



SN: _____, Name: _____

Chapter 18-20, Serway; ABSOLUTELY NO CHEATING!

Please write the answers on the blank space or on the back of this paper to save resources.

Chapter 18

49. Two train whistles have identical frequencies of 180 Hz. When one train is at rest in the station and the other is moving nearby, a commuter standing on the station platform hears beats with a frequency of 2.00 beats/s when the whistles operate together. What are the two possible speeds and directions the moving train can have?

Chapter 20

53. A 670-kg meteorite happens to be composed of aluminum. When it is far from the Earth, its temperature is -15°C and it moves with a speed of 14.0 km/s relative to the planet. As it crashes into the Earth, assume the resulting additional internal energy is shared equally between the meteor and the planet and all the material of the meteor rises momentarily to the same final temperature. Find this temperature. Assume the specific heat of liquid and of gaseous aluminum is $1\,170\text{ J/kg} \cdot ^{\circ}\text{C}$.