Is it true that as pressure decreases, the temperature will decrease if gas is at a constant volume?

According to the combined gas law, $\dfrac{P \cdot V}{T} = const$, if V=const, we obtain the Gay-Lussac's Law formula:

$\dfrac{P}{T} = const$, so if the temperature will decrease, the pressure will decrease too in the same many times, as the temperature, and their ratio will be constant.

Answer: Yes, it is true.