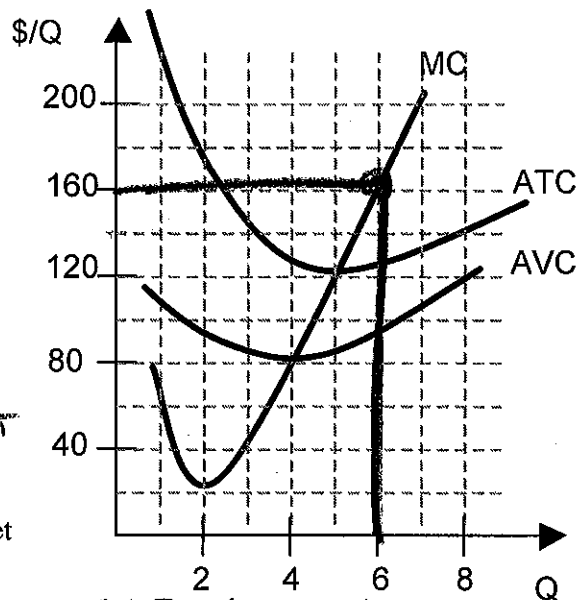


3. Consider the adjacent diagram showing some costs for a competitive firm in the short run. Suppose that this firm achieves its highest profit when output is $Q^* = 6$. Total fixed cost is \$100. EXPLAIN each of your answers below. (All credit is for your explanation.)



(a) What is the price of this firm's product?

$P = MC = \$160 @ Q = 6$

(b) Is this firm making a profit or a loss?

$P > ATC$, so $TR > TC \Rightarrow$ PROFIT
 [Profit $\approx (160 - 125) \times 6 = \210]

(c) Will the long-run equilibrium price in this market be higher or lower than you price in part (a)?

PROFIT \Rightarrow FIRMS ENTER \Rightarrow SUPPLY SHIFTS (increase) \Rightarrow Price Falls,
 or Long-run entails zero profit

(d) Suppose that market conditions change and the new price for this firm's product is $P = \$40$. In this case, how much output will the firm produce in the short run?

$P < AVC \Rightarrow$ shut down. $Q^* = 0$

4. Consider a firm making baskets. Suppose that straw can be purchased for \$50 per bale. All other inputs are fixed inputs. Total fixed cost is \$300. Straw can only be purchased by the bale (no partial bales). This is a firm in a competitive market, with an output price of \$2 per basket sold.

(a) Complete the following table.

Input (tons of straw)	Output (baskets per day)	Marginal physical product	Marginal revenue product	MRC
0	0	-----	-----	---
1	100	100	200	50
2	200	100	200	50
3	250	50	100	50
4	270	20	40	50
5	270	0	0	50

(b) What is the profit-maximizing number of baskets to produce? Explain your answer.

Use another input if $MRP > MRC$
 So input $I^* = 30 \Rightarrow Q^* = 250$

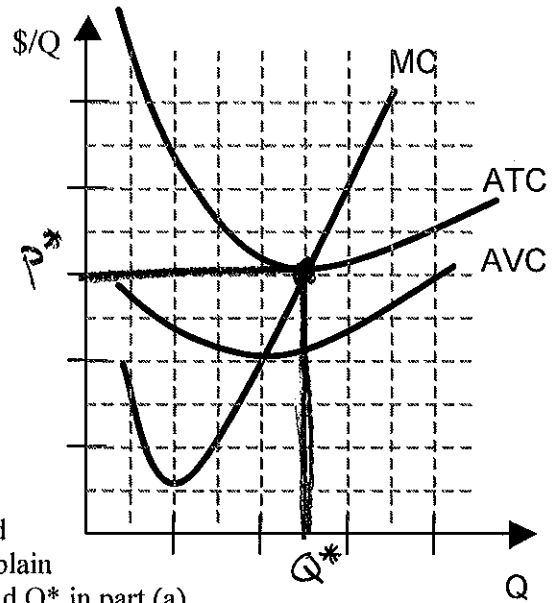
(c) Given your answer in part (b), determine the firm's profit or loss. Explain your answer.

Profit = $TR - TVC - TFC$
 $= (\$2 \times 250) - (\$50 \times 3) - \$300$
 $= \$500 - \$150 - \$300 = \50

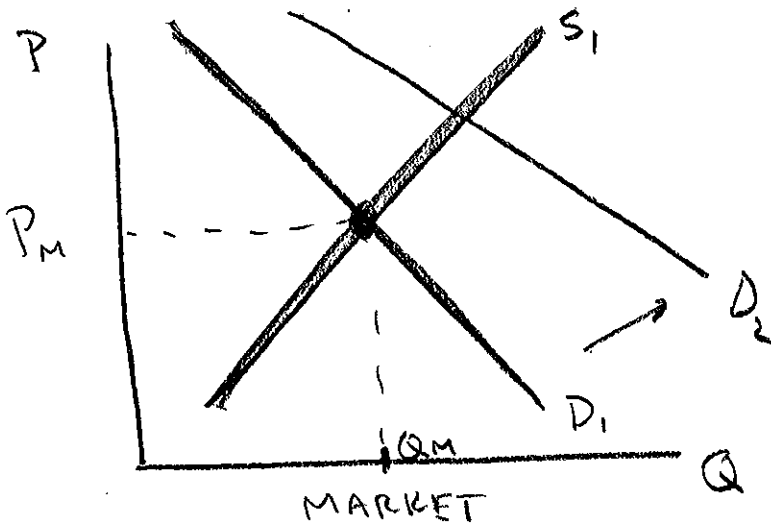
5. Consider a perfectly competitive firm. Suppose that we are in a long-run equilibrium. Note that the diagram is for short-run costs.

(a) Use the diagram to the right to illustrate the current price (P^*) and current output (Q^*) for this firm. In other words, show where P^* and Q^* will be in this diagram. Be sure to explain your answer.

Long-run equilibrium \Rightarrow zero profit
 Thus, have $P = MC = ATC$
 P^* is the zero-profit price



(b) Neatly draw another diagram below, illustrating the market supply and demand, for which the firm in part (a) is in this market. Denote the market equilibrium price and quantity by P_M and Q_M respectively, in your diagram. Explain how P_M and Q_M compare to (bigger or smaller than) P^* and Q^* in part (a). (Label your demand curve D_1 and your supply curve S_1 in your diagram.)



Market equilibrium price P_M must be zero-profit. Thus $P^* = P_M$.

$Q_M > Q^*$ since Q_M is the aggregate supply of all the firms.

(c) Now assume that good news about the product in this market causes a shift in the demand curve. Let D_2 denote the new demand curve and draw it in your diagram for (b) above. Assume that the level of output for this market has no effect on input prices. Explain why entry or exit of firms will occur in the long run, and show how this will affect the market supply curve.

Demand shifts right (higher demand)

\Rightarrow Higher equilibrium price at first \Rightarrow PROFIT > 0

\Rightarrow Firms enter \Rightarrow Supply shifts right (increase)

Supply shifts as firms enter until back at zero-profit price.