

Assignment 1 Solutions

1. Over the past two years, a restaurant has tried has varied the prices of its entrees substantially through the use of daily and seasonal specials as well as changes in the base pricing structure. The restaurant attempts to track the number of customers by age paying particular attention to whether the customers are between 18 and 55 years of age or older than 55. The average nightly number of customers, by age and average entrée price, is given in the table below.

Price	# of Customers older than 55	# of Customers, 18-55	Revenue >55	Revenue, 18-55	Profit, >55	Profit, 18-55	Combined Profit
8	165	245	1320	1960	165	245	410
8.5	142	231	1207	1964	213	346.5	559.5
9	125	220	1125	1980	250	440	690
9.5	113	213	1074	2024	282.5	532.5	815
10	104	199	1040	1990	312	597	909
10.5	82	189	861	1985	287	661.5	948.5
11	66	181	726	1991	264	724	988
11.5	53	168	610	1932	238.5	756	994.5
12	44	165	528	1980	220	825	1045
12.5	21	151	263	1888	115.5	830.5	946
13	14	142	182	1846	84	852	936
13.5	0	134	0	1809	0	871	871
14	0	124	0	1736	0	868	868
14.5	0	112	0	1624	0	840	840
15	0	101	0	1515	0	808	808

- a) If entrées cost approximately \$7.00 what should the (single) price of an entrée be? Explain and support your answer.

If a single serving price is charged the profit-maximizing price is \$12.00 where revenues exceed (variable) costs by \$1045 (see the gray-shaded row).

- b) Should the restaurant set a uniform price, that is, the same price for both those over 55 and those under 55 years of age? Explain, why or why not. If not, what prices should it set?

The price should not be the same. If we set a price of \$10.00 for those older than 55, we revenues exceed variable costs by \$312. If we set a price of \$13.50 for those younger than 55, revenues exceed variable costs by \$871. Then with price discrimination we have profits of \$1183 > \$1045 with a single price.

2.

A firm currently has a markup of 25% (over unit cost) on its product. After hiring a market research firm, it finds that the price elasticity of demand for its product is -4. Should it raise or lower its price? Explain.

- a) The firm is selling at the profit-maximizing price.
- b) The firm should lower its price.
- c) The firm should raise its price.
- d) There is not enough information.

The markup pricing formula is $\frac{P}{MC} = \frac{\epsilon}{(1 + \epsilon)}$. Then we have $\frac{P}{MC} = \frac{-4}{(1 + -4)} = \frac{4}{3} = 1.33$. The current markup is 25% so therefore the price is too low since at this elasticity a markup of 33% is appropriate.

3.

A manager of a large sporting goods store in a relatively small metropolitan area is setting pricing on a few different product lines. She places products into several different categories:

- a) Primary Purchase, carried only by this store. These are major items (reasons for going to the store) that, in this area, are carried only by this store (climbing gear, high-end camping and hiking gear, hockey equipment).
- b) Primary Purchase, carried by other stores. Major items also carried by discount stores in the area (fishing and hunting equipment, lower-end bicycles).
- c) Independent Accessories. Small items that cost the manager very little. Sold by cash register but not related to any of the primary purchases.
- d) Add-On Accessories. Small item purchases intended to complement major purchases. These cost the manager very little. They are located adjacent to primary purchases they are intended to complement.

Based on this limited information, which product categories would have relatively high markups and which would have lower markups? Explain.

We would expect that items in category b) would have relatively low markups. Because of competition, the demand for purchases of these products at the store will be quite elastic. Those items in category a) would be less elastic as the store has some monopoly power. This being the case, the markups will be higher. Items in category c) being a small share of a consumer's budget will tend to have a less elastic demand as will items in category d) as they are complements with much larger purchases. Then items in both of these categories would be expected to have relatively high markups.