ANSWER KEY: PHASES OF MATTER TEST REVIEWS 1 & 2

REVIEW 1:

Endothermic: phase changes that require an INCREASE in temperature/heat energy (endo = "into"; heat must go into the substance)

Exothermic: phase changes that require a DECREASE in temperature/heat energy (exo = "out of"; heat must go out of the substance - so it must cool)

Phase change	**From**	**To**	**Exothermic or Endothermic**	***Temperature***	***Where on graph?***
Melting	Solid	Liquid	endothermic	Increase to 5°C	Point b
Freezing	Liquid	Solid	exothermic	Decrease to 5°C	Point b
Boiling	Liquid	Gas	endothermic	Increase to 15°C	Point d
Condensing	Gas	Liquid	exothermic	Decrease to 15°C	Point d
Vaporizing	Liquid	Gas	endothermic	Increase to 15°C	Point d
Evaporating	Liquid	Gas	endothermic	Increase to below 15°C	Below Point d
Deposition	Gas	Solid	exothermic	skip	skip
Sublimation	Solid	Gas	endothermic	skip	skip

1. increase temp = increase k.e.
2. gas
3. solid
4. e
5. a
6. 5°C
7. freezing
8. a = solid, b=solid & liquid (melting occurring), c = liquid
9. remaining the same (no temp. increase during phase changes)
10. d
11. 15°C
12. a
13. because the molecules are using heat not to move faster, but to break free from other molecules (called "latent heat")
14. water and mercury (because 20°C is between the melting point and boiling point for each)
15. water and nitrogen (because 115°C is above the boiling point for each)
16. iron (because 20°C is below the melting point for iron)

Temperature review:
1. absolute zero = no vibration/movement of molecules = -273° C, 0° K

Conversions: remember, K = C + 273
25° C = 298 ° K
0° C = 273 ° K
5 ° K = -268° C
290° C = 563 ° K
325 ° K = 52 ° C

REVIEW 2:

1. condensation

2. charles' law

3. vaporization

4. gas

5. endothermic

7. gas

8. C (gas – fog = condensation = lost heat = exothermic)

9. B (altitude affects pressure, which affects boiling pt.)

10. D

11. A (constant volume makes them non-compressible)

12. B

14. Denver is higher in altitude than New Orleans, therefore Denver has a lower atmospheric pressure. Because of this, water can boil at a lower temperature in Denver. Because the water boils away before it reaches 100° C, the water in the pot is cooler in Denver than in N.O., therefore it takes more time to boil the pasta.

15. This produces sublimation – the water provides heat to the frozen carbon dioxide (dry ice), and the heat allows the molecules to change state directly to a gas – sublimation. This produces the illusion of "smoke" – its really the vaporizing CO_2.

17. K = C + 273. Boiling pt. of H_2O = 100 °C, 100 °C + 273 = **373 °K**

18.
A. vibrate
B. added
C. plasma
D. pressure