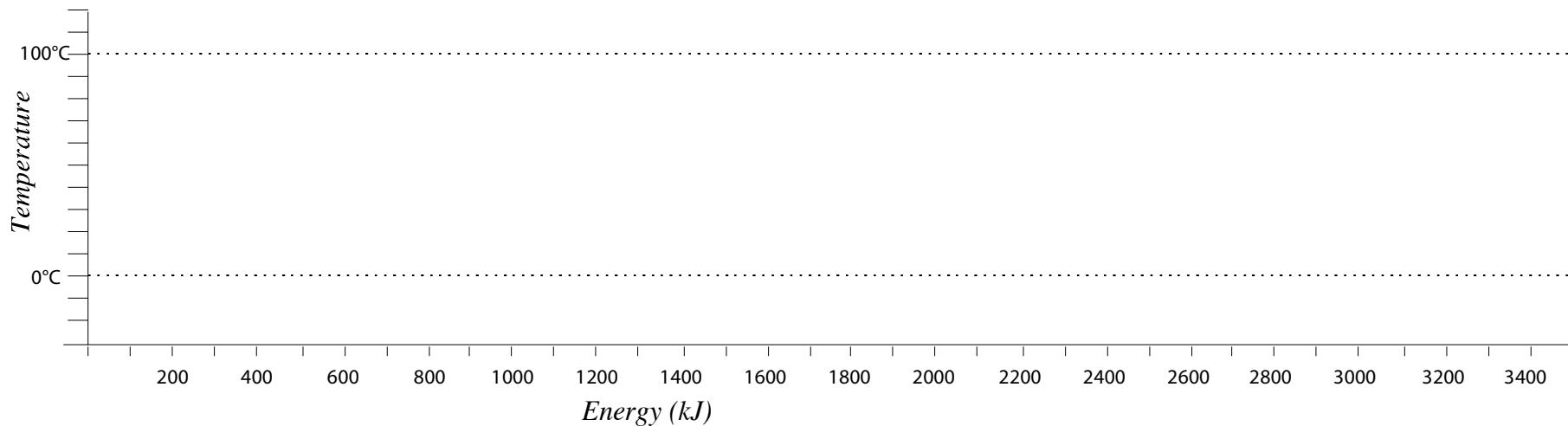


PhyzJob: Phase Change Graphing



As you add heat to a substance, its temperature generally increases. During a change of phase, however, the energy that would usually force molecules into increased jiggling instead goes into breaking the bonds of the solid or liquid. Since the thermometer doesn't move during a phase change, the energy added during the phase change is sometimes called **latent heat**. On the graph below, we will chart the temperature of 1 kg of H₂O (initially ice at $-30\text{ }^{\circ}\text{C}$) as we add enough energy to change it to steam at $120\text{ }^{\circ}\text{C}$.



I. How much energy is required to heat the ice from $-30\text{ }^{\circ}\text{C}$ to $0\text{ }^{\circ}\text{C}$?

III. How much **additional** energy is required to heat the water from $0\text{ }^{\circ}\text{C}$ to $100\text{ }^{\circ}\text{C}$?

V. How much **additional** energy is required to heat the steam from $100\text{ }^{\circ}\text{C}$ to $120\text{ }^{\circ}\text{C}$?

II. How much **additional** energy is required to change the $0\text{ }^{\circ}\text{C}$ ice to $0\text{ }^{\circ}\text{C}$ water?

IV. How much **additional** energy is required to change the $100\text{ }^{\circ}\text{C}$ water to $100\text{ }^{\circ}\text{C}$ steam?

Question
Would the graph look any different if 0.1 kg of H₂O was used instead of 1 kg?