Do Now

- Mass your final samples and begin your calculations.
- We will begin the review in 10 minutes.

Review

- Grab a whiteboard.
- Write number of the problems that you would like to see solved the most.
- Have your notebook and calculator ready.

Numbers

- Mine: 2, 5, 10, 11, 17, 19, 20, 23, 24, 27, 33, 36, 37, 39, 40, 44, 45
- Yours:

Answer Sheets

- Please fill out the answer sheet that you will use for the final tomorrow.
- Make sure that your student ID number is bubbled in correctly.
- I can look it up if you don't know it.

Liquid mercury has a density of 13.6 g/cm^3. An object with a mass of 9.83 g is placed in the mercury. The object will sink if it has a volume of less than: (1 point)

- 0.723 cm^3
- 1.38 cm^3
- 7.48 cm^3
- 134 cm^3

Thallium has two isotopes, thallium-203 and thallium-205. Thallium's atomic number is 81 and its atomic mass is 204.38 amu. Which statement about the thallium isotopes is true? (1 point)

- ○ There is more thallium-203 in nature.
- ○ Atoms of both isotopes have 81 protons.
- ○ Thallium-205 atoms have fewer neutrons.
- ○ The most common atom of thallium has a mass of 204.38 amu.

[Ne] $3s^2 3p^3$ is the electron configuration of a(n) atom of: (1 point)

- B
- N
- P
- Cl

10

The energy of a photon of light is _____ proportional to its frequency and _____ proportional to its wavelength. (1 point)

- directly, directly
- inversely, inversely
- inversely, directly
- directly, inversely
- indirectly, not

Identify **ALL** correctly written name/formula pairs. (1 point)

- [ ] Copper(I) nitrate, $Cu(NO_3)_2$
- [ ] Barium hydroxide, $Ba(OH)_2$
- [ ] Sulfur dichloride, SCl_2
- [ ] Lead oxide, PbO
- [ ] Dichlorine heptoxide, Cl_2O_7

17

Select **ALL** the polar molecules. Use Lewis structures to make your determination. (1 point)

- [ ] Br_2
- [ ] NH_3
- [ ] CCl_4
- [ ] CH_3Cl

19

Use the "Like Dissolves Like" principle to identify **ALL** of the following compounds that will dissolve in water. (1 point)

- [ ] Br_2
- [ ] NH_3
- [ ] CCl_4
- [ ] CH_3Cl

20

What is the empirical formula for a compound that is 36.1% Ca and 63.9% Cl? (1 point)

- CaCl
- Ca_2Cl
- $CaCl_2$
- Ca_2Cl_2
- Not enough information is provided

A compound contains 40.0% C, 6.71% H, and 53.29% O by mass. The molecular weight of the compound is 60.05 amu. The molecular formula of this compound is _____. (1 point)

- $C_2H_4O_2$
- CH_2O
- $C_2H_3O_4$
- $C_2H_2O_4$

What are the spectator ions in the neutralization (double replacement) reaction between KOH (aq) and HNO_3 (aq)? (1 point)

- K^+ and H^+
- H^+ and OH^-
- K^+ and NO_3^-
- H^+ and NO_3^-

27

A 36.4 L volume of methane gas is heated from 25°C to 88°C at constant pressure. What is the final volume of the gas? (1 point)

- 128.1 L
- 30.0 L
- 44.1 L
- 80.5 L

An aqueous ethanol solution (400 mL) was diluted to 4.00 L, giving a concentration of 0.0400 M. The concentration of the original solution was _____ M. (1 point)

- 0.400
- 0.200
- 4.00
- 2.00

36

How many milliliters of 1.50M HNO_3 contain enough nitric acid to dissolve an old copper penny with a mass of 3.94 g?

$3Cu + 8HNO_3 \rightarrow 3Cu(NO_3)_2 + 2NO + 4H_2O$

(1 point)

- 1.10×10^{2} mL
- 1.10×10^{-4} mL
- 1.55×10^{1} mL
- 1.55×10^{-5} mL

A 17.5 mL sample of an acetic acid ($HC_2H_3O_2$) solution required 29.6 mL of 0.250 M NaOH for neutralization during a titration. The concentration of acetic acid was _____ M. (1 point)

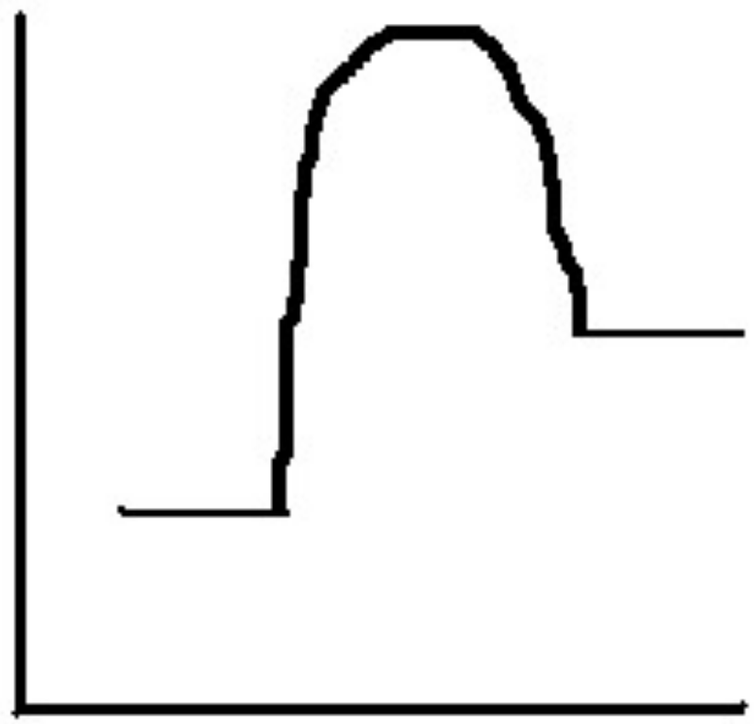
- 0.15
- 0.42
- 6.8
- 0.21

39

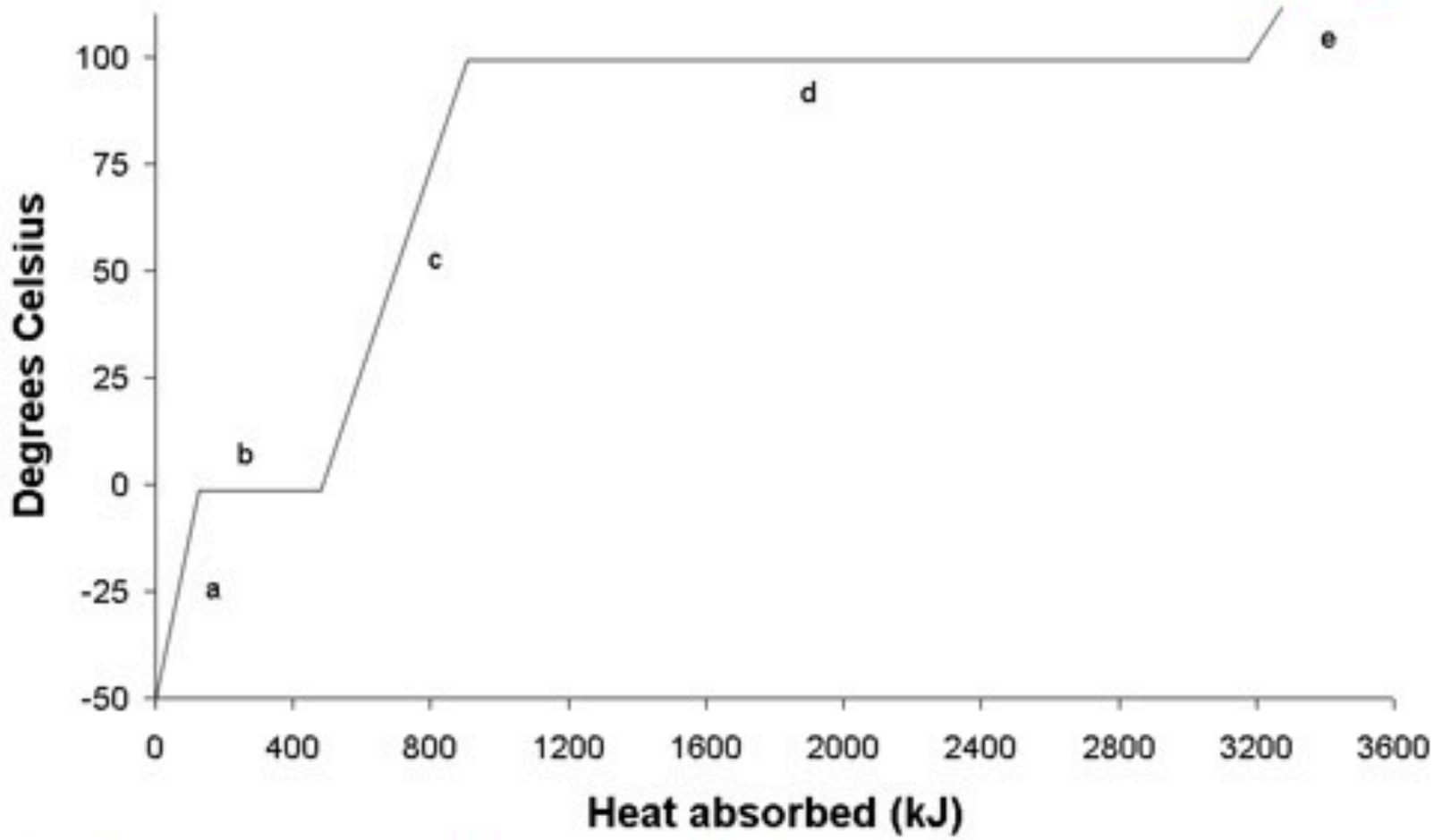
Which of the following would require the largest volume of 0.100 M sodium hydroxide solution for neutralization? (1 point)

- 10.0 mL of 0.0500 M H_3PO_4
- 20.0 mL of 0.0500 M HNO_3
- 5.0 mL of 0.0100 M H_2SO_4
- 15.0 mL of 0.0500 M HBr

Examine the enthalpy diagram below. Select **ALL** of the true statements. (1 point)

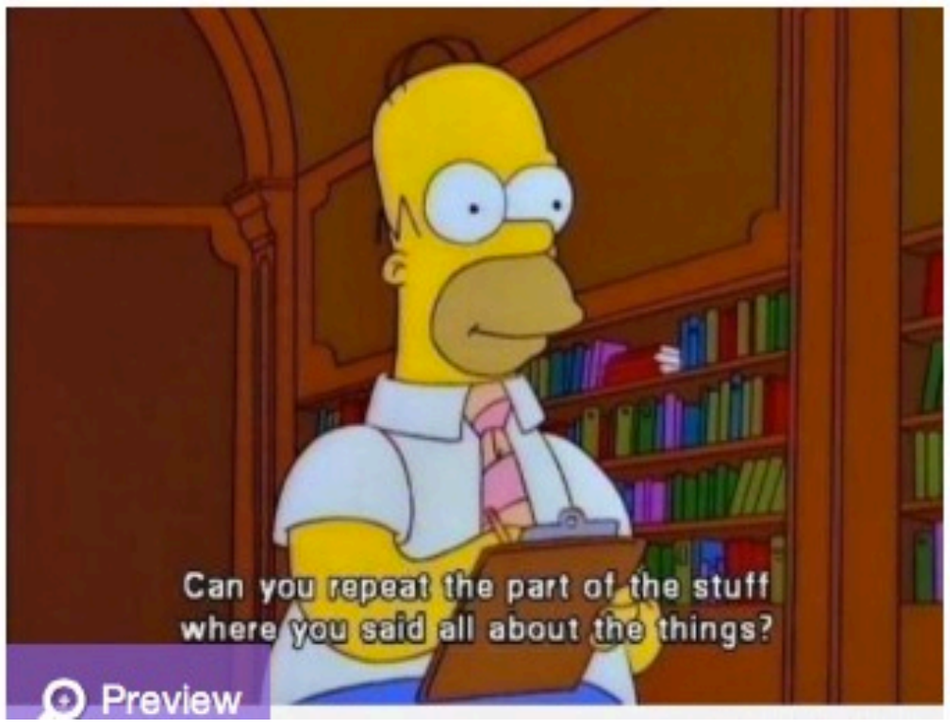


- [ ] Energy is released during the reaction.
- [ ] The reaction is endothermic.
- [ ] Adding a catalyst would decrease the energy difference between the reactants and products.



- [ ] A phase change is occuring in region "a"
- [ ] The energy added in region "d" is the molar heat of vaporization.
- [ ] Temperature is constant in region "b"

45



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