

To: Andy, Ben, Kevin, Matt and Tyler  
 From: John I. Gelder  
 Date: September 29, 2001  
 Re: Grading PS4

**STAFF MEETINGS...FRIDAYS, 3:30 p.m.**

The answers to PS #4 are attached. After reviewing the problem sets I have decided we should grade problems PS4.1, PS4.4, and PS4.6 for 3 points. The maximum possible on the problem set is twelve points. The remaining three points are awarded on an all or nothing basis for completion of the remaining problems. Note: If the word 'Late' is written at the top of the Problem Set grade as usual but deduct 3 points from their total. Note: 'Late' means the student found me at the end of class or immediately after class. I will not accept Problem Sets more than a few minutes after class is over, and such cases will have a minimum of 3 points deducted from their score.

If you have any questions about the grading procedure described below, please see me. Please do not assign any fractional points. Use a holistic approach, if the student's answer is not quite correct you must make the decision if it is at least half right in which case give the student the point. However, on the next occasion (in the same grading session) that you have to stop and ask yourself whether the student should receive the benefit of the doubt, do not give them the point. Reverse this procedure if for the first time you decide not to give them the benefit of the doubt, the next occasion give them the point.

Please return the graded problem sets to your students in laboratory next week. Be sure to record the scores for each student.

Copies of the answers and the grading memo are on the WEB.

**Grading the Review Problem Set**

PS4.1 **3 points** 1 point for part a and 2 points for part b. Part a look for complete work for the point. Neglect any minor math errors when the approach is correct in part a. In part b deduct 1 point if the denominator does not have particles of solution (as shown on the key). Award 1 point (half credit) if the student has  $\frac{5.56 \text{ mol}}{(5.56 \text{ mol} + 0.068 \text{ mol})}$ . Do not look just at the answer because there is only a small difference between the correct and wrong answer.

PS4.4 **3 points** Award 1 point for calculating the molality of the solution, 1 point for determining  $\Delta T_{bp}$  and 1 point for the actual boiling point for benzene. Students were expected to go and find the normal boiling for benzene.

PS4.6 **3 points.** 1 point for calculating a freezing point for the solution, 1 point for recognizing  $\text{MgSO}_4$  dissociates into 2 particles when dissolved in water. So with these two point if the student calculates a  $T_{fp}$  but says nothing about the fact that  $\text{MgSO}_4$  is ionic leaving out  $i = 2$  award 1 of the 2 points. The last point is for the discussion of why the ideal freezing point and the observed freezing point do not agree. To get this third point students must mention 'ion-pairing' as the reason the two freezing points differ. Ion-pairing reduces the actual number of particles in the solution. So if the student does not realize  $\text{MgSO}_4$  dissociates they will most likely lose two of the three points possible in this problem.

**3 points** For attempting the remaining 7 problems. Remember each problem must have an answer, an attempt. If the student writes nonsense for any of the other answers deduct the 3 points.