Chapter 15 Practice Problems Solutions

Elements of Microeconomics - Section 4

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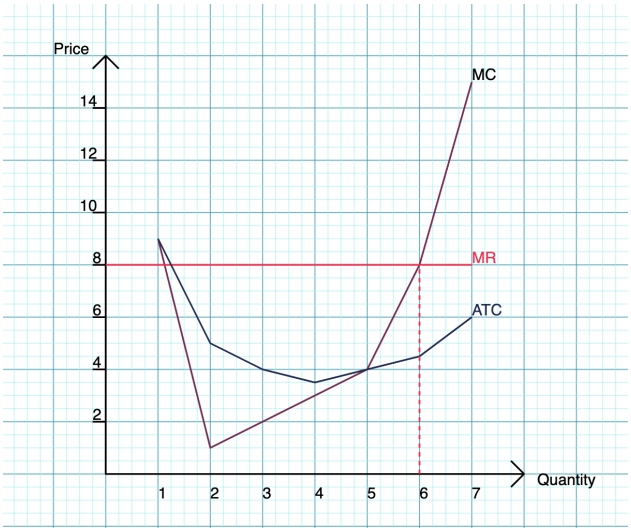
Question 1

You are a producer of eggs in a perfectly competitive market. The price of a carton of eggs in the market is $8.

- Fill in the table below.
- Graph the firms MC, MR, and ATC
- At what quantity and price will the firms produce at?

Answer



**Note that values are rounded to the nearest 0.5. Therefore ATC at Q=4 and Q=5 are slightly off*

Firms produce where MC=MR. Therefore they take the price of $8 and produce 6 cartons of eggs.

Quantity	TC	TR	AR	ATC	MC	MR
1	9	8	8	9	9	8
2	10	16	8	5	1	8
3	12	24	8	4	2	8
4	15	32	8	3.75	3	8
5	19	40	8	3.8	4	8
6	27	48	8	4.5	8	8
7	42	56	8	6	15	8

Question 2

You are still a seller in the egg market and the market price for eggs is still \$8.

- Let's assume that you want to sell your eggs at \$9. Explain intuitively why that is not possible.

Answer

If you sell at \$9, remember there are many sellers in the market that are largely the same. If they are able to produce the same good as you at \$8, all consumers will buy off of them because it is cheaper. Therefore no one will buy from you and you will make no revenue nor profit. Thus, you must lower your price back down to \$8 to capture any of the market.

Question 3

Assume that the market for pumpkins is perfectly competitive and you are a pumpkin producer. You have a fixed cost of \$10 and the total variable cost to produce a given quantity of pumpkins is given below.

Quantity	1	2	3	4	5	6	7
TVC	6	8	11	16	24	36	56
AVC	6	4	3.7	4	4.8	6	8
MC	6	2	3	5	8	12	20
ATC	16	9	7	6.5	6.8	7.7	9.4

- The market price for pumpkins in the fall is \$5 while the market price for pumpkins in the spring is \$3. Using the numbers given to you, explain mathematically why you will produce pumpkins in the fall but you will shut down and not produce pumpkins in the spring.
- EXTENSION: What market price do we need so that we do not exit the pumpkin market in the long run?

Answer

Note the AVC and MC are given above. If the market price is \$5 then the MR is 5. To profit maximize we produce at where MC=MR which is at a quantity of 4. Likewise if the market price is \$3, then MR is 3. According to the table, MC=MR at quantity 3. Notice that at quantity 4, $P = MR = MC > AVC$, therefore we will not shut down as we are covering our variable costs. However, at quantity 3, $P = MR = MC < AVC$ so we are not covering our variable costs and we will shut down.

In the long run, we need $P > ATC$ to not shut down. As $P = MR$ and as profit maximizers we produce at where MR=MC, then we need $MC > ATC$. This is satisfied when price is \$8 and we will be producing 5 pumpkins. If price is less, we will shut down.