

Chapter 3: Supply and Demand

Tuesday, June 22

CHAPTER 1 REVIEW...

Marginal benefit is the benefit from an additional unit.

Marginal cost is the cost of an additional unit.

Consumers should continue buying additional units of a good until **marginal benefit** is no longer greater than **marginal cost**. This maximizes **consumer surplus**.

Producers should continue selling additional units of a good until **marginal benefit** (or marginal revenue) is no longer greater than **marginal cost**. This maximizes **producer surplus**.

When considering the **cost** of something, one should take into account **implicit costs** as well as **explicit costs**.

QUESTION 1 (the margin)

donuts cost \$1 each

total benefit
(willingness
to pay)

donuts	
1	\$2.75
2	\$5.00
3	\$6.75
4	\$8.00
5	\$8.75
6	\$9.00

How many donuts should I buy?

- A) 2 B) 3 C) 4 D) 5 E) 6 or more

answer to question 1

donuts costs \$1 each

donuts	total benefit	marginal benefit	marginal cost	total surplus
1	\$2.75	\$2.75	\$1	\$1.75
2	\$5.00	\$2.25	\$1	\$3.00
3	\$6.75	\$1.75	\$1	\$3.75
4	\$8.00	\$1.25	\$1	\$4.00
5	\$8.75	75¢	\$1	\$3.75
6	\$9.00	25¢	\$1	\$3.00

How many donuts should I buy?

- A) 2 B) 3 C) 4 D) 5 E) 6 or more

QUESTION 2 (the margin)

How do I know that it's time to stop buying more donuts?

- A) When opportunity costs are zero.**
- B) When consumer surplus is negative**
- C) When the average benefit is less than the average cost**
- D) When the total benefit is less than the total cost**
- E) When the marginal benefit is less than the marginal cost**

answer to question 2

How do I know that it's time to stop buying more donuts?

A) When opportunity costs are zero.

B) When consumer surplus is negative

C) When the average benefit is less than the average cost

D) When the total benefit is less than the total cost

E) When the marginal benefit is less than the marginal cost

QUESTION 3 (the margin)

For every weekend that I spend at my summer house, I need to spend **\$500** in air fares.

Every weekend that I *don't* spend there, I can make **\$1,000** by renting it to someone else.

weekends	1	2	3	4	5	6
total benefit	6,400	9,600	11,200	12,000	12,400	12,600

How many weekends should I stay?

- A) 1 B) 2 C) 3 D) 4 E) 5**

answer to question 3

Explicit costs (air fares) are \$500. Implicit costs (from foregone rental income) are \$1,000. So, the cost per weekend is \$1,500.

weekends	1	2	3	4	5	6
total benefit	6,400	9,600	11,200	12,000	12,400	12,600
marginal benefit	6,400	3,200	1,600	800	400	200
marginal cost	2,500	2,500	2,500	2,500	2,500	2,500

How many weekends should I stay?

- A) 1 B) 2 C) 3 D) 4 E) 5**

QUESTION 4 (demand for coffee)

cups	total benefit
1	10
2	18
3	24
4	28
5	30
6	30

If the price of coffee is 3.99, how many cups should I buy?

A) 1

B) 2

C) 3

D) 4

E) 5

answer to question 4

cups	total benefit	marginal benefit
1	10	10
2	18	8
3	24	6
4	28	4
5	30	2
6	30	0

If the price of coffee is 3.99, how many cups should I buy?

A) 1

B) 2

C) 3

D) 4

E) 5

demand for coffee

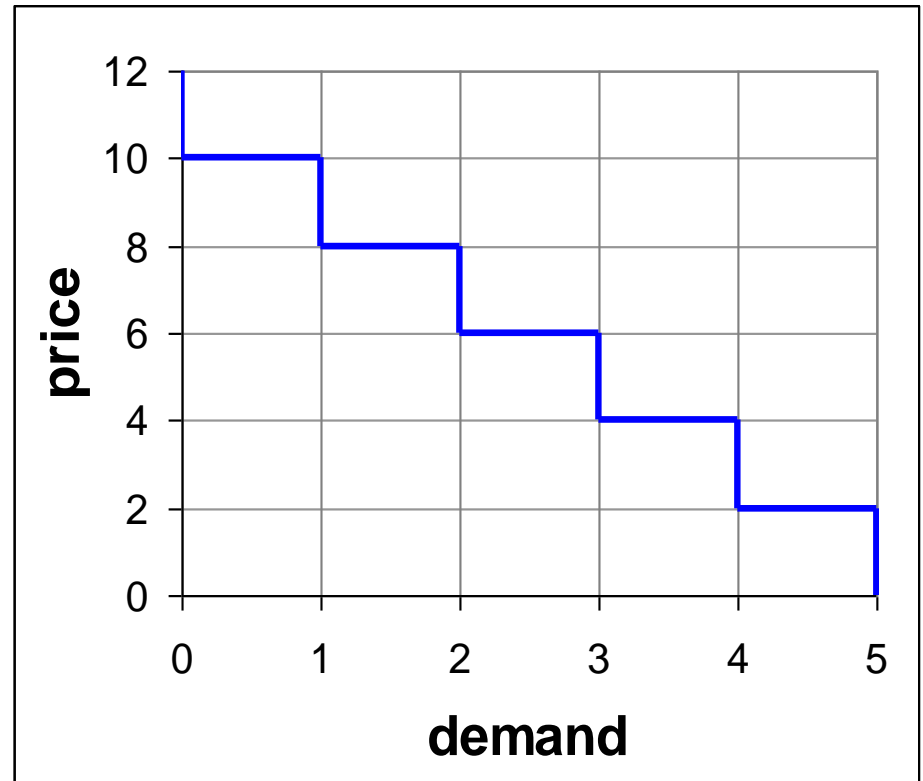
cups	total benefit	marginal benefit
1	10	10
2	18	8
3	24	6
4	28	4
5	30	2
6	30	0

price of coffee	my demand for coffee
1¢-\$1.99	5
\$2.01-\$3.99	4
\$4.01 - \$5.99	3
\$6.01 - \$7.99	2
\$8.01 - \$9.99	1
> \$10	0

As the price of coffee goes up, I'll be willing to buy fewer cups. That is, I will demand less coffee when the price is higher.

demand for coffee: a graph

price of coffee	my demand for coffee
1¢-\$1.99	5
\$2.01-\$3.99	4
\$4.01 - \$5.99	3
\$6.01 - \$7.99	2
\$8.01 - \$9.99	1
> \$10	0



As the price of coffee goes up, I'll be willing to buy fewer cups. That is, I will demand less coffee when the price is higher.

QUESTION 5 (five potential buyers)

person	maximum price
Albert	50
Bill	45
Cindy	40
Dena	35
Ed	30

I'm selling copies of my music video on DVD, and there are five potential buyers: Albert, Bill, etc. Each person has a maximum price that they're willing to pay. That is, they will buy a copy of the DVD from me as long as I don't charge more than that price.

If I charge a price of \$25 for the DVD, how many copies will be demanded?

- A) 1 B) 2 C) 3 D) 4 E) 5

answer to question 5

person	maximum price
Albert	50
Bill	45
Cindy	40
Dena	35
Ed	30

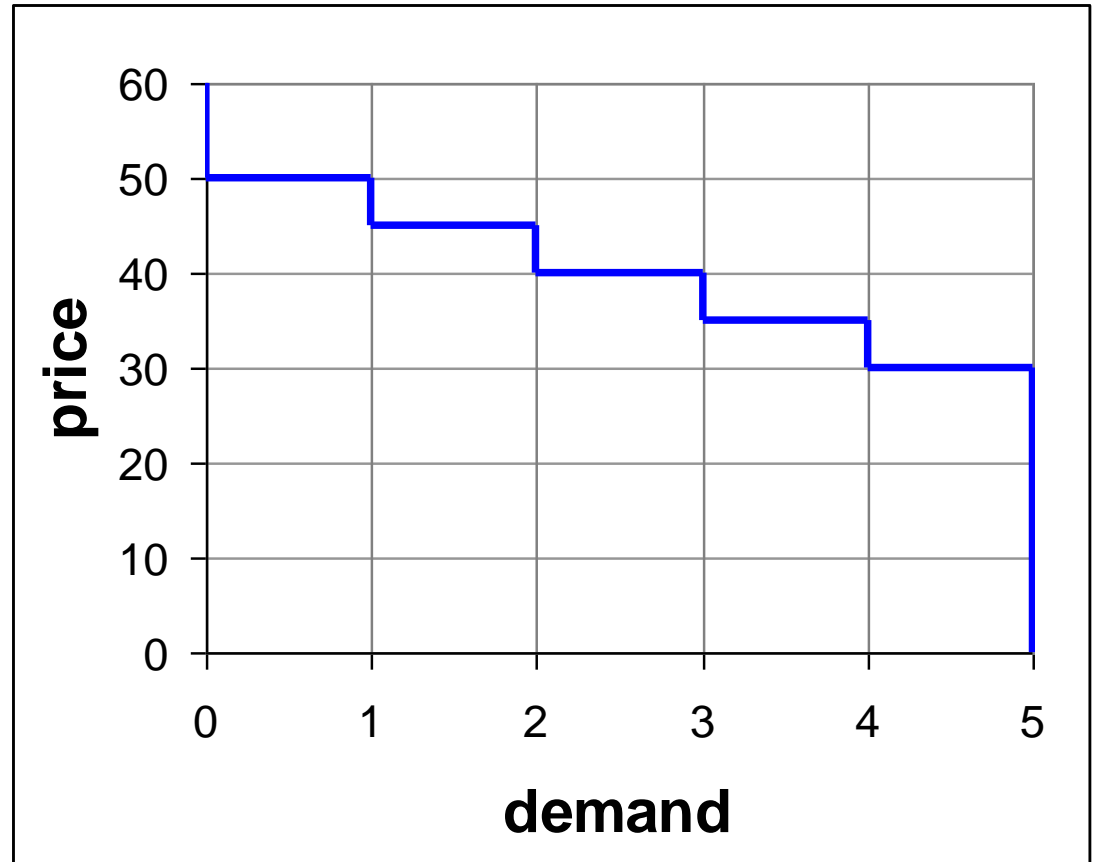
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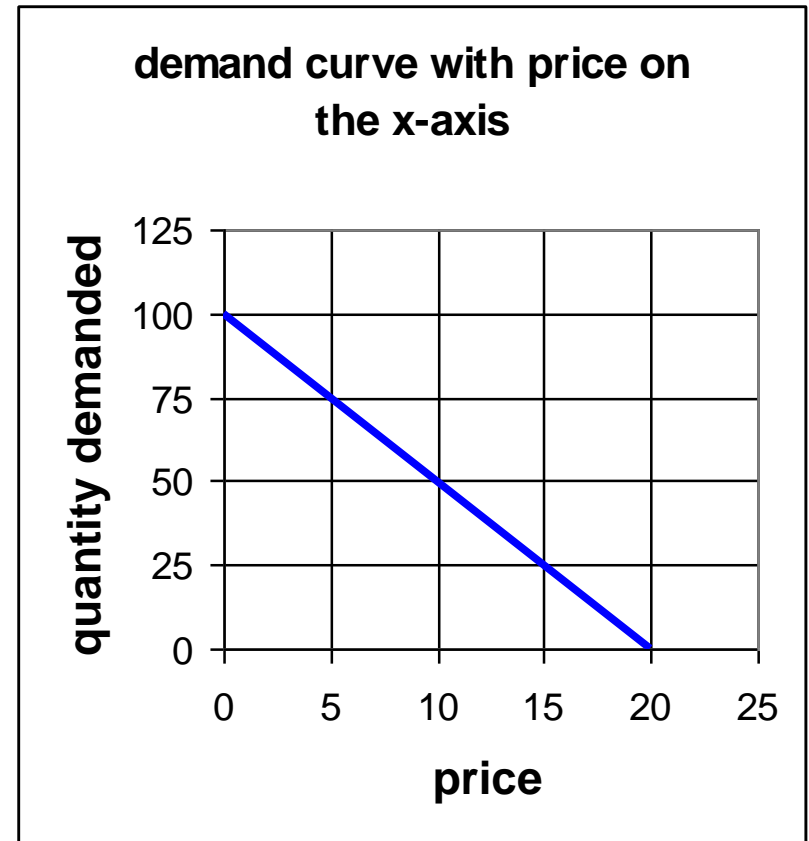
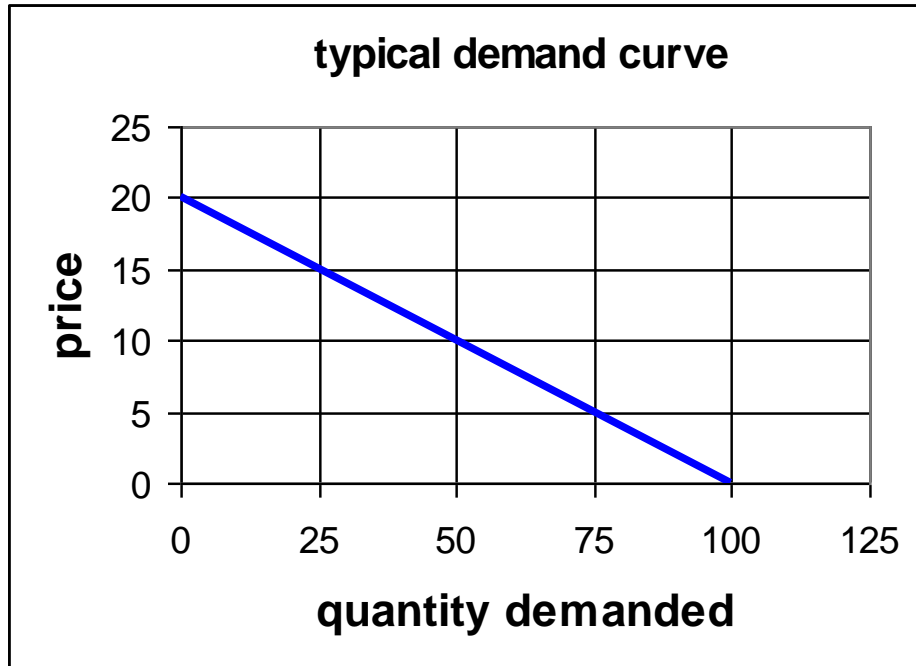
five potential buyers: a graph

person	maximum price
Albert	50
Bill	45
Charlie	40
Dave	35
Ed	30



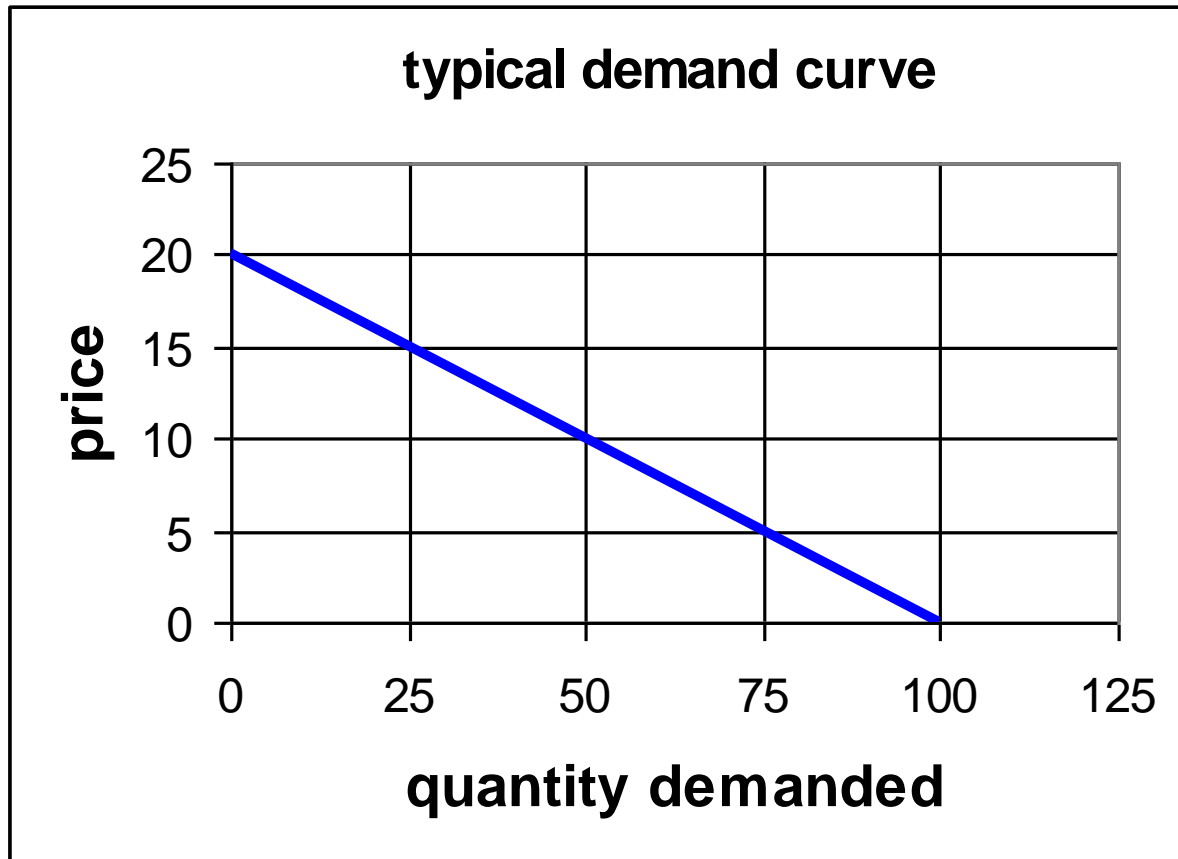
Again, as the price goes up, the quantity demanded goes down.

one demand curve, from two points of view



The convention in economics is to put quantity on the x-axis. It's not really better or more scientific or anything; it's just convention.

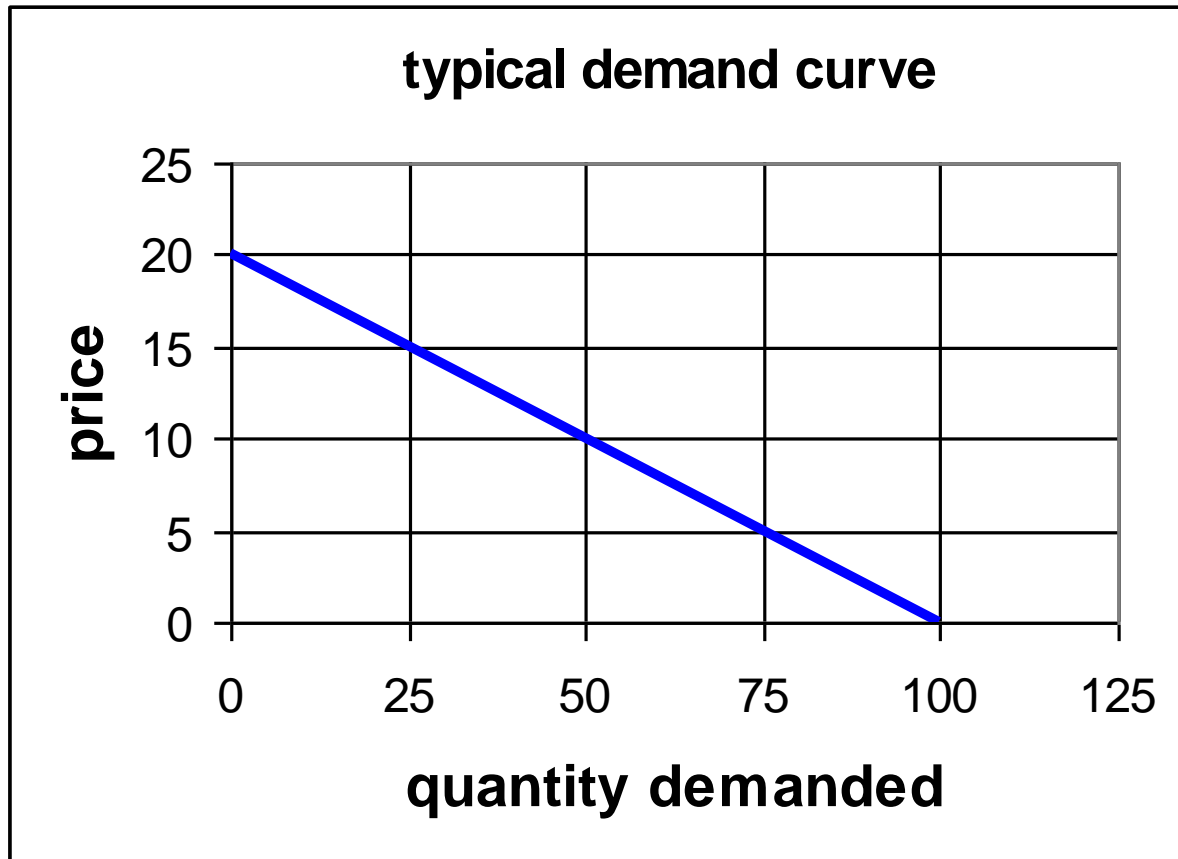
QUESTION 6 (reading a demand curve)



If price = 15, what is the quantity demanded?

- A) 0 B) 25 C) 50 D) 75 E) 100**

answer to question 6



If price = 15, what is the quantity demanded?

A) 0

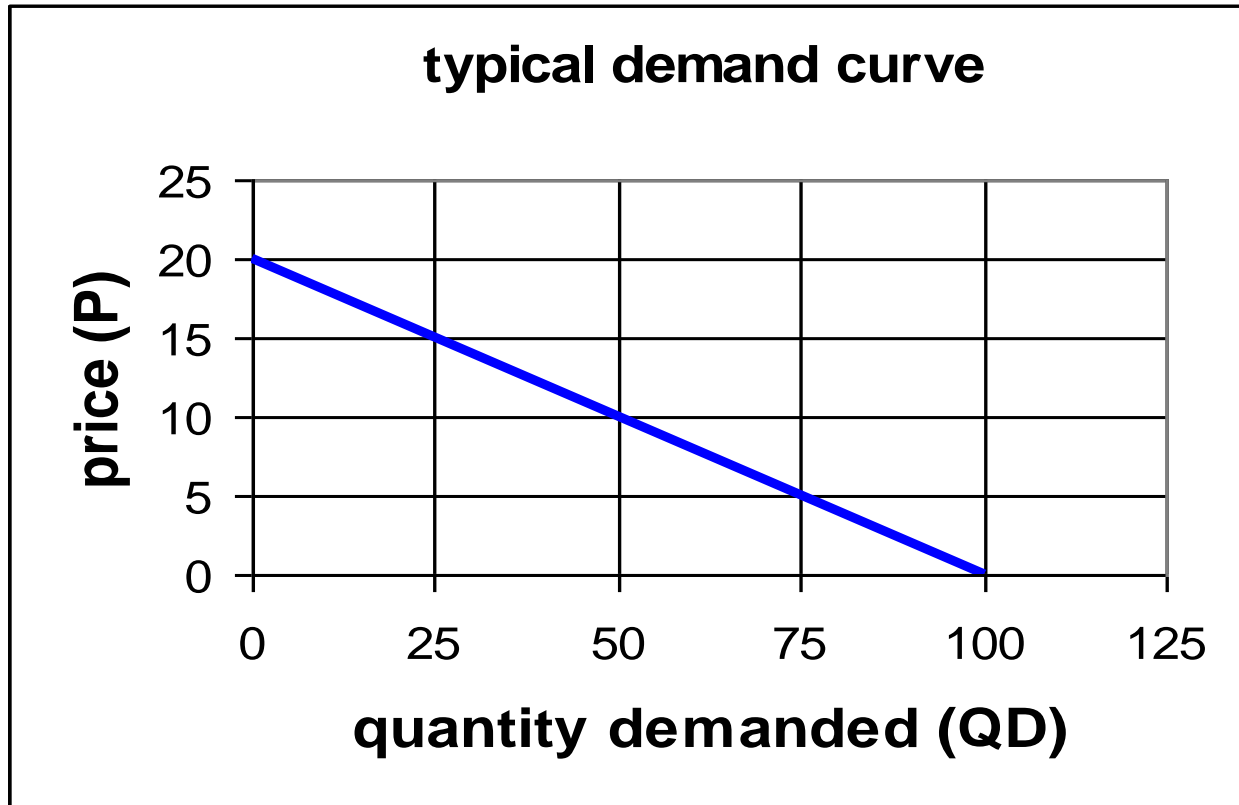
B) 25

C) 50

D) 75

E) 100

QUESTION 7 (equation of a demand curve)



This demand curve has the equation $Q_D = 100 - 5P$

Question: If $P = 7$, what is Q_D ?

A) 25

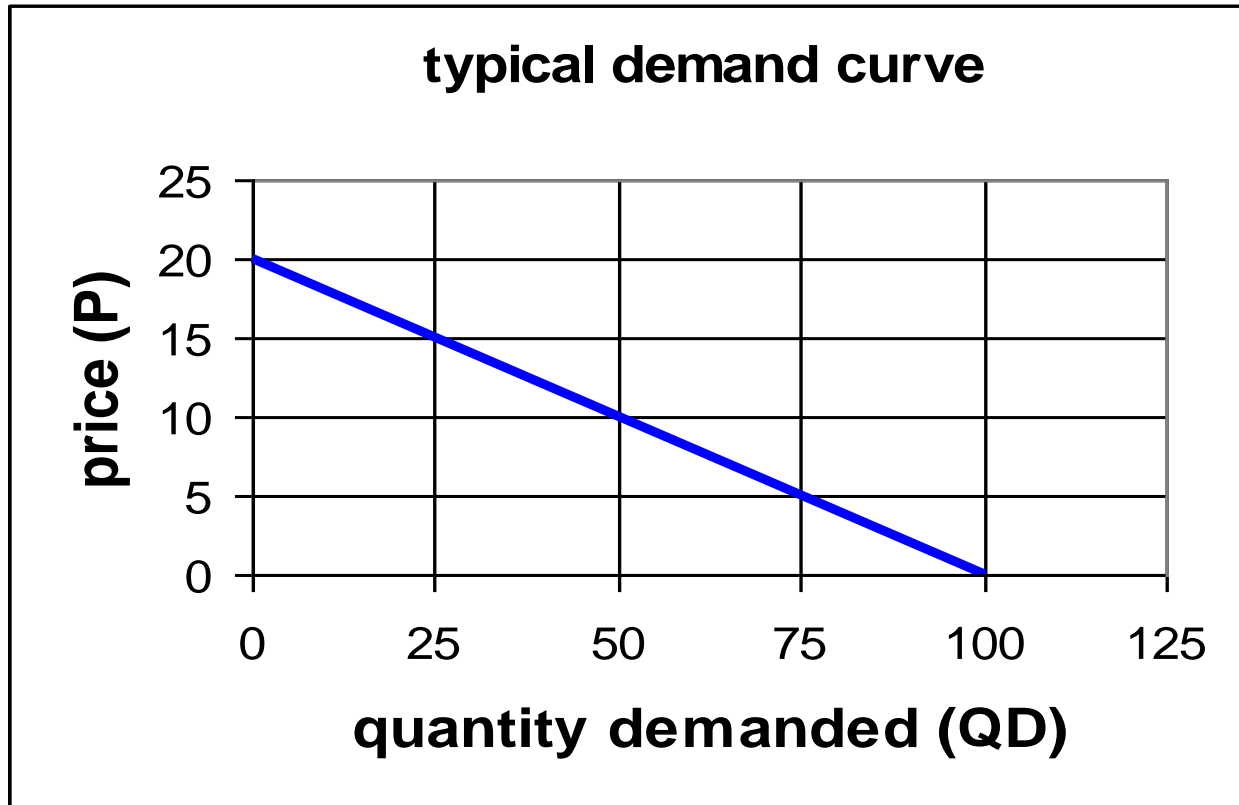
B) 35

C) 45

D) 55

E) 65

answer to question 7



This demand curve has the equation $Q_D = 100 - 5P$

Question: If $P = 7$, what is Q_D ?

A) 25

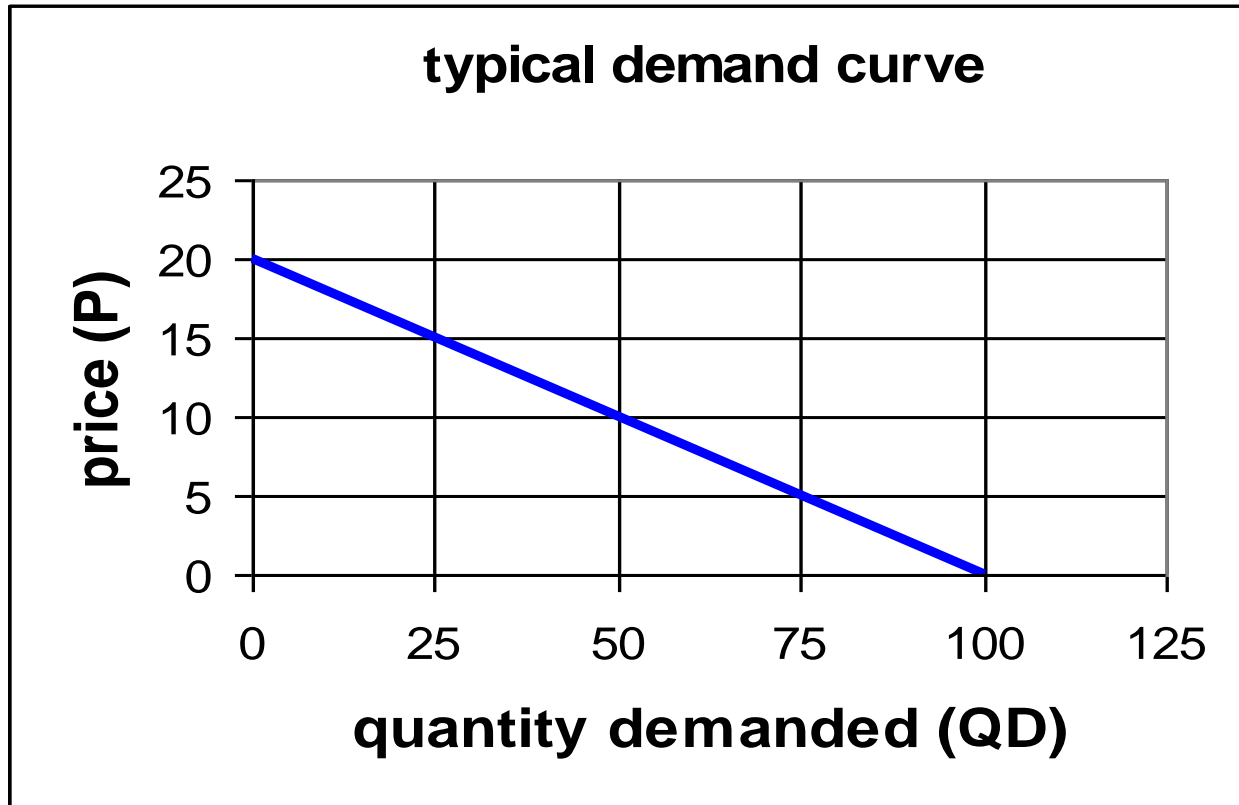
B) 35

C) 45

D) 55

E) 65

QUESTION 8 (equation of a demand curve)

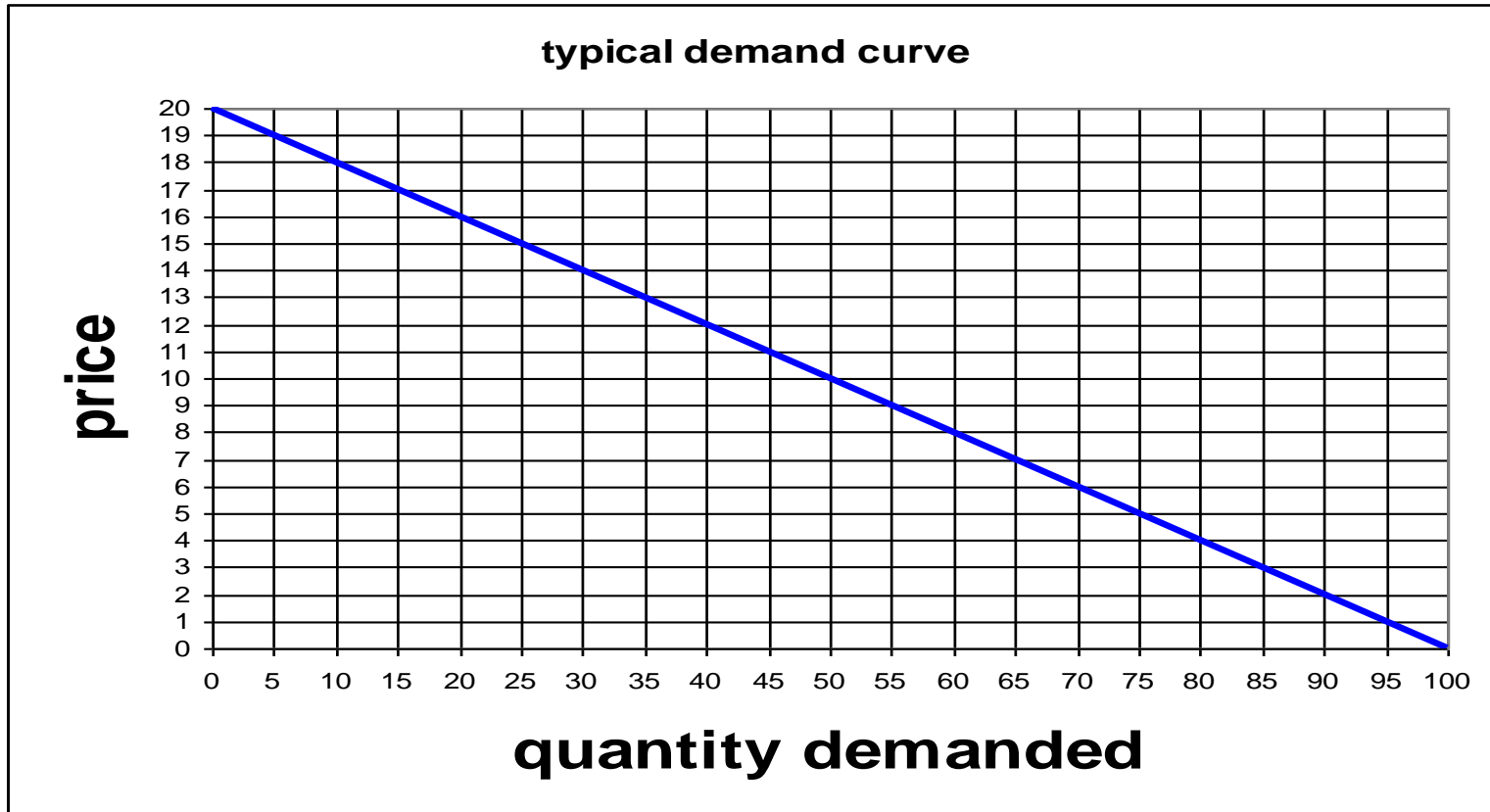


This demand curve has the equation $Q_D = 100 - 5P$

Question: If $P = 19$, what is Q_D ?

- A) 5 B) 15 C) 30 D) 45 E) 60**

answer to question 8



This demand curve has the equation $Q_D = 100 - 5P$

Question: If $P = 19$, what is Q_D ?

- A) 5 B) 15 C) 30 D) 45 E) 60**

QUESTION 9 (supply of fish)

fish	total cost
1	2
2	6
3	14
4	30
5	62

If the price of fish is \$3, how many fish should I sell?

A) 1

B) 2

C) 3

D) 4

E) 5

answer to question 9

fish	total cost	marginal cost
1	2	2
2	6	4
3	14	8
4	30	16
5	62	32

If the price of fish is \$3, how many fish should I sell?

A) 1

B) 2

C) 3

D) 4

E) 5

supply of fish

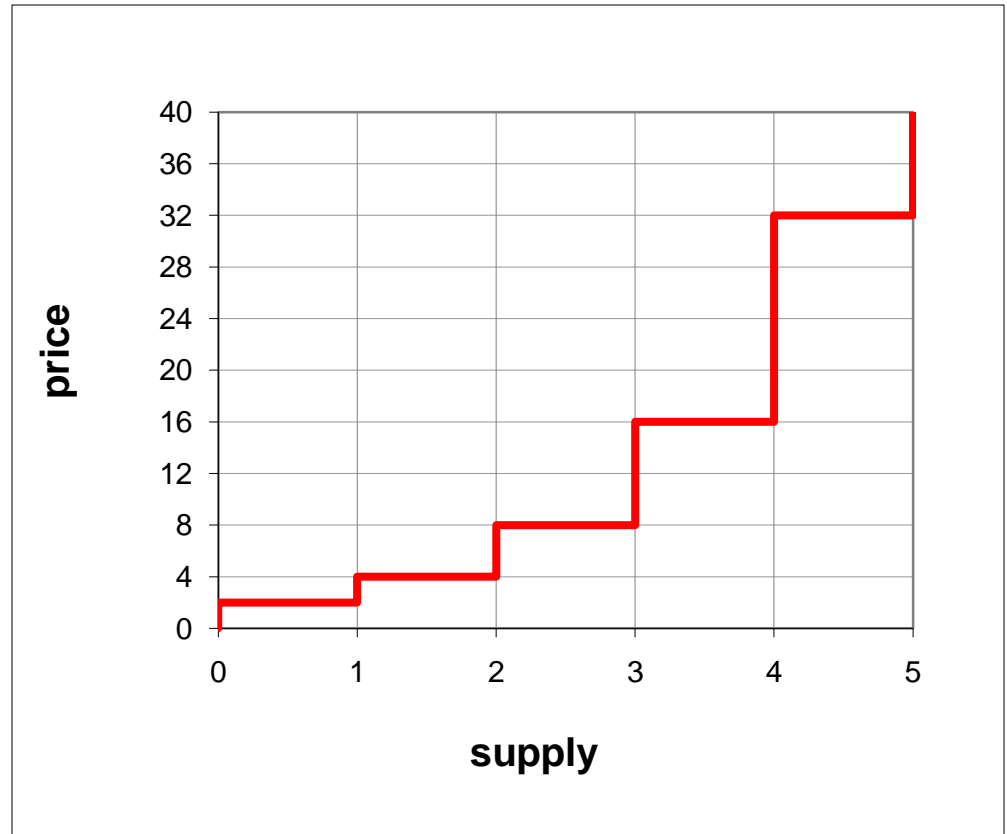
fish	total cost	marginal cost	price of fish	my supply of fish
1	2	2	< \$2	0
2	6	4	\$2 - \$4	1
3	14	8	\$4 - \$8	2
4	30	16	\$8 - \$16	3
5	62	32	\$16 - \$32	4
			\$32 +	5

As the price of fish goes up, I'll be willing to sell more fish. That is, I will supply more fish when the price is higher.

supply of fish: a graph

price of fish **my supply of fish**

< \$2	0
\$2 - \$4	1
\$4 - \$8	2
\$8 - \$16	3
\$16 - \$32	4
\$32 +	5



As the price of fish goes up, I'll be willing to sell more fish. That is, I will supply more fish when the price is higher.

QUESTION 10 (five potential sellers)

person	minimum price
Andy	\$100,000
Betty	\$200,000
Carl	\$250,000
Damien	\$300,000
Ellen	\$500,000

I'm collecting vintage Corvettes, and there are five potential sellers: Andy, Betty, etc. Each person has a minimum price that they're willing to sell at. That is, they will sell their Corvette from me as long as I offer at least that much.

If I offer a price of \$325,000 to each potential seller, how many Corvettes will I be able to acquire?

- A) 1 B) 2 C) 3 D) 4 E) 5

answer to question 10

person	minimum price
Andy	\$100,000
Betty	\$200,000
Carl	\$250,000
Damien	\$300,000
Ellen	\$500,000

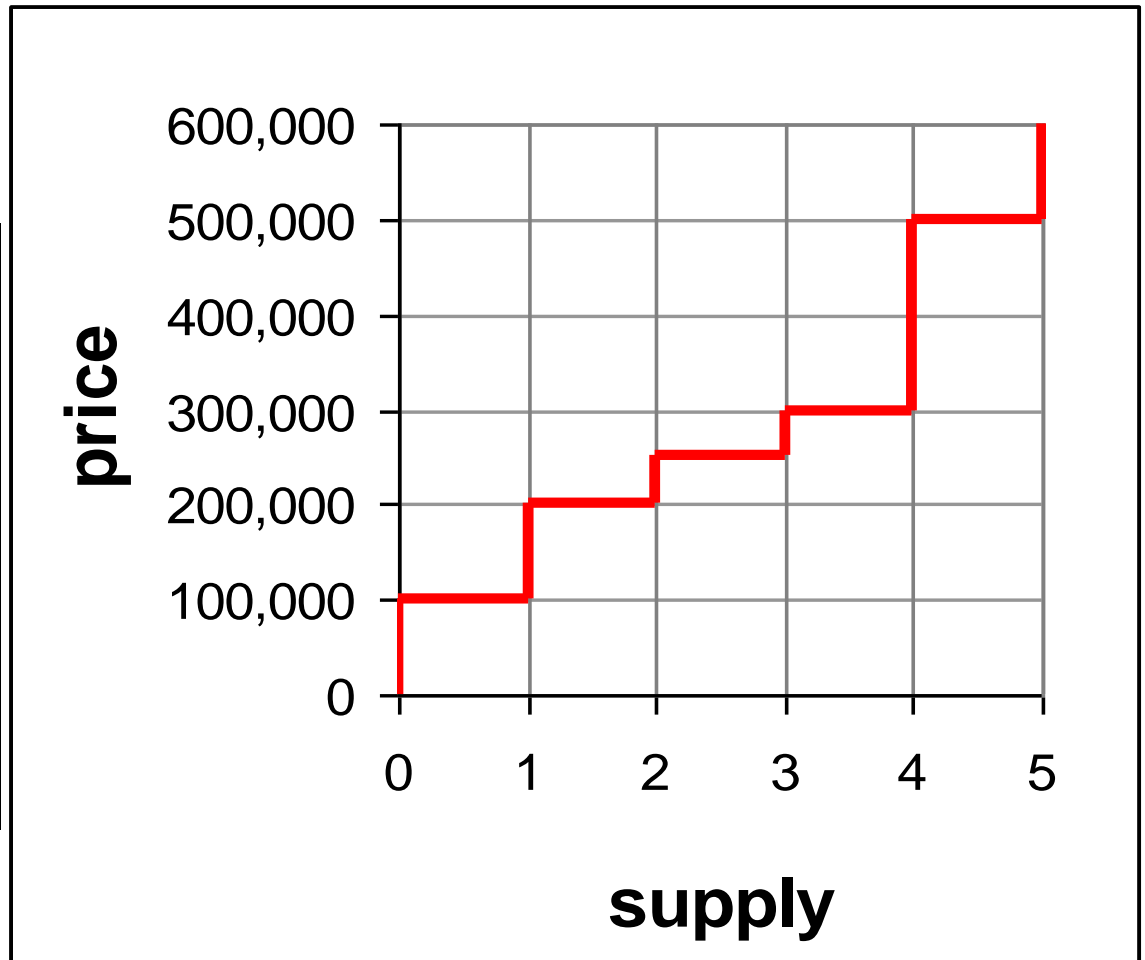
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If I offer a price of \$325,000 to each potential seller, how many Corvettes will I be able to acquire?

- A) 1 B) 2 C) 3 D) 4 E) 5

five potential sellers: a graph

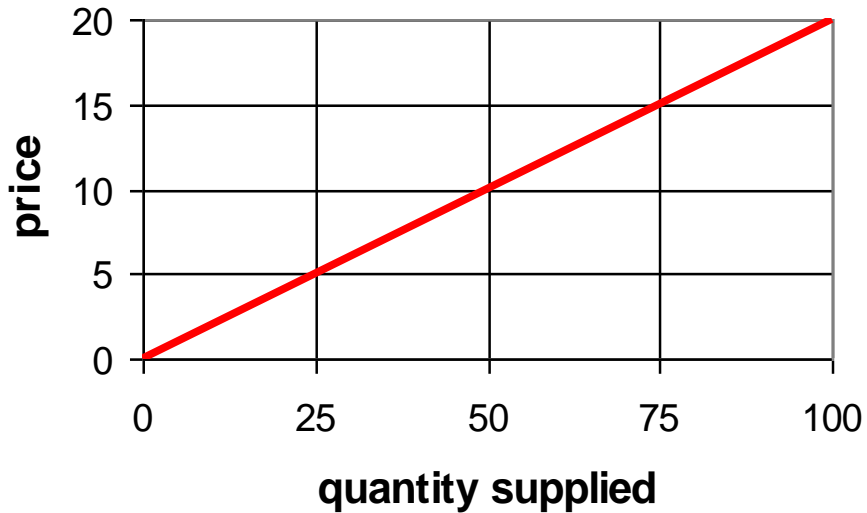
person	minimum price
Andy	\$100,000
Betty	\$200,000
Carl	\$250,000
Damien	\$300,000
Ellen	\$500,000



Again, as the price goes up, the quantity supplied goes up.

a supply curve from two points of view

typical supply curve

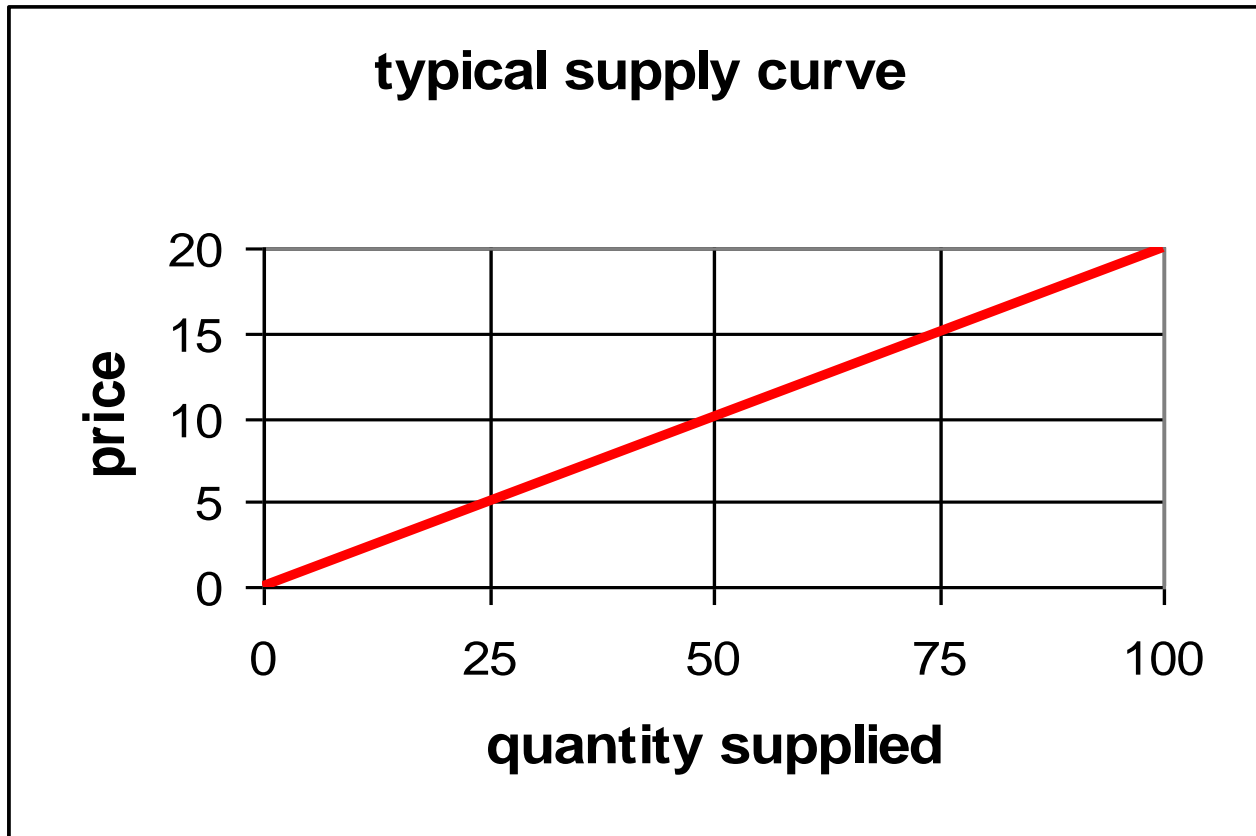


supply curve with price on the x-axis



Again, putting quantity on the x-axis is standard. It may be more intuitive to put price on the x-axis, but oh well.

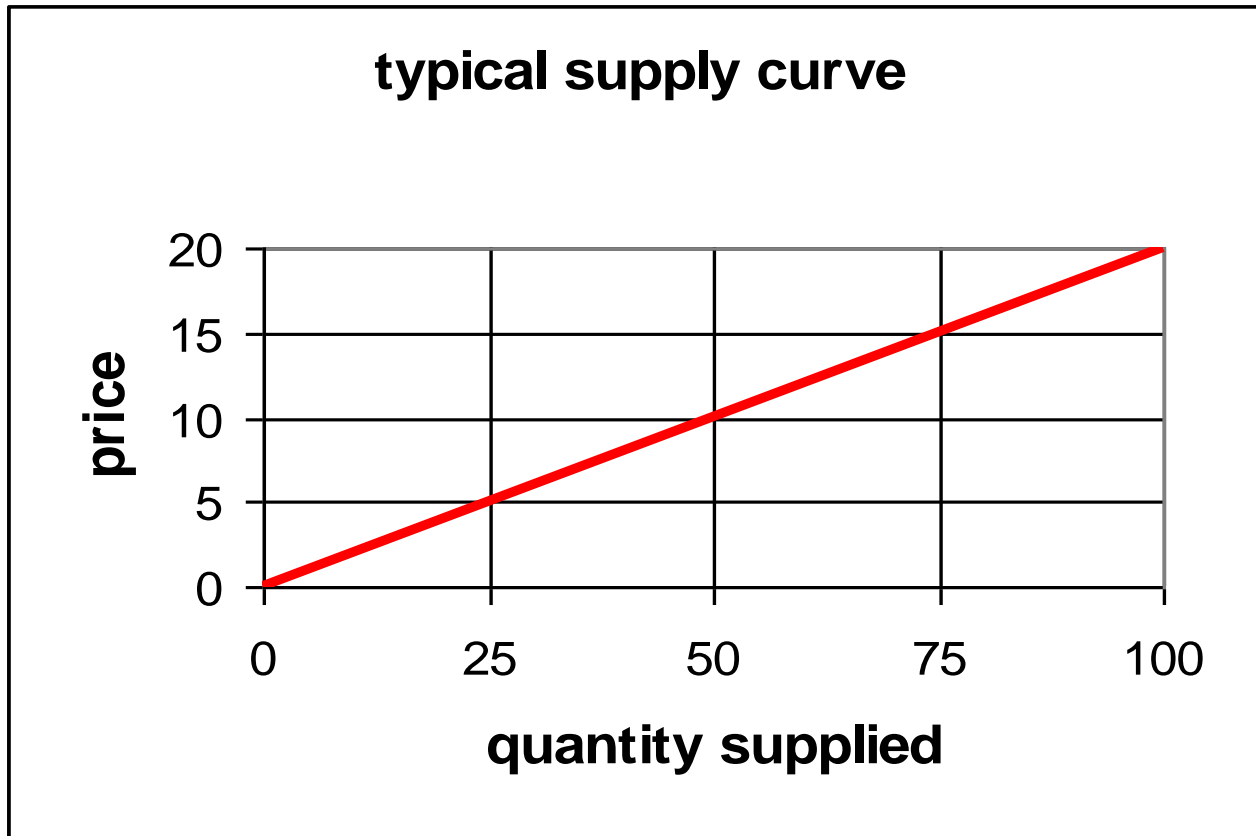
QUESTION 11 (reading a supply curve)



If price = 15, what is the quantity supplied?

- A) 0 B) 25 C) 50 D) 75 E) 100**

answer to question 11



If price = 15, what is the quantity supplied?

A) 0

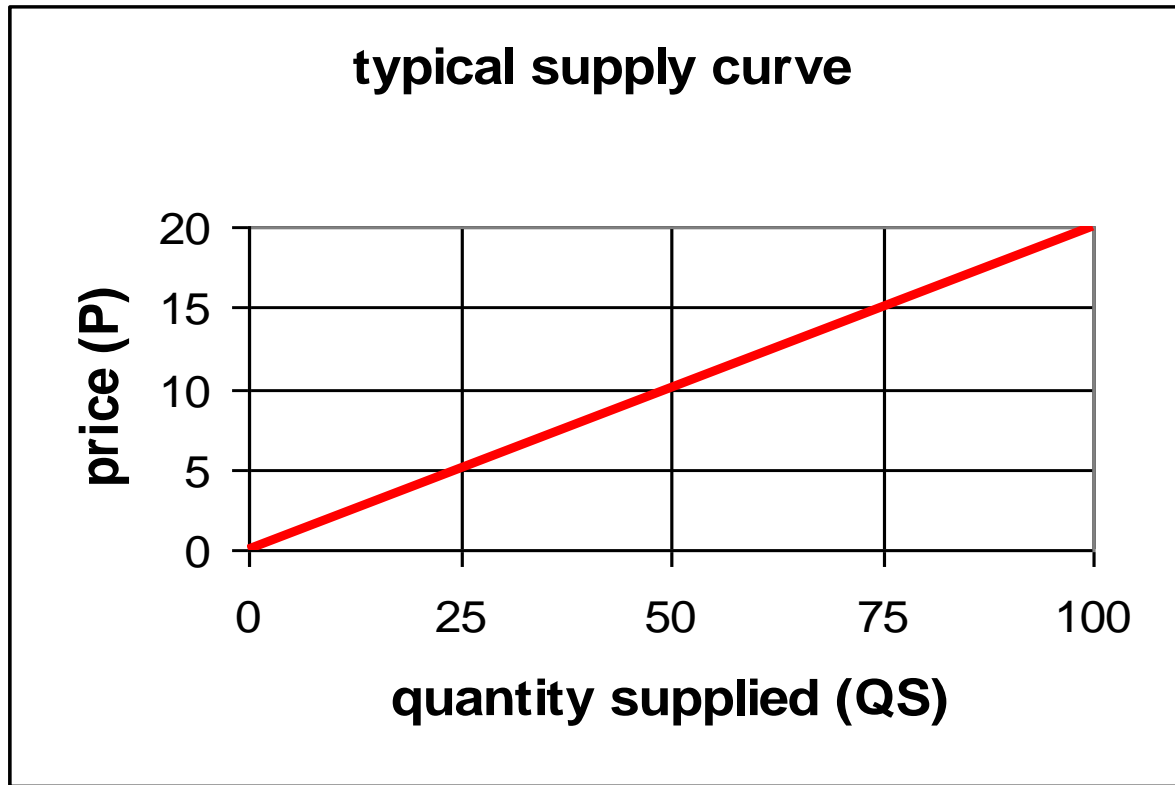
B) 25

C) 50

D) 75

E) 100

QUESTION 12 (equation of a supply curve)

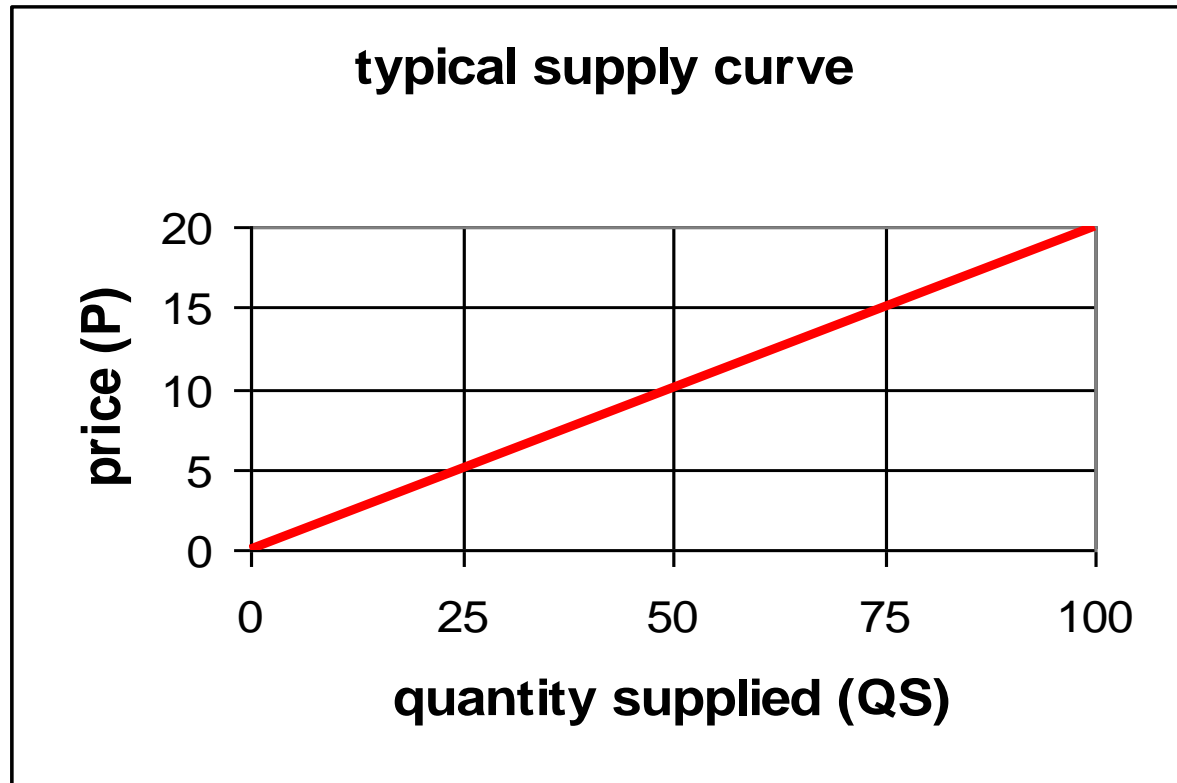


This supply curve has the equation $Q_s = 5P$

If $P = 7$, what is Q_s ?

- A) 7 B) 14 C) 21 D) 28 E) 35**

answer to question 12

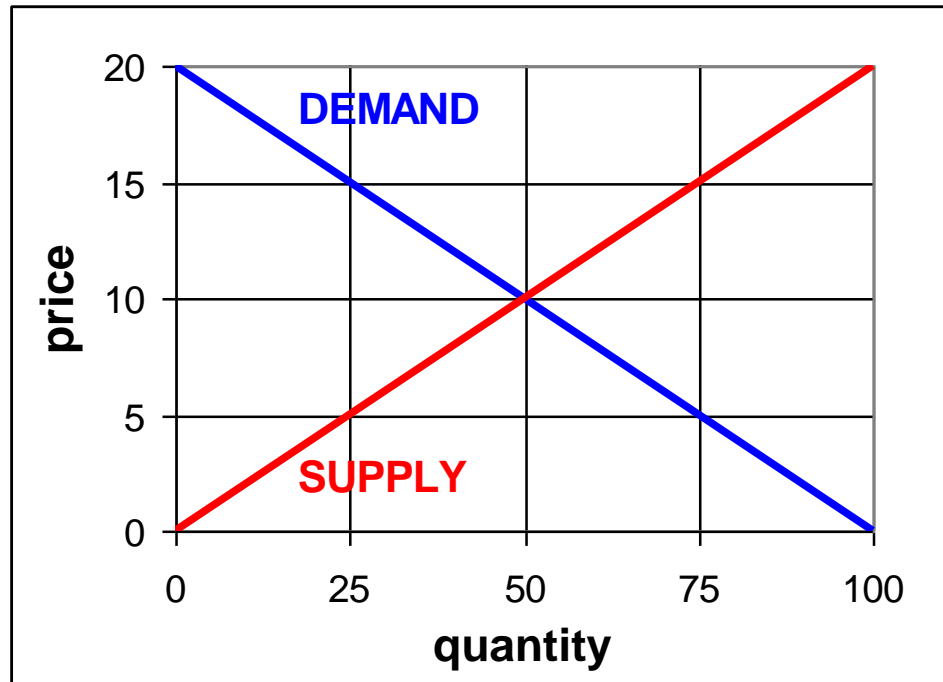


This supply curve has the equation $Q_s = 5P$

If $P = 7$, what is Q_s ?

- A) 7 B) 14 C) 21 D) 28 E) 35**

EXCESS DEMAND



In the market represented by the graph above, at a price of \$5, the quantity supplied will be 25, and the quantity demanded will be 75.

Thus, there is an **excess demand of 50 units.**

EXCESS DEMAND



In the market represented by the graph above, at a price of \$5, the quantity supplied will be 25, and the quantity demanded will be 75.

This results in an **excess demand of 50 units.**

EXCESS DEMAND



If the price stays at \$5, how many units will be sold?

25.

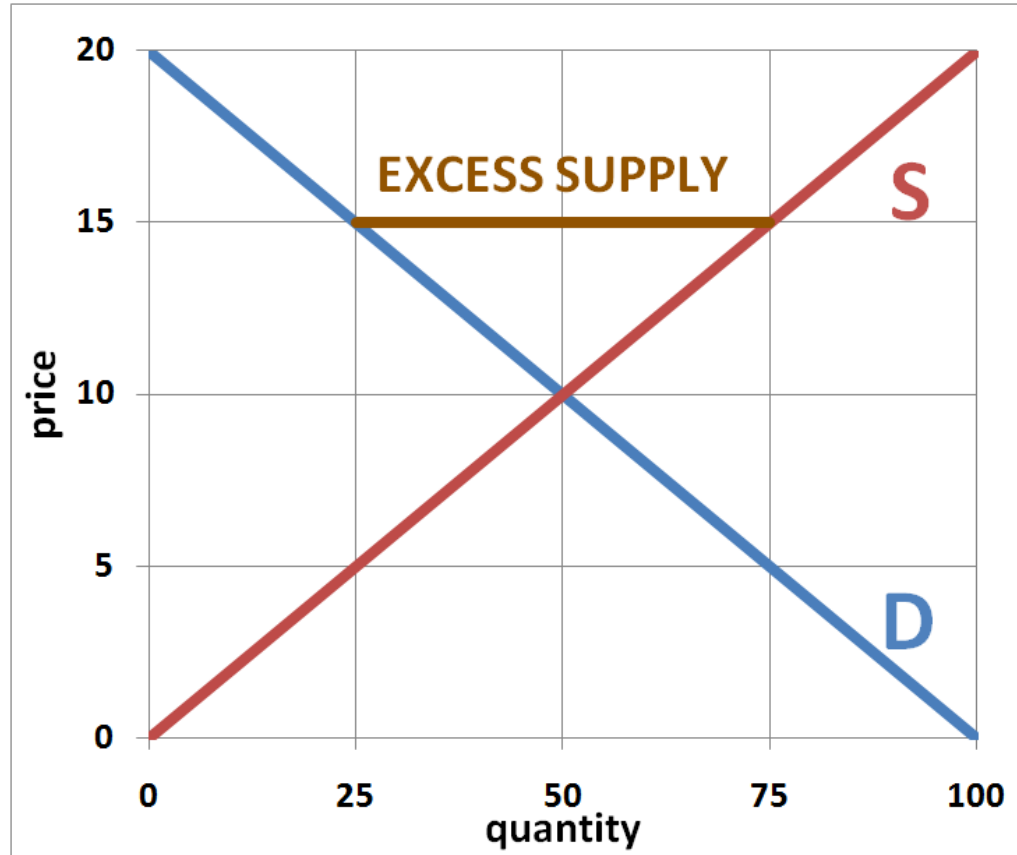
EXCESS DEMAND



When the price is \$5, 25 units will be sold, but at that price, people would prefer to buy 75 units.

These buyers have an incentive to offer higher prices.

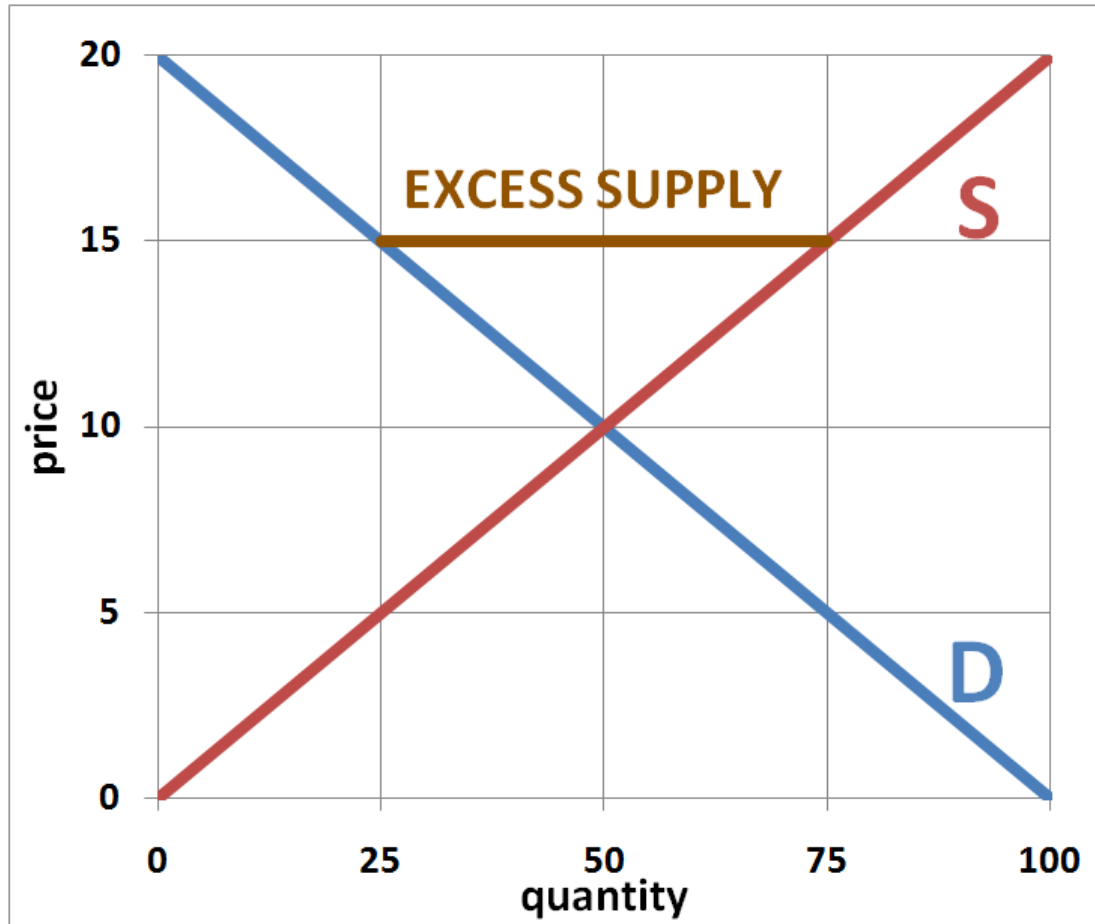
EXCESS SUPPLY



In the market represented by the graph above, at a price of \$15, the quantity supplied will be 75, and the quantity demanded will be 25.

This results in an **excess supply of 50 units.**

QUESTION 13 (excess supply)



If the price stays at \$15, how many units will be sold?

A) 0

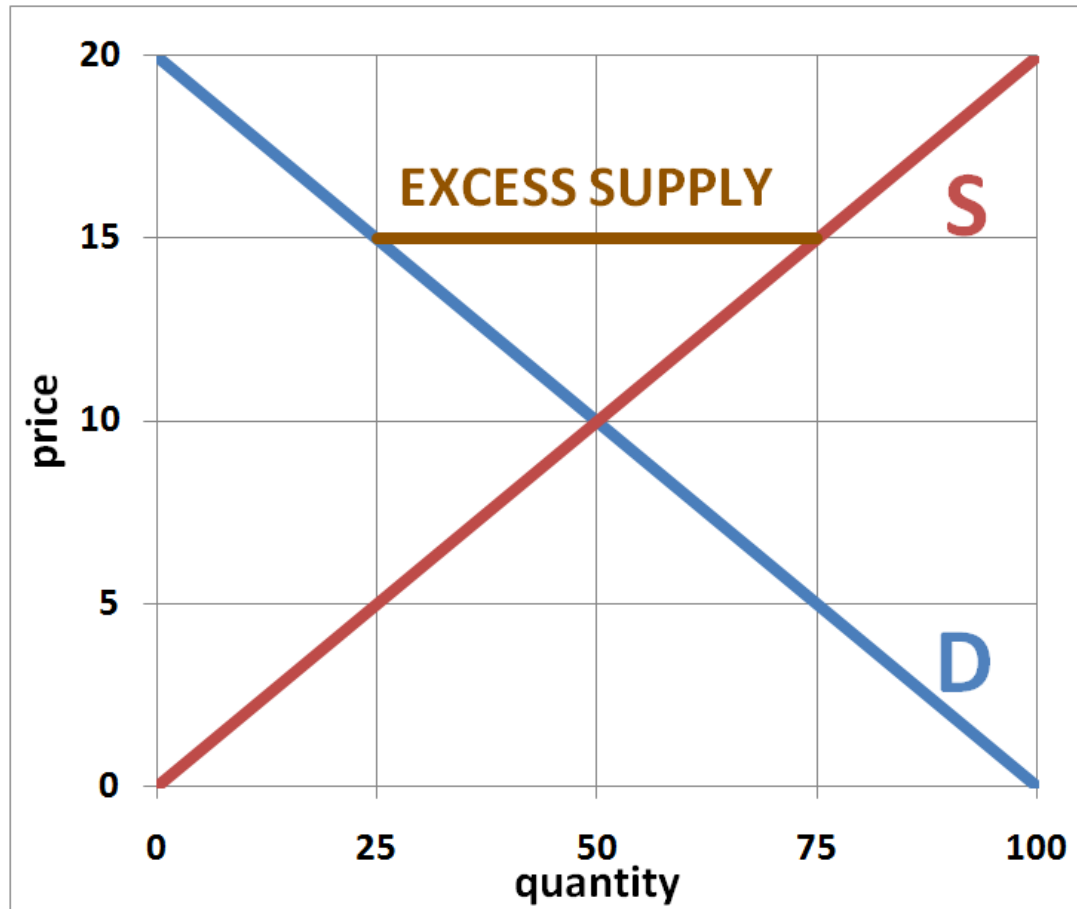
B) 25

C) 50

D) 75

E) 100

answer to question 13



If the price stays at \$15, how many units will be sold?

A) 0

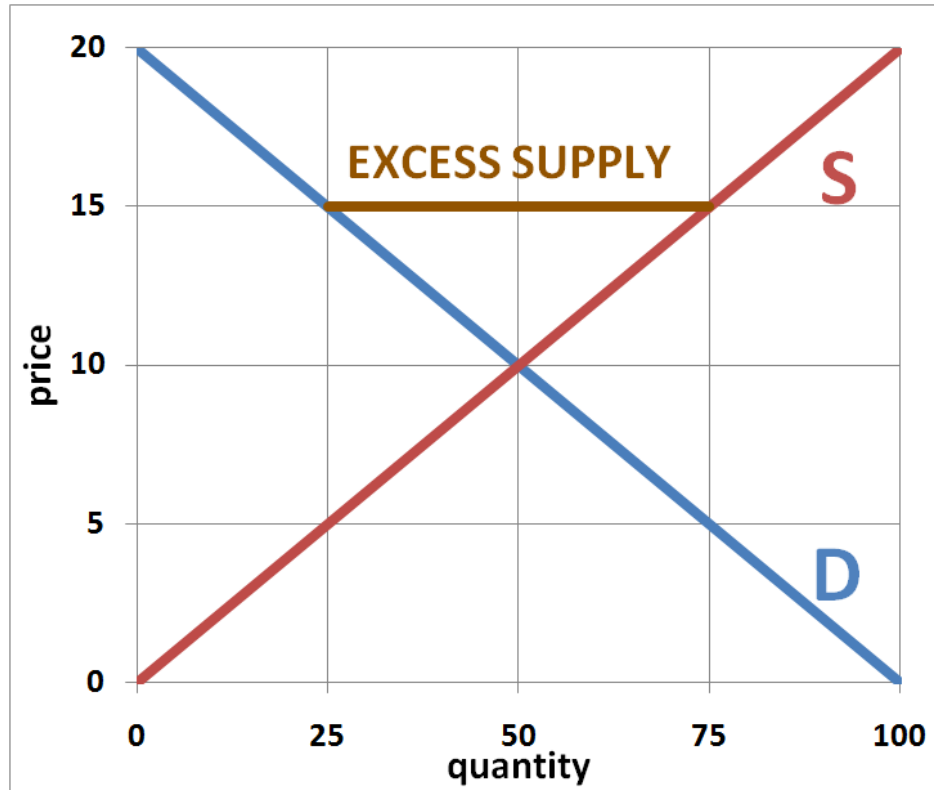
B) 25

C) 50

D) 75

E) 100

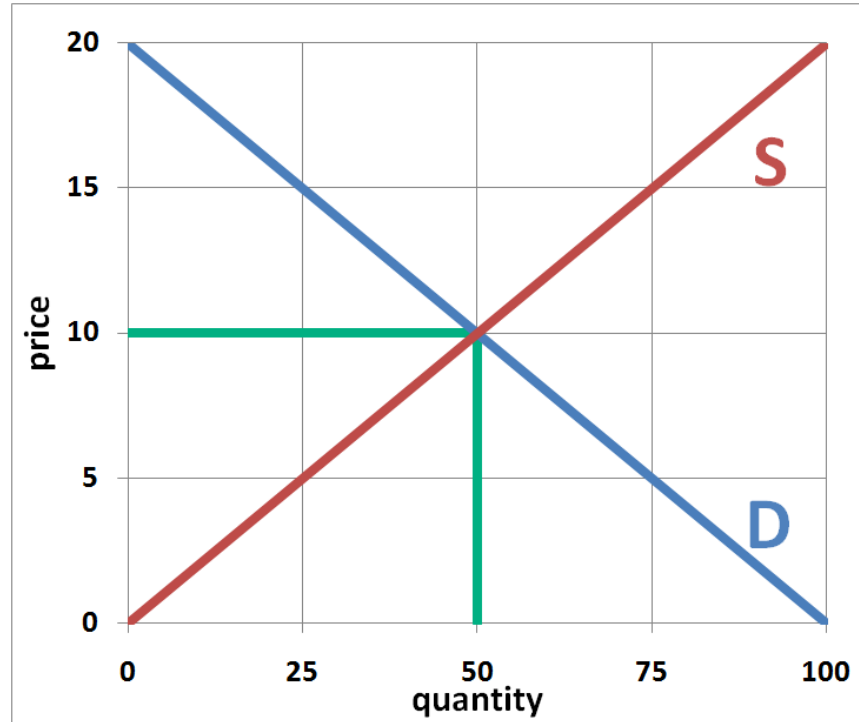
EXCESS SUPPLY



When the price is \$15, 25 units will be sold, but at that price, sellers would prefer to sell 75 units.

These sellers have an incentive to offer lower prices.

EQUILIBRIUM

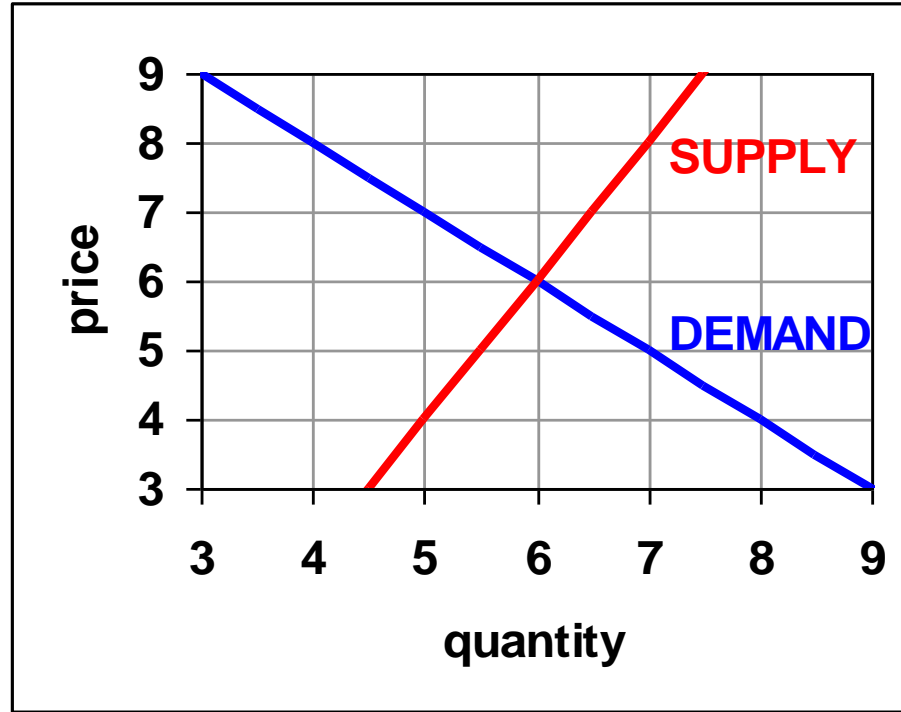


In the market represented by the graph above, at a price of \$10, the quantity supplied and quantity demanded will both be 50.

Neither buyers nor sellers have an incentive to offer a price other than \$10.

Thus, this market is in **equilibrium.**

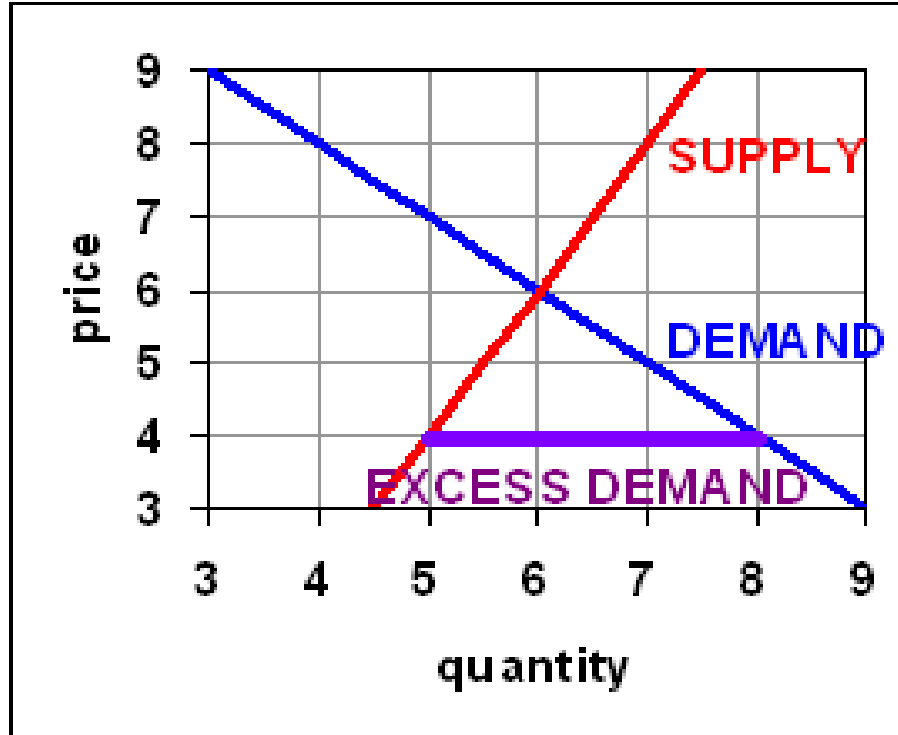
QUESTION 14 (which is true?)



Which is true when the price is \$4 in the market above?

- A) There is an excess supply of 7 units**
- B) There is an excess supply of 3 units**
- C) The market is in equilibrium**
- D) There is an excess demand of 3 units**
- E) There is an excess demand of 7 units**

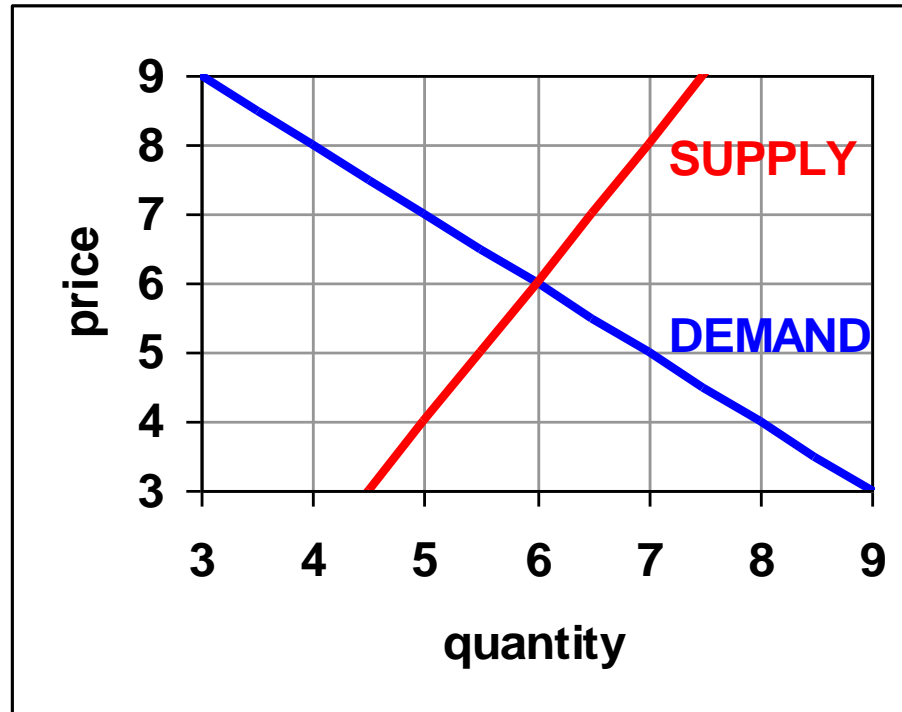
answer to question 14



Which is true when the price is \$4 in the market above?

- A) There is an excess supply of 7 units**
- B) There is an excess supply of 3 units**
- C) The market is in equilibrium**
- D) There is an excess demand of 3 units**
- E) There is an excess demand of 7 units**

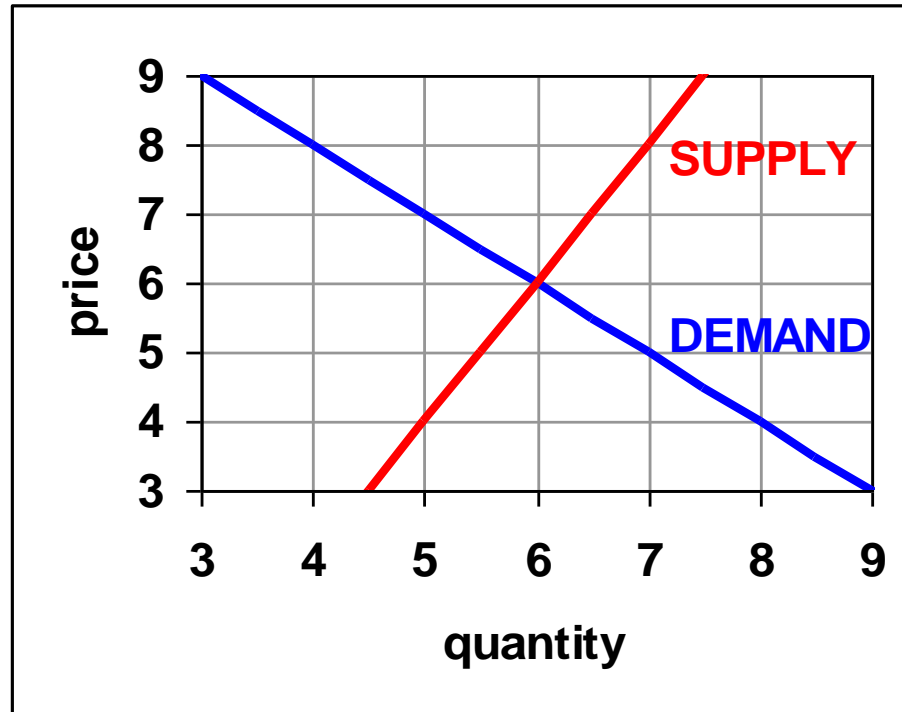
QUESTION 15 (which is true?)



Which is true when the price is \$8 in the market above?

- A) Sellers will have an incentive to offer a lower price**
- B) Sellers will have an incentive to offer a higher price**
- C) No one has an incentive to offer a different price**
- D) Buyers will have an incentive to offer a lower price**
- E) Buyers will have an incentive to offer a higher price**

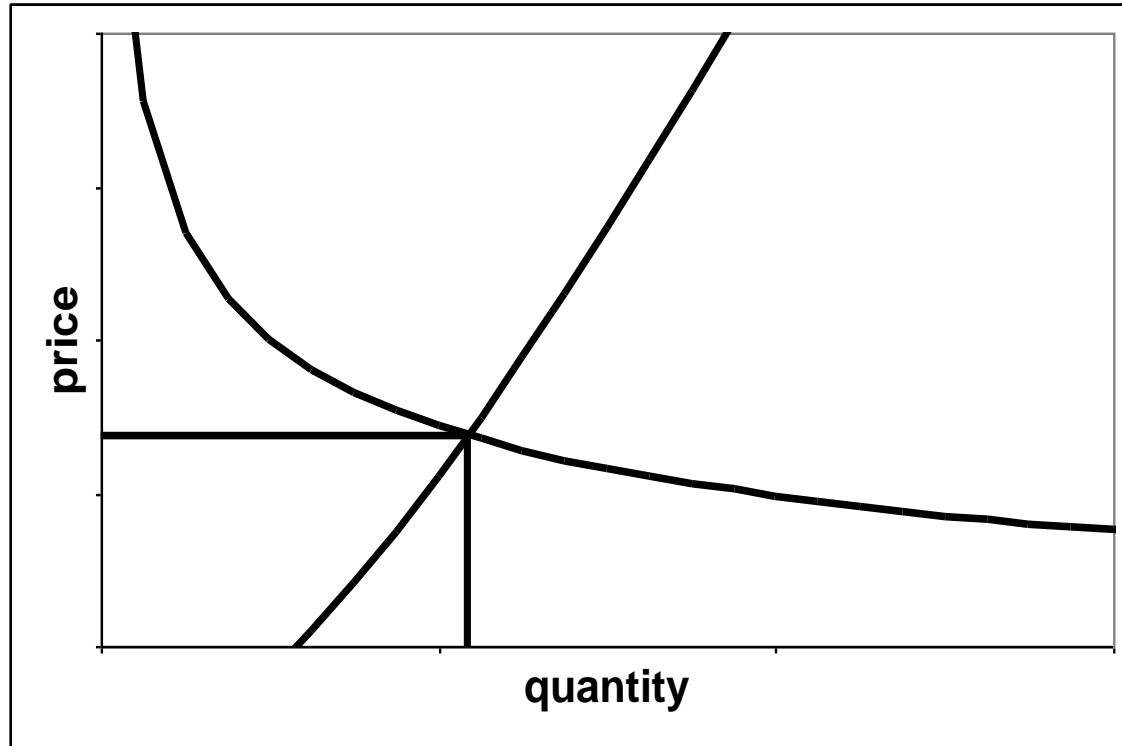
answer to question 15



Which is true when the price is \$8 in the market above?

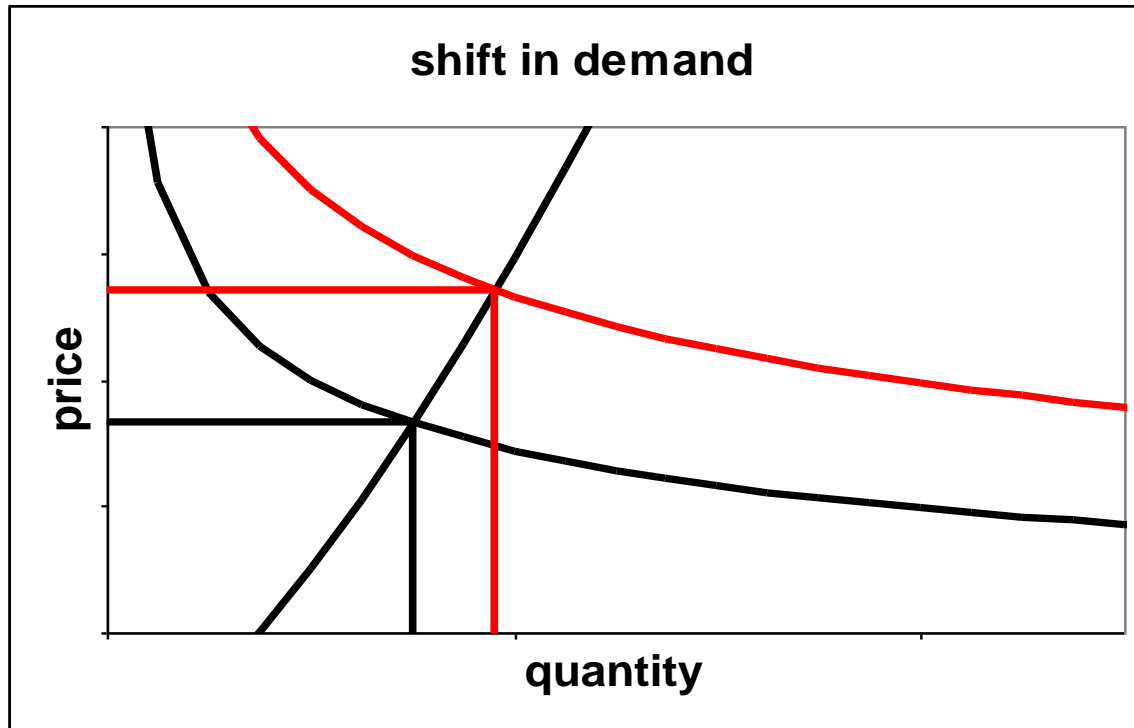
- A) Sellers will have an incentive to offer a lower price**
- B) Sellers will have an incentive to offer a higher price**
- C) No one has an incentive to offer a different price**
- D) Buyers will have an incentive to offer a lower price**
- E) Buyers will have an incentive to offer a higher price**

SHIFTS IN DEMAND



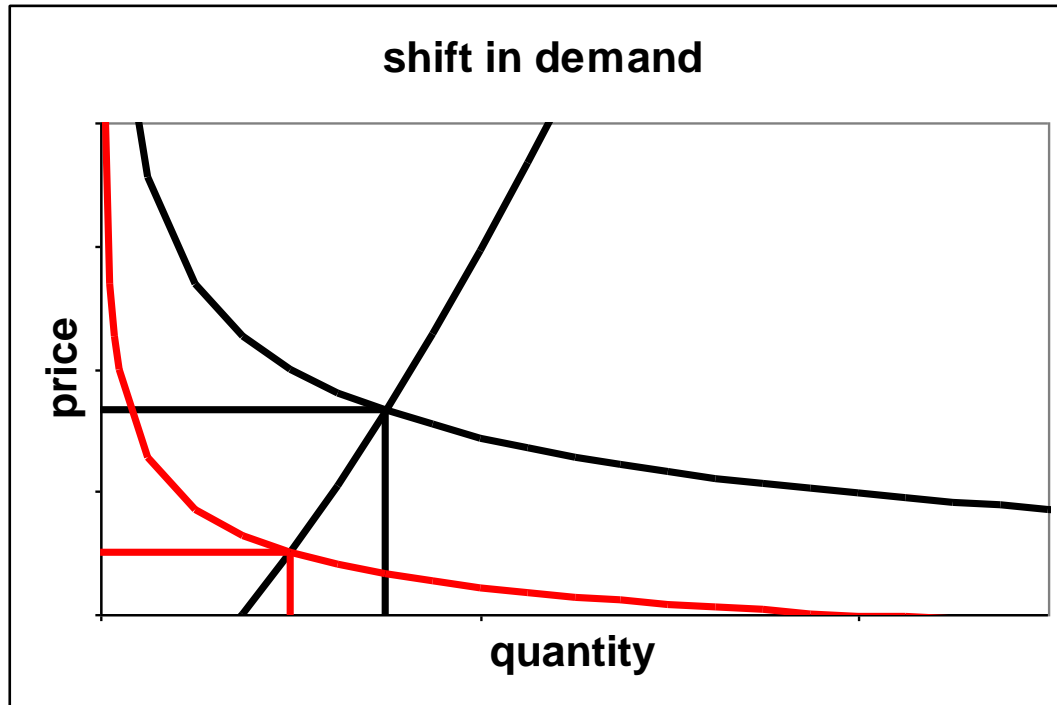
Suppose that the market for bananas is in equilibrium, as pictured above... and then it is revealed that bananas can prevent cancer. What happens to the price and quantity in the new equilibrium?

SHIFTS IN DEMAND



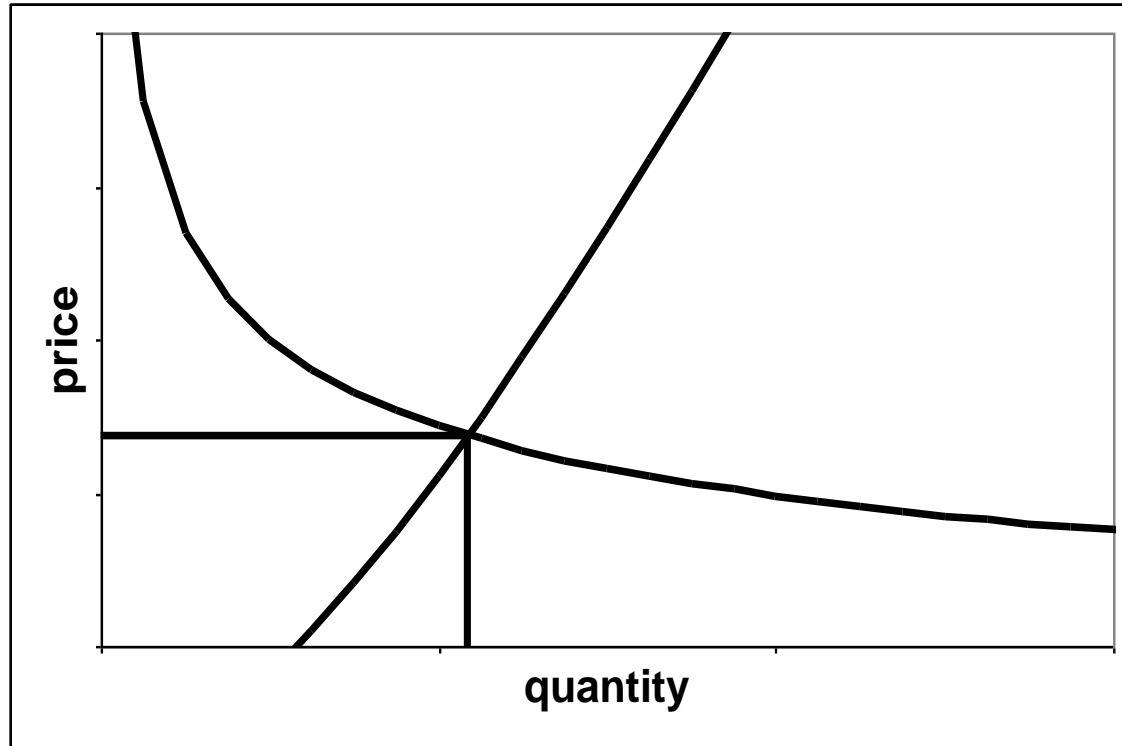
At every price, people wish to buy more bananas than they would have before the discovery. Demand has shifted out. Here we see that in the new equilibrium, quantity and price will both be higher.

SHIFTS IN DEMAND



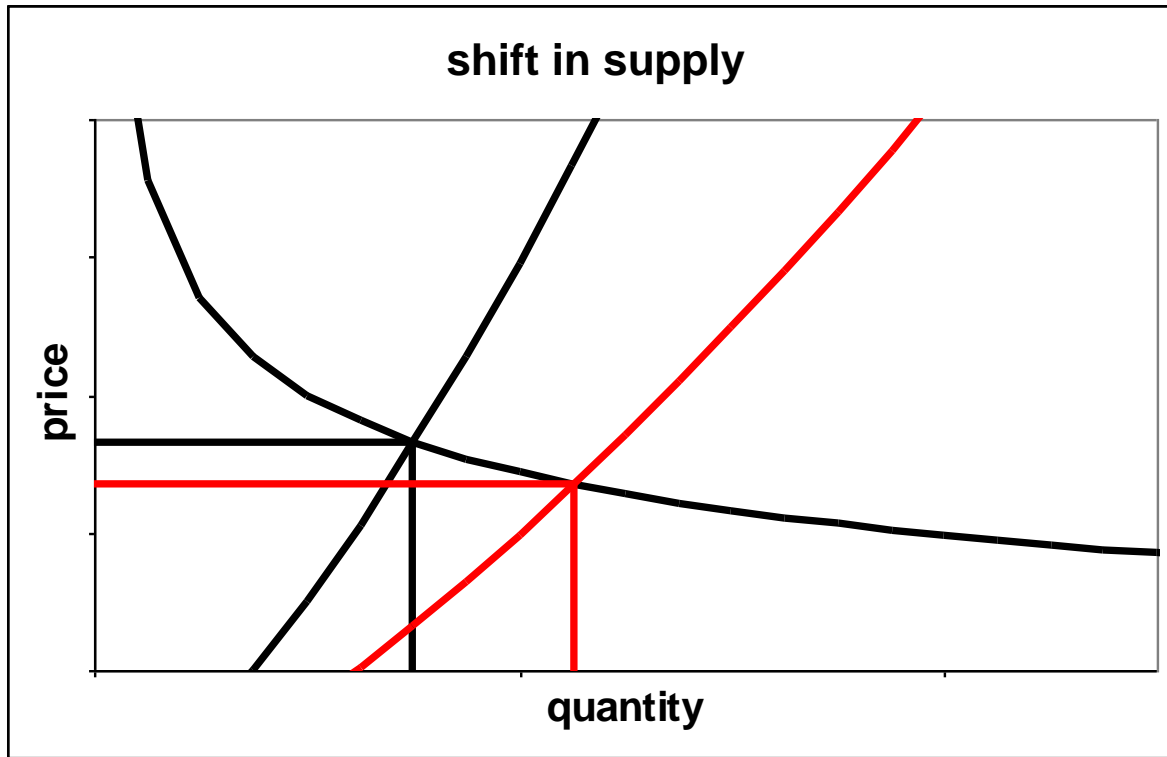
What if it is revealed instead that bananas *cause* cancer? At any given price, people demand fewer bananas than they would have before the discovery. Demand has shifted in. In the new equilibrium, price and quantity are both lower.

SHIFTS IN SUPPLY



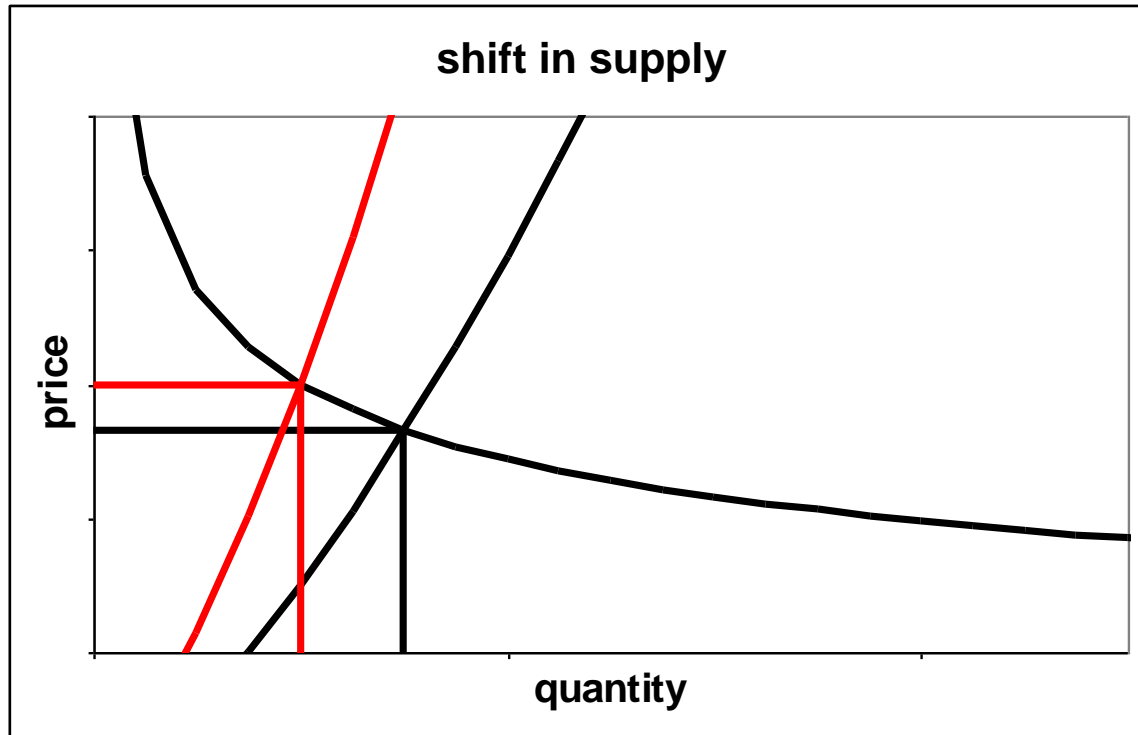
What if, instead of any of that, someone invented a new machine that made bananas really easy to pick? What would happen to price and quantity in equilibrium?

SHIFTS IN SUPPLY



At any given price, people are willing to supply more bananas than they would have without the new invention. Supply has shifted out. In the new equilibrium, quantity is higher, but price is lower.

SHIFTS IN SUPPLY



What if some kind of monsoon damages millions of banana trees? At any given price, suppliers are willing to sell fewer bananas than they would have before the monsoon. Supply shifts in, which causes equilibrium price to be higher, and equilibrium quantity to be lower.