

Name: Key
 Period: _____

Properties of Matter Review

1. Density	<u>C</u>	A measure of how easily a solid can be scratched.
2. Brittleness	<u>E</u>	A measurement of how easily a solid can be pounded into thin sheets.
3. Hardness	<u>A</u>	A measurement of the "compactness" of a substance: ratio of mass to volume.
4. Elasticity	<u>D</u>	Measure of a solid's ability to return to its original shape after stretching.
5. Malleability	<u>B</u>	A measure of how easily a solid will shatter.

1. Tensile Strength	<u>C</u>	A. A unit of volume that equals 1 mL.
2. viscosity	<u>B</u>	B. Measure of a fluid's resistance to flow. (How thick a fluid is.)
3. cm ³	<u>A</u>	C. Measure of how hard it is to break something by pulling.
4. s. ÷	<u>E</u>	D. Unit of density.
5. g/mL	<u>D</u>	E. In a formula, what the horizontal line means: ex. the line in:

Which object is the less dense? A

Why? more volume

Object A	Object B

A rock climber wants a rope with great tensile strength

An airplane pilot wants a windshield that is hard

A child bends a toy. It stays bent because it wasn't very elastic

I step on a ball of aluminum foil. The aluminum flattens because it is very malleable

Which object is the less dense? B

Why? More Mass

Object A	Object B

In Alaska, cars need oil that is thinner and flows faster, so during the cold winter it doesn't become too viscous

Balsa wood is very light for its size, so it is not very dense

A 15 g object has a volume of 30 cm³. Find its density.

$d = m/v$
 $m = 15g$
 $v = 30cm^3$
 $= \frac{15g}{30cm^3} = 0.5 g/cm^3$

A 12 g object has a volume of 6 mL. Find its density.

$d = m/v$
 $m = 12g$
 $v = 6mL$
 $= \frac{12g}{6mL} = 2 g/mL$

A 35 mL object has a density of 2 g/mL. Find its mass.

$d = m/v$
 $m =$
 $v = 35mL$
 $= 2g/mL \cdot 35mL$ $m = 70g$

We give small children plastic dishes because ceramic dishes are too brittle and break too easily

A piece of wood floats because it has density or buoyancy

Water
V before
Volume
12 grams
14 mL
- 7 mL
7 mL

What is the volume of the object? 7 mL $m = 12g$

What is the object's density? $d = m/v$ $\frac{12g}{7mL} = 1.73 g/mL$

How do you measure the mass of a liquid? mass w/ liquid
with liquid - mass without mass of liquid

How do you measure the volume of a floating object?
push it down until completely covered

Which is more dense: liquid iron or solid iron?
 Which is more dense: gaseous CO₂ or liquid CO₂?
 Which is more dense: liquid water or solid water?

A 200 g object displaces 150 g of water. Float or sink? Float

A 300 g object displaces 350 g of water. Float or sink? Float

A 250 g object displaces 300 g of water. How much cargo can it hold?
50g

Which liquid is which? A, B, or C?

D = 1.00 g/mL = Liquid B
 D = 0.75 g/mL = Liquid C
 D = 1.83 g/mL = Liquid A

Label the liquid you know.

Draw where ice will be in the column.

In the column, where would a cube of density 0.89 be?



- Isotope D A. An average of all the isotopes; the mass of average atom.
- Atomic mass E B. An atom with an equal number of electrons and protons.
- Atomic # F C. An atom with more or less electrons than protons.
- Neutral atom B D. A variation of an element with a different number of neutrons.
- Ion C E. Total number of protons and neutrons in the nucleus.
- Mass # A F. Number of protons; determines the element.

How many valence electrons?

Helium (He)	<u>2</u>	Lithium (Li)	<u>1</u>
Calcium (Ca)	<u>2</u>	Aluminum (Al)	<u>3</u>
Sulfur (S)	<u>6</u>	Nitrogen (N)	<u>5</u>

Calcium and Mg have the same reactivity.
 Oxygen and Sulfur have the same reactivity.
 Helium and Neon have the same reactivity.

Metal or Non-metal?

<u>M</u> Titanium (Ti)	<u>N</u> Neon (Ne)
<u>M</u> Sodium (Na)	<u>N</u> Hydrogen (H)
<u>N</u> Chlorine (Cl)	<u>M</u> Nickel (Ni)

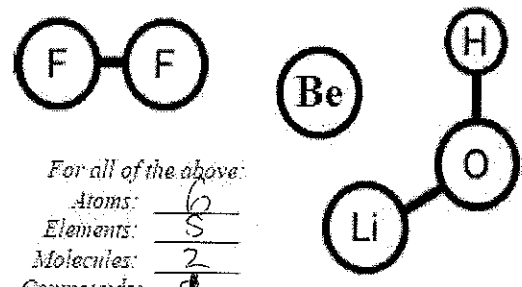
- Bohr C A. Discovered that atoms have a nucleus.
- Dalton E B. Realized that there was a smallest part of matter.
- Democritus B C. Discovered that electrons are in distinct orbits.
- Rutherford A D. Discovered the electron.
- Thompson D E. Theorized that atoms cannot be changed chemically.

8 protons and 10 electrons. Neutral atom or ion?
 16 protons and 18 electrons. Neutral atom or ion?
 20 protons and 20 electrons. Neutral atom or ion?

Give the element abbreviation and charge.
 16 protons and 18 electrons: Element: S Charge: -2
 35 protons and 36 electrons: Element: Br Charge: -1
 Nitrogen with 10 electrons. Charge: -3

A 35 N object feels like 30 N when lowered into a liquid. How much buoyant force does the liquid give? 5 N

If put into a more viscous liquid, the object would feel even lighter.



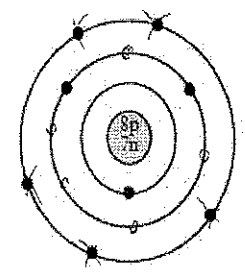
For all of the above:

Atoms: 6
 Elements: 5
 Molecules: 2
 Compounds: 1

"Atoms are solid." Respond and give reasons for your response.
No, atoms are mostly made of open air.

What is wrong with this picture of an atom?

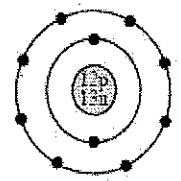
Fill in inner shell 1st



Are these different elements?
 Element A: 17 protons; 18 electrons; 16 neutrons.
 Element B: 18 protons; 18 electrons; 18 neutrons.
 Why? yes different # protons

Are these different isotopes of one another?
 Element A: 12 protons; 11 electrons; 13 neutrons.
 Element B: 12 protons; 12 electrons; 14 neutrons.
 Why? yes diff # of neutrons

Are these different isotopes of one another?
 Element A: 18 protons; 18 electrons; 18 neutrons.
 Element B: 19 protons; 18 electrons; 19 neutrons.
 Why? No different elements



Element: Mg
 # of neutrons: 13
 Mass #: 25
 # of electrons: 10
 # of valence electrons: 8
 It is an ion? Yes

Calcium (Ca) is in row 4. Calcium has 3 complete electron levels and 2 valence electrons in level 4.

Sulfur (S) is in row 3. Argon has 3 complete electron levels and 8 valence electrons in level 3.