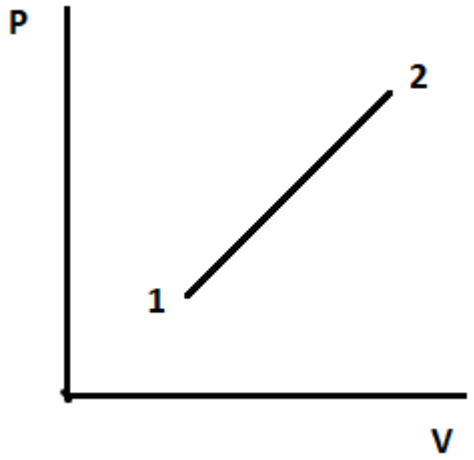
ILLUSTRATION

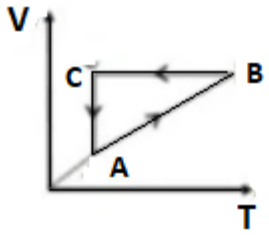
A pressure P-volume V diagram was obtained when a given mass of gas was heated. During the heating process from the state 1 to state 2 the Absolute Temperature of gas-

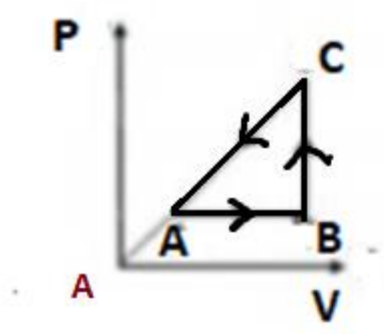
A. Remains Constant
B. Decreases
C. Increases
D. Changed Erratically

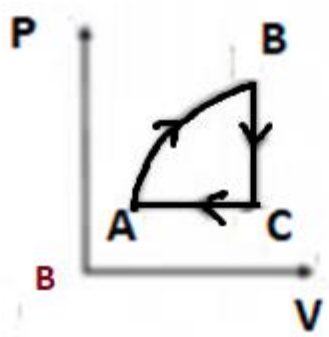


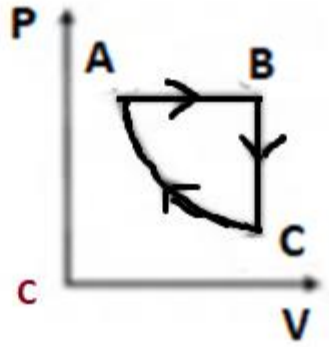
ILLUSTRATION

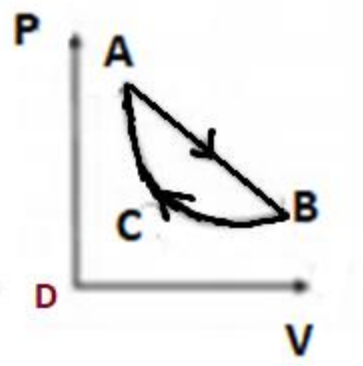
A cyclic process ABCA is shown in the V-T diagram. Process on the P-V diagram is-





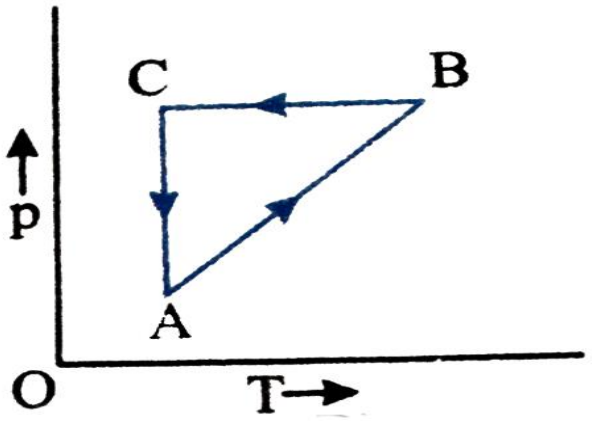




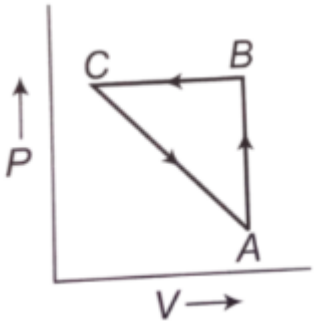


ILLUSTRATION

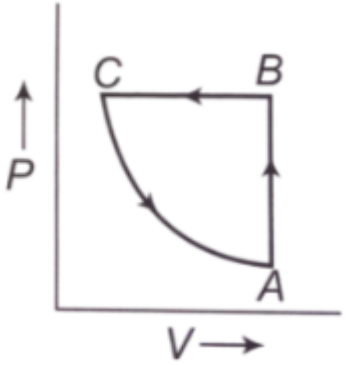
A cyclic process is shown on the P-T diagram. Which of the curves show the same process on a P-V diagram?



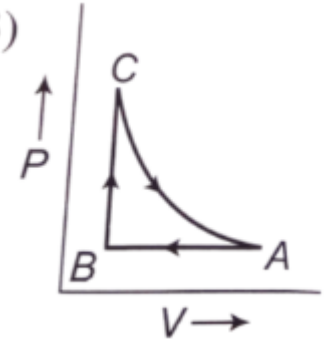
(1)



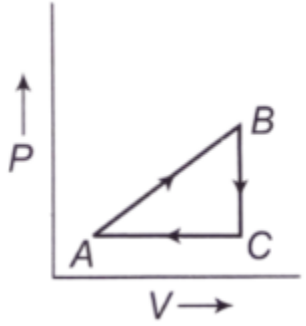
(2)



(3)



(4)



ILLUSTRATION

Statement – 1: For the thermal equilibrium of two bodies, they must be in contact.
Statement – 2: Two bodies in contact can be in thermal equilibrium.
Read the two statements carefully to mark the correct option out of the options given below:

A Both the statements are true and the statement - 2 is correct explanation of statement - 1.
B. Both the statements are true and the statement - 2 is not correct explanation of statement - 1.
C. Statement - 1 true but statement - 2 is false.
D. Statement - 1 false but statement - 2 is true.

ILLUSTRATION

What is the increase in internal energy of 1 moles of an ideal monoatomic gas whose temperature is increased from 300 K to 400 K. Take R = 8.32 J / mol-K

A. 416 J

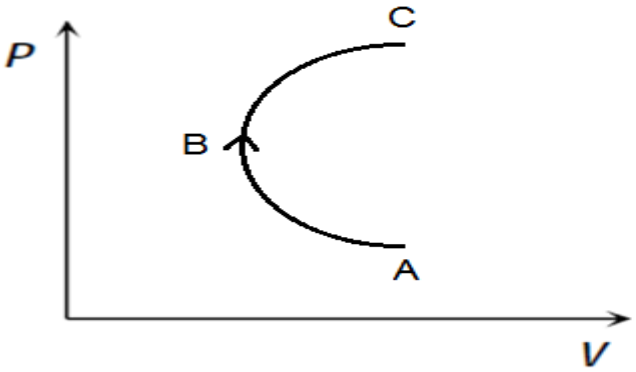
B. 832 J

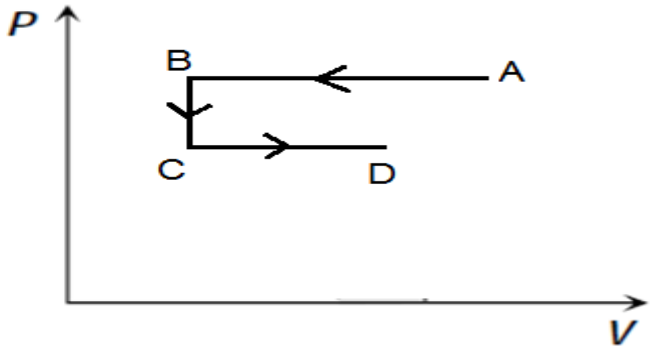
C. 1248 J

D. 2080 J

ILLUSTRATION

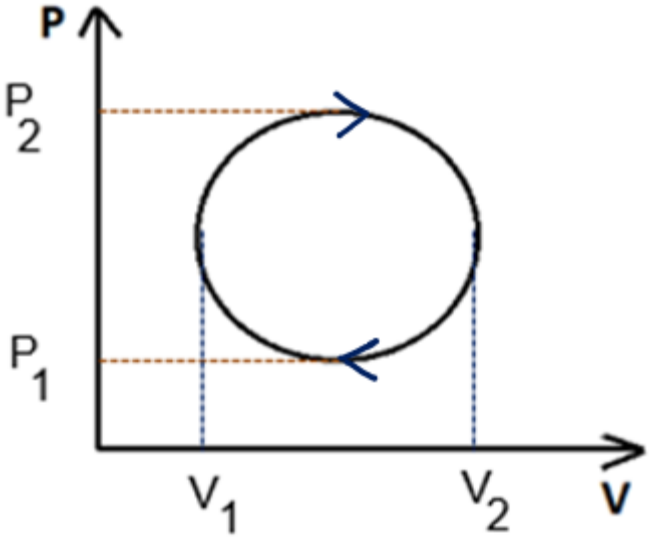
Shade the part of the graph which represents the net work done





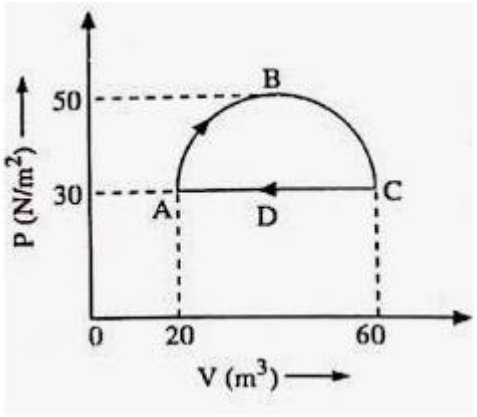
ILLUSTRATION

Find Work Done in Typical Cyclic Processes.



ILLUSTRATION

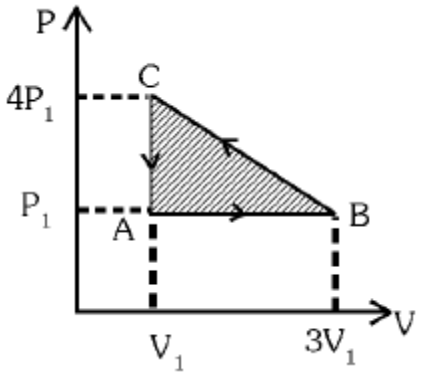
A gas undergoes a cyclic process ABCDA as shown in figure. The part ABC of process is semicircular. The work done by the gas is -



A. 400 πJ B. 2456 J C. 200 π J D. 1826 J

ILLUSTRATION

Find out work for cyclic process



AN

ILLUSTRATION

A thermos bottle contains coffee. The thermos bottle is vigorously shaken. Consider the coffee as the system.

(a) Does its temperature rise?

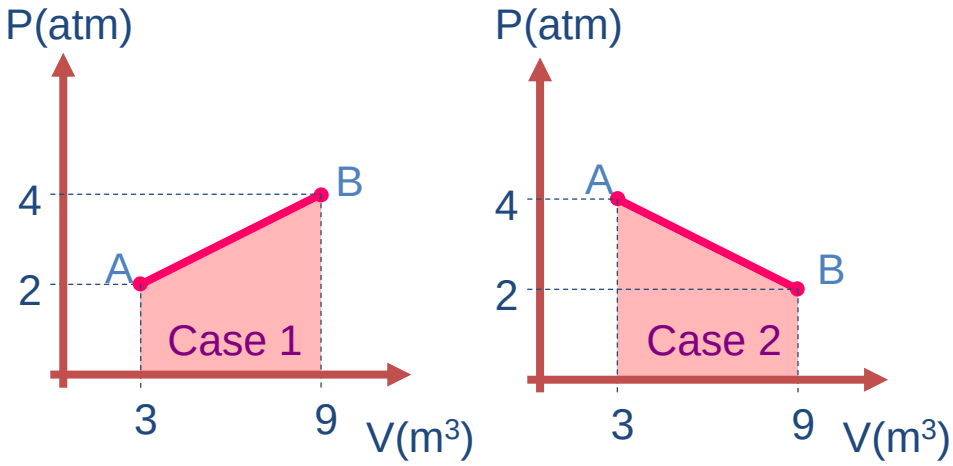
(b) Has heat been added to it?

(C) Has work been done on it?

(D) Has its internal energy changed?

ILLUSTRATION

Shown in the picture below are the pressure versus volume graphs for two thermal processes, in each case moving a system from state A to state B along the straight line shown.



(i) In which case is the work done by the system the biggest? A) Case 1 B) Case 2 C) Same

(ii) In which case is the change in internal energy of the system the biggest? A) Case 1 B) Case 2 C) Same

(iii) In which case is the heat added to the system the biggest? A) Case 1 B) Case 2 C) Same

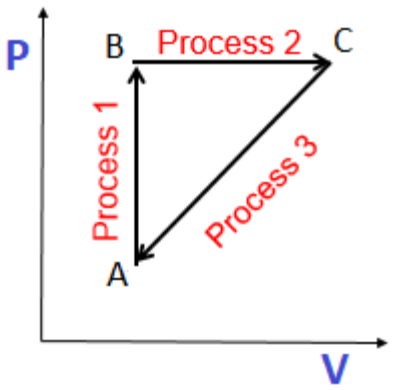
ILLUSTRATION

If ΔU and ΔW represent the increase in internal energy and work done by the system respectively in a thermodynamically process, which of the following is true?

(a) $\Delta U = -\Delta W$, in an adiabatic process
(b) $\Delta U = \Delta W$, in an isothermal process
(c) $\Delta U = \Delta W$, in an adiabatic process
(d) $\Delta U = -\Delta W$, in an isothermal process

ILLUSTRATION

A gas goes through the cycle shown in the *pV* diagram below.



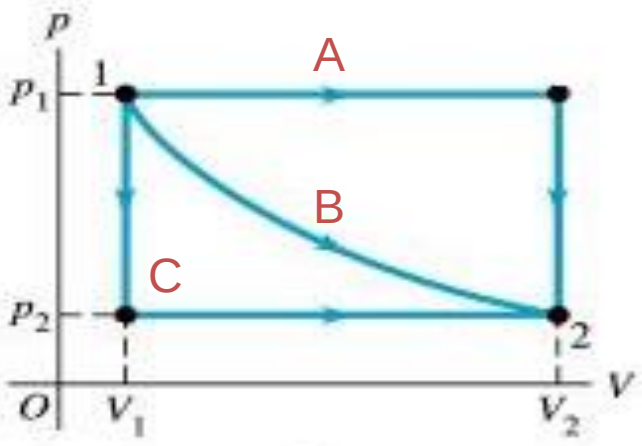
Data: $V_A = 2.0\ m^3$ $P_A = 1.0 \times 10^5\ Pa$
$V_C = 4.0\ m^3$ $P_C = 2.0 \times 10^5\ Pa$

(a) Determine the work done by the gas in each of the three parts of the cycle.

b) For the entire cycle, what are the work done by the gas, the change in internal energy of the gas and the heat exchanged with the surroundings? Is this heat absorbed or released by the gas?

ILLUSTRATION

A gas can go from state 1 to state 2 through three different processes. In which case does the internal energy of the gas change the most ?



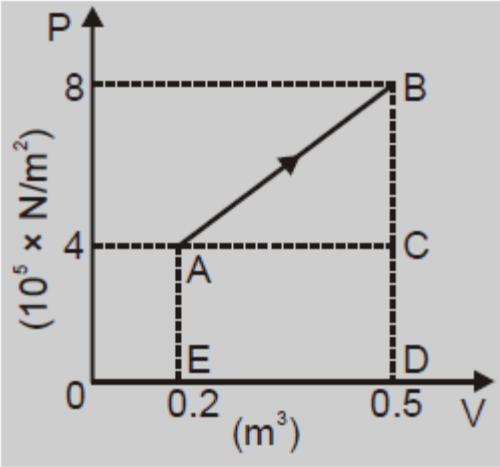
ILLUSTRATION

The pressure in monoatomic gas increases linearly from 4×10^5 Nm^{-2} to 8×10^5 Nm^{-2}, when its volume increases from 0.2 m^3 to 0.5 m^3. Calculate.

(i) Work done by the gas, (ii) Increase in the internal energy,

(iii) Amount of heat supplied, (iv) Molar heat capacity of the gas

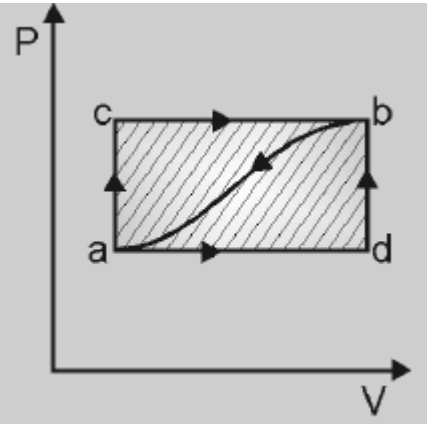
$R = 8.31$ J mol^{-1} K^{-1}.



AN

ILLUSTRATION

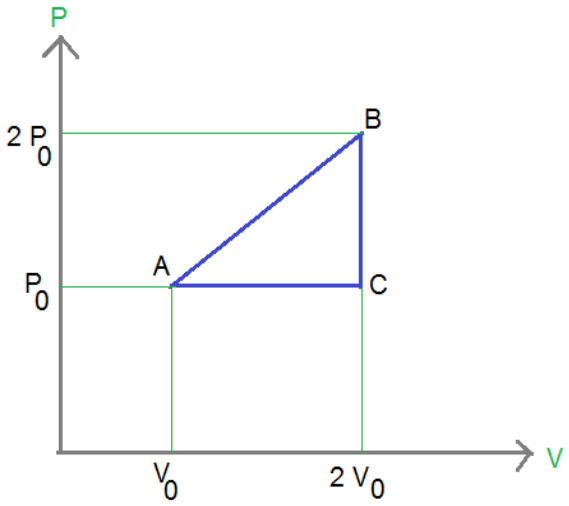
When a system is taken from state a to state b, in fig. along the path a → c →b, 60 J of heat flow into the system, and 30 J of work are done :
(i) How much heat flows into the system along the path a → d → b, if the work is 10 J. (ii) When the system is returned from b to a along the curved path, the work done by the system is –20 J. Does the system absorb or liberate heat, and how much? (iii) If, $U_a = 0$ and $U_d = 22$ J, find the heat absorbed in the process a → d and d → b.



AN

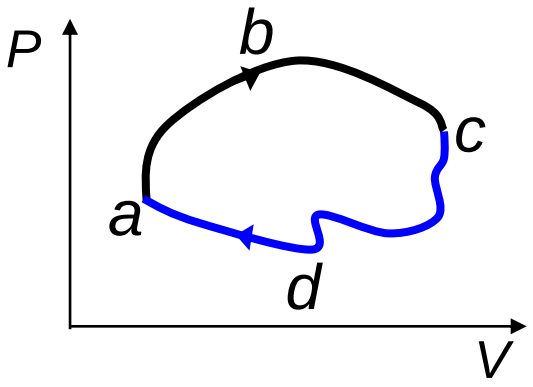
ILLUSTRATION

1 mole of monatomic gas is taken from a point A to another point B along the path ACB. The initial temperature at A is T_0. calculate the heat absorbed by the gas in the process A $\rightarrow$ C $\rightarrow$ B.(in terms of R and T_0)



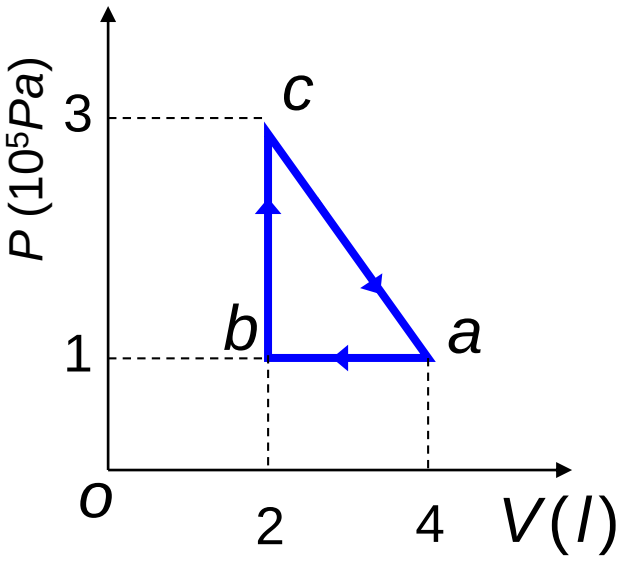
ILLUSTRATION

In process a → b → c, 800 J heat flow into the system, and 500 J work done by system. In process c → d → a, 300 J work done to system, What's the heat In process c → d → a?



ILLUSTRATION

An monatomic (1-atom) gas system goes through processes ab, bc, ca. Determine Q, W and ΔU in each process.



	ΔW,	ΔU	ΔQ
A → B;	--------,	--------,	--------
B → C;	--------,	--------,	--------
C → A;	--------,	--------,	--------

ILLUSTRATION

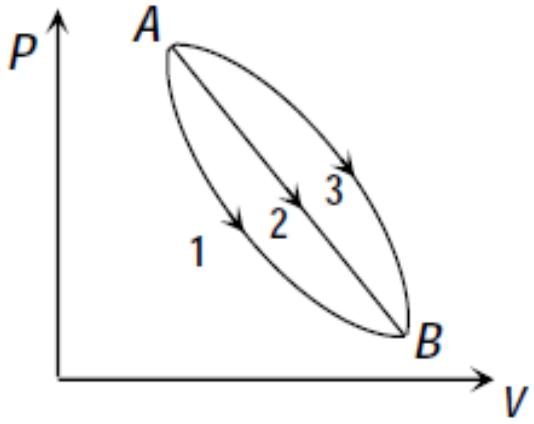
1 kg of water at 373 K is converted into steam at same temperature. Volume of 1 cm^3 of water becomes 1671 cm^3 on boiling. What is the change in the internal energy of the system, if the latent heat of vaporisation of water is 5.4×10^5 cal kg^{-1}?

AN

ILLUSTRATION

An ideal gas of mass m in a state A goes to another state B via three different processes as shown in figure. If Q_1,Q_2 and Q_3 denote the heat absorbed by the gas along the three paths, then

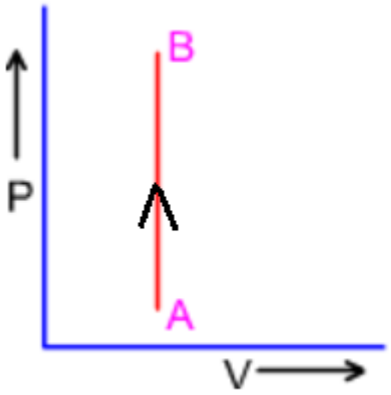
(a) Q1 < Q2 < Q3
(b) Q1 < Q2 = Q3
(c) Q1 = Q2 > Q3
(d) Q1 > Q2 > Q3



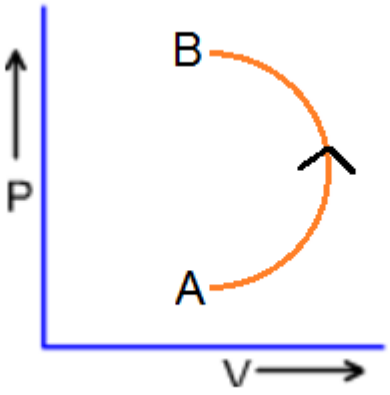
MC 212

ILLUSTRATION

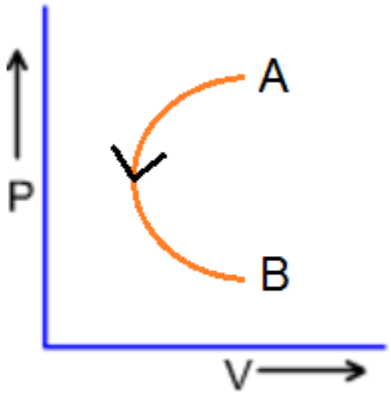
I D for isochoric and non isochoric process



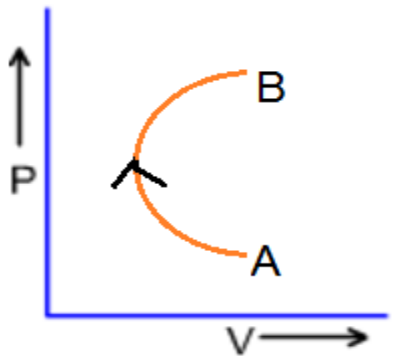
Isochoric / Non Isochoric



Isochoric / Non Isochoric



Isochoric / Non Isochoric



Isochoric / Non Isochoric

ΔV = / ≠ 0	ΔV = / ≠ 0	ΔV = / ≠ 0	ΔV = / ≠ 0
dV = / ≠ 0	dV = / ≠ 0	dV = / ≠ 0	dV = / ≠ 0
W = / ≠ 0	W = / ≠ 0	W = / ≠ 0	W = / ≠ 0

ILLUSTRATION

An ideal gas has a specific heat at constant pressure Cp = 5 R / 2.The gas is kept in a closed vessel of volume 0.0083 m^3 at a temperature of 300 K and a pressure of 1.6×10^6 Nm^{-2}. An amount of 2.49×10^4 J of heat energy is supplied to the gas. Calculate the final temperature and pressure of the gas.

AN

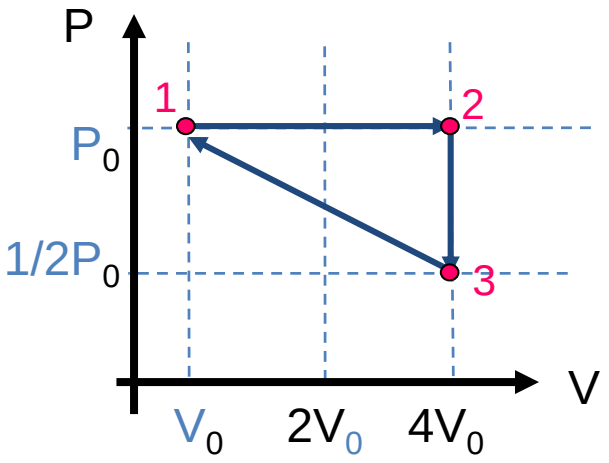
ILLUSTRATION

5 moles of oxygen is heated at constant volume from 10°C to 20°C. What will be change in the internal energy of the gas in calorie? The gram molecular specific heat of oxygen at constant pressure is C_P = 8 cal / mole and R = 8.36 joule/mole °C.

AN

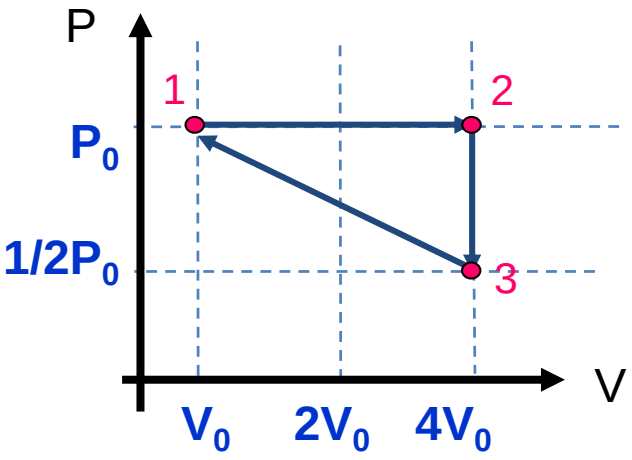
ILLUSTRATION

One mole of monatomic ideal gas is enclosed under a frictionless piston. A series of processes occur, and finally the state of this ideal gas returns to its initial state (see PV diagram). Answer the following questions in terms of P_0, V_0, and R.
(a) Determine the temperature at each vertex. (b) Determine the change in internal energy (ΔU) for each process (1→2, 2→3, 3→1). (c) Determine the work done by the gas for each process.(1→2, 2→3, 3→1). (d) Find heat transfer for each process.(1→2, 2→3, 3→1).



ILLUSTRATION

For each process in this cycle, indicate in the table below whether the quantities W, Q, and Δ U are positive (+), negative (-), or zero (0). W is the work done by the gas.



Process	W	Q	ΔU
1 -> 2			
2 -> 3			
3 -> 1			

ILLUSTRATION

2 moles of monatomic ideal gas is taken from state 1 to state 2 at constant volume V = 2 m^3, where T_1 = 120 K and T_2 = 180 K. Find P_1,P_2 & Q. Given R = 8.31 $J \cdot K^{-1} \cdot mol^{-1}$