How many moles of C_2H_2 are required to produce 0.58 moles H_2O?

Solution:
Balanced equation for task:

$2C_2H_2 + 5O_2 = 4CO_2 + 2H_2O$;
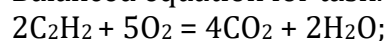
According to stoichiometric coefficients, number of moles of water is equal to number of moles of acetylene: $n(C_2H_2) = n(H_2O)$.

So, we need 0.58 moles of C_2H_2 to produce 0.58 moles of water.

Answer:
0.58 moles of C_2H_2 are needed to produce 0.58 moles of water.