Introductory Microeconomics
Economics 10004

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Introduction to key concepts

How to measure costs?

- When a decision-maker chooses an action, the resources used in taking that action become unavailable for alternative uses
- The cost of an action should thus be measured in terms of those resources
- To measure the value of those resources, we consider their next best alternative use

The opportunity cost of an action reflects the value of resources used in taking that action in their next best alternative use

Opportunity Cost in Action

- Imagine that Leonard and Sheldon share a house, and there are two tasks that need to be completed: cooking and laundry
- Gains from trade are most obvious if Leonard can cook but has difficulty with laundry, while Sheldon can do the laundry but can't cook
- But what if Leonard is better at cooking and at laundry than Sheldon?

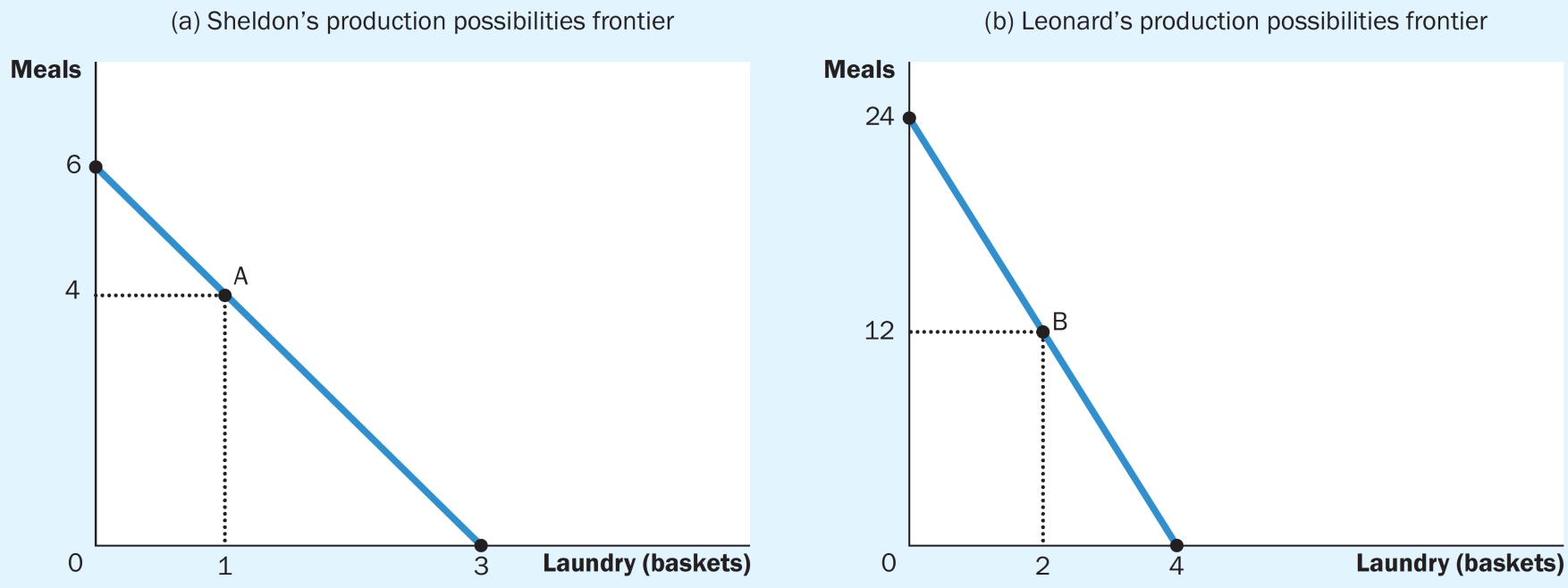
Opportunity Cost

Table 3.1 The production opportunities of Sheldon and Leonard

	Hours needed to make:		Maximum amount produced in 12 hours:	
	1 meal	1 basket	Meals	Baskets
Sheldon	2	4	6	3
Leonard	½	3	24	4

Possibilities and Choices with Trade

Figure 3.1 The production possibilities frontier



Leonard's Suggestion

- Suppose that Leonard makes the following offer to Sheldon:
  - If you spend 12 hours a week washing and ironing, you'll get three baskets done every week
  - Do one basket of laundry for me each week, and an extra basket every second week, and I'll cook you five meals a week

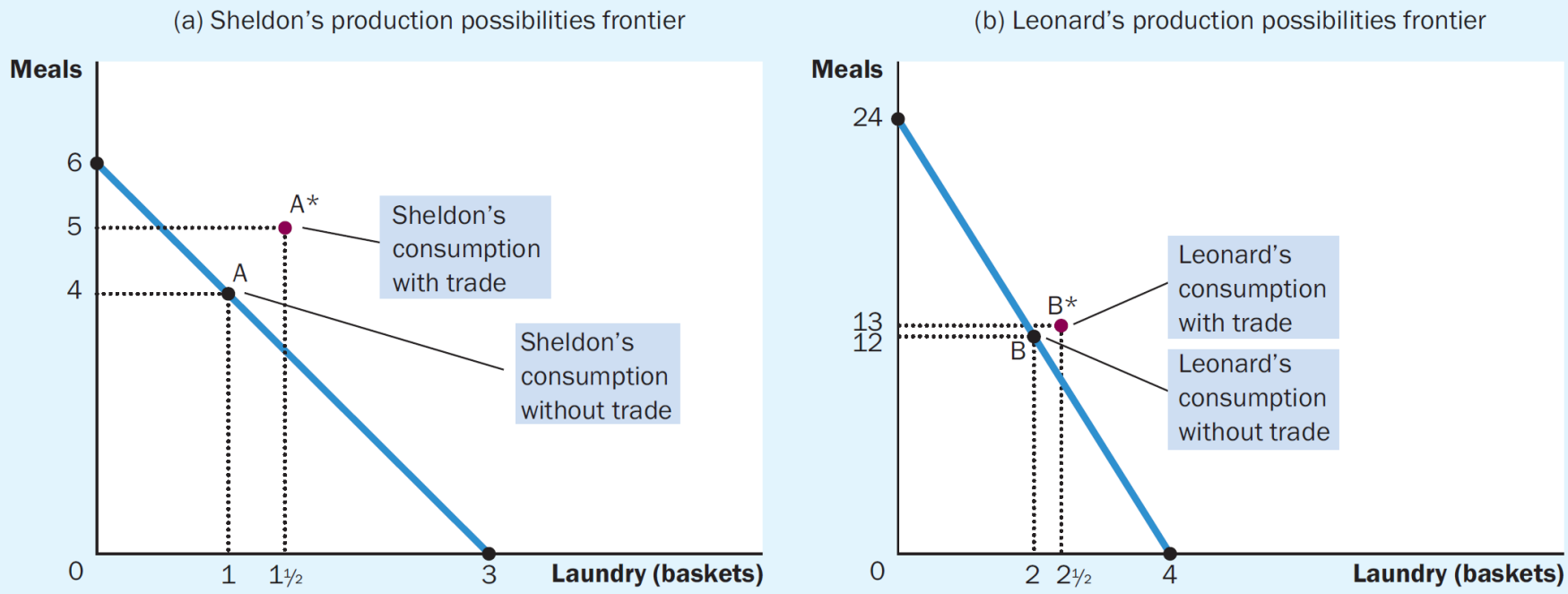
Both Gain

- This offer is good for Sheldon because Sheldon will have more clean clothes ($1\frac{1}{2}$ baskets on average) and more hot meals (5 meals per week).

- If Leonard makes 18 meals a week, and does one basket of laundry, then Leonard will get more clean clothes ($2\frac{1}{2}$ baskets on average) and 13 meals each week

Opportunity Cost

Figure 3.2 How trade expands the set of consumption opportunities



Opportunity Cost in Action: Gains from Trade

Table 3.2 The gains from trade: A summary

	Without trade:		With trade:		
	Production and consumption	Production	Trade	Consumption	Gains from trade
Sheldon	4 meals	0 meals	Gets 5 meals	5 meals	1 meal
	1 basket	3 baskets	for 1½ baskets	1½ baskets	½ basket
Leonard	12 meals	18 meals	Gives 5 meals	13 meals	1 meal
	2 baskets	1 basket	for 1½ baskets	2½ baskets	½ basket

Opportunity cost is the key!

Table 3.3 The opportunity cost of meals and baskets of clean clothes

	Opportunity cost of one:	
	Meal (in terms of baskets given up)	**Basket (in terms of meals given up)**
Sheldon	½	2
Leonard	⅙	6

Introduction to key concepts: Sunk Costs

What about resources that were used before making the decision?

- At the time a decision-maker chooses an action, resources that were already used should not matter in the decision-making
- Therefore, the value of those resources that were already used should not be considered opportunity costs

Sunk costs reflect the value of resources that were used before making a decision about which action to take

Introduction to key concepts

Let's use an examples to apply these cost concepts

- Attending the Commerce Student Society Ball
- Going to a football match, supposing that you already own a season ticket
- Both involve a ticket price of $150, take three hours and would require you to miss work ($20 per hr)
- What is the opportunity cost of each?
  - Ball: $150 + $60 = $210
  - Football: $60

Introduction to key concepts

How to measure benefits?

- Benefits sit at the core of the objective function of a decision-maker
- For example, a firm's objective is to maximise profits
- Since profits $=$ revenue $-$ costs, the benefits in the objective function would be revenue
- Suppose the decision is whether to open a new branch, then the benefits that need to be accounted for would comprise expected revenue from having the new branch

Introduction to key concepts

Rational decision-makers think at the margin

- Marginal benefit (MB) $=$ increment in total benefits by taking an action or by increasing the level of activity by one unit
- Marginal cost (MC) $=$ increment in total costs by taking an action or by increasing the level of activity by one unit
- To maximise net benefit, one would take an action or increase the level of activity as long as MB $\geq$ MC
- If an action or an increase in the level of activity confers MB $<$ MC, it must no longer be optimal as NB would be decreasing

Introduction to key concepts

- Algebraically, suppose $NB(x) = TB(x) - TC(x)$
- To maximise $NB(x)$ using calculus, differentiate $NB(x)$ with respect to x and set this to zero

$$\frac{\partial NB(x)}{\partial x} = \frac{\partial TB(x)}{\partial x} - \frac{\partial TC(x)}{\partial x} = 0$$

$$\frac{\partial NB(x)}{\partial x} = MB(x) - MC(x) = 0$$

- The optimal quantity x^* is the one that satisfies

$$MB(x^*) = MC(x^*)$$