Name_____ Period _____ Date_____

Quiz 14:2D Thermal Expansion & Heat Transfer

1. A brass rod [α_{brass} = 19 x $10^{-6}/^{o}C$] is exactly 120.00 cm long when the temperature is 31.0°C. What will be the new length of this rod if it is heated to a temperature of 355°C? [5 pts]

2. A wood burning stove has a surface area of 2.15 m^2 and is made of flat black steel which has an emissivity of ε = 0.66. At what rate will his stove radiate heat into the room if the temperature of the stove is 465°C. [5 pts] [σ = 5.67 x $10^{-8} W/(m^2 \cdot K^4)$]

3. A window, what has an area of 2.30 m^2 and a thickness of 0.650 cm, is used to keep out the cold. The temperature inside the room is 22.0°C while the temperature outside is -8.00°C. [thermal conductivity of glass κ = 0.840 W/m°K] How much heat will flow through this window during a 12 hour period? [5 pts]