

4



Supply

LEARNING OBJECTIVES

1. Interpret a supply schedule
2. Work with graphical models of firm and market supply
3. Explain the relationship between supply and marginal cost
4. Identify factors that shift the supply curve
5. Discuss the importance of producer surplus

THE SUPPLY SCHEDULE PART I

- A **supply schedule** is a table that indicates the quantity of a good or service that would be supplied in a given period at various prices.
- Supply schedules show the relationship between the price of a good or service and the quantity supplied.



Donna Anderson

THE SUPPLY SCHEDULE PART II

- Supply schedules show how much a producer is willing to accept for a certain number of goods, not the producer's preferred price (which would be infinite).
- *Individual supply schedules* can be added together to form a *market supply schedule*.

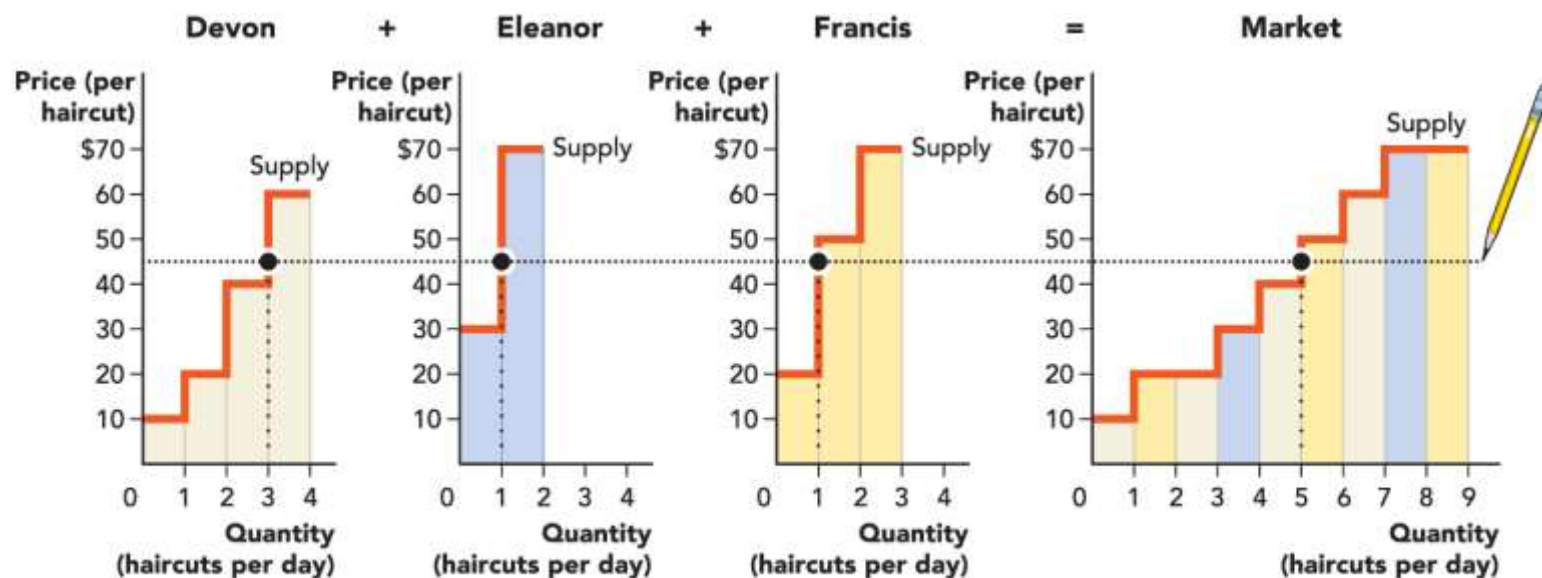
Price per Haircut	Quantity Supplied by Devon	Quantity Supplied by Eleanor	Quantity Supplied by Francis	Total Quantity Supplied by Market
\$10	1	0	0	1
20	2	0	1	3
30	2	1	1	4
40	3	1	1	5
50	3	1	2	6
60	4	1	2	7
70	4	2	3	9

THE SUPPLY GRAPH

- A **supply curve** illustrates the relationship between the price of a good and the quantity supplied.
- A supply curve is a visual representation of a supply schedule.
- Supply graphs measure price (per unit) on the vertical axis and measure quantity on the horizontal axis.

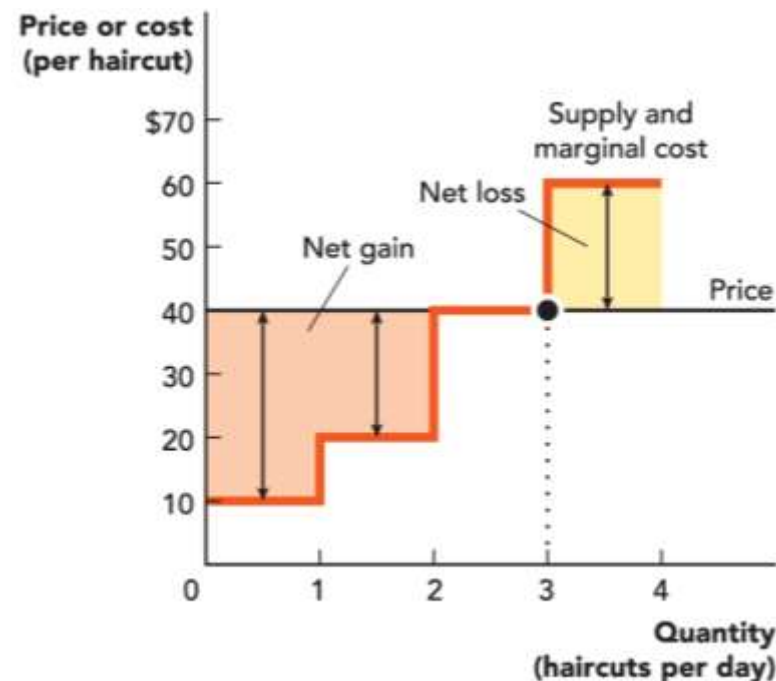
FIRM AND MARKET SUPPLY CURVES

- Like with supply schedules, there are *individual supply curves*, which are combined to form the *market supply curve*.
- To find the quantity supplied at a price of \$45, draw a horizontal line at a height of \$45 across the graph. The quantity supplied is found where the line and the supply curve intersect.



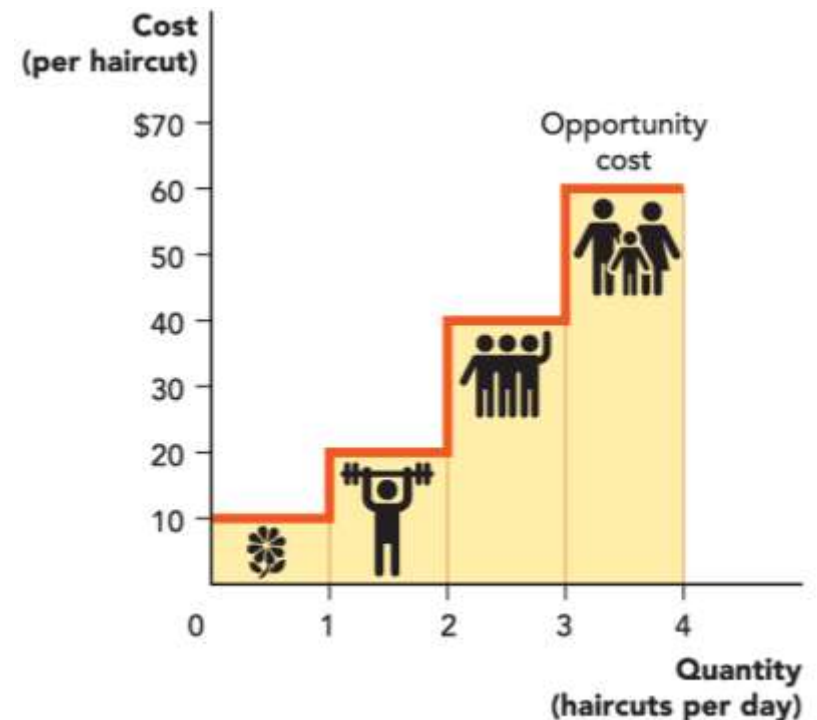
MARGINAL COST

- The additional cost of supplying one more unit of a good or service is the **marginal cost**.
- The firm's supply curve is the same as its marginal cost curve, which shows the additional cost of providing each unit.
- If it costs \$10 to produce the first unit, the firm will only provide that unit if the price is at least \$10.
- The graph shows that at a price of \$40, the marginal cost for a fourth haircut is \$60, so the hairstylist will choose to not provide that haircut.



THE RISING COST OF SUPPLYING ONE MORE

- The marginal cost typically rises as more units are produced.
- One reason for this is that the opportunity cost rises as more time is spent producing.
- Due to rising costs, firms will provide more goods or services only in exchange for higher prices.



THE LAW OF SUPPLY

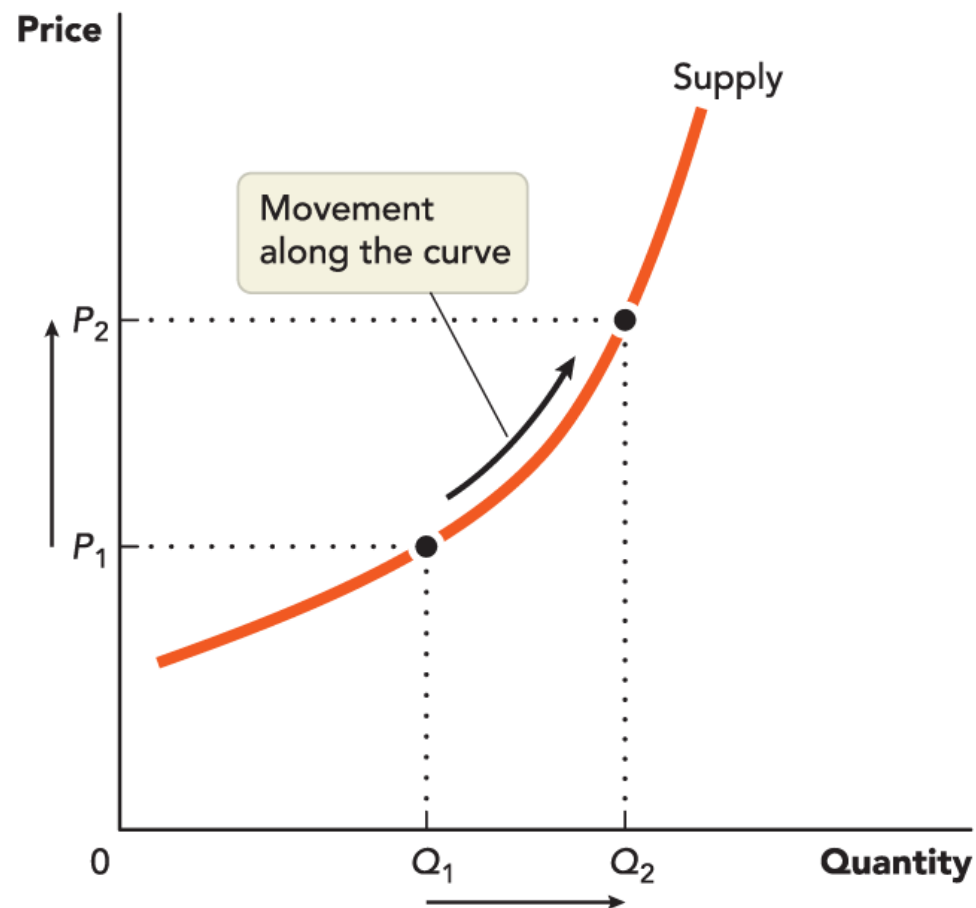
- Supply curves tend to be upward sloping, which results from rising marginal cost.
- When the price falls below the marginal cost of providing a unit of a good, firms no longer supply that unit, so supply decreases.
- The **law of supply** states that when other influences remain unchanged, firms will supply a larger quantity of a good or service at higher prices than at lower prices.

SMOOTH SUPPLY CURVES

- Like demand curves, supply curves have a jagged appearance when the horizontal portions that represent each unit are long enough to be clearly seen.
- When the quantities being supplied are large enough, the horizontal portions are not clearly seen, and supply curves appear to be smooth.

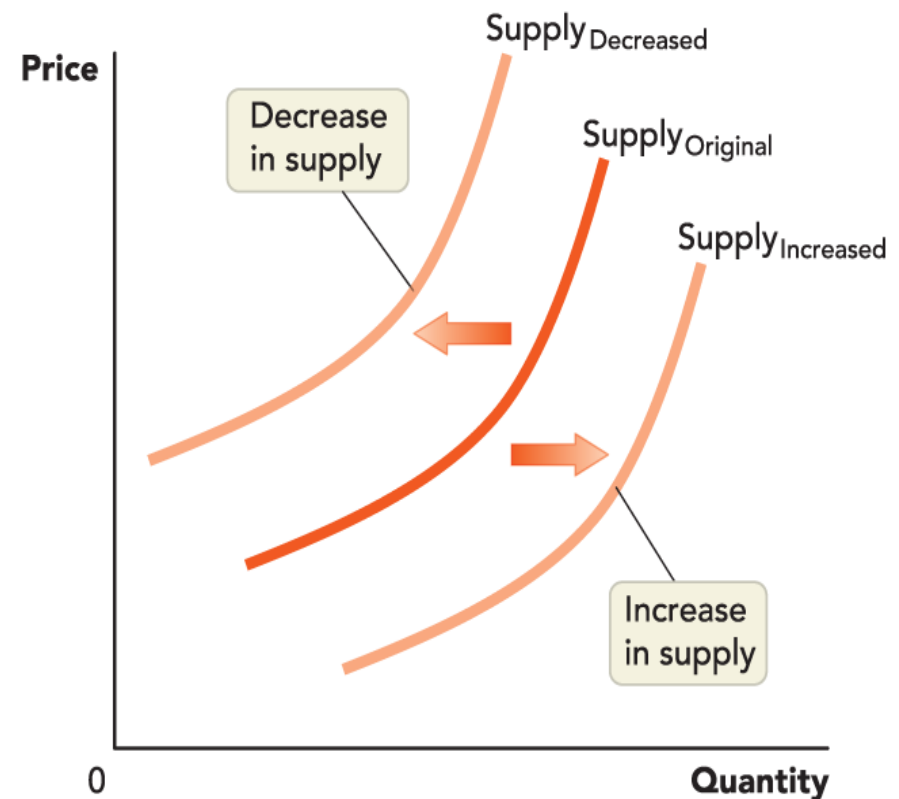
MOVEMENTS ALONG THE SUPPLY CURVE

- A change in quantity supplied that results from a price change is shown by a **movement along the supply curve**.
- The curve itself does not change, but because the price has changed, the quantity supplied also changes to a different point on the graph.



CHANGES IN SUPPLY

- A **change in supply** is a shift in the entire supply curve, indicating a change in the quantity supplied at each price.
- This happens when something changes that isn't the price. For example, if improved technology makes it cheaper to manufacture cars, supply will increase. This is shown by shifting the curve to the right.



CHANGES IN SUPPLY VERSUS MOVEMENTS ALONG THE SUPPLY CURVE

- It is important not to confuse a movement along the supply curve with a change in supply.
- A change in the quantity supplied that is brought about by a price change is not a change in supply.
- It takes a change in something that is not already measured on the axes of the graph to shift the supply curve.

SUPPLY SHIFTERS

- Both individual and market supply curves shift due to changes in:
 - input costs
 - expectations
 - nature or the weather
 - the prices of related goods or services
- Market supply curves also shift when there is a change in:
 - the number of firms

INPUT COSTS

- To produce most goods and services, firms must pay for inputs, such as electricity and labor.
- When input costs decrease, production becomes cheaper, and supply increases accordingly.
- *Technology*, which is the method of creating a good or service from inputs, has a direct influence on input costs.
- Input costs can go up as well for reasons such as wars and government regulations.
- When input costs go up, supply decreases, and the supply curve shifts to the left.



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EXPECTATIONS

- For storable goods, such as canned goods, the seller has a choice between offering the good for sale now or later.
- A company that expects higher prices in the future may hold goods in *inventory*, or temporary storage, until the best time for selling them.
- This would cause a decrease in supply.

NATURAL DISASTERS AND WEATHER

- Natural disasters and bad weather increase production costs and decrease supply.
- Droughts force farmers to spend more time and money irrigating crops.
- Good weather can lower production costs and increase supply.
- Ample rain leads to larger harvests of wheat.



SUBSTITUTES IN PRODUCTION

- The supply for one good is often influenced by the prices of other goods.
- Two goods are **substitutes in production** if the inputs that are used to provide one of the goods could otherwise be used to provide more of the other good.
- Part of the opportunity cost of providing a good or service is giving up producing substitutes.
- If the price of cheese increases, firms will produce less ice cream and use the milk to produce more cheese.

COMPLEMENTS IN PRODUCTION

- Two goods are **complements in production** if they are produced together using the same inputs.
- This machine separates milk into cream and skim milk, so cream and skim milk are complements in production.
- When the price of cream rises, more cream is produced, and more skim milk is produced as a by-product.
- So, an increase in the price of cream results in an increase in the supply of skim milk.



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THE NUMBER OF FIRMS AND A SUMMARY



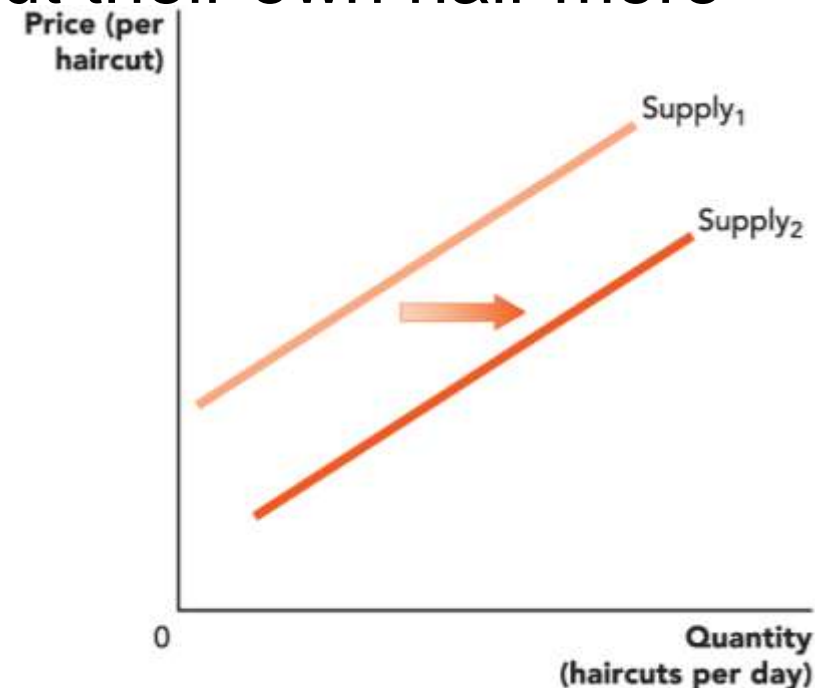
Anderson, *Survey of Economics*, © 2019 Worth Publishers

- All of these factors shift the supply curves of both individual firms and the market.
- When the number of firms in the market increases, the market supply will also increase.

LEARN BY DOING: PRACTICE QUESTION 1

Which of these changes could cause the shift shown here?

- I. Dye jobs become less popular, and their prices fall.
- II. New clippers allow haircuts to be done more quickly.
- III. New clippers allow individuals to cut their own hair more easily, so prices are expected to fall in the future.



- a) I and II only
- b) II and III only
- c) I and III only
- d) I, II, and III

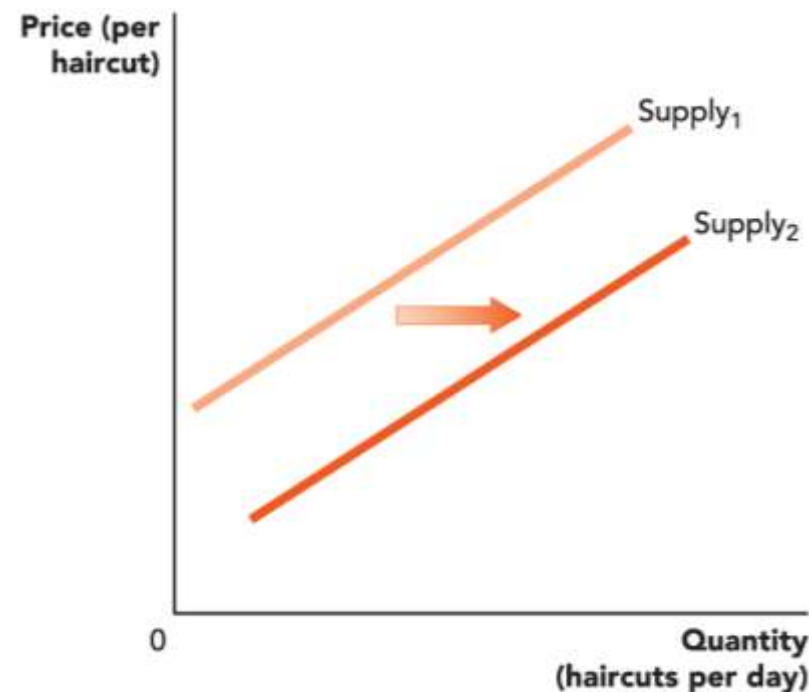
LEARN BY DOING: PRACTICE QUESTION 1

(Answer)

Which of these changes could cause the shift shown here?

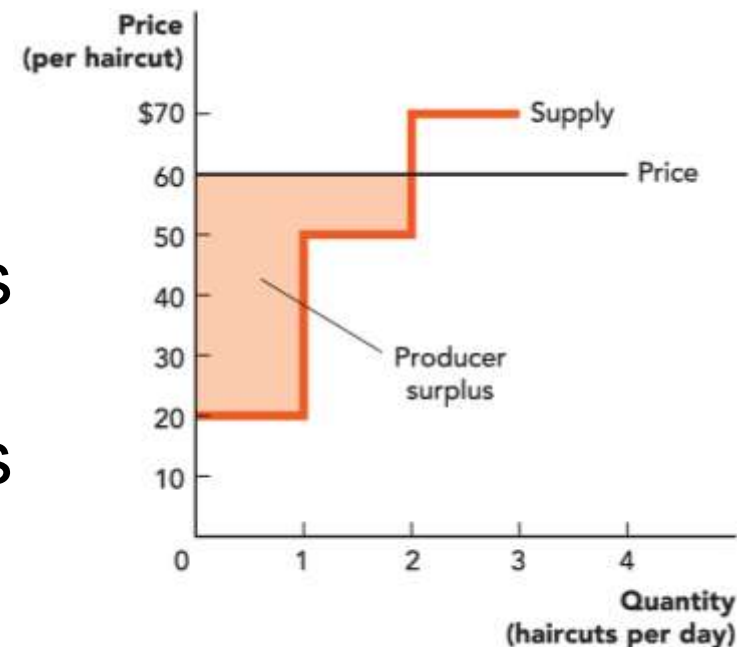
- I. Dye jobs become less popular, and their prices fall.
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- a) I and II only
- b) II and III only
- c) I and III only
- d) I, II, and III (correct answer)**



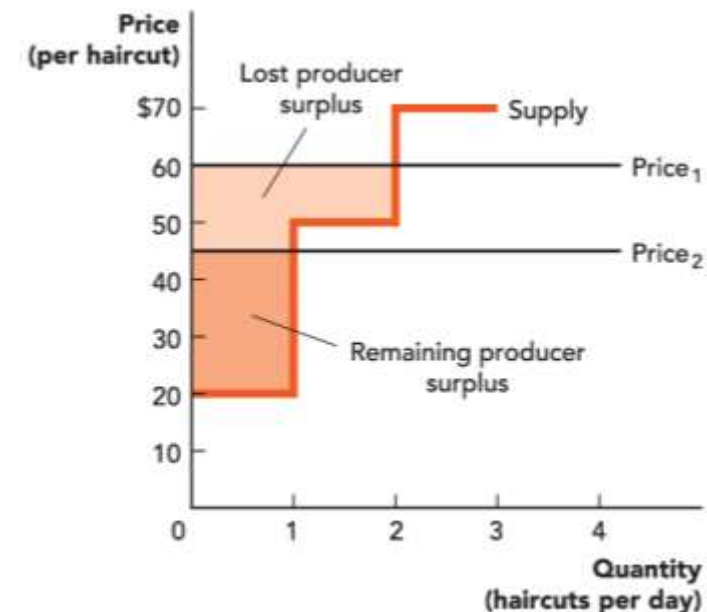
INDIVIDUAL PRODUCER SURPLUS

- Firms supply goods and services for which the marginal cost is less than (or equal to) the price.
- Any amount by which the price exceeds the marginal cost of each unit sold provides a net gain called **producer surplus**.
- The graph shows that Francis gets $\$60 - \$20 = \$40$ of producer surplus from the first haircut and $\$60 - \$50 = \$10$ of producer surplus from the second latte, so his total producer surplus is \$50.



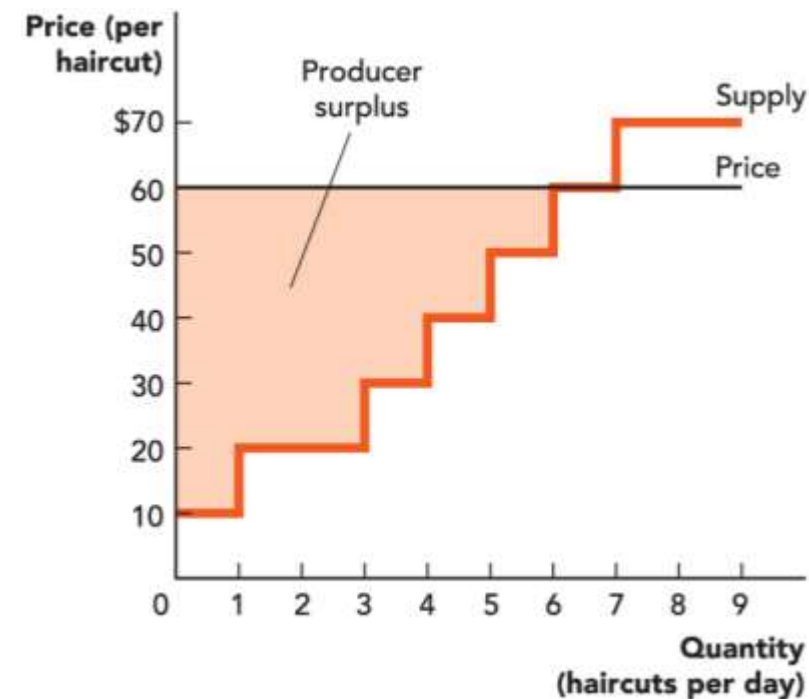
PRODUCER SURPLUS AFTER A PRICE CHANGE

- A price decrease reduces producer surplus for two reasons:
 - The producer surplus for each good or service is reduced by the amount of the price decrease.
 - Firms supply less after a price decrease.
- The graph shows that when the price per haircut falls from \$60 to \$45, Francis supplies only one haircut. His producer surplus from the one haircut is $\$45 - \$20 = \$25$, a \$25 decrease in total producer surplus.
- Similarly, a price increase increases producer surplus.



MARKET PRODUCER SURPLUS

- Total producer surplus in the market is found the same way that it is found for the individual.
- In the graph, the seventh haircut provides no producer surplus because the price and the amount the firm is willing to accept are the same.
- The total producer surplus is found by adding the producer surplus for each of the supplied haircuts.
- $\$50 + \$40 + \$30 + \$20 + \$10 + \$0 = \$190$



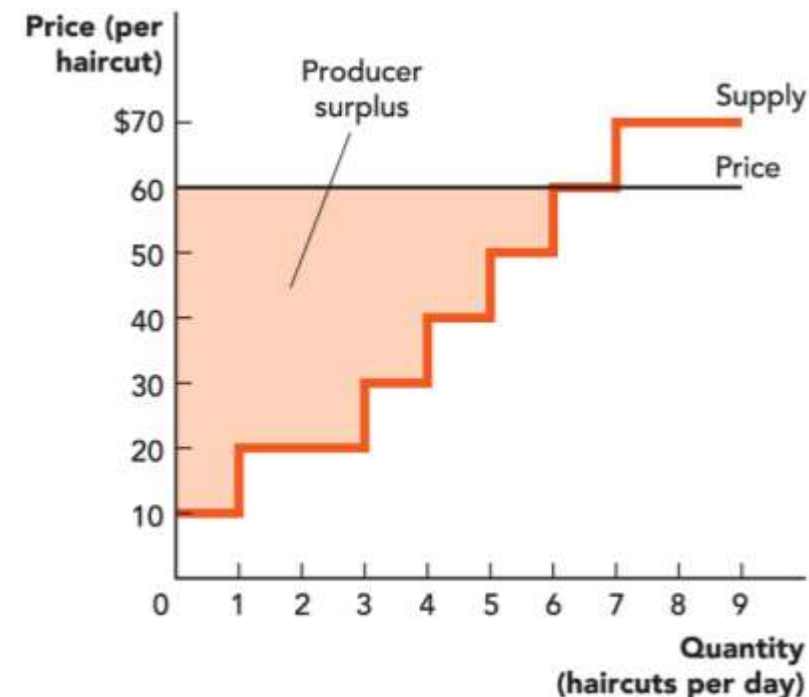
PRODUCER SURPLUS AND PROFIT

- Producer surplus is not the same thing as *profit*.
- Profit is the firm's net gain after subtracting *all* of its costs from the money it takes in. Producer surplus considers only marginal cost.
- Things like rent and insurance affect profit but not producer surplus.

LEARN BY DOING: PRACTICE QUESTION 2

Suppose that the price per haircut decreases from \$60 to \$20. What is the change in producer surplus?

- a) \$10
- b) \$100
- c) \$180
- d) \$190



LEARN BY DOING: PRACTICE QUESTION 2 (Answer)

Suppose that the price per haircut decreases from \$60 to \$20. What is the change in producer surplus?

- a) \$10
- b) \$100
- c) \$180 (correct answer)**
- d) \$190

