if the heat of combustion for a specific compound is 1080.0kj/mol and its molar mass is 58.29 g/mol how many grams of this compound must you burn to release 300.60j of heat

Let's start with moles and joules:

Heat of combustion is 1080.0 kJ per one mol or 1080000 J per one mol

Now you have:

1080000 J -------------- 1 mol

300.6 J--------------------x mol

x=2,78e-4 mol

Now you need to find mass:

n =m/Mw, where Mw is molecular weight.

m=n*Mw = 2,78e-4 mol * 58.29 g/mol =**0,0162 g**