

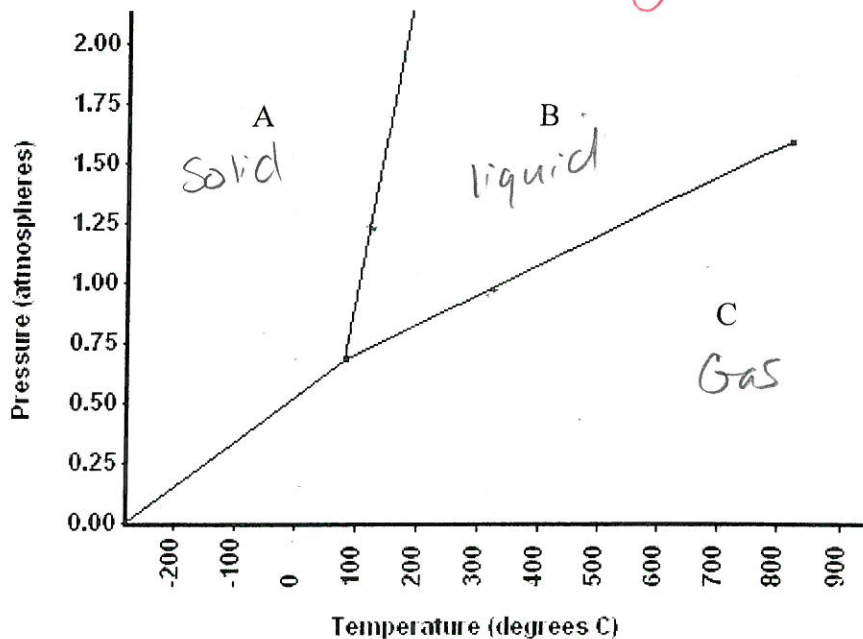
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# Phase Change Diagram

Key



1) Label A, B, and C on the graph.

2) Name a temperature and pressure at which the substance changes from a solid to a liquid.

1.25 atm, 100°C

*Has to be on the line*

3) Name a temperature and pressure at which the substance changes from a liquid to a gas

1.0 atm 320°C

4) At what temperature and pressure does the substance exist as a solid, liquid, and gas?

0.75 atm, 100°C. What is point called? triple point

5) If I have a bottle of the compound at a pressure of 0.75 atm and temperature of 700 C, what will happen if I dropped the temperature to -100 C?

*\* Changes from Gas to solid \* Remove thermal energy.*

*\* Deposition*

6) A compound starts at a pressure of 1.75 and drops to 0.25 at 400 C, explain the phase change.

*Liquid to gas. Thermal energy going into the substance. Boiling*

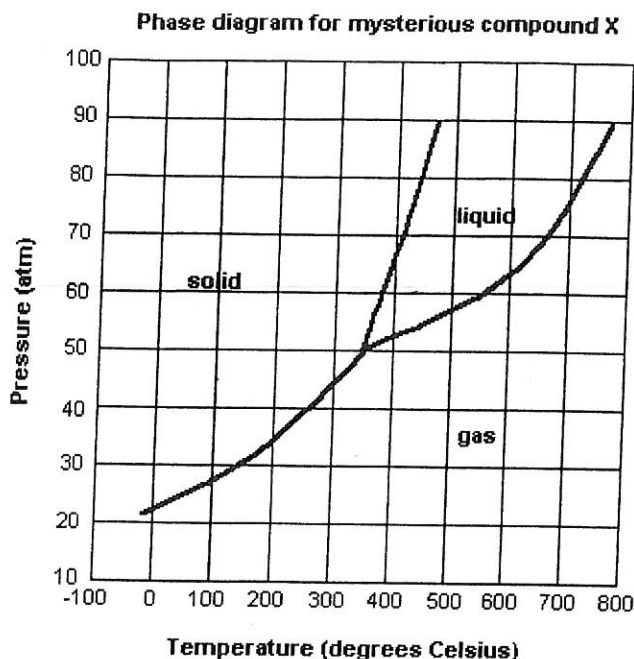
7) A compound starts at a ~~temperature~~ of 0.50 and drops to 0.25 at 0 C, explain the phase change.

*Solid to gas. Thermal energy is going into the substance. Sublimation*

8) What states of matter can exist at a pressure of 1.00 atm?

All three

For each of the questions on this worksheet, refer to the phase diagram for mysterious compound X



- 1) What is the critical temperature of compound X? 770°C
- 2) At what temperature and pressure will all three phases coexist?  
50 atm, 350°C
- 3) If I have a bottle of compound X at a pressure of 45 atm and temperature of 100°C, what will happen if I raise the temperature to 400°C?  
Solid to gas. Thermal energy increase. Sublimation
- 4) Why can't compound X be boiled at a temperature of 200°C?  
Because compound X isn't in a liquid state at 200°C
- 5) What states of matter can exist at a pressure of 40 atm? solid, gas only
- 6) At a pressure of 70 atm, if you wanted to change a solid to a liquid, what would need to happen?  
You can increase the Temperature (thermal energy) melting or decrease the pressure (certain areas)
- 7) If you wanted to change a liquid at a pressure of 60 atm to a gas, what would need to happen?  
Increase the temperature or decrease the pressure.
- 8) If I wanted to, could I drink compound X?  
NO, because compound X as a liquid has temperature too hot for us to drink,