Heat Problems

1. A cup of water has 3347 Joules of energy, how many calories is this?

2. The specific heat capacity of water is 1 cal/g*C^{o}. How much energy will it take to raise the temperature of 1 gram of water by 1 C^{o}?

3. Sand has a specific heat capacity of .07 cal/g*C^{o}. Use the definition of specific heat capacity and the specific heats of water and sand to explain why islands have a relatively constant climate.

4. Explain why deserts are hot during the day and cold during the night.

5. Which has the higher specific heat capacity, plastic or glass?

6. Do you think that the air has a high or low specific heat capacity? Think in comparison to water.

7. How much energy is required to change the temperature of 5 grams of water by 5 C^{o}?

8. How much energy is required to change the temperature of 36 grams of water by 25 C^{o}?

9. How much energy is required to change the temperature of 17 grams of water by 28 C^{o}?

10. The specific heat of aluminum is 0.215 cal/g*C^{o}. If 20 grams of aluminum receive 500 calories of heat, what is the change in temperature of the aluminum?

11. 5 grams of an unknown material heats up by 50 C^o when it receives 250 calories of heat. What is the specific heat capacity of the material?
12. 5 grams of an unknown material heats up by 7 C^o when it receives 250 calories of heat. What is the specific heat capacity of the material?
13. 5 grams of an unknown material heats up by 487 C^o when it receives 250 calories of heat. What is the specific heat capacity of the material?