Profit Maximization

AP Microeconomics | Unit 3 | economic vs accounting profit, and the MR = MC rule

1. Accounting vs economic profit

Example. Maya quits a $50,000 job to open a bakery. Revenue is $200,000 and she pays $130,000 in bills. Her savings invested in the bakery would have earned $10,000 in interest.

Two kinds of profit

Accounting profit = revenue − explicit costs = 200,000 − 130,000 = $70,000
Economic profit = revenue − explicit costs − implicit costs = 200,000 − 130,000 − 60,000 = $10,000

Economic profit is always the smaller number. **Zero economic profit is normal profit**: the owner earns exactly what the next best alternative would have paid. Unless a question says "accounting", profit means economic profit.

2. The rule: MR = MC

The bakery sells each batch for $100, so marginal revenue is $100 for every batch.

output	MR	MC	profit	
0	–	–	−$100	
1	$100	$50	−$50	
2	$100	$30	$20	
3	$100	$40	$80	
4	$100	$60	$120	
5	$100	$90	**$130**	last batch with $MR \geq MC$
6	$100	$130	$100	costs more than it brings in

Profit-maximizing rule

Produce the quantity where $MR = MC$ (or the last unit for which $MR \geq MC$). It holds for every firm in the course, monopolies included.

3. Profit on the graph

1. Find the **quantity** where $MR = MC$: $Q = 5$.
2. At that quantity read the **price**: $100.
3. At that quantity read **ATC**: $74.

$$\text{profit} = (P - ATC) \times Q = (100 - 74) \times 5 = \$130$$

On the graph this is a rectangle: height $P - ATC$, width Q. If $P < ATC$, the same rectangle is a loss.

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4. Not where average cost is lowest

$Q = 4$ (minimum ATC) : $(100 - 70) \times 4 = \$120$ $Q = 5$ $(MR = MC)$: $(100 - 74) \times 5 = \$130$

The goal is the largest *total* profit, not the largest profit per unit. The fifth batch adds \$100 of revenue and \$90 of cost, so it still adds \$10.

5. Profit on the total curves

Profit is the vertical gap $TR - TC$. With $P = \$100$ the gap is \$80 at $Q = 3$ and largest, \$130, at $Q = 5$: the same output as $MR = MC$, because where the gap is widest the two curves have equal slopes. If TC lies above TR everywhere (price \$55), the firm minimizes its loss by picking the smallest gap: $Q = 3$, a loss of $\$220 - \$165 = \$55$, less than the \$100 fixed cost it would lose by shutting down.

Zero economic profit does not mean zero accounting profit: with revenue \$190,000, explicit costs \$130,000 and implicit costs \$60,000, economic profit is 0 (a normal profit) while accounting profit is \$60,000.

Where students lose points

1. Choosing the quantity at minimum ATC instead of $MR = MC$.
2. A profit rectangle read at the wrong quantity, or from MC instead of ATC.
3. Forgetting implicit costs in economic profit.
4. Saying zero economic profit means the firm should close.
5. Saying "profit is maximized where $MR = MC$" with no quantity named.

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