

L. N. Coakley Science Department
Heating Graph, Changes of State and Density of a Substance.

Name: _____ Date: _____ Grade: _____.

1. This question is about changes of state and density.

500 g of a substance X is heated from a temperature of 28 °C to 120°C.

Fig. 1.1 shows the heating curve for this substance. Label the state of matter of each section of the graph.



a)

- I. State the melting and boiling point for the substance X.

Melting point _____

Boiling point _____

II. What state of matter is present when the temperature is 36 °C?

III. How long did substance X exist entirely as a liquid during heating?

_____.

b)

I. What is happening to the kinetic energy of the particles of substance x between 3.4 and 4.6 minutes?

_____.

II. Give a reason for your response to (b) (I).

_____.

III. What is happening to the potential energy of the particles of substance x between 3.4 and 4.6 minutes?

_____.

II. Give a reason for your response to (b) (III).

c)

I. If substance X has a volume of 8.5 cm^3 at 70°C , what is its density at this temperature?

Data	Formula
$m = \text{---} \text{ g}$	$\text{---} = \text{---}$
$V = \text{---} \text{ cm}^3$	Substitution
D-?	$D = \text{---} = \text{---} \text{ g/cm}^3$

II. With reference to fig. 1.1, at which temperature would the substance X have the greatest density?

d) What is happening to kinetic energy of the molecules of substance X when the gradient of the heating curve is steepest?
