1. Which of the following represents the *fastest* rate?

 (A) 2.0 moles of NaOH disappearing in 400 s

 (B) 30 g of NaOH reacting in 1 minute

(C) a reaction rate of 0.4 g NaOH/s

 (D) 0.10 L of 2.0 M NaOH reacting in 10 seconds



2. A tin can is filled with steam until it reaches atmospheric pressure. Then, after sealing the can, we continue to inject more steam into the can.

 What will happen to the tin can? (5 points)



3.

At a party that I hosted last year, the guests started to bore me with car-talk, so while I nodded my head, I thought of the following problem:

Assume 16 people just eating and talking for 4 hours. Each person burns an average of 297 kJ per hour eating and talking. Air has a specific heat of 1.0 J/(g.oC) and a density of 0.00129 g/cm3 = 1290 g/m3. The dining room has a volume of 3 m X 10 m X 6 m, and an area of 60 m2 through which it can lose heat to adjacent rooms. The dining area loses 69000 J/(hour\* m2)

How much hotter will the dining room get?

4. The overall reaction for respiration is:

6 O2(g) + C6H12O6(s) + 38 ADP 🡪 38 ATP + 6 CO2(g) + 6 H2O(l) (10 points)

How many litres of carbon dioxide would you exhale on a cold day at –10OC and 105 kPa if your body breaks down 480 g of glucose (C6H12O6(s))?

5. With two drawings, show the difference between an *ineffective* and an *effective* collision between H2 and Cl2.

The product that could form is HCl.

6. Which statement is FALSE as applied to the following reaction?

H2(g) 🡪H(g) + H(g) H = + 26 kJ

(A) The positive H means the reaction is endothermic.

(B) Two moles of H gas contain more energy than one mole of H2 gas.

(C) Weight for weight, H gas would be better fuel than H2 gas.

(D) Heat is released when H gas is made from H2 gas.