

**Applecross Senior High School**

**/25**

**Year 11 Physics Heating and Cooling Problems Sets Validation**

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Useful Data : Specific heat capacity of glass = 670 J kg-1K-1

1. (a) Explain the difference between thermal energy(internal energy) and heat. (2 marks)

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(b) Explain the difference between thermal energy(internal energy) and temperature. (2 marks)

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(c) 60 ⁰C is **not** twice as hot as 30 ⁰C, it is 9.9% hotter. Explain (2 marks)

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1. You want to heat a glass mug of water at 22.5 ⁰C to 98.5 ⁰C. The mass of the glass is 215 g and it contains 185 g of water. How much energy would the glass and water need to absorb? (5 marks)

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1. A gas burner supplies 3.24 x 105 J of heat to 2.55 kg of soup at 20 ⁰C. (5 marks)

The heat capacity of the soup is 4.13 x 103 J kg-1K-1. Determine the final temperature of the soup.

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1. In different parts of a car air conditioner, a liquid changes to a gas, and a gas changes to a liquid.
2. Which of these changes causes cooling? (1 mark)

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1. Describe how the air conditioner removes heat from the car’s cabin. (3 marks)

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1. You want to make tap water colder for you to drink by adding ice.

Calculate the mass of ice needed at -11.3 ⁰C needed to cool 245 g of tap water at 22.7 ⁰C in a 205 g glass

to a temperature of 3.60 ⁰C. (5 marks)

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