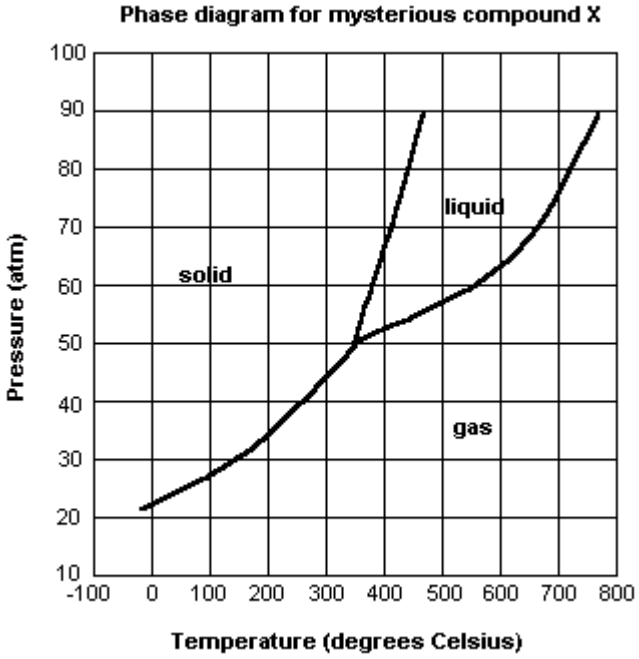
Phase Diagram Worksheet

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?

2) If you were to have a bottle containing compound X in your closet, what phase would it most likely be in?

3) At what temperature and pressure will all three phases coexist?

4) 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?

5) Why can't compound X be boiled at a temperature of 200°C?

6) If I wanted to, could I drink compound X?

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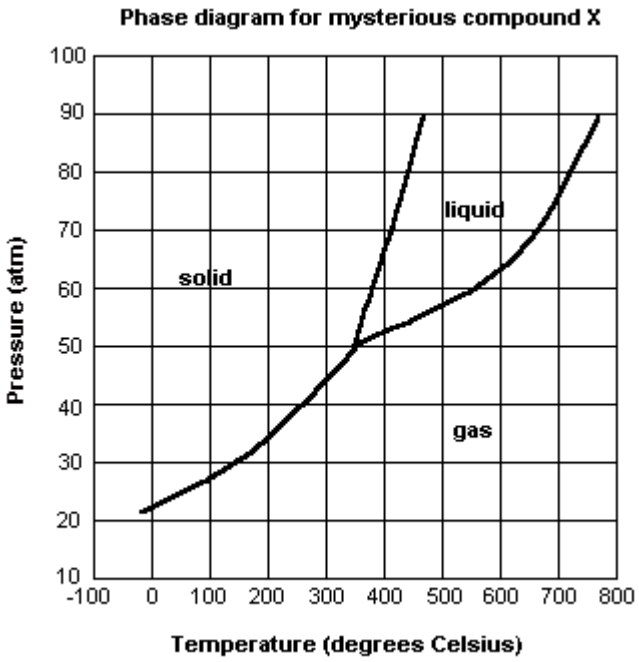

1) What is the critical temperature of compound X? **~ 770°C**

2) If you were to have a bottle containing compound X in your closet, what phase would it most likely be in?

Extrapolating from this diagram, it's most likely a gas.

3) At what temperature and pressure will all three phases coexist?

350°C, ~ 51 atm

4) 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?

It will sublime

5) Why can't compound X be boiled at a temperature of 200°C?

It does not form a liquid at this temperature. It only exists as a liquid at temperatures above 350°C.

6) If I wanted to, could I drink compound X?

No. At the temperatures and pressures that it forms a liquid, you'd probably die.