Chapter 16: Answers to Problems

1a. The most the guard can charge is $150, to be hired by Jill.
b. The plan will not be approved because Jack will not vote for it. He would have to pay a $60 tax for a service worth only $50 to him.

2a. A 1 percent tax would imply that Jack pays $10 per month and Jill pays $110. Both Jack and Jill would vote for this tax.
b. Suppose Jack pays the guard $x and Jill pays him $y. Then $x$ and $y$ must satisfy the equations $x + y = 120$ and $150 - y = 50 - x$. Solving, we get $x = 10$ and $y = 110$, the same as in part c.
c. In order to implement the plan in part b, each party would have to report the most he or she would be willing to pay for the guard. The problem is that Jack and Jill each have an incentive to understate that amount in the hope that the other has a higher willingness-to-pay and will therefore pay more of the total.

3a. The pool will not be built because with the requisite lump-sum tax of $6 per voter per week, voters B and C will vote against it. This outcome is not socially efficient because the total benefits per week exceed the total weekly cost.
b. Since marginal cost is zero, a monopolist’s profit maximizing price is the price that maximizes total weekly revenue—namely a price of $12. The result would be a $6 weekly loss, so no firm will be willing to operate the pool. Again, the socially efficient outcome is not achieved.

4a. This time, there is a potential economic profit of $1 per week forever. At an interest rate of $1 per week, the present value of this profit stream is $100, and this is the price at which the monopoly franchise should sell. The pool will be built, and the socially efficient outcome therefore achieved.
b. If all firms spend the same on lobbying, each will have a 25 percent chance of winning the franchise, which means an expected profit of 25 cents per week less the amount spent lobbying. But by spending a penny more than its rivals, any one of these firms could grab the whole dollar in monopoly profit. As we saw in the case of the $20 bill auction, the incentives strongly favor escalation of the total amount spent on lobbying, and total expenditures on lobbying may well exceed the total value of the prize.

5a,b. To construct the demand curve, we add the two demand curves vertically, as shown. The socially optimal quantity of broadcast opera on Saturdays occurs where the marginal cost curve (MC) intersects the total demand curve (D, top panel), 3 hours per Saturday.
6a. The network will choose the programs that generate the most profit. An episode of Springer would attract an audience of 12 million viewers, while one of Masterpiece Theater would attract only 8 million. Those audience sizes would generate payments of $1.2 million and $800,000, respectively, from Colgate. Net of production costs, the network would thus earn $800,000 for a Springer episode, and only $400,000 for an MT episode. The network would thus maximize its profit by filling one time slot with Springer and the other with the weight-loss infomercial.

b. The economic surpluses from showing episodes of Springer and MT are the areas under their respective demand curves—$48 million for Springer, $64 million for MT. Since both figures are far larger than the surplus generated by the infomercial, the socially efficient result would be for the network to fill its two remaining slots with Springer and MT.

7. A pay-per-view network would set price at the point along its demand curve for which marginal revenue equals marginal cost. Since the marginal cost per viewer is zero, its profit-maximizing price would be $8 per episode. The network would receive $32 million in revenue, and viewers would reap economic surplus of $16 million. In contrast, showing MT free of charge on PBS would result in a viewer surplus of $64 million. Since production costs of each episode would be the same under the two arrangements, total economic surplus per episode would be $16 million larger if broadcast on PBS than if shown on pay-per-view.
a. False, because the pay-per-view company charges a positive price for a nonrival good.

b. False, because the profit maximizing pay-per-view fee will not result in the largest possible audience (which would have maximized advertising revenue).

c. False, because the marginal cost to viewers is zero on broadcast TV.

d. False, because charging a positive price for a nonrival good can cause an even greater loss in surplus than results from choosing the wrong program.

e. True, because the pay-per-view scheme allows TV viewers to move away from the lowest-common-denominator programs favored and funded by advertisers.

9. The answer is e. Although the incentive problem described in part c does exist under the stated circumstances, it is not a cause of the free-rider problem.

10a. The net benefit after tax (column 3 of the table) indicates that Anita, Brandon and Carlena would vote for the museum, so the referendum would carry.

<table>
<thead>
<tr>
<th>Citizen</th>
<th>Marginal Benefit from Museum ($/yr)</th>
<th>Net Benefit after Tax ($/yr)</th>
<th>Single-Price Monopolist’s Revenue ($/yr)</th>
<th>Price-Discriminating Monopolist’s Revenue ($/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anita</td>
<td>340</td>
<td>140</td>
<td>340</td>
<td>340</td>
</tr>
<tr>
<td>Brandon</td>
<td>290</td>
<td>90</td>
<td>580</td>
<td>630</td>
</tr>
<tr>
<td>Carlena</td>
<td>240</td>
<td>40</td>
<td>720</td>
<td>870</td>
</tr>
<tr>
<td>Dallas</td>
<td>190</td>
<td>-10</td>
<td>760</td>
<td>1,060</td>
</tr>
<tr>
<td>Eloise</td>
<td>140</td>
<td>-60</td>
<td>700</td>
<td>1,200</td>
</tr>
</tbody>
</table>
b. The maximum revenue a single-price private company could make is $760/yr, which is accomplished by charging a one-time fee of $190/yr to view the museum. The total revenues ($760/yr) do not cover the museum costs ($1,000/yr), so no private company is willing to build and operate the museum on a single-fee basis.

c. A price-discriminating monopolist can make $1,200/yr operating the monument and charging each citizen his or her marginal benefit. The museum costs $1,000/yr to build, so the maximum a private company would bid for the license to operate the museum as a discriminating monopolist is $200/yr (= $1,200/yr - $1,000/yr).