

AP MICROECONOMICS

UNIT 5

Factor Markets



10–13%
AP EXAM WEIGHTING



~6–8
CLASS PERIODS



Remember to go to [AP Classroom](#) to assign students the online **Personal Progress Check** for this unit.

Whether assigned as homework or completed in class, the **Personal Progress Check** provides each student with immediate feedback related to this unit's topics and skills.

Personal Progress Check 5

Multiple-choice: ~10 questions

Free-response: 1 question

- Short

Factor Markets



Developing Understanding

BIG IDEA 3

Production Choices and Behavior **PRD**

- How are prices for resources determined?
- How do firms use resource prices to make decisions?

By this point in the course, students are familiar with how product markets operate and what drives firm decision making. In this unit, students will apply many of the concepts they learned previously but now in the context of factor markets. Like with product markets, the laws of supply and demand apply to factor markets with an upward-sloping supply curve and a downward-sloping demand curve. In factor markets, firms hire additional resources up to the point at which the resource's marginal revenue product is equal to its marginal resource cost. This decision is another application of the idea first introduced in Unit 1 of making an optimal choice by equating marginal benefit with marginal cost and firms' decisions to maximize profits where marginal revenue equals marginal cost.

Building Course Skills

1.A 2.A 2.C 3.B

In this unit, students should be able to describe the principles of factor markets so that they can apply that understanding in context. Devote sufficient time to introducing students to new concepts and vocabulary while also connecting key terms and concepts to items addressed previously in the course.

Students should also be able to represent factor markets graphically in this unit. It helps to explain the basis of each model and the underlying assumptions so that students can create properly labeled graphs to represent economic situations and interpret given graphs.

Students will continue to build their quantitative skills by solving problems in which they interpret how firms should allocate inputs to minimize costs or maximize profits. Once again, it's important to spend time conceptually grounding students in the underlying concepts of these quantitative problems and provide ample time for numerical examples and practice.

Preparing for the AP Exam

Factor markets are one of the biggest challenge areas for students on the AP Exam. There can be a tendency to rush through this unit because it only accounts for a small percentage of the multiple-choice section of the AP Exam and is near the end of the course. Sufficient time should be devoted to introducing the concepts and providing opportunities for student practice to properly prepare students for factor market questions on the exam. It may also be helpful to teach factor markets as another application of concepts such as supply and demand and marginal analysis so that students can see the connections to previous content and the ways in which factor markets differ. For example, cost minimization by firms works like utility maximization by consumers when you equalize the marginal product per dollar for each input.

UNIT AT A GLANCE

Enduring Understanding	Topic	Suggested Skills	Class Periods
			~6–8 CLASS PERIODS
PRD-4	5.1 Introduction to Factor Markets	1.A Describe economic concepts, principles, or models.	1
	5.2 Changes in Factor Demand and Factor Supply	3.B Determine the effect(s) of one or more changes on other economic markets.	2
	5.3 Profit-Maximizing Behavior in Perfectly Competitive Factor Markets	2.C Interpret a specific economic outcome using quantitative data or calculations.	1
	5.4 Monopsonistic Markets	2.A Using economic concepts, principles, or models, explain how a specific economic outcome occurs or what action should be taken in order to achieve a specific economic outcome.	1
 Go to AP Classroom to assign the Personal Progress Check for Unit 5. Review the results in class to identify and address any student misunderstandings.			

SAMPLE INSTRUCTIONAL ACTIVITIES

The sample activities on this page are optional and are offered to provide possible ways to incorporate various instructional approaches into the classroom. Teachers do not need to use these activities or instructional approaches and are free to alter or edit them. The examples below were developed in partnership with teachers from the AP community to share ways that they approach teaching some of the topics in this unit. Please refer to the Instructional Approaches section beginning on p. 105 for more examples of activities and strategies.

Activity	Topic	Sample Activity
1	5.1	Activating Prior Knowledge Refer students back to the simulation that was carried out in Topic 3.1 in which students acted as producers in a firm to show total product, marginal product, and diminishing marginal returns. Now introduce the price of the output being produced in order for students to calculate the value of the marginal product, also called marginal revenue product or factor demand.
2	5.2	Graph and Switch Provide students with a series of scenarios that introduce changes in the determinants of labor demand and labor supply. Have students graph each scenario and then switch papers or whiteboards with a partner to review each other's work.
3	5.3	Model Questions After introducing students to the content covered in Topic 5.3, provide an opportunity for students to practice answering previous free-response questions to reinforce their learning (e.g., 2011 AP Exam Question #2 , 2010 AP Exam Question #2).



Unit Planning Notes

Use the space below to plan your approach to the unit. Consider how you want to pace your course and methods of instruction and assessment.

1. Derived Demand

Demand for goods and services creates a demand for the factors of production to produce those goods and services. Thus, demand for resources is derived from (and changes with) the demand for the products those resources make.

2. Factor Market

The market in which the factors of production are bought by firms and sold by households.

3. Marginal Factor Cost

The cost of employing one additional unit of a factor; change in total cost divided by change in quantity of the factor in question (often labor). Bears a close relationship to labor supply.

4. Marginal Revenue Product

The added revenue a firm gains when employing an additional unit of a factor. Change in total revenue divided by change in the quantity of the factor in question (often labor). Bears a close relationship to labor demand.

5. Monopsony

A market dominated by a single consumer. The monopsony model is used to show why in labor markets with only one large firm hiring all the labor in an area, wages and employment will be lower than if there were several firms bidding for labor resources. Monopsonies often give rise to union formation.

6. Wage

The price of labor per unit of time.

7. Wage Taker

Firms who hire labor in perfectly competitive labor markets are wage takers; they can hire any quantity of workers desired for a market wage rate. This stems from the fact that in these markets there are a large number of firms hiring similarly qualified workers. Thus, these firms face horizontal (perfectly elastic) labor supply curves.

8. Unions

Organizations of workers who seek to increase the wage rates, working conditions, and number of jobs available in their industries. Unions can be of various types and may seek to include all workers in a sector or make membership more exclusive in a particular craft.

SUGGESTED SKILL

 *Principles and Models*

1.A

Describe economic concepts, principles, or models.

TOPIC 5.1

Introduction to Factor Markets

Required Course Content

ENDURING UNDERSTANDING

PRD-4

Factor prices provide incentives and convey information to firms and factors of production.

LEARNING OBJECTIVE

PRD-4.A

- Define (using graphs where appropriate) key terms and concepts relating to factor markets.
- Explain (using graphs where appropriate) the relationship between factors of production, firms, and factor prices.
- Calculate (using data from a graph or table where appropriate) the marginal revenue product and marginal resource cost.

ESSENTIAL KNOWLEDGE

PRD-4.A.1

Factors of production (labor, capital, and land) respond to factor prices (wages, interest, and rent), and employers' (firms') decision to hire is based on the productivity of the factors, output price, and cost of the factor.

PRD-4.A.2

The quantity of labor demanded is negatively related to the wage rate, while the quantity of labor supplied is positively related to the wage rate in a given labor market, other things constant.

- A. Factor or resource markets are the markets for the factors of production (land, labor (L), capital (K), and entrepreneurship).
- B. Markets happen whenever consumers and producers meet to exchange goods, services, or in this case, factors of production.
- C. Derived factor demand refers to the fact that the demand for goods and services in the product markets creates demand for the factors of production to produce these goods and services.
- D. Factor demand comes from multiplying the firm's marginal revenue by its marginal product.
- E. Recall that marginal revenue is the additional revenue that comes from selling an additional unit of output ($\Delta TR / \Delta Q$)
- F. Marginal product is the additional output or product generated by employing an additional input ($\Delta Q / \Delta L$ or ΔK)
- G. Marginal revenue product (MRP), or Factor Demand, is the change in total revenue (ΔTR) generated when one additional input is employed (ΔL or ΔK). MRP decreases as additional workers are hired due to the principle of diminishing marginal returns. For perfectly competitive firms $MRP = P \cdot MP$ because price equals marginal revenue for these firms, this is also referred to as the value of marginal product or VMP. For imperfectly competitive firms, $MRP = MR \cdot MP$ because $MR < P$ for these firms. Because MRP is factor demand, changes in price, marginal revenue, or marginal product directly affect factor demand
- H. Marginal resource cost (MRC) or marginal factor cost (MFC) is the extra cost a firm incurs when employing an additional unit of input like a worker or machine. $MRC = \Delta TC / \Delta L$ or $\Delta TC / \Delta K$
- I. In perfectly-competitive factor markets, MRC is equal to either the wage rate (labor market) or rental rate (capital market).
- J. Just as the product markets can be arranged on a spectrum from perfectly-competitive to monopolistic, factor markets can have different structures.

1. Define the following:
 - derived demand
 - factor market / resource market
 - marginal revenue product (MRP)
 - marginal resource cost (MRC) / marginal factor cost (MFC)
2. An increase in the demand for electric vehicles has what effect on the demand for workers who build electric vehicles?
3. If the price of bananas increases, then ceteris paribus explain why derived demand for banana harvesters increases using the formula for marginal revenue product.
4. In a perfectly competitive factor market, MRC is
 - a. Less than the equilibrium market wage
 - b. Equal to the equilibrium market wage
 - c. Greater than the equilibrium market wage
 - d. Less than or equal to the equilibrium market wage
 - e. Greater than or equal to the equilibrium market wage
5. Use the table below to calculate marginal revenue product for each unit of labor

Units of Labor	Price per Unit of Output	Total Product	Marginal Revenue Product
0	\$5	0	
1	\$5	20	
2	\$5	35	
3	\$5	45	
4	\$5	50	
5	\$5	52	
6	\$5	53	
7	\$5	53	

1. Define the following:
 - derived demand *Demand for goods and services creates demand for the resources used to produce the goods and services*
 - factor market / resource market *The market where the factors of production are purchased and*
 - marginal revenue product (MRP) *MRP = Marginal Revenue X Marginal Product OR Product Price X Marginal Product*
 - marginal resource cost (MRC) / marginal factor cost (MFC) *MRC = Marginal*

2. An increase in the demand for electric vehicles has what effect on the demand for workers who build electric vehicles?

Increased demand for vehicles increases the demand for the people and machines used to produce electric

3. If the price of bananas increases, then ceteris paribus explain why derived demand for banana harvesters increases using the formula for marginal revenue product.

If price of bananas increases, then (P X MP) increases, so MRP increases

4. In a perfectly competitive factor market, MRC is
 - ~~a. Less than the equilibrium market wage~~
 - b. Equal to the equilibrium market wage
 - ~~c. Greater than the equilibrium market wage~~
 - ~~d. Less than or equal to the equilibrium market wage~~
 - ~~e. Greater than or equal to the equilibrium market wage~~

5. Use the table below to calculate marginal revenue product for each unit of labor

Units of Labor	Price per Unit of Output	Total Product	Marginal Revenue Product
0	\$5	0	
1	\$5	20	\$100
2	\$5	35	\$75
3	\$5	45	\$50
4	\$5	50	\$25
5	\$5	52	\$10
6	\$5	53	\$5
7	\$5	53	\$0

TOPIC 5.2

Changes in Factor Demand and Factor Supply

SUGGESTED SKILL

 Manipulation

3.B

Determine the effect(s) of one or more changes on other economic markets.

Required Course Content

ENDURING UNDERSTANDING

PRD-4

Factor prices provide incentives and convey information to firms and factors of production.

LEARNING OBJECTIVE

PRD-4.B

Explain (using graphs where appropriate) firms' and factors' responses to changes in incentives and constraints.

ESSENTIAL KNOWLEDGE

PRD-4.B.1

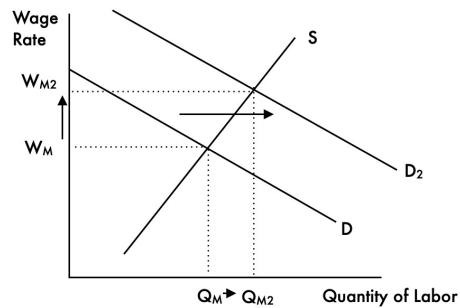
Changes in the determinants of labor demand, such as the output price and the productivity of the worker, cause the labor demand curve to shift.

PRD-4.B.2

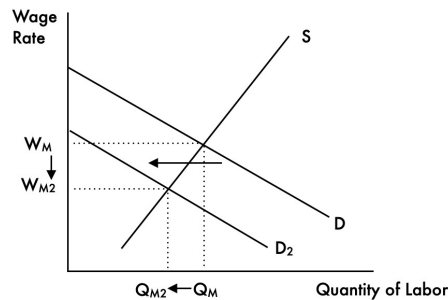
Changes in the determinants of labor supply (such as immigration, education, working conditions, age distribution, availability of alternative options, preferences for leisure, and cultural expectations) cause the labor supply curve to shift.

Changes in the determinants of labor demand, such as the output price and the productivity of the worker, cause the labor demand curve to shift.

Increased demand results in an increase in the equilibrium wage rate and quantity of labor employed.

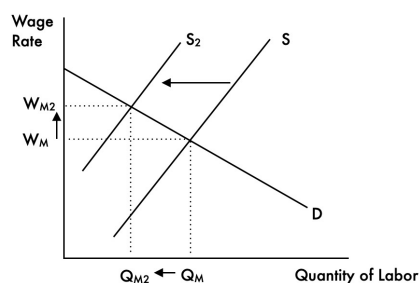
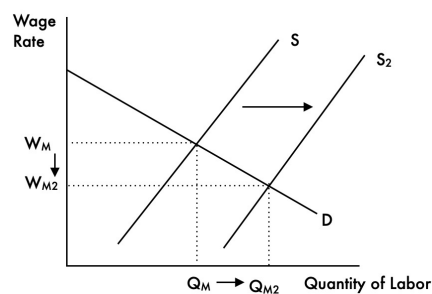


Decreased demand results in a decrease in the equilibrium wage rate and quantity of labor employed.



Changes in the determinants of labor supply (such as immigration, education, working conditions, age distribution, availability of alternative options, preferences for leisure, and cultural expectations) cause the labor supply curve to shift.

Increased supply results in a decrease in the equilibrium wage rate and an increase in the quantity of labor employed.



For each of the following, draw a correctly labeled graph of the labor market and show the effects of changes in the determinants for the supply and demand of labor on the wage rate and quantity of labor employed.

1. Increase in product prices

2. Fewer young workers available as population ages

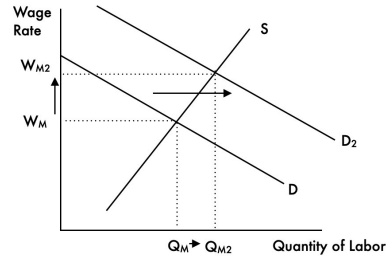
3. Deportation of workers from a country

4. Decrease in labor productivity

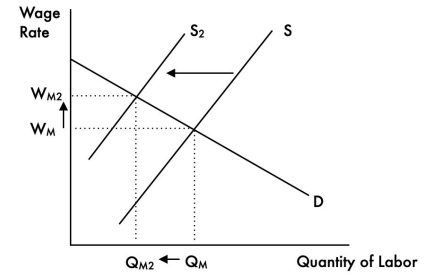
5. People increase the number of hours they are willing to work

For each of the following, draw a correctly labeled graph of the labor market and show the effects of changes in the determinants for the supply and demand of labor on the wage rate and quantity of labor employed.

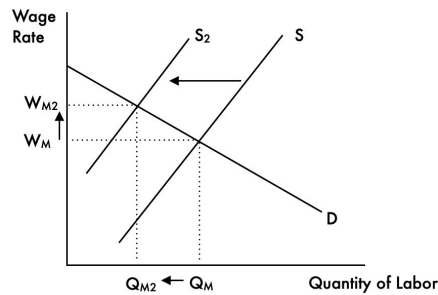
1. Increase in product prices



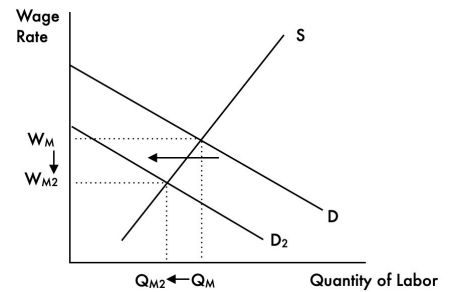
2. Fewer young workers available as population ages



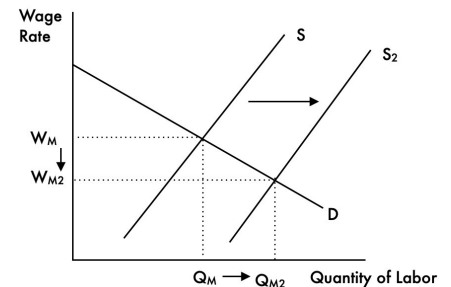
3. Deportation of workers from a country



4. Decrease in labor productivity



5. People increase the number of hours they are willing to work



SUGGESTED SKILL

 Interpretation

Interpret a specific economic outcome using quantitative data or calculations.



AVAILABLE RESOURCES

- Classroom Resources >
 - ♦ *Markets—Product and Factor Markets*
 - ♦ *Mastering Economic Thinking Skills—Marginal Thinking: Key Concepts and Questions*

TOPIC 5.3

Profit-Maximizing Behavior in Perfectly Competitive Factor Markets

Required Course Content

ENDURING UNDERSTANDING

PRD-4

Factor prices provide incentives and convey information to firms and factors of production.

LEARNING OBJECTIVE

PRD-4.C

- a. Define (using graphs as appropriate) the characteristics of perfectly competitive factor markets.
- b. Explain (using graphs where appropriate) the profit-maximizing behavior of firms buying labor (with other inputs fixed) in perfectly competitive markets.
- c. Calculate (using data from a graph or table where appropriate) measures representing the profit-maximizing behavior of firms buying labor (with other inputs fixed) in perfectly competitive markets.

ESSENTIAL KNOWLEDGE

PRD-4.C.1

In a perfectly competitive labor market, the wage is set by the market and each firm hires the quantity of workers, where the marginal factor (resource) cost (wage) equals the marginal revenue product of labor. A typical firm may be a perfect competitor in the labor market even if it is an imperfect competitor in its output markets.

PRD-4.C.2

A typical firm hires labor in a perfectly competitive labor market as long as the marginal revenue product of labor is greater than the market wage.

PRD-4.C.3

To minimize costs or maximize profits, firms allocate inputs such that the last dollar spent on each input yields the same amount of marginal product.

LEARNING OBJECTIVE

PRD-4.C

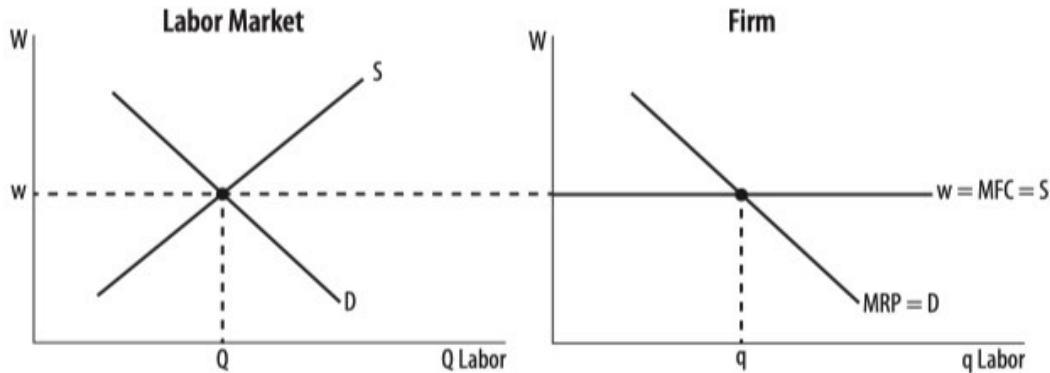
- Define (using graphs as appropriate) the characteristics of perfectly competitive factor markets.
- Explain (using graphs where appropriate) the profit-maximizing behavior of firms buying labor (with other inputs fixed) in perfectly competitive markets.
- Calculate (using data from a graph or table where appropriate) measures representing the profit-maximizing behavior of firms buying labor (with other inputs fixed) in perfectly competitive markets.

ESSENTIAL KNOWLEDGE

PRD-4.C.4

Marginal revenue product of a factor of production is the change in total revenue divided by the change in that factor of production, which is also equal to the marginal physical product of that factor multiplied by the marginal revenue ($MRP = MP \times MR$). Firms in a perfectly competitive output market will have marginal revenue product of labor that is equal to the value of the marginal product of labor ($VMPL = MPL \times P$) because marginal revenue for each unit of output is equal to price.

- A. Perfectly-competitive factor markets are those in which a large number of firms are acting to hire similar workers. Each firm's hiring decisions cannot affect the market wage rate because each firm is hiring only a very small percentage of the industry quantity. Such firms are referred to as wage-takers.



- B. Firms try to make as much profit as possible. One way they can reach this goal is by decreasing their costs without decreasing their output. This means that they need to find the right mix of labor (workers) and capital (machines) to achieve productive efficiency (lowest ATC).
1. Firms can find the combination of labor (L) and capital (k) that is least costly by following this rule: set the marginal product of labor (MPL) divided by the price of labor (PL) equal to the marginal product of capital (MPk) divided by the price of capital (Pk).
 2. The rule can be abbreviated in either of the following ways:

$$MPL/PL = MPk/Pk$$

OR

$$MPL/MPk = PL/Pk$$

3. Remember that because of the law of diminishing returns, the MPL and MPk decrease as firms increase the use of labor and capital. So if $MPL/PL > MPk/Pk$, the firm should employ more labor and use less capital to minimize ATC. However, if $MPL/PL < MPk/Pk$, the firm should employ less labor and employ more capital in order to minimize its ATC.

For example, assume $MPL = 10$, $PL = \$5$, $MPk = 20$ and $Pk = \$4$. Given these numbers, $10/\$5 < 20/\$4$, so the firm should employ more capital or less labor to minimize its cost.

1. Assuming a perfectly competitive labor market, explain why perfectly competitive firms in the product market demand more labor than imperfectly competitive firms in the product market given the same product prices.
2. Draw a side-by-side graph of a perfectly competitive labor market and a firm in a perfectly competitive industry. Indicate on your graph the market wage, the quantity of labor hired in the market, and the quantity of labor hired by the firm.
3. Using the graph above, show the effect of an increase in the number of skilled workers immigrating to a country.
4. What is the formula for the least-cost hiring rule (profit maximizing hiring rule)?
5. Use the least cost hiring rule (profit maximizing hiring rule) to determine what changes the following firms need to make to their use of labor and capital

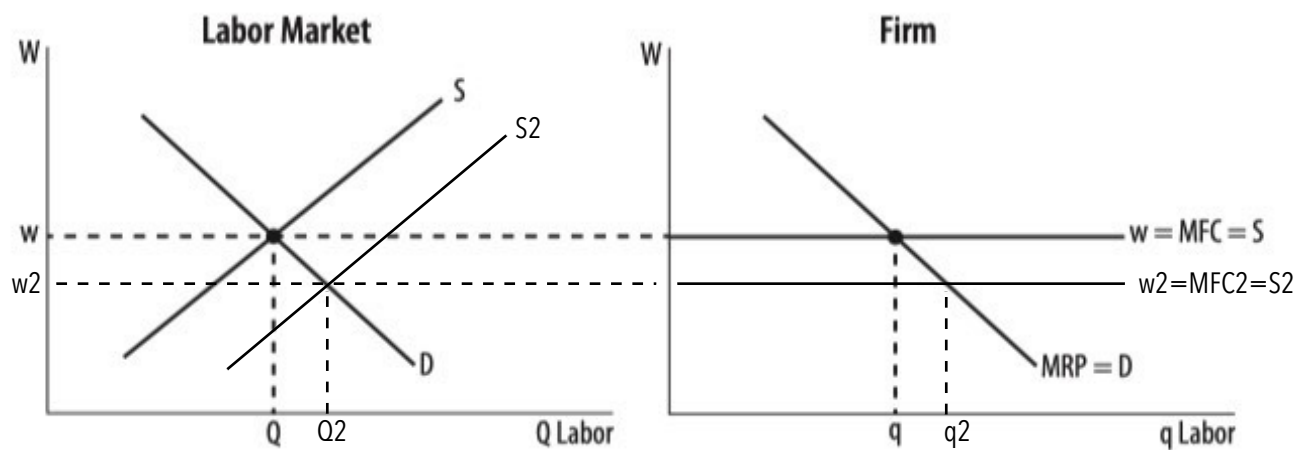
Firm 1: $MPL/PL > MPK/PK$

Firm 2: $PL/PK < MPL/MPK$

1. Assuming a perfectly competitive labor market, explain why perfectly competitive firms in the product market demand more labor than imperfectly competitive firms in the product market given the same product prices.

Marginal Revenue is generally less than price for imperfectly competitive firms, and since demand for labor

2. Draw a side-by-side graph of a perfectly competitive labor market and a firm in a perfectly competitive industry. Indicate on your graph the market wage, the quantity of labor hired in the market, and the quantity of labor hired by the firm.



3. Using the graph above, show the effect of an increase in the number of skilled workers immigrating to a country.

4. What is the formula for the least-cost hiring rule (profit maximizing hiring rule)?

$$MPL/PL = MPK/PK \text{ or } PL/PK = MPL/MPK$$

5. Use the least cost hiring rule (profit maximizing hiring rule) to determine what changes the following firms need to make to their use of labor and capital

Firm 1: $MPL/PL > MPK/PK$ Firm 1 should employ more labor and less capital until $MPL/PL = MPK/PK$

Firm 2: $PL/PK < MPL/MPK$ Firm 2 should also employ more labor and less capital until $PL/PK = MPL/MPK$

Number of Workers	Number of Parked Cars
0	0
1	8
2	20
3	34
4	45
5	54
6	60
7	63

2. Assume that Schmitt Inc. provides car parking services in a perfectly competitive output market and hires labor in a perfectly competitive input market. The market price per car parked is \$10, the daily market wage per worker is \$100, and fixed costs are \$50 per day. The table above shows the number of workers required to park different quantities of cars per day.
- (a) Calculate the marginal revenue product of the second worker. Show your work.
- (b) How many workers will Schmitt Inc. hire to maximize profit? Relative to this number of hired workers, explain why Schmitt Inc. will not hire one additional worker. Your answer must use marginal analysis and numbers from the table.
- (c) Calculate the daily profit for Schmitt Inc. at the profit-maximizing quantity identified in part (b). Show your work.
- (d) Suppose new legislation requires each worker in the parking industry to purchase an individual insurance policy at the worker's expense in order to legally park cars.
- (i) Will the market wage paid by a typical firm in this industry increase, decrease, or stay the same in the long run?
 - (ii) For a typical firm in the industry, will the number of workers hired in the short run increase, decrease, or stay the same? Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

Question 2: Short**5 Points**

-
- (a)** Calculate the marginal revenue product of the second worker as \$120 and show your work. **1 point**

$$\text{Marginal Revenue Product} = (20-8)/(2-1) \times \$10 \text{ or } (\$200-\$80)/(2-1) = \$120$$

-
- (b)** State that Schmitt Inc. will hire 4 workers and explain that Schmitt will not hire the 5th worker because the marginal revenue product of the 5th worker is \$90 $((54-45) \times \$10)$ which is less than the wage of \$100. **1 point**

-
- (c)** Calculate Schmitt's daily profit as \$0 and show your work. **1 point**

$$\text{Profit} = (\text{TR} - \text{TC}) = (\$10 \times 45) - (\$50 + (4 \times \$100)) = \$450 - \$450 = \$0$$

-
- (d) (i)** State that the wage will increase. **1 point**

-
- (ii)** State that the number of workers employed by a typical firm will decrease and explain that the market supply of workers will decrease, which causes the marginal factor cost (marginal resource cost) to increase, leading to a lower quantity of workers for the typical firm where $\text{MRP} = \text{MFC}$. **1 point**

Total for part (d) 2 points

Total for question 2 5 points

2. Keepdry produces and sells rain jackets in a perfectly competitive product market at the price of \$5 per jacket and hires all the workers it needs in a perfectly competitive labor market at the wage rate of \$15. Labor is the only variable input, and the firm's production schedule is provided in the table.

Number of Workers	Quantity of Output
0	0
1	9
2	20
3	27
4	32
5	34
6	35

- (a) Calculate the marginal revenue product of the second worker. Show your work.
- (b) Diminishing marginal returns will begin with the hiring of which worker?
- (c) Determine the profit-maximizing number of workers the firm should hire. Explain using marginal analysis.
- (d) Assuming Keepdry's fixed cost is \$40, calculate Keepdry's economic profit when hiring the profit-maximizing number of workers. Show your work.
- (e) Suppose Keepdry's fixed cost increases to \$80. Will the profit-maximizing number of workers hired in the short run increase, decrease, or stay the same? Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

Question 2: Short**5 points**

- (a) Calculate the marginal revenue product (MRP) of the 2nd worker as \$55 and show your work. **1 point**

$$\text{MRP}_{(2\text{nd worker})} = (\text{Marginal Product} \times \text{Marginal Revenue})$$

$$= (20 - 9) \times \$5 = 11 \times \$5 = \$55$$

- (b) State that diminishing marginal returns will begin with the hiring of the 3rd worker. **1 point**

- (c) State that the profit-maximizing number of workers is 4 and explain that the MRP of the 4th worker (\$25) is greater than the marginal factor cost (MFC) of the 4th worker (wage = \$15), and that the hiring of the 5th worker would decrease profits because the MRP (\$10) is less than the MFC of the 5th worker (\$15). **1 point**

- (d) Calculate the economic profit as \$60 and show your work. **1 point**

$$\text{Economic Profit} = \text{Total Revenue} - \text{Total Cost}$$

$$\text{Economic Profit} = \text{Total Revenue} - \text{Total Fixed Cost} - \text{Total Variable Cost}$$

$$\text{Economic Profit} = (\$5 \times 32) - \$40 - (\$15 \times 4)$$

$$= \$160 - \$40 - \$60 = \$160 - \$100 = \$60$$

- (e) State that the number of workers hired will stay the same and explain that the increase in fixed cost does not affect the marginal factor cost of producing rain jackets. **1 point**

Total for question 2 5 points

SUGGESTED SKILL

 Interpretation

2.A

Using economic concepts, principles, or models, explain how a specific economic outcome occurs or what action should be taken in order to achieve a specific economic outcome.

TOPIC 5.4

Monopsonistic Markets

Required Course Content

ENDURING UNDERSTANDING

PRD-4

Factor prices provide incentives and convey information to firms and factors of production.

LEARNING OBJECTIVE

PRD-4.D

- Define (using graphs as appropriate) the characteristics of monopsonistic markets.
- Explain (using graphs where appropriate) the profit-maximizing behavior of firms buying labor (with other inputs fixed) in monopsonistic markets.
- Calculate (using data from a graph or table where appropriate) measures representing the profit-maximizing behavior of firms buying labor (with other inputs fixed) in monopsonistic markets.

ESSENTIAL KNOWLEDGE

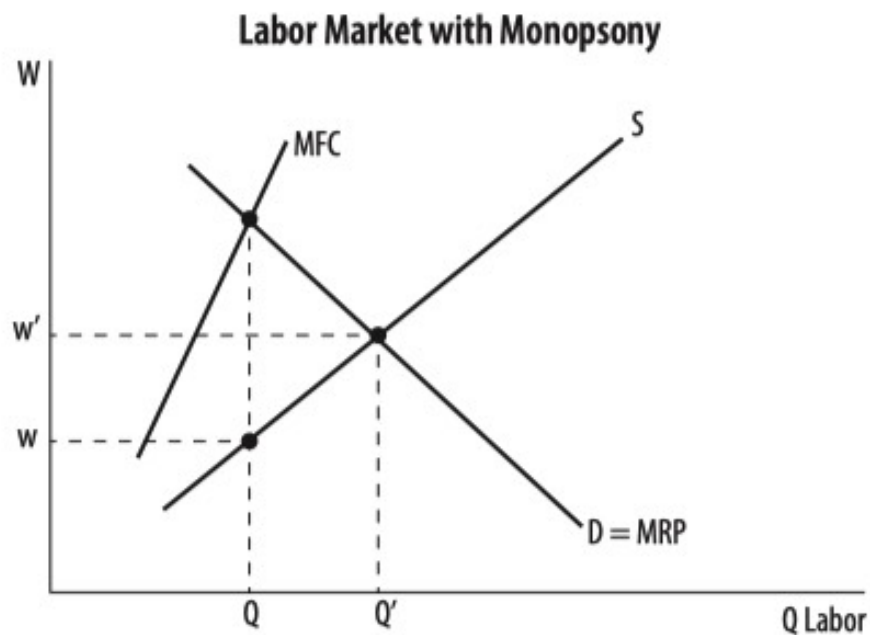
PRD-4.D.1

In a monopsonistic labor market, a typical firm hires additional labor as long as the marginal revenue product is greater than the marginal factor (resource) cost (the wage of a new unit of labor plus the wage increase given to all existing labor).

PRD-4.D.2

When a typical firm hires additional workers in a monopsonistic labor market, the marginal factor (resource) cost is greater than the supply price of labor.

- A. Monopsony occurs when there is only one consumer in a market.
- B. If there is monopsony in the factor market, this means there is only one employer of labor and/or capital. A town with one large factory that is the only employer of significant numbers of workers who don't have specialized skills is a good approximation of a monopsony.
- C. Monopsony in the factor market leads to marginal factor cost increasing at a faster rate than the labor supply curve because as more factors are employed, the price of the last unit employed must be paid to all of the previous units as well. In other words, the assumption is made that monopsonists cannot wage discriminate. For example, as a monopsonist firm attempts to hire more labor, it must not only offer a higher wage to the prospective workers, but it must also pay that wage to the workers already employed.
- D. The result of monopsony in the factor market is a lower price for the factors of production (wages, rents), and a lower quantity of factors employed.
- E. The following graph illustrates the difference in outcomes between monopsony and perfect competition in the factor market. The monopsony wage (w) is lower than the competitive wage (w'). The monopsony quantity (Q) is less than the competitive quantity (Q').

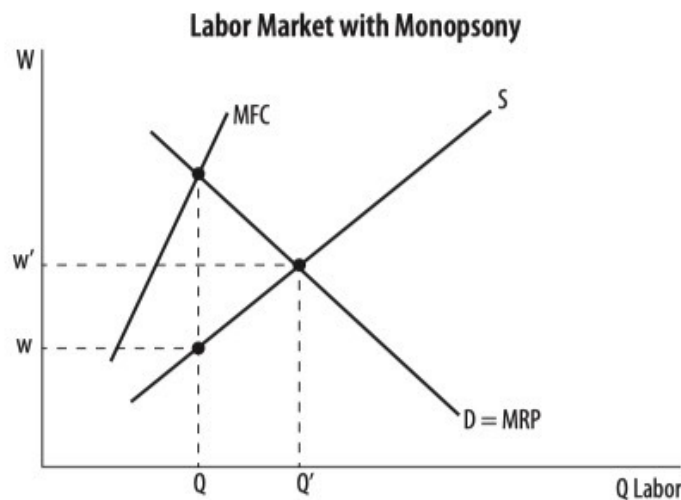


1. Define the following:
Monopsony
2. Draw a graph of a monopsonistic labor market. Identify quantity of labor hired by firm (Q), the quantity of labor which would have been hired in a competitive market (Q'). Show the monopsony wage (w) and the competitive wage (w').
3. Explain why less labor is employed in a monopsonistic market than in a competitive labor market.
4. Compared to a monopsonistic firm unable to wage discriminate, will a monopsonistic firm which practices perfect wage discrimination hire more or fewer units of labor?
5. Assume the government passes a minimum wage law that is higher than the monopsony wage. Will more or less labor be hired than before? Explain using a graph of a monopsonistic labor market.

1. Define the following:

Monopsony A market with only one consumer

2. Draw a graph of a monopsonistic labor market. Identify quantity of labor hired by firm (Q), the quantity of labor which would have been hired in a competitive market (Q'). Show the monopsony wage (w) and the competitive wage (w').



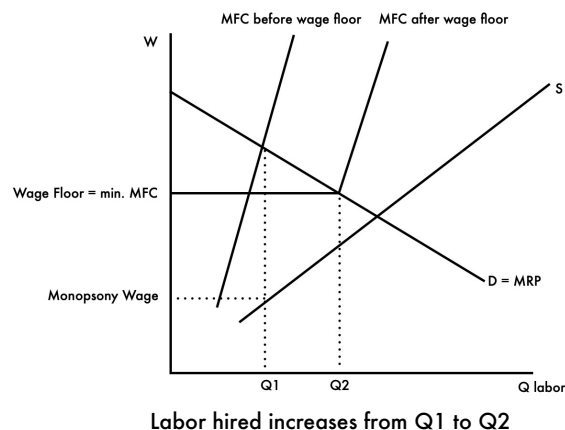
3. Explain why less labor is employed in a monopsonistic market than in a competitive labor market.

In a competitive labor market, $MFC = \text{the market wage}$, but in a monopsonistic market, $MFC > \text{the market wage}$, so the

4. Compared to a monopsonistic firm unable to wage discriminate, will a monopsonistic firm which practices perfect wage discrimination hire more or fewer units of labor?

A monopsonistic firm which practices perfectly wage discrimination will hire more units of labor

5. Assume the government passes a minimum wage law that is higher than the monopsony wage. Will more or less labor be hired than before? Explain using a graph of a monopsonistic labor market.



14. The equilibrium quantity of labor used in the production of a good will be the largest under which of the following conditions?
- (A) When the labor market is monopsonistic and the output market is perfectly competitive
 - (B) When the labor market is monopsonistic and the output market is a pure monopoly
 - (C) When the labor market is perfectly competitive and the output market is a pure monopoly
 - (D) When both the labor and output markets are perfectly competitive
 - (E) When laborers are allowed to collude in setting a price