students complete notes for next chapter*	x				

* **Note-taking option:** Once students are done with chapter test, they get the next set of notes and work quietly on completing them while other students finish up. All notes are to be completed when they return to class. Have students glue each page of notes into the next few pages of their INB (right side only). This way, when you go over the PowerPoint each day, they have already reviewed topic and are ready for class.

5 E Model

Engage – Teacher-led demos foster wonder and classroom discussion and serve as the hook for the lesson. Videos and images of natural phenomena also foster questioning and communication. NGSS phenomena are aligned to middle school NGSS standards.

Explain – PowerPoints, instructional videos, and guided notes (input side of interactive notebooks) provide definitions, explanations, and information through mini-lecture, text, internet, and other resources which encourages students to explain concepts and definitions in their own words.

Explore – Students investigate problems, events, or situations. As a result of their mental and physical involvement in these activities, students question events, observe patterns, identify and test variables, and communicate results.

Elaborate – It is important to involve students in further experiences that apply, extend, or elaborate the concepts, processes, or skill they are learning. Elaborate activities provide time for students to apply their understanding of concepts and skills. They might apply their understanding to similar phenomena or problems.

Evaluate – Use a variety of assessment to gather evidence of student's understanding and provide opportunities for them to assess their own progress.

Student Interactive Notebook

Each concept shares:

- Actual photos of both the INPUT and OUTPUT pages of Science Interactive Notebook
- Instructions on how to create/use/complete activity for OUTPUT side
- Mini-Quizzes for each concept to check students' understanding
- Answer Keys for all mini-quizzes
- Appendix with Teacher Notes for Interactive Notebook in LARGE print.

Section 1: Atomic Structure

Accordion Foldable

Step 1: Fold two papers in half horizontally and then vertically. You end up with four sheets of paper.

Atomic Model Timeline

Directions: Create a timeline to show the history of the atom. The model and idea of the atom's form with many contributions and significant philosophers and scientists. You will need to contribute and develop a timeline that includes the atom along with the model.

Teacher Resource - Atomic Model Timeline

Students will learn about the history of the atom. The model and idea of the atom's form with many contributions and significant philosophers and scientists. You will need to contribute and develop a timeline that includes the atom along with the model.

Teacher Resource - Atomic Model Timeline

Students will learn about the history of the atom. The model and idea of the atom's form with many contributions and significant philosophers and scientists. You will need to contribute and develop a timeline that includes the atom along with the model.

Section 2: Masses of Atoms

Directions: Using the information given on your Periodic Table of Elements, find the missing information for each element below. When finished, paste worksheet in your Interactive Notebook.

Atomic Number $\rightarrow$ 6
Symbol $\rightarrow$ C
Name $\rightarrow$ Carbon
Electron Configuration $\rightarrow$ 2,4

Bohr Model

Bohr Model

Bohr Model

Bohr Model

Instructions: Students will learn to use information from the Periodic Table of Elements to fill in missing information on the Element worksheet. This section includes the Element Properties printable along with two mini-quizzes. The reason for this is because I think both are vital for students to show Periodic Table comprehension.

Quiz: Atomic Structure

1. What particle is NOT located in the nucleus?
a. proton b. electron

2. The smallest piece of matter is a(n) _____.
a. compound b. electron

3. Protons have a _____ charge.
a. positive b. negative

4. Neutrons have a _____ charge.
a. positive b. negative

5. Electrons have a _____ charge.
a. positive b. negative

Quiz: Masses of Atoms

1. What particle is NOT located in the nucleus?
a. proton b. electron

2. The smallest piece of matter is a(n) _____.
a. compound b. electron

3. Protons have a _____ charge.
a. positive b. negative

4. Neutrons have a _____ charge.
a. positive b. negative

5. Electrons have a _____ charge.
a. positive b. negative

Quiz: Properties of Periodic Table

Name _____ Date _____

A $\rightarrow$ 6 B $\rightarrow$ 12
C $\rightarrow$ Carbon D $\rightarrow$ 24

A. _____ B. _____
C. _____ D. _____
E. _____

Quiz: Properties of Periodic Table

Name _____ Date _____

A $\rightarrow$ 6 B $\rightarrow$ 12
C $\rightarrow$ Carbon D $\rightarrow$ 24

A. _____ B. _____
C. _____ D. _____
E. _____

Quiz: Masses of Atoms

Name _____ Date _____

Element	Symbol	Atomic #	Protons	Neutrons	Electrons	Mass #
1. Potassium	K	19	19	20	19	39
2. Fluorine	F	9	9	10	9	19
3. Neon	Ne	10	10	10	10	20
4. Sodium	Na	11	11	12	11	23
5. Magnesium	Mg	12	12	12	12	24

Quiz: Masses of Atoms

Name _____ Date _____

Element	Symbol	Atomic #	Protons	Neutrons	Electrons	Mass #
1. Potassium	K	19	19	20	19	39
2. Fluorine	F	9	9	10	9	19
3. Neon	Ne	10	10	10	10	20
4. Sodium	Na	11	11	12	11	23
5. Magnesium	Mg	12	12	12	12	24

Student Digital Notebook

The student notebook is on Google Drive and ready for you to share with your students. Here's a quick overview of the features:

Set up like a traditional interactive notebook with input and output sides.

Hyperlinked tabs so student can easily move through chapter for review

Students watch video < 6 min to complete notes.

Directions: Organize candies by features and characteristics. Create a data table to help you organize the information you collected and use that information to construct a Periodic Table of Candy in your Notebook. Make sure groups (vertical columns) share similar characteristics. Groups do not need to have the same number of candy in each group.

Candy (from left to right): Gummy Bears, Peanut M&M's, Colossal, Sour Gummy Worms, Conversation Hearts, Candy Corns, Peanut Butter Cups, Gummi Squirrels, Gummi Bears, Regular M&M's, Skittles, Truffles, Caramels, Kisses, Shocks, Sour Patch Kids, LifeSaver, etc.

PERIODIC TABLE OF CANDY

THE PERIODIC TABLE

Periodic table -

In the late 1800's, _____ devised the first periodic table based on _____ however, some elements were out of order. In 1913, _____ arranged the elements by _____, and this is what we use today.

Groups -

Periods -

What do elements in the same group have in common?

Electron Dot Diagram -

He • • O • • Ne • • Ar • •

The Periodic Table

Digital Textbook

For further exploration, click button(s) below:

- Periodic Table History
- Mendeleev's periodic table

Encouraging independent learners. Directions for output side are here along with what they need to complete the activity.

Notes are chunked into manageable sections with large spaces for textboxes

Some pages have links so students can go deeper into the topic if they need.

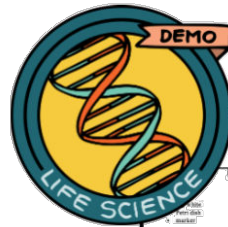
Demos, Labs, & Science Stations

Working in the lab and being engaged in science experiments is the most exciting part of science.

Demo, Labs, and Science Stations Includes:

1. **SCIENCE STATION SIGNAGE** for all 7 stations is provided in color and in black and white (see preview) and all student answer sheets have icons that correspond with each station for ease of use.
2. **DEMONSTRATION** (teacher-led) allows teachers to invite scientific discussions and can help uncover misconceptions and, most importantly, lead to heightened curiosity and interest in the topic being studied.
3. **GUIDED INQUIRY LAB** which is a traditional lab that allows students to perform an investigation in order to solve a problem. Students will hypothesize, collect and analyze data and communicate their results.
4. **TEACHER GUIDES to DEMOS & SCIENCE STATIONS** help get you started and give you background information to make your science lessons engaging.
5. **7 SCIENCE STATIONS** which are designated locations in the classroom with activities that challenge students to extend their knowledge and elaborate on their science skills by working independently of the teacher in small groups or pairs. Stations included are:
 - **INFORMATION STATION** – Group members will read an interesting and relevant science passage then complete a task to help increase science literacy and deepen their understanding of the science concept.
 - **OBSERVATION STATION** – Group members will have images, illustrations, or actual samples at this station that show applications or processes of the science topic. Using what they've learned, they will need to apply their observation skills to complete the questions attached to each.
 - **CALCULATION STATION** – Group members use their math skills to complete the station challenge. Skills may include graphing, analyzing data, using models, measurement, and calculating formulas or word problems.
 - **INVESTIGATION STATION** – Group members will work with one another to explore the concept through hands-on activities so they may practice specific inquiry process skills as they learn.
 - **COMMUNICATION STATION** – There are three different options for this station: interviews, video, group essay. Depending on the option you choose, group members will communicate what they know by answering questions in creative ways.
 - **CREATION STATION** – Group members will work together to solve a STEM (Science, Technology, Engineering, Math) challenge by creating models or designs that demonstrate their understanding of the science topic being taught.
 - **IMAGINATION STATION** – This station makes science concepts relevant for students by asking them to imagine scenarios that will bring about discussion and critical thinking.
6. **INQUIRY PROCESS SKILLS CHECKLIST** is provided with each set to show teachers and administrators the inquiry skills used by students in each activity. These skills include, but are not limited to, communicating, creating models, inferring, classifying, identifying variables, measuring, observing, predicting, gathering and organizing data, comparing and contrasting, interpreting data, and manipulating materials.

SCIENCE STATIONS



Eye Safety

SCIENCE SKILLS AND LAB SAFETY

Procedure:

- Place all eyes on the outside of the Post-It and display for class using the projector.
- Each group has a sign for the eye vision only of the form sign.
- Explain that the purpose is to show how eyes are similar to those found in the protective layer of the eye.
- Ask students to make observations of what is happening to the eye vision.
- Try adding water to cover the effects. Have students make observations.

What's Happening?

The purpose is to show how eyes are similar to those found in the protective layer of the eye. The purpose is to show how eyes are similar to those found in the protective layer of the eye. The purpose is to show how eyes are similar to those found in the protective layer of the eye.

Discussion:

- What happened to the eye?
- What type of safety equipment must be worn when doing lab?
- Do goggles cover the eyes, gloves?

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Discussion questions and teacher set-up included!

Teacher guide and answer key offered for every lab!

Easy-to-get materials!



Measure with SI Units

SCIENCE SKILLS AND LAB SAFETY

The standard system of measurement used by scientists around the world is known as the International System of Units, which is abbreviated as SI. It is very easy to use because they use the same system of measurement. The following table lists the prefixes used to name the base units of SI.

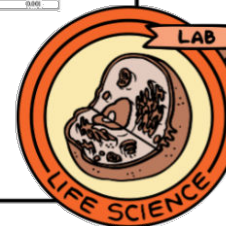
Prefix	Symbol	Amount
kilo-	k	1,000
hecto-	h	100
deka-	da	10
deci-	d	0.1
centi-	c	0.01
milli-	m	0.001

Materials:

- 1. graduated cylinder
- 2. tape
- 3. balance
- 4. weighing scale
- 5. graduated cylinder (small scale)
- 6. graduated cylinder (large scale)
- 7. metric ruler
- 8. small graduated cylinder
- 9. graduated cylinder

Lab

LIFE SCIENCE



Drip, Drop, Splat!

How does the density of a liquid and drop height affect the shape of droplet splatters?

Materials:

- colored water (graduated cylinder A)
- colored syrup (graduated cylinder B)
- eye dropper
- paper
- metric ruler
- meter stick

Procedure:

- Make a hypothesis of how density of a liquid will affect splatter size on your lab sheet.
- Place the piece of paper down on the lab table in order to catch splatters.
- Measure the heights listed in the data table using a meter stick. Place meter stick with end starting at zero on paper and move up stick when increasing height of drop.
- Use the eye dropper to drop ONE drop of colored water and ONE drop of colored syrup. Make sure to drop on different places on paper.
- Measure the size of the splatter in MILLIMETERS. Record in data table on answer sheet.
- Repeat for each height.
- Use the collected data to graph the splatter size versus drop height for each liquid.

Analyze and Conclude:

- Was your hypothesis correct? Explain.
- What are two controls in your experiment that helped you collect the most accurate data possible?

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USER-FRIENDLY PAGES:
Students easily recognize which answer sheet to use at each station by matching station icons located on each page!!

Name _____ Date _____

Hypothesis

Drop Height (cm)

Drop Height (cm)	Water	Syrup
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Height of Drop vs. Splatter Size

Height of Drop (cm)

Size of Splatter (mm)

Legend:

- Water
- Syrup

Analyze and Conclude:

-
-

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TEACHERS SAVE TIME:
Laminate station pages and reuse for each class and for years to follow!
Inquiry skills used are timeless!

Instructional Videos

Atoms and the Periodic Table Instructional Videos and Digital Assessments are designed to help teachers move instruction from the group learning space to the individual learning space. Not only does this give students independence in their learning, but it also allows more time for dynamic and interactive learning when teachers meet with students in a group setting.

This resource is perfect for:

- Flipped Classroom
- Absent students
- 1:1 Classrooms
- Sub Plans
- Hybrid Schedules
- Teachers who want more time to guide students as they apply concepts and engage creatively in the subject matter

Features of this resource include:

- Instructional videos which are six minutes or less to keep students focus
- Videos and assessments can be completed independently
- Auto grading and reporting in Google Forms
- Share link with students through educational platforms or email
- Quizzes are editable with 5 – 8 questions per quiz
- Information in video pairs with NGS Magnified Interactive Notebooks

Task Cards & Digital Task Cards

Task cards are a great tool for concept review that can be used in a variety of ways – pairs, small groups, team games, or individually. The reason they are so effective is there is only ONE task per card, allowing students to focus on that single task until they have successfully completed it. Answers sheet and answer key for teachers are included.

The digital, self-checking task cards are hosted at Boom Learning™ and are compatible with Google Classroom. These are perfect for displaying on your interactive whiteboard and leading class games or review sessions.

Print Task Cards

The print task cards are numbered 1 through 16 and feature a variety of question types:

- Card 1 (DECIDE):** Which of the following has negative electric charge?
a. proton
b. electron
c. neutron
d. nucleus
- Card 2 (DETERMINE):** What particles are found in the nucleus of an atom?
a. electrons and protons
b. electrons and neutrons
c. protons and neutrons
- Card 3 (DETERMINE):** Determine what elements are represented by the following symbols:
Fe
- Card 4 (DECIDE):** Each energy level of an atom has a maximum number of _____.
a. electrons
b. protons
c. neutrons
d. quarks
- Card 5 (LIST):** Horizontal rows of the periodic table are called _____.
a. groups
b. periods
c. families
d. clusters
- Card 6 (DECIDE):** The number of _____ identifies the element.
a. protons
b. electrons
c. neutrons
d. quarks
- Card 7 (CALCULATE):** If a carbon atom has 7 neutrons and 6 protons, what is the mass number?
a. 13
b. 12
c. 11
d. 10
- Card 8 (COMPLETE):** Atoms of the same element with different numbers of neutrons are called _____.
a. isotopes
b. ions
c. molecules
d. compounds
- Card 9 (CLASSIFY):** Classify the following elements as a metal, nonmetal or a metalloid:
Carbon, Boron, and Sodium

Digital Task Cards

The digital task cards are numbered 1 through 3 and feature interactive elements:

- Card 1:** ATOMS AND THE PERIODIC TABLE OF ELEMENTS. Elements are organized in the periodic table by increasing atomic _____.
a. mass
b. number
c. size
d. weight
- Card 2:** ATOMS AND THE PERIODIC TABLE OF ELEMENTS. The first periodic table based on atomic mass was devised by this man named _____.
a. Mendeleev
b. Bohr
c. Dalton
d. Rutherford
- Card 3:** ATOMS AND THE PERIODIC TABLE OF ELEMENTS. How many total electrons are in this water molecule?
a. 10
b. 11
c. 12
d. 13

Study Guides: Includes **print** or **digital** options

NGS Magnified Study Guides are directly aligned to the notes and assessments offered by NGS Magnified and include a variety of review strategies that meet the needs of your learners for independent study and indirect instruction.

Each study guide provides a combination of strategies which may include:

- Graphic organizers
- Vocabulary building
- Compare and contrast
- Problem-solving
- Concept mapping
- Interpreting data
- Critical thinking
- Theme connection
- Matching
- Fill-in-the-blank
- Short answer
- Real-world application
- QR videos with accompanying questions

ATOMS & PERIODIC

SECTION 1
Name: _____ Date: _____
Directions: Label electrons and name the atom.

SECTION 2
Directions: Match each term to its definition.
quick _____
atomic mass _____
atomic number _____
Composed mostly of protons and neutrons _____
Amount of difference _____
Weight _____

SECTION 3
Directions: Use the periodic table below to answer questions on this page and the next page.
Periodic Table of Elements

H	He																	Ne						
Li	Be	B	C	N	O	F	Ne																	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr							
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe							
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn							

SECTION 4
Directions: Answer the questions below about the periodic table.
1. What do elements in a same group have in common?
2. Does the atomic number increase or decrease as you move down the row on the periodic table?
3. What are the names of elements in Group 1?
4. What are the names of elements in Group 2?
5. What are the elements in Group 3-10?
6. What are the names of the elements in the Lanthanide and Actinide series?
7. What are the elements in Group 3-10?
8. What are the names of the elements in the Lanthanide and Actinide series?
9. The Lanthanide and Actinide series are a category of metals?
10. Where are the metalloids located?

SECTION 5
Directions: Fill in the blank with the correct word and then find it in the word search.

A	M	C	N
L	I	C	L
K	Y	R	W
A	F	G	K
L	I	Y	Z
I	X	K	D
M	S	Z	A
F	F	K	C
T	S	Q	S
A	A	B	I
L	G	I	A
S	L	Q	I
B	I	C	F
D	B	M	M
K	O	T	N
I	N	B	O
R	H	I	N
Y	D	S	W

1. _____ are gases.
2. _____ are metals.
3. The most reactive of all metals is _____.
4. _____ earth is the most common metal.
5. The most common metals are _____.
6. They are the most common metals and they are the most common metals.
7. _____ are the most common metals.

SECTION 6
Directions: Look at the elements listed below, determine where they fit on the periodic table, and write the answer on the line.

Alkali metal	Alkaline earth metal
Transition metal	Noble gas
Metalloid	

Sodium	
Magnesium	
Silicon	
Zinc	
Polonium	
Neon	
Cobalt	
Chromium	
Nickel	
Boron	
Argon	

Directions: Choose three of the elements above and give their abbreviation. Then choose one and draw its electron dot diagram.

Element	Abbreviation

Element	Electron Dot Diagram

Assessments:

Teachers can use a variety of assessments to evaluate student progress throughout the unit. The curriculum provides mini-quizzes for each Interactive Notebook chapter and an online assessments that goes with the instructional videos. The chapter test includes multiple choice, short answer, interpreting diagrams, and an essay.

Name _____
Date _____

Quiz: Masses of Atoms

Element	Symbol	Atomic #	Protons	Neutrons
1.	Hg	47	21	51
Potassium	K	19	4	20
5.	Fe	26	50	69
Fluorine	F	9	9	7
Krypton	Kr	36	36	48

Name _____ Date _____

Quiz: Masses of Atoms

element	symbol	Atomic #	Protons	Neutrons
1.	Hg	47	21	61
Potassium	K	19	4	20
5.	Fe	26	50	60
Fluorine	F	9	9	7
Krypton	Kr	36	36	48

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