1. Fawzi is taking a science class in which his grade is based upon the mean of 5 100-point exams. The grades follow a standard “90-80-70-60” cut-off rule. He has taken four exams already and earned an 80, 85, 73, and 78.

(a) Use “count and balance” to determine the score he needs on the last exam to make a B. Explain.

(b) Use “count and balance” to determine the lowest score he could get on the last exam and still keep a C. Explain.

2. Maureen is taking a language class where her grade is also based upon five exam scores, but the first four are out of 100 points while the last is out of 200. She has earned the same scores as Fawzi, and the cut-offs are the same.

(a) Use “count and balance” to determine the number of points she needs on the last exam to make a B. Explain.

(b) Use “count and balance” to determine the lowest score she could get on the last exam and still keep a C. Explain.

3. (a) Ken is taking a class where 82% is the lowest B. He earned a 79, 92, and 81 on the first three exams (which were out of 100 points). How many points must he earn on the 200-point final exam to get a B for the course?

(b) How many points would he need if the final were worth only 150 points?

4. (a) Daniel’s taking a course where the lowest B is only a 78%. On his first four exams, he got an 80, an 82, a 74 and a 70. How many points does he need on the 150-point final exam to get a B in the course?

(b) Daniel forgot that his professor includes classroom participation in computing grades. Daniel has earned 37 out of 50 participation points. Now how many points does he need on the 150-point final exam to get a B in the course?
1. (a) He has earned 5 surplus points and 9 deficit points, so he’s down by 4 points overall. To counteract them, he needs an 84 on the last exam.
   (b) He has earned 36 surplus points. He could afford to get only a 34 on the last exam and still get a C.

2. (a) Maureen is also 4 points down, so she must counteract them and earn the 160 out of 200 it takes to have an 80% on the final itself. She needs a 164 to get a B.
   (b) Maureen has 36 surplus points. She can afford to get only a 104.

3. (a) Ken’s got 10 surplus points and 4 deficit points, so he’s got 6 points to spare. He needs a 164 to get a B on the final itself, and can sacrifice 6 points toward his overall grade: he must get a 158 to maintain a B.
   (b) He’s still got his 6 points to spare, but it now takes 82% of 150, or 123 points to get a B on the final itself. Sacrificing at most 6 points, he must get a 117 to maintain the B.

4. (a) Daniel’s got 6 surplus points and 12 deficit points, so he’s 6 points down overall. He needs 78% of 150, or 117, points to get a B on the final itself, and must make up 6 points toward his overall grade: he must get a 123 to maintain a B.
   (b) For the participation, it takes 78% of 50, or 39, points to have a B; this adds to Daniel’s deficit points, because he’s 2 points down from that. So overall, he has 6 surplus points and 14 deficit points, meaning he’s 8 points down going into the final. It still takes 117 points to get a B on the final itself, but now Daniel’s got to make up another 8 points: he needs a 125 on the final.