

Boiling and melting points

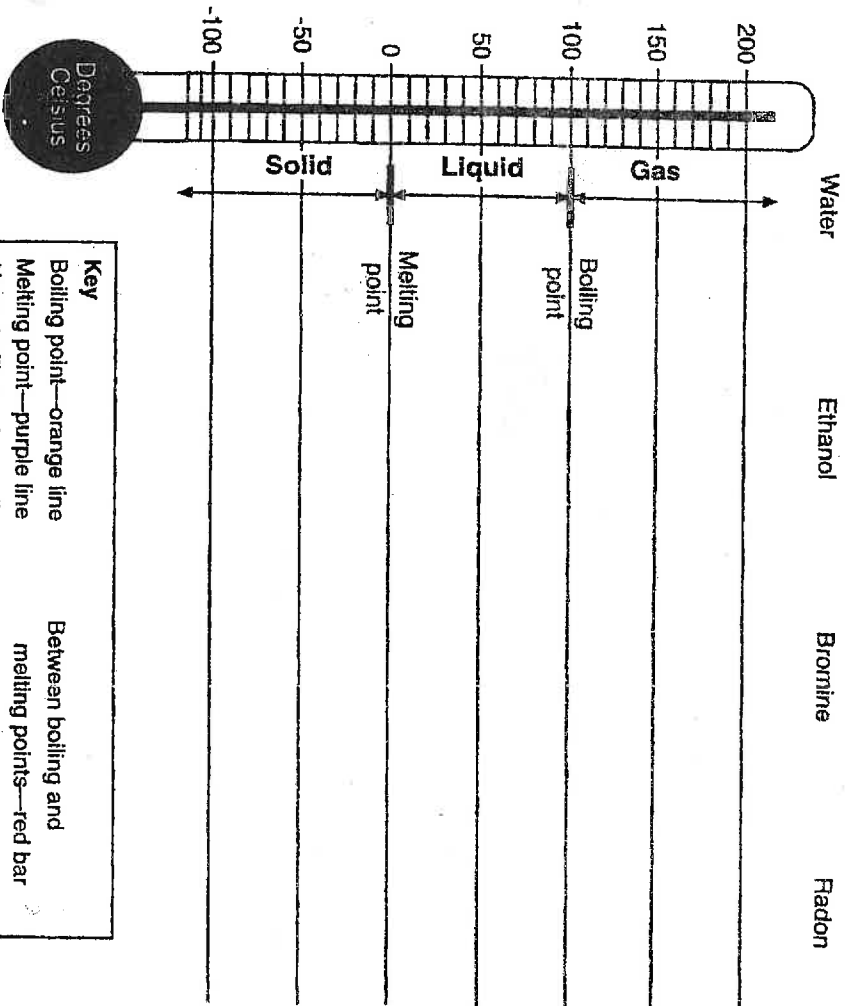
The diagram to the right is designed to help you better understand boiling points and melting points. The thermometer on the left is marked in the Celsius scale. Each time you move up one line on the thermometer you are increasing the temperature 10°C.

You are going to plot the boiling points and melting points of ethanol, bromine, and radon on the diagram using the information below. The information for water is already filled in. Refer to this as a guide.

Substance	Melting point	Boiling point
Water	0°C	100°C
Ethanol	-115°C	78°C
Bromine	-7°C	59°C
Radon	-71°C	-61°C

Procedure

1. With an orange pencil, trace over the boiling point line for water.
2. With a yellow pencil, color in the area directly above the boiling point line for water.
3. With a red pencil, color in the area between the boiling point line and the melting point line for water.
4. With a purple pencil, color over the melting point line for water.
5. With a blue pencil, color in the area below the melting point line for water.
6. Use a regular graphite pencil to add horizontal lines for the melting and boiling points of ethanol, bromine, and radon, just below their respective labels. Use the lines extending from the right of the thermometer to estimate where to draw these lines.
7. Use the same color scheme previously described to color in the new areas.
8. In each of the yellow regions, write the word "gas."
9. In each of the red regions, write the word "liquid."
10. In each of the blue regions, write the word "solid."



True or False

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Short answer

1. Water is a liquid at 35°C.
2. Bromine is a gas at -60°C.
3. Radon is a solid at -100°C.
4. Ethanol is a gas at 140°C.
5. Water is a solid at -5°C.
6. Ethanol is a liquid at -80°C.
7. Radon is a liquid at 0°C.
8. Bromine is a solid at 0°C.
9. Radon melts at a lower temperature than water (ice).
10. Bromine melts at a lower temperature than ethanol.
11. Which substance has the lowest boiling point?
12. Which substance has the highest boiling point?
13. Which substance has the highest melting point?
14. Which substance has the lowest melting point?
15. Name the substances that are liquids at -30°C.
16. Name the substances that are gases at 70°C.
17. Name the substances that are solids at 10°C.
18. What is the lowest temperature at which all four substances will be gases?
19. What is the highest temperature at which all four substances will be solids?
20. Name a temperature at which water is a solid and radon is a gas.