Bell Work, Monday, 3/17/14

Passage:

Suppose that 1 gram (g) of Material A, initially a liquid, is kept in a cylinder fitted with a piston at a constant pressure of 1 atmosphere (atm).

Table 1 and Figure 1, respectively, show how Material A's volume and temperature vary over time as **Material A absorbs heat at a rate of 10 calories per second (cal/sec).**

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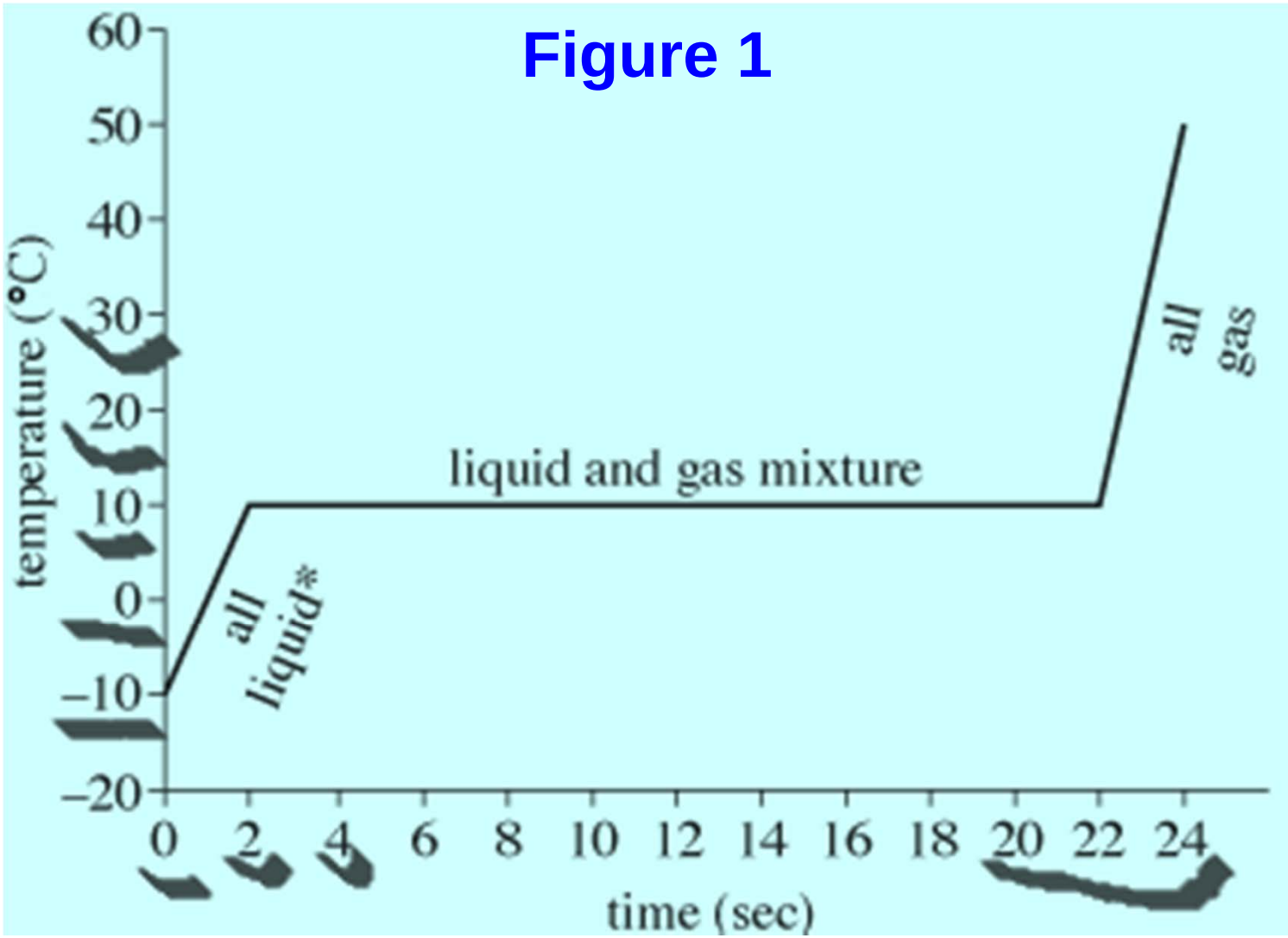
Table 1

Time (s)	Volume of Material A (cm^3)
0	1
2	1
4	136
6	271
8	406
10	541
12	676
14	811
16	946
18	1,081
20	1,216
22	1,351
24	1,541

Figure 1



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1. Based on the passage and Table 1, what was the density of liquid Material A ?

F. 0.5 g/cm^3 **H.** 5 g/cm^3

G. 1 g/cm^3 **J.** 10 g/cm^3

$$D = \frac{m}{v}$$

1 cm^3 = 1 mL

Figure 1 shows that Material A was in the liquid phase from Time 0 to Time 2.

Table 1 shows that Material A had a volume of 1 cm^3 during this time.

According to the passage, the mass of the Material A was 1 g.

So while Material A was a liquid, its density was

$$\frac{mass}{volume} = \frac{1\ g}{1 cm^3} = 1\ g/\ cm^3$$

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Passage: Table 2 gives the boiling points of liquid Materials B–D at 1 atm. The heat absorbed refers to the amount of heat that is needed to turn 1 g of a liquid at its boiling point into a gas.

Copy table 2 onto your bell work sheet.

Table 2

Material	Boiling Point (C)	Heat absorbed (cal)
B	13	500
C	19	610
D	28	270

Boiling point: the temperature at which the liquid starts to turn into a gas.

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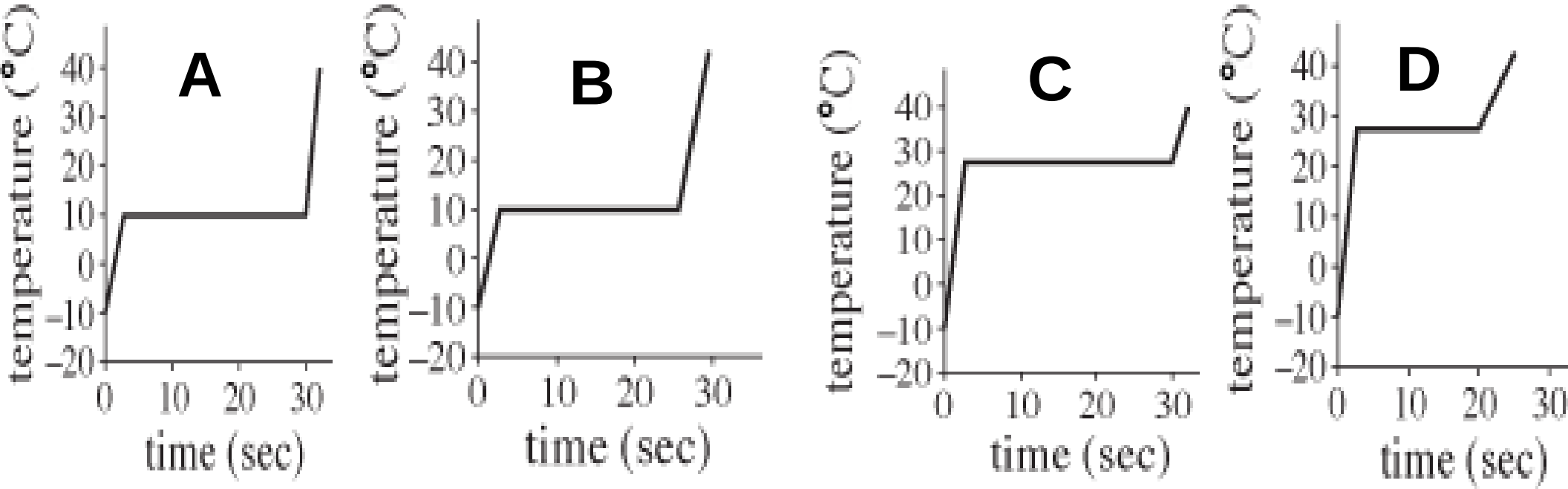
1. *Suppose 1 g of Material D at –10°C is heated at the rate of 10 cal/sec* and kept at 1 atm until all of the liquid is vaporized. Based on Figure 1 and Table 2, a plot of Material D's temperature versus time would be best represented by which of the following graphs?



We need to know two things to answer the question:

- **<u>Boiling point temp</u> and <u>time</u> to boil off all the liquid.**

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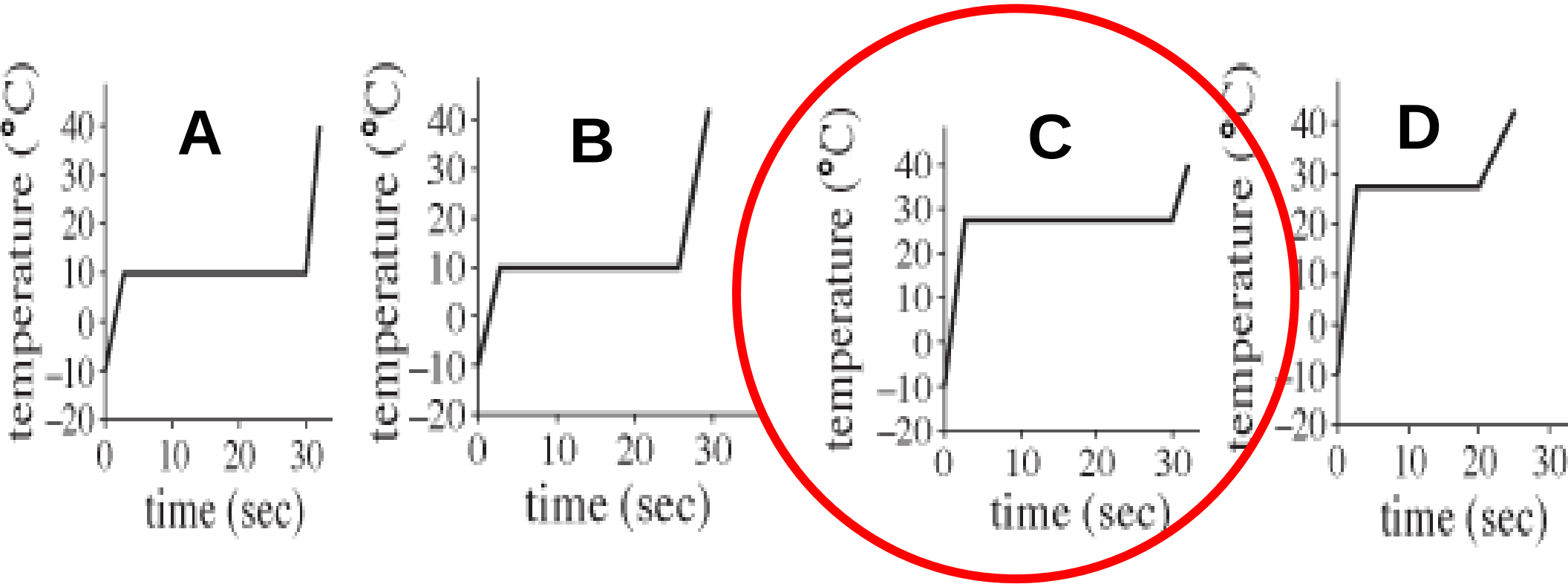
Boiling Point temp is 28 and time is 270/10 = 27 minutes from boiling point till all of D is a gas

Material	Boiling Point (C)	Heat absorbed (cal)
D	28	270



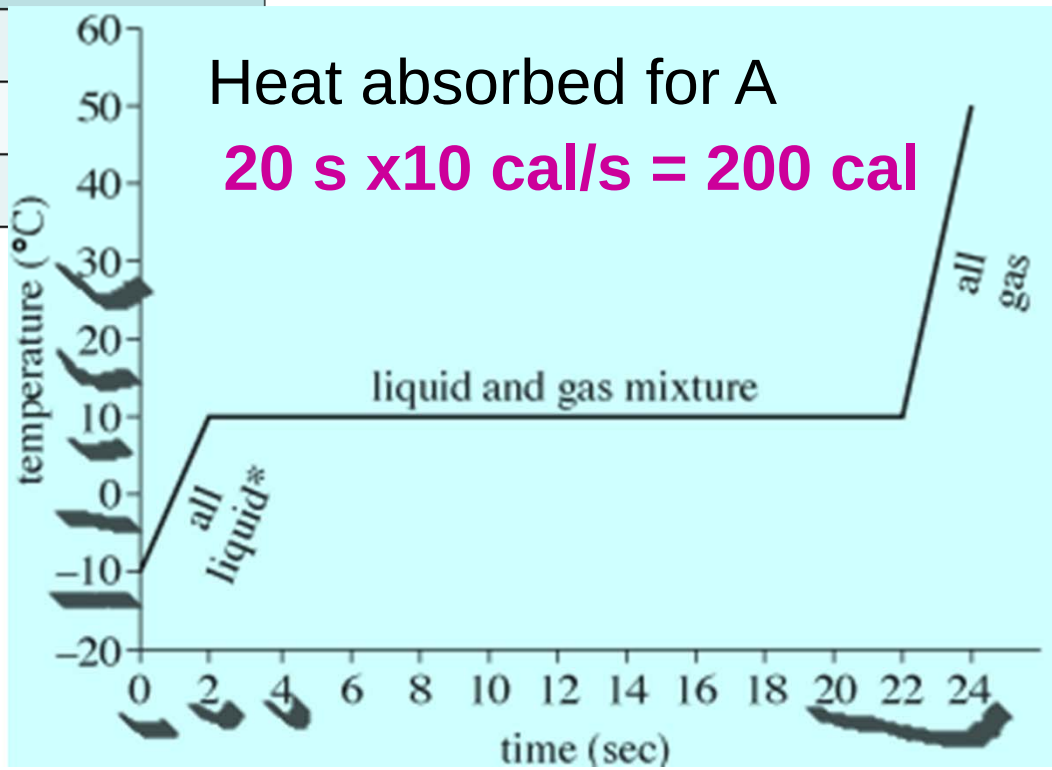
Bonus Bell Work, Tuesday, 3/18/14

2. Suppose 1 g samples of liquid Materials A–D are just beginning to boil. If each of the liquids absorbs heat at the rate of 10 cal/sec while kept at 1 atm, which of the liquids will be the first to be completely turned into a gas?

A. Material A
B. Material B
C. Material C
D. Material D

Material	Boiling Point (C)	Heat absorbed (cal)
B	13	500
C	19	610
D	28	270

DO NOT DRAW THE GRAPH OR TABLE!



Bell Work, Wednesday, March 19

1. A measure of the pull of gravity on a given mass or matter is

a. density. **c. volume.**

b. weight. **d. mass.**

2. A change in the force of Earth's gravity on an object will affect its

a. mass. **c. weight.**

b. density. **d. kinetic energy.**

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3. Define volume

The space "stuff" occupies. Anything that takes up space has volume.

4. Define matter.

Anything that has volume (takes up space) and has mass.

5. What is matter made of?

Stuff

Bell Work, Thursday, 3/20/14

1. Define mass?

Mass is the amount of "stuff" matter has.

2. What is a property as used to describe matter?

An essential or distinctive characteristic or quality of a thing.

3. Name some properties of matter.

Inertia, mass, volume, density, heat & electrical conductivity.

4. What is inertia? (add inertia to study guide)

How lazy things are (resists motion or rest; amount of mass).

5. What is a scientific model?

A representation of an object or an event.