A Heating Curve

The heating curve shown in the figure is a plot of temperature vs. time. It represents the heating of what is initially ice at -10°C at a constant rate of heat transfer.

Answer the following questions.

1. a. What phase or phases are present during segment A?
   b. What is happening to the energy being absorbed from the heat source? (Answer in terms of potential and/or kinetic energy.)
   c. What phase change, if any, is taking place?

2. a. What phase or phases are present during Segment B?
   b. What is happening to the energy being absorbed?
   c. What phase change, if any, is taking place?
   d. What is the significance of the temperature 0°C?

3. a. What phase or phases are present during segment C?
   b. What is happening to the energy being absorbed?
   c. What phase change, if any, is taking place?

4. a. What phase or phases are present during segment D?
   b. What is happening to the energy being absorbed?
   c. What phase change, if any, is taking place?
   d. What is the significance of the temperature 100°C?

5. What would you expect to happen if the heating were continued?
Temperature

Answer the following questions.

1. a. How many Fahrenheit degrees separate the freezing and boiling points of water?
   b. What are these two temperatures?

2. a. How many Celsius degrees separate the freezing and boiling points of water?
   b. What are these two temperatures?
   c. How does the size of a Celsius degree compare with that of a Fahrenheit degree?
   d. What is the lowest possible temperature in °C?

3. a. How many kelvins separate the freezing and boiling points of water?
   b. What are these two temperatures?
   c. How does the size of a kelvin compare with that of a Celsius degree?
   d. What is the lowest possible temperature in kelvins?
   e. What is this lowest possible temperature called?

4. Convert Celsius degrees and kelvins as necessary to find the missing values in the figure below. Use the formulas 
   \[ K = °C + 273 \]
   \[ °C = K - 273 \]

   ![Temperature Scale Diagram]

   4.a. 
   b. 
   c. 
   d. 
   e. 
   f. 