

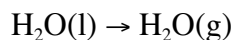
Name _____

Period _____

Qualitative Thermodynamic Change

Without performing specific calculations predict the sign of ΔH , ΔS , and ΔG for the following processes. Will they be positive or negative? Or could they be either?

1. This phase change at 298 Kelvin:

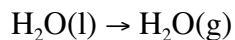


$\Delta H =$

$\Delta S =$

$\Delta G =$

2. This phase change at 374 Kelvin:

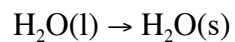


$\Delta H =$

$\Delta S =$

$\Delta G =$

3. This phase change at 298 Kelvin:

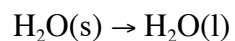


$\Delta H =$

$\Delta S =$

$\Delta G =$

4. This phase change at 298 Kelvin:

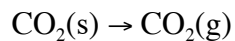


$\Delta H =$

$\Delta S =$

$\Delta G =$

5. This phase change at 298 Kelvin:

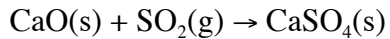


$\Delta H =$

$\Delta S =$

$\Delta G =$

6. This reaction is spontaneous:



$\Delta H =$

$\Delta S =$

$\Delta G =$

7. This reaction is not spontaneous at 298 K:

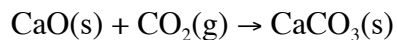


$\Delta H =$

$\Delta S =$

$\Delta G =$

8. This endothermic reaction:

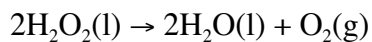


$\Delta H =$

$\Delta S =$

$\Delta G =$

9. This exothermic reaction:



$\Delta H =$

$\Delta S =$

$\Delta G =$

10. The following reaction is highly endothermic and very spontaneous:



$\Delta H =$

$\Delta S =$

$\Delta G =$

How can both the enthalpy be what it is and the free energy what it is? What drives this reaction?