

- As ice cools from 273 K to 263 K, the average kinetic energy of its molecules will
 - Decrease
 - Increase
 - Remain the same
- The molecules of which substance have the highest average kinetic energy?
 - He(g) at 0°C
 - CO₂(g) at 20°C
 - HCl(g) at 40°C
 - N₂(g) at 60°C
- As ice at 0°C changes to water at 0°C, the average kinetic energy of the molecules
 - Decreases
 - Increases
 - Remains the same
- As water vapor condenses at 100°C, the potential energy of the molecules
 - Decreases
 - Increases
 - Remains the same
- When heat energy is lost by a pure substance at its freezing point, its potential energy
 - Decreases
 - Increases
 - Remains the same
- When a substance was dissolved in water, the temperature of the water increased. This process is described as
 - Endothermic, with the release of energy
 - Endothermic, with the absorption of energy
 - Exothermic, with the release of energy
 - Exothermic, with the absorption of energy
- Which phase change is endothermic?
 - Gas → Solid
 - Gas → Liquid
 - Liquid → Solid
 - Liquid → Gas
- In what type of reaction do the products of the reaction always possess more potential than the reactants?
 - Endothermic
 - Exothermic
 - Redox
 - Spontaneous
- What is the total number of joules of heat that must be absorbed to change the temperature of 100 grams of water from 25°C to 30°C?
 - 420
 - 2100
 - 10500
 - 12600

10. How many grams of water will absorb a total of 2520 joules of energy when the temperature of the water changes from 10.0°C to 30.0°C?
a) 10.0 g c) 30.0 g
b) 20.0 g d) 60.0 g
11. If 840 joules are added to 20 grams of water at 30°C, what will be the final temperature of the water?
a) 20°C c) 40°C
b) 35°C d) 50°C
12. Which formula represents a mixture?
a) NaCl(aq) c) H₂O(l)
b) NaCl(s) d) H₂O(g)
13. Which of the following substances cannot be decomposed by chemical change?
a) H₂SO₄ c) H₂O
b) NH₃ d) Ar
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14. Which is the formula of a compound?
a) C c) N₂
b) Cl₂ d) HF
15. At a pressure of 1 atm, what is the temperature of a mixture of steam and water at equilibrium?
a) 100°C c) 273°C
b) 212°C d) 373°C
16. At 1 atm pressure, the difference between the freezing point and the boiling point of water, in degrees Kelvin, is
a) 100 c) 273
b) 180 d) 373
17. Which term represents a form of energy?
a) heat c) joule
b) degree d) temperature
18. The heat of fusion of a compound is 126 joules per gram. What is the total number of joules of heat that must be absorbed by a 15.0 gram sample to change the compound from solid to liquid at its melting point?
a) 63 joules c) 630 joules
b) 189 joules d) 1890 joules
19. On a separate sheet of paper, draw a heating curve for a pure substance. Label the melting point, the boiling point, and phase(s) present in each interval. Describe what is happening to the kinetic energy in each interval and describe the potential energy at the phase changes.