Possible answers to HW #5 for 6th period to self-check:

1. A) A line of symmetry is a line dividing a figure into two congruent parts, one of which is a reflection (or mirror image of the other). Or, for each point on one side of the line, there is a corresponding point on the opposite side of the line equidistant from the line. Or, if you fold along the line of symmetry, each point on one side of the figure matches perfectly with a point on the other side of the line.

B) This is not a line of symmetry because the figure does not meet any of these definitions. The two curves on top of the “heart” do not perfectly match the curves on the bottom, although there is a vertical line of symmetry down the middle of the heart.

2) You will need 2/3 cup of sugar for the adjusted recipe. If there are 3 C of flour and 1 C of sugar in the adjusted recipe, then you have 1/3 C of sugar for each cup of flour. So for 2 C of flour, you will need 1/3 + 1/3 or 2/3 C of sugar.

3) The student is incorrect because the shaded area is 1/8 of the square, not ¼. There are several ways of looking at this. One is to consider the triangle and trapezoid on each side of the square. The trapezoid is clearly bigger than the triangle, so the triangle is not half of half, it is less than half of half of the square, so less than ¼. Another way of looking at this is that DE is a midsegment of the big triangle that is half of the rectangle. Add the other two midsegments and you will see four congruent triangles on each side of the square. So the shaded triangle is ¼ of ½ of the square or 1/8. Another way of approaching the problem is to see that the small triangle DEF is similar to the larger one by a ratio of 1:2 (since D and E are midpoints of the sides). If the sides have a 1:2 ratio, then the areas have a 1:4 ratio (.5 squared = .25) so the triangle is ¼ of half the square.

4) This system of inequalities has no solution because each inequality has a set of points that make it true that are a completely different set of points than the solution of the other inequality. The lines that define the solution boundaries are parallel because they have the same slope of -.5 and different y-intercepts. The inequality with the y-intercept below zero has all of its solutions below the line; the inequality with its y-intercept above zero has all of its solutions above the line. Therefore, there is not a single point that will make both inequalities true, so no solution.

5) The student is wrong. In some cases, their strategy will work, but only if the two numbers with values in tenths add up to a number less than 10. For instance: 5.4 and 3.5 sum to 8.9 because 4/10 plus 5/10 = 9/10. But if it had been 3.5 and 8.8, .3 + .8 is 3/10 plus 8/10 or 11/10. 0.11 is not 11/10, it is 11/100. Therefore your place values would be incorrect.