Question #: 1

Which state of matter has a definite shape and definite volume?

A. solid  
B. liquid  
C. gas  
D. plasma
Question #: 2
Classify each image as an **element**, **compound**, or **mixture**.

![Image 1](Image)

1. 
2. 
3. 

1. __________
2. __________
3. __________

Question #: 3
Select the **true** statement.

A. The boiling point of a substance is a chemical property.
B. The chemical composition of a substance changes when undergoing a physical change.
C. The chemical composition of a substance doesn't change when undergoing a physical change.
D. Flammability is a physical property.
**Question #: 4**

Fill in the blanks using the correct metric prefix multiplier or exponent. You answer should be either a **one-letter abbreviation** for the missing prefix or a **whole number and sign (+/-)**.

1. \( __1 \) m = \( 10^3 \) m
2. \( 1 \) nm = \( 10^{2} \) nm
3. \( 1 \) \( __3 \) g = \( 10^{-2} \) g

1. __________  
2. __________  
3. __________

**Question #: 5**

Select the **correct** significant figure rule concerning zeros.

A. Leading zeros are always significant.  
B. Trailing zeros are always significant.  
C. Trailing zeros are always non-significant.  
D. Sandwich or captive zeros are always significant.

____________________________________________________________________________

**Question #: 6**

Determine the number of significant figures in the numbers below. Report your answers as **whole numbers**. Do **NOT** include units in your answer.

1. 0.04 has \( __1 \) significant figures.  
2. 0.007100 has \( __2 \) significant figures.  
3. 700 has \( __3 \) significant figures.

1. __________  
2. __________  
3. __________
Question #: 7

What answer should be reported, with the **correct number of significant figures**, for the following calculation?

\[ 3.14159 + 25.2 = \]

1.

Question #: 8

What answer should be reported, with the **correct number of significant figures**, for the following calculation?

\[ 2.35 \times 25 = \]

1.

Question #: 9

Convert the number below to proper scientific notation. **Use the format 2e2 or 2e-2 for your answer.**

92019 is \[ \_\_\_\_ \] in scientific notation.

Do not round your answer.

1.

Question #: 10

Convert the number below to standard notation. 

\[1.23 \times 10^{-4}\] is \_1\_ in standard notation.
Do not round your answer.

1. \_

Question #: 11

How many grams are in 187 pounds (lbs)?

A. 

\[4.10 \times 10^{-1}\] grams

B.

\[5.65 \times 10^{4}\] grams

C.

\[7.27 \times 10^{4}\] grams

D.

\[8.48 \times 10^{4}\] grams
**Question #**: 12

How many centimeters are in 86 miles?

A. \(6.0 \times 10^6\) centimeters
B. \(1.4 \times 10^7\) centimeters
C. \(3.3 \times 10^7\) centimeters
D. \(8.5 \times 10^7\) centimeters

**Question #**: 13

Convert 45 °C to °F.

A. 45 °F
B. 321 °F
C. 98 °F
D. 23 °F
E. 113 °F

**Question #**: 14

How many grams are contained in 750. mL of ethanol? The density of ethanol is 0.789 g/ml.

A. 955 g
B. 608 g
C. 592 g
D. 485 g
**Question #: 15**

Complete the table with the appropriate **element name** or **symbol**.

<table>
<thead>
<tr>
<th>Element</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>tungsten</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>C</td>
</tr>
<tr>
<td>boron</td>
<td>3</td>
</tr>
</tbody>
</table>

1. _________
2. _________
3. _________

**Question #: 16**

Complete the table by classifying each element as a **metal**, **non-metal**, or **metalloid**.

<table>
<thead>
<tr>
<th>Element</th>
<th>Metal, Non-metal, or Metalloid</th>
</tr>
</thead>
<tbody>
<tr>
<td>sodium</td>
<td>1</td>
</tr>
<tr>
<td>silicon</td>
<td>2</td>
</tr>
<tr>
<td>barium</td>
<td>3</td>
</tr>
</tbody>
</table>

1. _________
2. _________
3. _________
**Question #**: 17

Complete the table with the appropriate subatomic particle, charge, or location. For subatomic particles, use the full name of the particle. For charges, include any necessary signs (+/-) and a whole number.

<table>
<thead>
<tr>
<th>Subatomic Particle</th>
<th>Charge</th>
<th>Choose (Inside/Outside) the Nucleus</th>
</tr>
</thead>
<tbody>
<tr>
<td>proton</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-1</td>
<td>Outside</td>
</tr>
<tr>
<td>neutron</td>
<td>4</td>
<td>Inside</td>
</tr>
</tbody>
</table>

1. __________
2. __________
3. __________
4. __________

**Question #**: 18

What symbol represents a chromium atom with a mass number of 53?

A. \( ^{53}\text{Cr}^{24} \)
B. \( ^{53}\text{C}^{24} \)
C. \( ^{24}\text{Cr}^{53} \)
D. \( ^{24}\text{C}^{53} \)
E. \( ^{29}\text{Cr}^{24} \)
Question #: 19

Complete the sentence by using whole numbers. Do NOT include units in your answer. A neutral uranium-238 isotope has ___ protons, ___ neutrons, and ___ electrons.

1. _________
2. _________
3. _________

Question #: 20

Calculate the atomic mass of boron, given that naturally occurring boron consists of 19.9% boron-10 with an isotopic mass of 10.013 amu; and 80.1% boron-11 which has an isotopic mass of 11.009 amu. Report your answer with two decimal places. Do NOT include units in your answer. ___ amu

1. _________

Question #: 21

Label each region on the periodic table. Report each answer as ONE letter with a label from the figure provided for your answers.
Noble Gases
Alkaline earth metals
S-block elements

1. __________
2. __________
3. __________

Question #: 22
Which element is located in the 3d section of the periodic table?

A. K
B. Ti
C. Br
D. Y
E. B

Question #: 23
Identify the element with the electron configuration:
1s²2s²2p⁶3s²

A. Na
B. Mg
C. Li
D. Be
E. Ne
Question #: 24

Determine the electron configuration for phosphorus and fill in the missing values. Enter each answer as a whole number. Do NOT include units in your answer.

number of electrons in the $n = 1$ level is ___1___
number of electrons in the $n = 3$ level is ___2___

1. __________
2. __________

Question #: 25

Which Lewis-dot structure indicates the correct number of valence electrons for the element?

A.

B.

C.

D.
Question #: 26

Which element is the **smallest**?

A. Cl  
B. P  
C. F  
D. Si  
E. Ne
Question #: 1

Which state of matter has a definite shape and definite volume?

✓ A. solid
B. liquid
C. gas
D. plasma

Question #: 2

Classify each image as an element, compound, or mixture.

1. Mixture
2. Compound
3. Element

Question #: 3

Select the true statement.

A. The boiling point of a substance is a chemical property.
B. The chemical composition of a substance changes when undergoing a physical change.
✓C. The chemical composition of a substance doesn't change when undergoing a physical change.
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Question #: 4
Fill in the blanks using the correct metric prefix multiplier or exponent. You answer should be either a **one-letter abbreviation** for the missing prefix or a **whole number and sign (+-)**. 

1. \( \text{1 } \text{m} = 10^3 \text{ m} \)
2. \( \text{1 nm} = 10^{-2} \text{ nm} \)
3. \( \text{1 g} = 10^{-2} \text{ g} \)

   1. k
   2. \(-9|9-|
   3. c

**Question #: 5**

Select the **correct** significant figure rule concerning zeros.

- A. Leading zeros are always significant.
- B. Trailing zeros are always significant.
- C. Trailing zeros are always non-significant.
- **✓** D. Sandwich or captive zeros are always significant.

**Question #: 6**

Determine the number of significant figures in the numbers below. Report your answers as **whole numbers**. Do **NOT** include units in your answer.

1. \( \text{1.04 has } 1 \text{ significant figures.} \)
2. \( \text{0.007100 has } 2 \text{ significant figures.} \)
3. \( \text{700 has } 3 \text{ significant figures.} \)

   1. 3|three|
   2. 4|four|for|
   3. 1|one|

**Question #: 7**

What answer should be reported, with the **correct number of significant figures**, for the following calculation? 

\[ 3.14159 + 25.2 = \]
1. 28.3

Question #: 8

What answer should be reported, with the correct number of significant figures, for the following calculation?

\[ 2.35 \times 25 = \]

1. 59

Question #: 9

Convert the number below to proper scientific notation. Use the format 2e2 or 2e-2 for your answer.

92019 is __ in scientific notation.

Do not round your answer.

1. 9.2019e4

Question #: 10

Convert the number below to standard notation.

\[ 1.23 \times 10^{-4} \] is __ in standard notation.

Do not round your answer.

1. 0.000123 | 0.000123 |

Question #: 11
How many grams are in 187 pounds (lbs)?

A. 4.10e\(^{-1}\) grams

B. 5.65e\(^{4}\) grams

C. 7.27e\(^{4}\) grams

✓D. 8.48e\(^{4}\) grams

---

Question #: 12

How many centimeters are in 86 miles?

A. 6.0e\(^{6}\) centimeters

✓B. 1.4e\(^{7}\) centimeters

C. 3.3e\(^{7}\) centimeters

D. 8.5e\(^{7}\) centimeters

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Convert 45 °C to °F.
Question #: 14

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A. 955 g  
B. 608 g  
C. 592 g  
D. 485 g

✓ E. 592 g

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<td>C</td>
</tr>
<tr>
<td>boron</td>
<td>3</td>
</tr>
</tbody>
</table>

1. W  
2. carbon  
3. B

Question #: 16

Complete the table by classifying each element as a metal, non-metal, or metalloid.

<table>
<thead>
<tr>
<th>Element</th>
<th>Metal, Non-metal, or Metalloid</th>
</tr>
</thead>
<tbody>
<tr>
<td>sodium</td>
<td>1</td>
</tr>
</tbody>
</table>
1. metal
2. metalloid
3. metal

**Question #**: 17

Complete the table with the appropriate subatomic particle, charge, or location. For subatomic particles, use the full name of the particle. For charges, include any necessary signs (+/-) and a whole number.

<table>
<thead>
<tr>
<th>Subatomic Particle</th>
<th>Charge</th>
<th>Choose (Inside/Outside) the Nucleus</th>
</tr>
</thead>
<tbody>
<tr>
<td>proton</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>neutron</td>
<td>4</td>
<td>Inside</td>
</tr>
<tr>
<td>3</td>
<td>−1</td>
<td>Outside</td>
</tr>
</tbody>
</table>

1. +1[1+]
2. inside[inside]
3. electron
electron
4. zero[0]

**Question #**: 18

What symbol represents a chromium atom with a mass number of 53?

✓ A. $^{53}_{24}\text{Cr}$

B. $^{53}_{24}\text{C}$
Question #: 19

Complete the sentence by using **whole** numbers. Do **NOT** include units in your answer.
A neutral uranium-238 isotope has _1_ protons, _2_ neutrons, and _3_ electrons.

1. 92
2. 146
3. 92

Question #: 20

Calculate the atomic mass of boron, given that naturally occurring boron consists of 19.9% boron-10 with an isotopic mass of 10.013 amu; and 80.1% boron-11 which has an isotopic mass of 11.009 amu.
Report your answer with **two decimal** places. Do **NOT** include units in your answer.

1. 10.81

Question #: 21

Label each region on the periodic table. Report each answer as **ONE** letter with a label from the figure provided for your answers.
Noble Gases 1
Alkaline earth metals 2
S-block elements 3

1. M
2. B
3. U

Question #: 22

Which element is located in the 3d section of the periodic table?

A. K
✓ B. Ti
C. Br
D. Y
E. B

Question #: 23

Identify the element with the electron configuration:

1s²2s²2p⁶3s²
A. Na  
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C. Li  
D. Be  
E. Ne

**Question #: 24**

Determine the electron configuration for phosphorus and fill in the missing values. Enter each answer as a whole number. Do NOT include units in your answer.

number of electrons in the $n = 1$ level is $\text{1}$

number of electrons in the $n = 3$ level is $\text{2}$

1. 2\(\text{two}\)
2. 5\(\text{five}\)

**Question #: 25**

Which Lewis-dot structure indicates the correct number of valence electrons for the element?

A. 

B. 

C. 

✓D.
Question #: 26

Which element is the smallest?

A. Cl  
B. P  
C. F  
D. Si  
E. Ne