3. a. Bert's demand schedule is:

Price	Quantity Demanded
More than $7	0
$5 to $7	1
$3 to $5	2
$1 to $3	3
$1 or less	4

Bert's demand curve is shown in Figure 9.

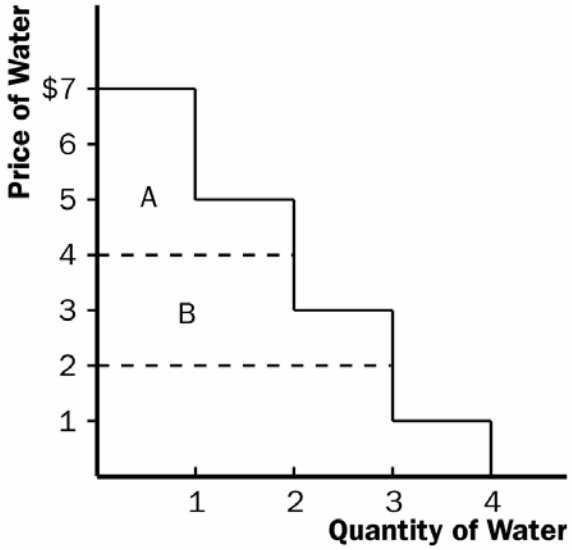

Figure 9

b. When the price of a bottle of water is $4, Bert buys two bottles of water. His consumer surplus is shown as area A in the figure. He values his first bottle of water at $7, but pays only $4 for it, so has consumer surplus of $3. He values his second bottle of water at $5, but pays only $4 for it, so has consumer surplus of $1. Thus Bert's total consumer surplus is $3 + $1 = $4, which is the area of A in the figure.

c. When the price of a bottle of water falls from $4 to $2, Bert buys three bottles of water, an increase of one. His consumer surplus consists of both areas A and B in the figure, an increase in the amount of area B. He gets consumer surplus of $5 from the first bottle ($7 value minus $2 price), $3 from the second bottle ($5 value minus $2 price), and $1 from the third bottle ($3 value minus $2 price), for a total consumer surplus of $9. Thus consumer surplus rises by $5 (which is the size of area B) when the price of a bottle of water falls from $4 to $2.

4. a. Ernie's supply schedule for water is:

Price	Quantity Supplied
More than $7	4
$5 to $7	3
$3 to $5	2
$1 to $3	1

Less than $1	0

Ernie's supply curve is shown in Figure 10.

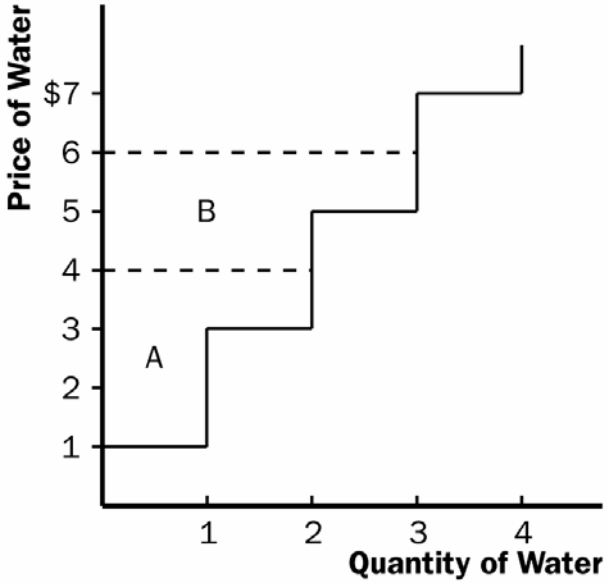

Figure 10

b. When the price of a bottle of water is $4, Ernie sells two bottles of water. His producer surplus is shown as area A in the figure. He receives $4 for his first bottle of water, but it costs only $1 to produce, so Ernie has producer surplus of $3. He also receives $4 for his second bottle of water, which costs $3 to produce, so he has producer surplus of $1. Thus Ernie's total producer surplus is $3 + $1 = $4, which is the area of A in the figure.

c. When the price of a bottle of water rises from $4 to $6, Ernie sells three bottles of water, an increase of one. His producer surplus consists of both areas A and B in the figure, an increase by the amount of area B. He gets producer surplus of $5 from the first bottle ($6 price minus $1 cost), $3 from the second bottle ($6 price minus $3 cost), and $1 from the third bottle ($6 price minus $5 price), for a total producer surplus of $9. Thus producer surplus rises by $5 (which is the size of area B) when the price of a bottle of water rises from $4 to $6.

5. a. From Ernie's supply schedule and Bert's demand schedule, the quantity demanded and supplied are:

Price	Quantity Supplied	Quantity Demanded
$ 2	1	3
4	2	2
6	3	1

Only a price of $4 brings supply and demand into equilibrium, with an equilibrium quantity of 2.

b. At a price of $4, consumer surplus is $4 and producer surplus is $4, as shown in problems 3 and 4. Total surplus is $4 + $4 = $8.

c. If Ernie produced one fewer bottle, his producer surplus would decline to $3, as shown in problem 4. If Bert consumed one fewer bottle, his consumer surplus would decline to $3, as shown in problem 3. So total surplus would decline to $3 + $3 = $6.

d. If Ernie produced one additional bottle of water, his cost would be $5, but the price is only $4, so his producer surplus would decline by $1. If Bert consumed one additional bottle of water, his value would be $3, but the price is $4, so his consumer surplus would decline by $1. So total surplus declines by $1 + $1 = $2.