**Heating & Cooling Curve Practice**

**YOYO:** Answer the following questions using your knowledge of chemistry and explain your reasoning.

1. True or False: Boiling and melting happen at the same temperature.
2. True or False: Freezing and melting happen at the same temperature.
3. True or False: Temperature remains constant during a phase change.

**The Heating Curve**

F

E

D

C

B

A

1. The state of matter represented by line AB is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. The state of matter represented by line CD is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. The state of matter represented by line EF is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. The phase change represented from B 🡪 C is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. During the phase change represented by line BC, the temperature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. The phase change represented from C 🡪 B is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. In order to go from a liquid to solid, heat must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. When a solute such as salt is added to a solvent such as water, the freezing point \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. *Circle One*: If the freezing point is lowered, the new temperature is (hotter/colder) than the original freezing temperature.
10. *True or False*: The freezing point and the melting point occur at the same temperature. \_\_\_\_\_\_\_\_\_\_\_\_
11. The phase change represented from D 🡪 E is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
12. In order to go from a liquid to a gas, heat must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
13. During the phase change represented by line DE, the temperature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
14. When a solute such as salt is added to a solvent such as water, the boiling point \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
15. *Circle One*: If the boiling point is elevated/higher, the new temperature is (hotter/colder) than the original boiling temperature.
16. The phase change represented from E 🡪 D is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
17. In order to go from a gas to a liquid, heat must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
18. The phase change from a solid directly to a gas is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
19. The phase change from a gas directly to a solid is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
20. Temperature is the measure of average \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_.
21. If Kinetic energy increases, P.E stays the \_\_\_\_\_\_\_\_\_\_\_\_.
22. If Kinetic energy stays the same, P.E \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
23. In segment AB, the temperature \_\_\_\_\_\_\_\_\_\_\_, therefore the kinetic energy \_\_\_\_\_\_\_\_\_\_\_\_, the P.E stays the \_\_\_\_\_\_\_\_.
24. In segment BC, at 0 °C, the phase change that happens is \_\_\_\_\_\_\_\_\_\_\_\_, the temperature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, therefore the kinetic energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the P.E \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
25. In segment CD, the temperature goes from 0 °C to 100° C, the K.E \_\_\_\_\_\_\_\_\_\_\_\_\_, the P.E \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
26. In segment DE, the phase change that happens at 100 °C is \_\_\_\_\_\_\_\_\_\_\_\_\_, the temperature \_\_\_\_\_\_\_\_\_\_\_, kinetic energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_, Potential energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
27. In segment EF, the temperature \_\_\_\_\_\_\_\_\_\_\_\_, K.E \_\_\_\_\_\_\_\_, P.E \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**The Cooling Curve**

* A cooling curve is obtained when a substance cools down and changes state.
* The cooling curve is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the heating curve. The temperature is \_\_\_\_\_\_\_\_\_\_\_\_\_\_, therefore the kinetic energy is also \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



1. The state of matter represented by line AB is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. The state of matter represented by line CD is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. The state of matter represented by line EF is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. The phase change represented from B 🡪 C is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. During the phase change represented by line BC, the temperature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. The phase change represented from C 🡪 B is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. In order to go from a liquid to solid, heat must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. The phase change represented from D 🡪 E is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. To go from a liquid to a solid, heat must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
10. During the phase change represented by line DE, the temperature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
11. The phase change represented from E 🡪 D is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
12. In order to go from a solid to a liquid, heat must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
13. The phase change from a gas directly to a solid is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
14. The phase change from a solid directly to a gas is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
15. Temperature is the measure of average \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_.
16. If temperature of a gas is decreases, K.E \_\_\_\_\_\_\_\_\_\_, P.E stays the \_\_\_\_\_\_\_\_\_\_\_\_.
17. If Kinetic energy stays the same, P.E \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \*\* **This is the opposite of the heating curve**.
18. In segment AB, the temperature \_\_\_\_\_\_\_\_\_\_\_, therefore the kinetic energy \_\_\_\_\_\_\_\_\_\_\_\_, the P.E stays the \_\_\_\_\_\_\_\_\_\_.
19. In segment BC, at 100° C, the phase change that happens is \_\_\_\_\_\_\_\_\_\_\_\_, the temperature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, therefore the kinetic energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the P.E \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
20. In segment CD, the temperature goes from 100 C to 0° C, the K.E \_\_\_\_\_\_\_\_\_\_\_\_\_, the P.E \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
21. In segment DE, the phase change that happens at 0 °C is \_\_\_\_\_\_\_\_\_\_\_\_\_, the temperature \_\_\_\_\_\_\_\_\_\_\_, kinetic energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_, Potential energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
22. In segment EF, the temperature \_\_\_\_\_\_\_\_\_\_\_\_, K.E \_\_\_\_\_\_\_\_, P.E \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.