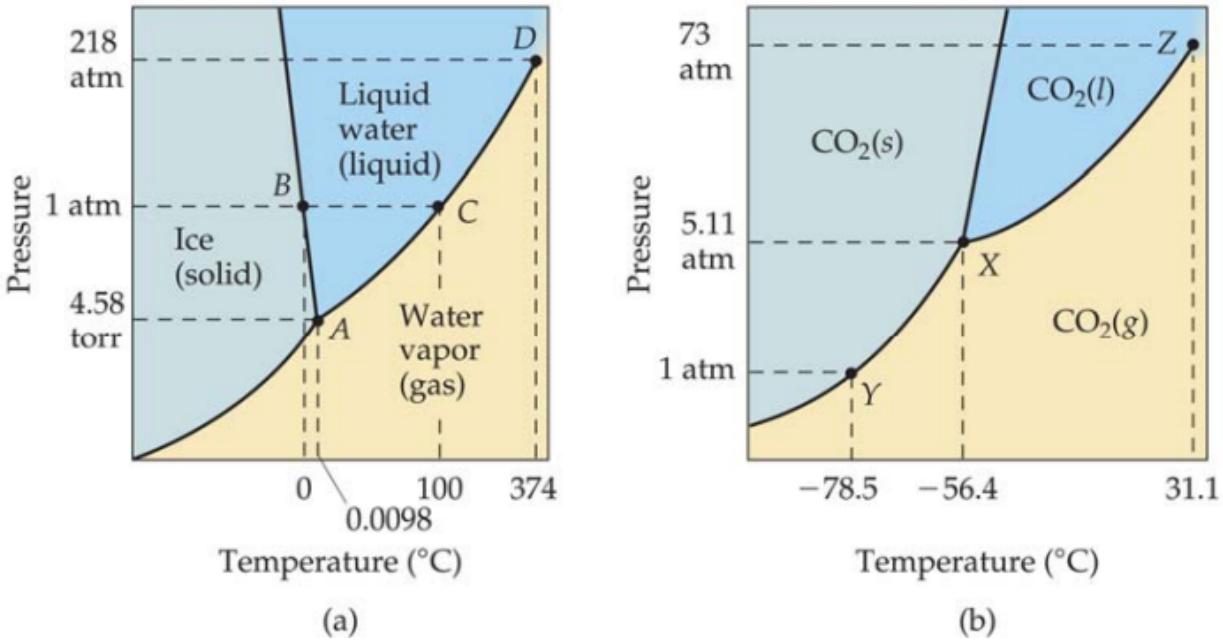
Chem 116 Lecture 6 [JL]
9-18-08

- Water has abnormal liquid-solid transition.
    - At same T, as you increase p, substance changes from solid to liquid.
        - To picture a normal substance, think of golf balls scattered in a box. As you apply pressure to it, those unorganized golf balls will settle in more organized form, and therefore result in higher density. But water has the opposite behavior from a normal substance. As pressure is increased, (at the same temperature) water will become less dense.

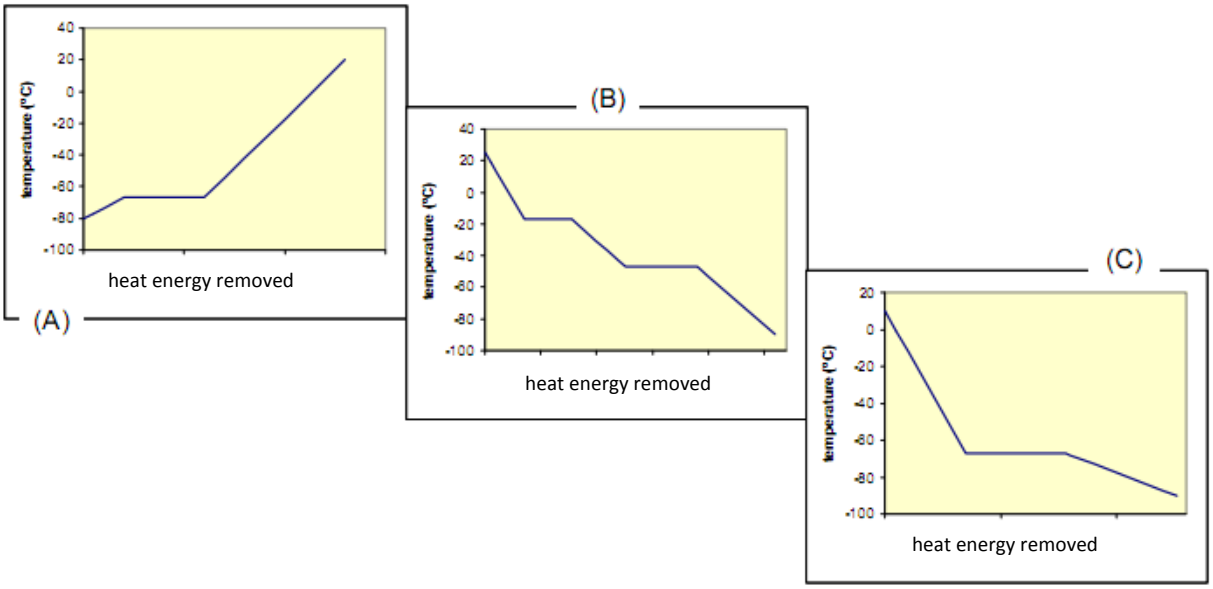
Compare phase diagrams of H_2O and CO_2



        - e.g. Ice skating: Pressure is increased by very thin blade of skate => ice turns into water.
- Difference between phase diagram and heating curve.
    - In/dependent variables are different.
        - Phase diagram: T=independent variable, P=dependent variable.
        - Heating curve: Heat=independent variable, T=dependent variable.
            - As solid changes into liquid, point in phase diagram will not change but point in heat curve will.

A clicker question that asks about material we covered in class today

Which of the following graphs represents a cooling curve for CO_2 at P = 3 atm?



(A) incorrect because this is heating curve.

(B) At 3 atm, CO_2 only has one phase change (Gas – Solid). Look phase diagram of CO2 above. This would have been a right answer if question was asking for a cooling curve at above the triple point.

Therefore, (C) is right answer.