Consumer and Producer Surplus Worked Problems

I assume

... you read the chapter and know a few definitions.

We will play with some examples that get at principles.

Willingnes to Pay

- Another guise of the demand function.
- The demand function tells the highest price someone is willing to pay for one more of the good.
- Alternately, how much the person with the highest valuation is willing to pay for the good.

A Few Kinds of Surplus

Has the dragon-dragonfly problem.

- Total, or gross, surplus (Note book gives the other common definition of total): The value to consumer of consuming goods. The sum of what they would have been willing to pay.
- Consumer surplus: The benefits of consuming the good less what was paid. Can be thought of as net surplus.

Example

Agent	WTP
Alice	4
Bob	8
Charlie	6
David	10

Questions

- What is the total gross benefits possible from consuming this good?
- At a price, cost to society, of 5, who wants to buy?
- What is the what is consumer surplus?

What did you find?

- What is the total gross benefits possible from consuming this good?
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- At a price, cost to society, of 5, who wants to buy? Bob, Charlie and David.
- What is the what is consumer surplus? (24-15 = 9)

Work a few margins?

- If the price drops to 4 1/2 who chooses to purchase the good and what happens to consumer surplus?
- What is the consumer surplus if everyone is given the good? Remember that the good must be produced so subtract the cost.

Agent	WTP
Alice	4
Bob	8
Charlie	6
David	10

Another Margin

Three people individually wanted the good when the price was 5, Bob, Charlie and David, can you take the good from one of them and make consumer produce increase?

Agent	WTP
Alice	4
Bob	8
Charlie	6
David	10

What you know so far

- Individual purchase/no purchase decisions results in the same result.
- Lower cost of good means more consumer surplus.

If the prices are not right (market power maybe) or consumption has an effect on others (externalities) this is not true.

Willingness to Accept

- Another guise of the supply function.
- The supply function tells the lowest price someone is willing to accept for one more of the good.
- Alternately, how much the person with the lowest valuation is willing to accept for the good.

Does not matter if good is produced, just that there is an opportunity cost.

Supply Side

- Gross surplus is equivalent to revenue.
- Consumer surplus is equivalent to revenue less cost (actually variable cost) or profit plus fixed cost, i.e., producer surplus.
  - Those two costs come later.

Individual and Collective

Agent	WTA
Larry	1
Curly	3
Moe	7
Shemp	5

- You need three, who should produce?
- At a price of 5 who would produce?
- What is the producer surplus when the price is 5?

Now Put Them Together

Buyer	WTP	Seller	WTA
Alice	4	Larry	1
Bob	8	Curly	3
Charlie	6	Moe	7
David	10	Shemp	5

- How many would be produced and purchased in a competitive market?
- What is a reasonable range of prices (There is more than one price that works)?

Given that

Buyer	WTP	Seller	WTA
Alice	4	Larry	1
Bob	8	Curly	3
Charlie	6	Moe	7
David	10	Shemp	5

- What is CS+PS in equilibrium (Hint: you don't need to know the specific price to find this.)
- What is CS+PS if everybody produces and consumes? Is this better or worse?

What you know now

- Low cost sellers are more likely to produce.
- Competitive markets maximize total surplus.