

Directions: These assignments are designed to challenge your memories with problems from the “past” that are not allowed to be forgotten. You can use your notes or the BASICS, but please don’t just copy. These will be graded, but if you copy yourself to a 10/10, will you really know it, will you really be challenging yourself, will you really be learning? What’s the point? Learning is fundamental to being in high school. Above all else, don’t be evil.

Name the compounds from their formulas, or write the formulas from the names. If you need a Roman numeral, use one. If you need a prefix, use it. We want perfection, a little wrong is still wrong.

MgS	Magnesium sulfide	PCl <sub>5</sub>	Phosphorous pentachloride
CaBr <sub>2</sub>	Calcium bromide	BF <sub>3</sub>	Boron trifluoride
Ti <sub>2</sub> O <sub>3</sub>	Titanium (III) oxide	(NH <sub>4</sub> ) <sub>3</sub> P	Ammonium phosphide
Rb <sub>2</sub> O	Rubidium oxide	Be <sub>3</sub> N <sub>2</sub>	Beryllium nitride
B <sub>2</sub> S <sub>3</sub>	Diboron trisulfide	NaOH	Sodium hydroxide
CS <sub>2</sub>	Carbon disulfide	SrS <sub>2</sub> O <sub>3</sub>	Strontium thiosulfate
FCl	Fluorine monochloride	Al(ClO <sub>3</sub> ) <sub>3</sub>	Aluminum chlorate
InP	Indium phosphide	Hg <sub>2</sub> SO <sub>3</sub>	Mercury (II) sulfate
Ni(NO <sub>3</sub> ) <sub>2</sub>	Nickel (II) nitrate	AsI <sub>5</sub>	Arsenic pentaiodide
Ni(NO <sub>3</sub> ) <sub>3</sub>	Nickel (III) nitrate	CCl <sub>4</sub>	Carbon tetrachloride
TiO <sub>2</sub>	Titanium (IV) oxide	Mn(CN) <sub>4</sub>	Manganese (IV) cyanide
NaHCO <sub>3</sub>	Sodium hydrogen carbonate	FeO	Iron (II) oxide
KClO <sub>4</sub>	Potassium perchlorate	FeBr <sub>3</sub>	Iron (III) bromide
Al <sub>2</sub> (Cr <sub>2</sub> O <sub>7</sub> ) <sub>3</sub>	Aluminum dichromate	PCl <sub>3</sub>	Phosphorous trichloride

Calculate the molar mass of aluminum oxide, then calculate the percent composition by mass of aluminum in aluminum oxide. Finally, if you have 264 grams of aluminum oxide, how many grams are just aluminum, how many grams are just oxygen



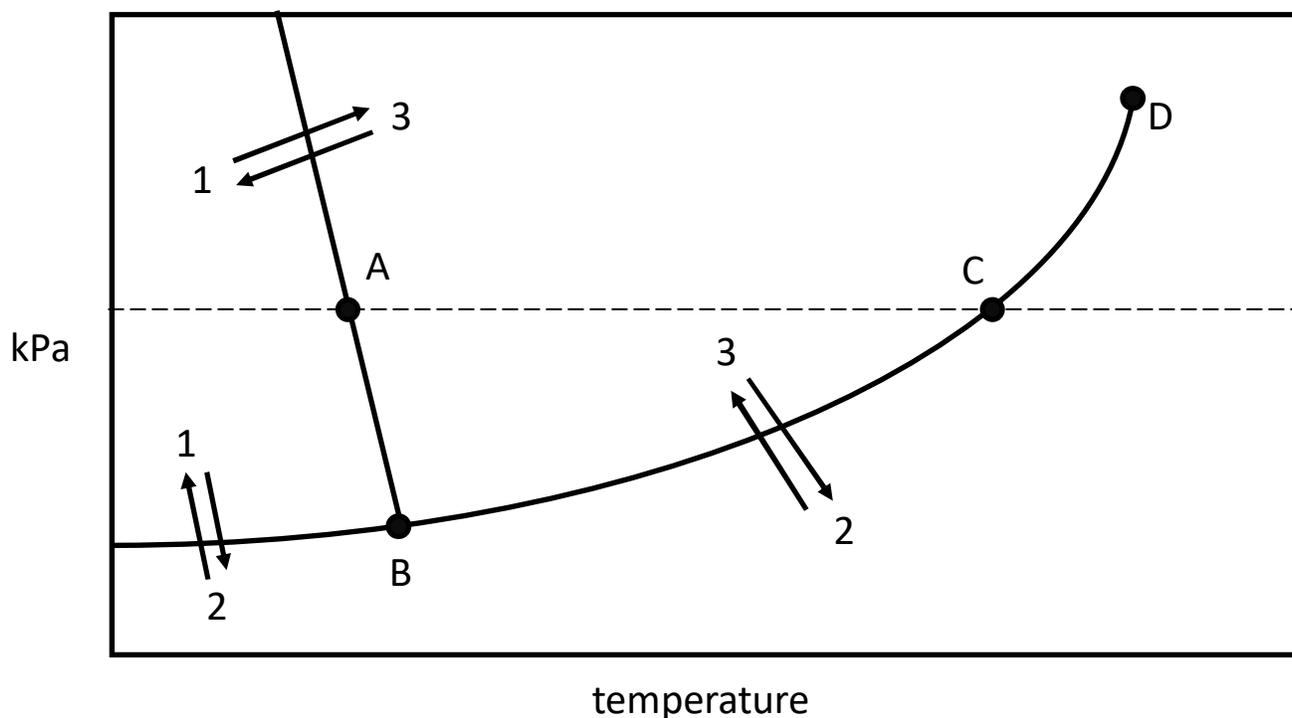
Al  $2 \times 27 = 54 \text{ g}$   
 O  $3 \times 16 = 48 \text{ g}$   
 total  $102 \text{ g/mole}$

**% Comp**

Al  $54 \text{ g} / 102 \text{ g} \times 100\% = 53\%$   
 O  $48 \text{ g} / 102 \text{ g} \times 100\% = 47\%$

264 grams of aluminum oxide  $\times .53 = 140$  grams is aluminum  
 264 grams of aluminum oxide  $\times .47 = 124$  grams is oxygen  
**>264 grams total**

Using the phase diagram for water below to answer the questions that follow.



Name the phase changes that occur when water moves from:

1→2	sublimation	2→1	deposition	3→2	vaporization
2→3	condensation	1→3	melting	3→1	freezing

Name point A— NORMAL FREEZING POINT

B— TRIPLE POINT,

C— NORMAL BOILING POINT

D—CRITICAL POINT

What is the temperature + pressure at point A? 273 K/ 101.3 kPa Point C? 373 K / 101.3 kPa