1) a. The problems with preference revelation with Lindahl pricing arise from the fact that an individual who reports lower preferences for a public good lowers the provision of that public good by only a small amount (since the total provision is average across all members of the community) but lowers his taxes by a large amount (since his taxes are based on his reported preferences). In other words, individuals have an incentive to free ride on the provision of others. In the Tiebout model everyone in each jurisdiction ends up with the same preferences, and the Lindahl prices can therefore be set equal for each resident. This means that taxes are no longer specific to an individual’s report. When an individual reports lower preferences for the public good, he lowers the provision by a small amount, but he also lowers his taxes by a small amount (and lowers everyone else’s taxes by the same amount). This removes the incentive to free ride and solves the problems with preference revelation.

b. The Tiebout model relies on a strong link between taxes paid and benefits received. This link is stronger for public schools than it is for food assistance. Taxpayers with children and those who perceive the positive externality of an educated populace will be willing to pay taxes in exchange for quality public education. In addition, much of the benefit of this expenditure is enjoyed locally. Local provision is likely to be relatively efficient. Many taxpayers will not perceive any benefit from paying for food assistance that is given to only a few, so they will not support this public good or they will move away from communities that provide it. Furthermore, the provision of food assistance may lead to in-migration of needy families, reducing the community’s ability to continue to provide this assistance. Under these conditions, food assistance is more efficiently provided centrally.

2) a. This is the exact same case as illustrated in Figure 11-2 on page 291 with $E_F = $4000 and $B = $20,000. Scenario discussed in (a) is illustrated in household-X, (b) in household-Y and (c) in household-Z.

3) a. i. The probability that your income next year will be $50,000 is .95; the probability that your income next year will be $20,000 is .05. Summing the expected values of the outcomes yields $.95($50,000) + .05($20,000) = $47,500 + $1,000 = $48,500. This is your expected income next year.

ii. An actuarially fair premium would be one that exactly offset the expected value of the loss. In this case, the expected loss is $50,000 – $48,500 = $1,500, so an actuarially fair premium would be $1,500.

Another (equivalent) way to determine this premium is to calculate the expected value of the claims the insurance company would pay: here it is the probability of the loss occurring times the dollar value of the loss, or .05 ($50,000 – $20,000) = .05($30,000) = $1,500.
A third (equivalent) way to determine the premium is to compute the expected profits to the insurance provider for any given premium $P$. Since the premium is surely paid and the insurance company pays you $30,000 with a probability of 0.05, the expected profits are given by $P - 0.05(30,000)$. Actuarially fair premiums are those that lead to zero expected profits; setting expected profits equal to zero and solving gives $P = 0.05(30,000) = 1,500$ again.

b. i. The insurance company expects to pay out $12,000 in claims to 5% of the Speed Racers it covers, so it must collect at least $0.05(12,000) = 600$ from each one. Similarly, it must collect at least $0.01(12,000) = 120$ from each Low Rider.

ii. (a) Every individual would claim to be a Low Rider, but if the insurance company sold insurance to everyone for $120, it would lose money because of the presence of Speed Racers in the population. The insurance company would quickly increase premiums, but if it increased them by too much the Low Riders would leave the market. It cannot be determined here exactly how much more than $120 the Low Riders would tolerate, as their risk aversion is not specified. As more Low Riders chose not to purchase insurance, the pool of covered drivers would include a higher and higher proportion of Speed Racers, requiring the insurance company to increase premiums again to cover the claims.

(b) The insurance company could offer a premium that averages the expected claims. In a population of half Low Riders and half Speed Racers, the pooling premium would be $(600 + 120)/2 = 360$. The Low Riders would have to be extremely risk averse to be willing to pay $360 to cover an expected loss of $120. If they (the Low Riders) opted out of the market, the insurance company would be back to the adverse selection problem discussed above: an insured pool containing a high proportion of Speed Racers.