

Balancing Carbon Reactions

Name _____

Write a coefficient in every blank so each side has the same number of C, H, and O atoms. Use the lowest whole numbers. Write 1 when only one is needed.

1	_____ C + _____ H ₂ → _____ CH ₄	SYNTHESIS
2	_____ CO + _____ O ₂ → _____ CO ₂	SYNTHESIS
3	_____ CO + _____ H ₂ → _____ CH ₃ OH	SYNTHESIS
4	_____ C ₂ H ₂ + _____ H ₂ → _____ C ₂ H ₆	SYNTHESIS
5	_____ CH ₄ → _____ C + _____ H ₂	DECOMPOSITION
6	_____ CO → _____ C + _____ CO ₂	DECOMPOSITION
7	_____ C ₆ H ₁₂ O ₆ → _____ C ₂ H ₅ OH + _____ CO ₂	DECOMPOSITION (FERMENTATION)
8	_____ C ₁₂ H ₂₂ O ₁₁ → _____ C + _____ H ₂ O	DECOMPOSITION (SUCROSE)
9	_____ CH ₄ + _____ O ₂ → _____ CO ₂ + _____ H ₂ O	COMBUSTION
10	_____ C ₃ H ₈ + _____ O ₂ → _____ CO ₂ + _____ H ₂ O	COMBUSTION
11	_____ C ₂ H ₄ + _____ O ₂ → _____ CO ₂ + _____ H ₂ O	COMBUSTION
12	_____ C ₂ H ₅ OH + _____ O ₂ → _____ CO ₂ + _____ H ₂ O	COMBUSTION
13	_____ C ₆ H ₁₂ O ₆ + _____ O ₂ → _____ CO ₂ + _____ H ₂ O	COMBUSTION
14	_____ C ₁₂ H ₂₂ O ₁₁ + _____ O ₂ → _____ CO ₂ + _____ H ₂ O	COMBUSTION
15	_____ C ₂ H ₆ + _____ O ₂ → _____ CO ₂ + _____ H ₂ O	COMBUSTION
16	_____ CH ₃ OH + _____ O ₂ → _____ CO ₂ + _____ H ₂ O	COMBUSTION
17	_____ C ₂ H ₂ + _____ O ₂ → _____ CO ₂ + _____ H ₂ O	COMBUSTION
18	_____ C ₄ H ₁₀ + _____ O ₂ → _____ CO ₂ + _____ H ₂ O	COMBUSTION
19	_____ CH ₄ + _____ O ₂ → _____ CO + _____ H ₂ O	INCOMPLETE COMBUSTION
20	_____ CO ₂ + _____ H ₂ O → _____ C ₆ H ₁₂ O ₆ + _____ O ₂	PHOTOSYNTHESIS

Balancing Carbon Reactions: Key

Gray 1s are coefficients usually left unwritten. Check any answer by counting C, H, and O on each side.

1	$1 \text{ C} + 2 \text{ H}_2 \rightarrow 1 \text{ CH}_4$	SYNTHESIS
2	$2 \text{ CO} + 1 \text{ O}_2 \rightarrow 2 \text{ CO}_2$	SYNTHESIS
3	$1 \text{ CO} + 2 \text{ H}_2 \rightarrow 1 \text{ CH}_3\text{OH}$	SYNTHESIS
4	$1 \text{ C}_2\text{H}_2 + 2 \text{ H}_2 \rightarrow 1 \text{ C}_2\text{H}_6$	SYNTHESIS
5	$1 \text{ CH}_4 \rightarrow 1 \text{ C} + 2 \text{ H}_2$	DECOMPOSITION
6	$2 \text{ CO} \rightarrow 1 \text{ C} + 1 \text{ CO}_2$	DECOMPOSITION
7	$1 \text{ C}_6\text{H}_{12}\text{O}_6 \rightarrow 2 \text{ C}_2\text{H}_5\text{OH} + 2 \text{ CO}_2$	DECOMPOSITION (FERMENTATION)
8	$1 \text{ C}_{12}\text{H}_{22}\text{O}_{11} \rightarrow 12 \text{ C} + 11 \text{ H}_2\text{O}$	DECOMPOSITION (SUCROSE)
9	$1 \text{ CH}_4 + 2 \text{ O}_2 \rightarrow 1 \text{ CO}_2 + 2 \text{ H}_2\text{O}$	COMBUSTION
10	$1 \text{ C}_3\text{H}_8 + 5 \text{ O}_2 \rightarrow 3 \text{ CO}_2 + 4 \text{ H}_2\text{O}$	COMBUSTION
11	$1 \text{ C}_2\text{H}_4 + 3 \text{ O}_2 \rightarrow 2 \text{ CO}_2 + 2 \text{ H}_2\text{O}$	COMBUSTION
12	$1 \text{ C}_2\text{H}_5\text{OH} + 3 \text{ O}_2 \rightarrow 2 \text{ CO}_2 + 3 \text{ H}_2\text{O}$	COMBUSTION
13	$1 \text{ C}_6\text{H}_{12}\text{O}_6 + 6 \text{ O}_2 \rightarrow 6 \text{ CO}_2 + 6 \text{ H}_2\text{O}$	COMBUSTION
14	$1 \text{ C}_{12}\text{H}_{22}\text{O}_{11} + 12 \text{ O}_2 \rightarrow 12 \text{ CO}_2 + 11 \text{ H}_2\text{O}$	COMBUSTION
15	$2 \text{ C}_2\text{H}_6 + 7 \text{ O}_2 \rightarrow 4 \text{ CO}_2 + 6 \text{ H}_2\text{O}$	COMBUSTION
16	$2 \text{ CH}_3\text{OH} + 3 \text{ O}_2 \rightarrow 2 \text{ CO}_2 + 4 \text{ H}_2\text{O}$	COMBUSTION
17	$2 \text{ C}_2\text{H}_2 + 5 \text{ O}_2 \rightarrow 4 \text{ CO}_2 + 2 \text{ H}_2\text{O}$	COMBUSTION
18	$2 \text{ C}_4\text{H}_{10} + 13 \text{ O}_2 \rightarrow 8 \text{ CO}_2 + 10 \text{ H}_2\text{O}$	COMBUSTION
19	$2 \text{ CH}_4 + 3 \text{ O}_2 \rightarrow 2 \text{ CO} + 4 \text{ H}_2\text{O}$	INCOMPLETE COMBUSTION
20	$6 \text{ CO}_2 + 6 \text{ H}_2\text{O} \rightarrow 1 \text{ C}_6\text{H}_{12}\text{O}_6 + 6 \text{ O}_2$	PHOTOSYNTHESIS