

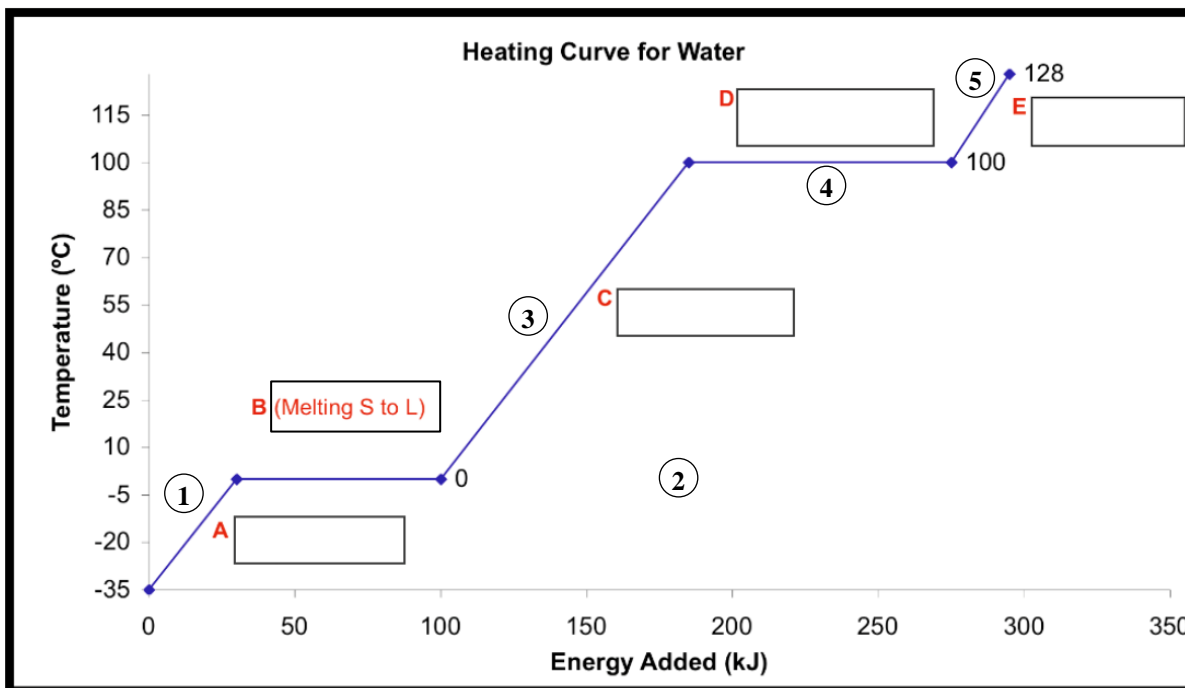
Name: \_\_\_\_\_

Period: \_\_\_\_\_

Seat#: \_\_\_\_\_

**Directions:** Use the heating curve below for ice at  $-35^{\circ}\text{C}$  being converted to steam at  $128^{\circ}\text{C}$ . If you need a refresher on Heating Curve calculations here is a YouTube video of the Honors Chemistry lecture on the topic.

<https://youtu.be/g2srRytHiX0>



<p><b>1)</b> Label each of the blank rectangle boxes on the graph above with one of the following terms. Terms can be used more than once.</p> <ul style="list-style-type: none"> <li>• Warming</li> <li>• Melting</li> <li>• Vaporizing</li> </ul>	<p>Which equation do you use for each of the following sections?</p> <ul style="list-style-type: none"> <li>• Warming <math>\rightarrow q =</math></li> <li>• Melting <math>\rightarrow q =</math></li> <li>• Vaporizing <math>\rightarrow q =</math></li> </ul>																		
<p><b>2)</b> What are the following values for water? Include both J/g and kJ/mol answers.</p> <ul style="list-style-type: none"> <li>• <math>H_{fus} =</math>            <u>    </u> J/g            <u>    </u> kJ/mol</li> <li>• <math>H_{vap} =</math>            <u>    </u> J/g            <u>    </u> kJ/mol</li> </ul>	<p><b>3)</b> Indicate what is happening in each line segment</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;"><u><math>\Delta</math> Kinetic Energy</u></th> <th style="text-align: center;"><u><math>\Delta</math> Potential Energy</u></th> </tr> </thead> <tbody> <tr> <td>Line 1</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Line 2</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Line 3</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Line 4</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Line 5</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </tbody> </table>		<u><math>\Delta</math> Kinetic Energy</u>	<u><math>\Delta</math> Potential Energy</u>	Line 1	<input type="checkbox"/>	<input type="checkbox"/>	Line 2	<input type="checkbox"/>	<input type="checkbox"/>	Line 3	<input type="checkbox"/>	<input type="checkbox"/>	Line 4	<input type="checkbox"/>	<input type="checkbox"/>	Line 5	<input type="checkbox"/>	<input type="checkbox"/>
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<p><b>4)</b> How many calories are needed to convert 312.0g of ice at <math>-35^{\circ}\text{C}</math> to liquid to water at <math>25.0^{\circ}\text{C}</math> <u>38200 cal</u> (remember, <math>1 \text{ cal} = 4.184\text{J}</math>)</p>																			

Dougherty Valley HS Chemistry - AP  
IMFs – Heating Curve Practice

5) How many joules (J) of energy are released when  $6.80 \times 10^3$  g of steam at  $100.0^\circ\text{C}$  are completely frozen to ice at  $0.0^\circ\text{C}$ ?  $2.05 \times 10^7 \text{ J}$

6) How much energy (in J) is required to completely melt 205.0 mol of ice at  $0.0^\circ\text{C}$ ?  $1.235 \times 10^6 \text{ J}$

7) Using the information in the chart below, how much heat is needed to raise the temperature of 85g of potassium from  $25^\circ\text{C}$  to  $2,500^\circ\text{C}$ ?  $3.41 \times 10^5 \text{ J}$

Substance	C (solid) $\left(\frac{\text{J}}{\text{g} \cdot \text{K}}\right)$	M.P. ( $^\circ\text{C}$ )	$\Delta H_{\text{fus}}$ $\left(\frac{\text{J}}{\text{g}}\right)$	C (liquid) $\left(\frac{\text{J}}{\text{g} \cdot \text{K}}\right)$	B.P. ( $^\circ\text{C}$ )	$\Delta H_{\text{vap}}$ $\left(\frac{\text{J}}{\text{g}}\right)$	C (gas) $\left(\frac{\text{J}}{\text{g} \cdot \text{K}}\right)$
K	0.560	62	61.4	1.070	760	2025	0.671