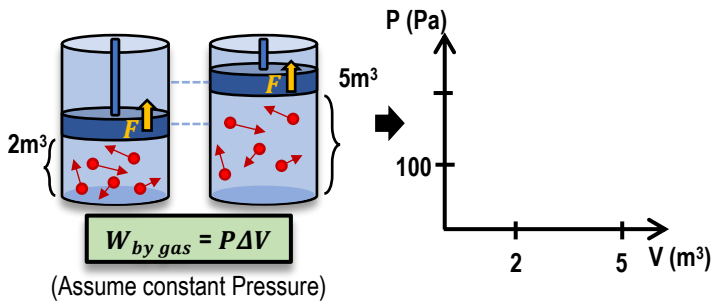


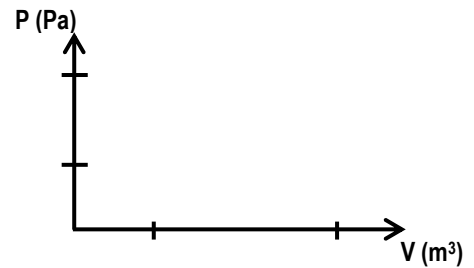
CONCEPT: INTRO TO PV DIAGRAMS & WORK

- PV Diagrams plot **P** _____ vs. **V** _____ .
 - They graph thermodynamic processes, which is when any system/gas _____ between states.
- Work done in any thermodynamic process = _____ under the PV curve
- Unlike other diagrams which *only* went left-to-right, thermodynamic processes can go in *any* direction on PV diagrams.
 - If the “path” of the process goes from left-to-right, $W_{BY} = \text{Area} = [+ | -]$
 - If the “path” of the process goes from right-to-left, $W_{BY} = \text{Area} = [+ | -]$

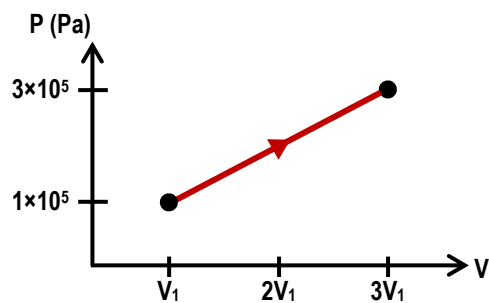
EXAMPLE: A gas expands from a volume of 2m^3 to 5m^3 at a constant pressure of 100 Pa . **a)** Draw this process on the PV diagram. **b)** Calculate the work done by the gas. **c)** Calculate the area under the “path” of the process.



EXAMPLE: A gas compresses from 5m^3 to 2m^3 while the pressure rises steadily from 100 to 220 Pa . Draw the process on the PV diagram and calculate the work done BY the gas.



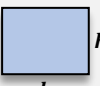
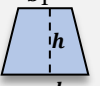
PROBLEM: The work done by the gas in the process shown below is 2×10^5 J. What is the value V_1 indicated on the axis?



THERMO EQs & CONSTANTS

$$W_{BY} = P \Delta V$$

$$R = 8.314 \frac{\text{J}}{\text{mol} \cdot \text{K}}$$

Rectangle	Triangle	Trapezoid
		
$A = b \cdot h$	$A = \frac{1}{2} b \cdot h$	$A = \frac{1}{2} (b_1 + b_2) \cdot h$