

Problems

11.1 Temperature and Thermal Energy 14.

What is 35.0 °F in kelvins?

- a. 1.67 K
- b. 35.0 K
- c. -271.5 K
- d. 274.8 K

15.

Design a temperature scale where the freezing point of water is 0 degrees and its boiling point is 70 degrees. What would be the room temperature on this scale?

- a. If room temperature is 25.0 °C, the temperature on the new scale will be 17.5 °.
- b. If room temperature is 25.0 °C, the temperature on the new scale will be 25.0°.
- c. If the room temperature is 25.0 °C, the temperature on the new scale will be 35.7°.
- d. If the room temperature is 25.0 °C, the temperature on the new scale will be 50.0°.

11.2 Heat, Specific Heat, and Heat Transfer 16.

A certain quantity of water is given 4.0 kJ of heat. This raises its temperature by 30.0 °F. What is the mass of the water in grams?

- a. 5.7 g
- b. 570 g
- c. 5700 g
- d. 57 g

17.

5290 J of heat is given to 0.500 kg water at 15.00 °C. What will its final temperature be?

- a. 15.25° C
- b. 12.47 ° C
- c. 40.3° C
- d. 17.53° C

11.3 Phase Change and Latent Heat 18.

How much energy would it take to heat 1.00 kg of ice at 0 °C to water at 15.0 °C?

- a. 271 kJ

- b. 334 kJ
- c. 62.8 kJ
- d. 397 kJ

19.

Ice cubes are used to chill a soda with a mass $m_{\text{soda}} = 0.300$ kg at 15.0 °C. The ice is at 0 °C, and the total mass of the ice cubes is 0.020 kg. Assume that the soda is kept in a foam container so that heat loss can be ignored, and that the soda has the same specific heat as water. Find the final temperature when all ice has melted.

- a. 19.02 °C
- b. 90.3 °C
- c. 0.11 °C
- d. 9.03 °C