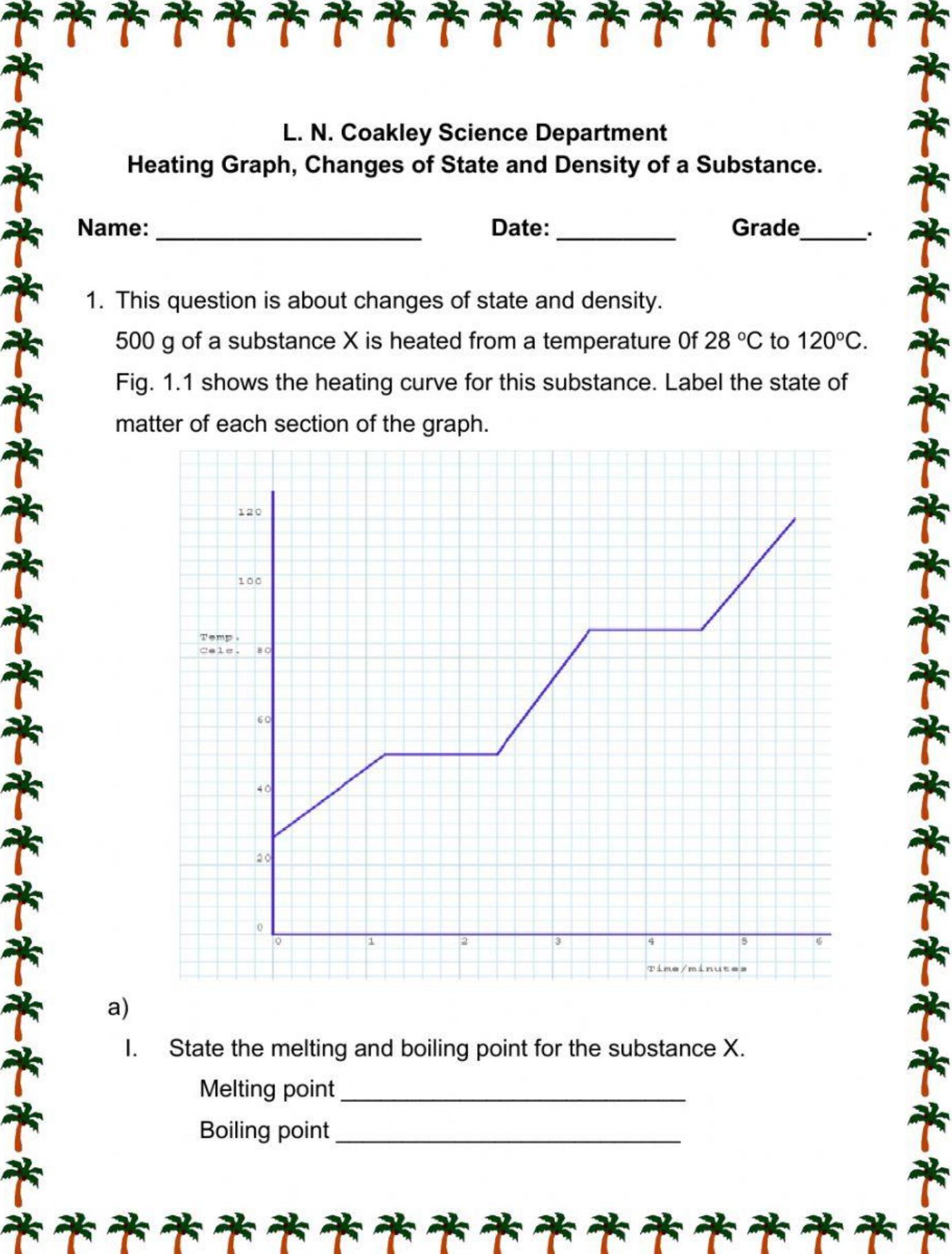**L. N. Coakley Science Department**
Heating Graph, Changes of State and Density of a Substance.

Name: _____   Date: _____   Grade_____.

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

   500 g of a substance X is heated from a temperature 0f 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 cm³ at 70 °C, what is its density at this temperature?

Data	Formula
m = _____ g	$= -$
V = _____ cm³	
D-?	Substitution
	$D = \dfrac{\quad\quad}{\quad\quad} = \quad\quad$ $^g/_{cm^3}$

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?

_____

_____

_____

_____

_____ .