How to calculate your grade in Chem 116

Your grade in this course is based on the following:

Best 2 of 3 in-class exams @ 100 points each	200 points
Group problems (lowest one is dropped)	50 points
Discussion attendance (3 absences permitted, 10 points deducted for every absence after that)	50 points
Final exam	200 points

Therefore, there are 500 points possible.

The grading scale is as follows:
90-100 A
80-89 B
70-79 C
60-69 D
≤ 59 F

After the third exam, you basically know all your grades except for the final exam grade (theoretically, your group problem grade and your discussion attendance grade could change, but you are in control of those). If you want to figure out what grade you will need on the final exam to get a particular grade in the course, here is how to set up an algebra problem to solve for that.

1) Set x = the % you need to get on the Final Exam (a score between 0 and 100). Since the Final Exam is worth 200 points, then $2x$ will be the term used in the calculation of the Overall Grade.

2) You already know your other grades: *Exam1*, *Exam2*, *Exam3*, *GrpProb*, and *DiscAtt*.

3) Decide on the Overall Grade you are hoping for. Call it *N*. It must be a number between 0 and 100. You can try the equation several times with different values for N, to get a sense of how different Final Exam scores will affect your Overall Grade.

4) The following equation will give you the minimum possible value of x (the % you need to get on the Final Exam)

   Note:
   TwoHighestExams = [*Exam1* + *Exam2* + *Exam3* – min(*Exam1*,*Exam2*,*Exam3*)] is just a mathematical way of expressing that you should use your two highest in-class exam scores

$$\frac{N}{100} = \frac{[TwoHigestExams] + GrpProb + DiscAtt + 2x}{500}$$

   Solving for x:

$$x = \frac{5N - \{TwoHighestExams + GrpProb + DiscAtt\}}{2}$$

Some examples follow.

Example 1

Let's say a person got exam scores of 80, 70 and 75. Therefore, the two highest exam grades are 80 and 75. This person was absent for one of the group problems, and has an average of 9.5 on all the other group problems, yielding a score of (9.5/10)*50 = 47.5 points. This person also did not miss more than 3 discussion sessions, so has a perfect 50 for the discussion attendance grade.

This person would like to know what final exam grade is necessary in order to receive a B+ grade for the course. The lowest grade that corresponds to a B+ is 87, so $N = 87$.

$$x = \frac{5N - \{TwoHighestExams + GrpProb + DiscAtt\}}{2}$$

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x = (5*87 – {[80+75] + 47.5 + 50}) / 2
  = (435  - { 155    + 47.5 + 50}) / 2
  = (435  - 252.5) / 2
  = 182.5/2
  = 91   (rounded to nearest integer)
```

So, this person needs to get a 91% on the Final Exam in order to get a B+ in the course.

Example 2

Same person wants to know what grade on the Final Exam is necessary in order to get a B- in the course. The lowest grade that corresponds to a B- is 80, so $N = 80$.

$$x = \frac{5N - \{TwoHighestExams + GrpProb + DiscAtt\}}{2}$$

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x = (5*80 – {[80+75] + 47.5 + 50}) / 2
  = (400  - { 155    + 47.5 + 50}) / 2
  = (400  - 252.5) / 2
  = 147.5/2
  = 74   (rounded to nearest integer)
```

So, this person needs to get a 74% on the Final Exam in order to get a B- in the course.

Example 3

A different person has exam scores of 50, 60 and 0 (this person missed one exam). Therefore, the two highest exam scores are 50 and 60. This person was absent for one group problem, but got perfect scores on all the other ones, so the group problem score is 50. This person missed 4 discussion sessions, so the discussion attendance grade is 40.

This person would like to know what final exam grade is necessary in order to receive a grade of C for the course. The lowest grade that corresponds to a C is 73, so $N = 73$.

$$x = \frac{5N - \{TwoHighestExams + GrpProb + DiscAtt\}}{2}$$

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x = (5*73 – {[50+60] + 50 + 40}) / 2
  = (5*73 - { 110    + 50 + 40}) / 2
  = (365  - 200) / 2
  = 165/2
  = 83   (rounded to nearest integer)
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So, this person needs to get an 83% on the Final Exam in order to get a C in the course.