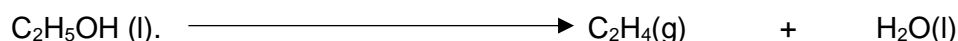


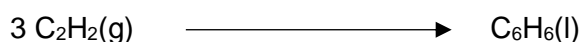
Calculations related to Enthalpy- Class worksheet.- 2025

1. Standard enthalpy of formation of $C_6H_6(l) = + 49 \text{ kJ mol}^{-1}$, Standard enthalpy of formation of $CO_2(g) = -393 \text{ kJ mol}^{-1}$, Standard enthalpy of formation of $H_2O(l) = -286 \text{ kJ mol}^{-1}$, Calculate the Standard enthalpy of combustion of $C_6H_6(l)$
2. Standard enthalpy of formation of $C_2H_5OH(l)$, $CO_2(g)$ and $H_2O(l)$ are -227 , -393 , -286 kJ mol^{-1} respectively. Calculate the Standard enthalpy of combustion of $C_2H_5OH(l)$
3. Standard enthalpy of formation of $C_2H_2(g)$, $CO_2(g)$ and $H_2O(l)$ are $+226$, -393 , -286 kJ mol^{-1} respectively. Calculate the Standard enthalpy of combustion of $C_2H_2(g)$.
4. Standard enthalpy of formation of $CH_3CHO(l)$, $CO_2(g)$ and $H_2O(l)$ are -166 , -393 , -286 kJ mol^{-1} respectively. Calculate the Standard enthalpy of combustion of $CH_3CHO(l)$.
5. Standard enthalpy of combustion of $C(s, gr)$, $S(s, Rh)$ and $CS_2(l)$ are -393 , -297 , $-1200 \text{ kJ mol}^{-1}$ respectively. Calculate the Standard enthalpy of formation of $CS_2(l)$.
6. Standard enthalpy of formation of $C_2H_5OH(l)$, $C_2H_4(g)$ and $H_2O(l)$ are -277 , -52 , -286 kJ mol^{-1} respectively. Calculate the Standard enthalpy following reaction.



Drawing enthalpy cycles

7. Standard enthalpy of combustion of $C_2H_6(g)$, $C(s, gr)$ and $H_2(g)$ are -1560 , -393 , -286 kJ mol^{-1} respectively. Calculate the Standard enthalpy of combustion of $C_2H_6(g)$ using an enthalpy cycle.
8. Standard enthalpy of formation of $CO_2(g)$, $H_2O(l)$ and $CH_3CHO(l)$ are -393 , -286 and -166 kJ mol^{-1} respectively. Calculate the Standard enthalpy of combustion of $CH_3CHO(l)$ using an enthalpy cycle.
9. Standard enthalpy of formation of $CO_2(g)$, $H_2O(l)$ and $CH_3COOH(l)$ are -393 , -286 and $-487.6 \text{ kJ mol}^{-1}$ respectively. Calculate the Standard enthalpy of combustion of $CH_3COOH(l)$ using an enthalpy cycle.
10. Standard enthalpy of combustion of $C_6H_6(l)$, $C_2H_2(g)$ are -3345 , $-1300 \text{ kJ mol}^{-1}$ respectively. Calculate the Standard enthalpy of the following reaction using an enthalpy cycle.



Drawing enthalpy Diagrams.

11. Standard enthalpy of formation of $\text{CO}_2(\text{g})$, $\text{H}_2\text{O}(\text{l})$ and $\text{C}_6\text{H}_6(\text{l})$ are -393 , -286 and $+49$ kJ mol^{-1} respectively. Calculate the Standard enthalpy of combustion of $\text{C}_6\text{H}_6(\text{l})$ using an enthalpy level diagram.
12. Standard enthalpy of formation of $\text{CO}_2(\text{g})$, $\text{H}_2\text{O}(\text{l})$ and $\text{C}_2\text{H}_2(\text{g})$ are -393 , -286 and $+226$ kJ mol^{-1} respectively. Calculate the Standard enthalpy of combustion of $\text{C}_2\text{H}_2(\text{g})$ using an enthalpy level diagram.
13. Standard enthalpy of formation of $\text{CO}_2(\text{g})$, $\text{H}_2\text{O}(\text{l})$ and $\text{C}_2\text{H}_5\text{OH}(\text{l})$ are -393 , -287 and -277 kJ mol^{-1} respectively. Calculate the Standard enthalpy of combustion of $\text{C}_2\text{H}_5\text{OH}(\text{l})$ using an enthalpy level diagram.
14. Standard enthalpy of formation of $\text{CO}_2(\text{g})$, $\text{H}_2\text{O}(\text{l})$ and $\text{CH}_3\text{OH}(\text{l})$ are -393 , -287 and -239 kJ mol^{-1} respectively. Calculate the Standard enthalpy of combustion of $\text{CH}_3\text{OH}(\text{l})$ using an enthalpy level diagram.
15. Standard enthalpy of formation of $\text{CO}_2(\text{g})$, $\text{H}_2\text{O}(\text{l})$ and $\text{C}_6\text{H}_{12}\text{O}_6(\text{s})$ are -393 , -286 and -2502 kJ mol^{-1} respectively. Calculate the Standard enthalpy of combustion of $\text{C}_6\text{H}_{12}\text{O}_6(\text{s})$ using an enthalpy level diagram.
16. Standard enthalpy of formation of $\text{CO}_2(\text{g})$, $\text{H}_2\text{O}(\text{l})$ and $\text{CH}_3\text{CHO}(\text{l})$ are -393 , -286 and -166 kJ mol^{-1} respectively. Calculate the Standard enthalpy of combustion of $\text{CH}_3\text{CHO}(\text{l})$ using an enthalpy level diagram.
17. Standard enthalpy of formation of $\text{Fe}_2\text{O}_3(\text{s})$ and $\text{MgO}(\text{s})$ are -626 and -616 kJ mol^{-1} respectively. Calculate the Standard enthalpy of reaction of the following using an enthalpy level diagram.
- $$\text{Fe}_2\text{O}_3(\text{s}) + 3 \text{Mg}(\text{s}) \longrightarrow 2\text{Fe}(\text{s}) + 3\text{MgO}(\text{s})$$
18. Standard enthalpy of formation of $\text{C}_2\text{H}_2(\text{g})$ and $\text{C}_2\text{H}_6(\text{g})$ are $+226.5$ and -48.8 kJ mol^{-1} respectively. Calculate the Standard enthalpy of reaction of the following using an enthalpy level diagram.
- $$\text{H}-\text{C}\equiv\text{C}-\text{H}(\text{g}) + 2\text{H}_2(\text{g}) \longrightarrow \text{CH}_3-\text{CH}_3(\text{g})$$
19. Standard enthalpy of combustion of $\text{C}_2\text{H}_6(\text{g})$, $\text{C}(\text{s, gr})$ and $\text{H}_2(\text{g})$ are -1260 , -393 , -286 kJ mol^{-1} respectively. Calculate the Standard enthalpy of formation of $\text{C}_2\text{H}_6(\text{g})$ using an enthalpy level diagram.
20. Standard enthalpy of combustion of $\text{C}_{12}\text{H}_{22}\text{O}_{11}(\text{s})$, $\text{C}(\text{s, gr})$ and $\text{H}_2(\text{g})$ are -5670 , -393 , -286 kJ mol^{-1} respectively. Calculate the Standard enthalpy of combustion of $\text{C}_{12}\text{H}_{22}\text{O}_{11}(\text{s})$, using an enthalpy level diagram.
21. Standard enthalpy of combustion of $\text{CH}_3\text{CHO}(\text{l})$, $\text{C}(\text{s, gr})$ and $\text{H}_2(\text{g})$ are -1320 , -393 , -286 kJ mol^{-1} respectively. Calculate the Standard enthalpy of combustion of $\text{CH}_3\text{CHO}(\text{l})$, using an enthalpy level diagram.