KEY

REAL LIFE VIDEO GAS LAWS!

Watch what happens to the volume (and or pressure) inside a soda can when the **temperature** is INCREASED.

goo.gl/Vd0UZD

Watch what happens to the volume of the balloon when we REDUCE the **pressure** inside the bell jar.

goo.gl/NzQ42y

Watch what happens to the temperature inside the tube when **pressure** is rapidly INCREASED,

goo.gl/0TTAw4

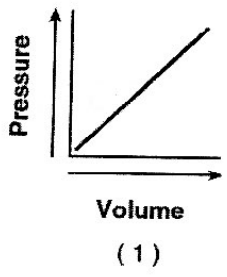
15 A sample of a gas is contained in a closed rigid cylinder. According to kinetic molecular theory, what occurs when the gas inside the cylinder is heated?

(1) The number of gas molecules increases.
(2) The number of collisions between gas molecules per unit time decreases.
(3) The average velocity of the gas molecules increases.
(4) The volume of the gas decreases.

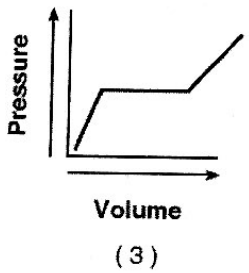
20 A sample of gas is held at constant pressure. Increasing the kelvin temperature of this gas sample causes the average kinetic energy of its molecules to

(1) decrease and the volume of the gas sample to decrease
(2) decrease and the volume of the gas sample to increase
(3) increase and the volume of the gas sample to decrease
(4) increase and the volume of the gas sample to increase

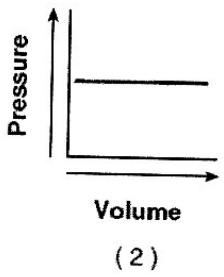
44 Which graph represents the relationship between pressure and volume for a sample of an ideal gas at constant temperature?



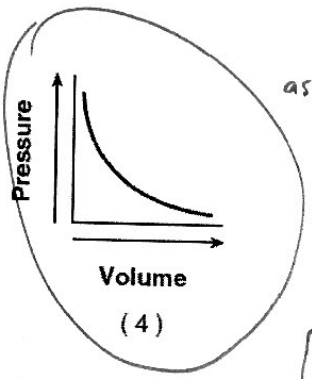
(1)



(3)



(2)



(4)

as P ↑, V ↓ and vice versa

[P T V]

43 Which temperature change would cause a sample of an ideal gas to double in volume while the pressure is held constant?

(1) from 400. K to 200. K
(2) from 200. K to 400. K
(3) from 400.°C to 200.°C
(4) from 200.°C to 400.°C

double the T (in Kelvin!)

24 Which unit is used to express the pressure of a gas?

(1) mole
(2) joule
(3) kelvin
(4) pascal

↖ see Table A

KEY

Watch the SHORT video, then try the questions & check the key.

goo.gl/XrTw0

Base your answers to questions 51 and 52 on the electron configuration table shown below.

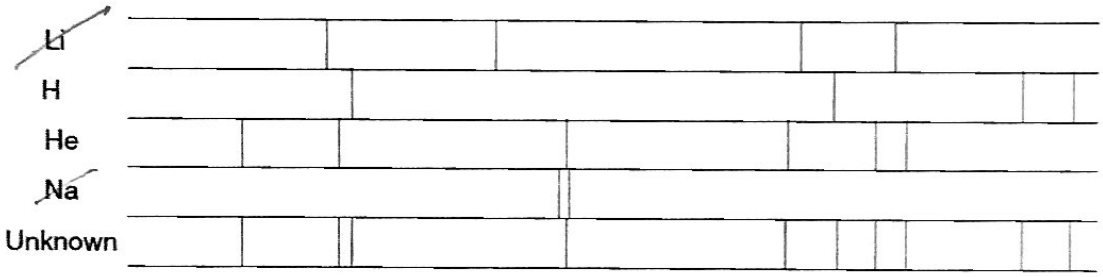
Element	Electron Configuration
X	2–8–8–2
Y	2–8–7–3
Z	2–8–8

51 What is the total number of valence electrons in an atom of electron configuration *X*? [1] 2

52 Which electron configuration represents the excited state of a calcium atom? [1] Y

Base your answers to questions 63 and 64 on the diagram below, which shows bright-line spectra of selected elements.

Bright-Line Spectra



63 Identify the *two* elements in the unknown spectrum. [2] H + He

64 Explain how a bright-line spectrum is produced, in terms of *excited state*, *energy transitions*, and *ground state*. [2] an e⁻ absorbs nrg and jumps up to a higher nrg level (it's now in the excited state). Then it falls back to the ground state and releases light nrg (that's the b.l. spectrum). Jumping up + falling back are nrg transitions

is the ground state

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1 As an electron in an atom moves from the ground state to the excited state, the electron

(1) gains energy as it moves to a higher energy level
(2) gains energy as it moves to a lower energy level
(3) loses energy as it moves to a higher energy level
(4) loses energy as it moves to a lower energy level

31 Which electron configuration represents the electrons in an atom of chlorine in an excited state?

(1) 2-7-7
(2) 2-7-8
(3) 2-8-7
(4) 2-8-8