

How Wages Are Determined in Labor Markets

This activity examines how wages and employment are determined in two types of labor markets. A *perfectly competitive labor market* is one in which all buyers and sellers are so small that no one can act alone and affect the market wage. The interaction of market demand (D) and supply (S) determines the wage and the level of employment. A *monopsony* exists if there is only one buyer of labor in the resource market. The monopsonist pays as low a wage as possible to attract the number of workers needed.

! Student Alert: If the monopsonist needs more workers, the wage will have to be raised.

Part A: A Perfectly Competitive Labor Market



Figure 4-5.1

A Perfectly Competitive Labor Market

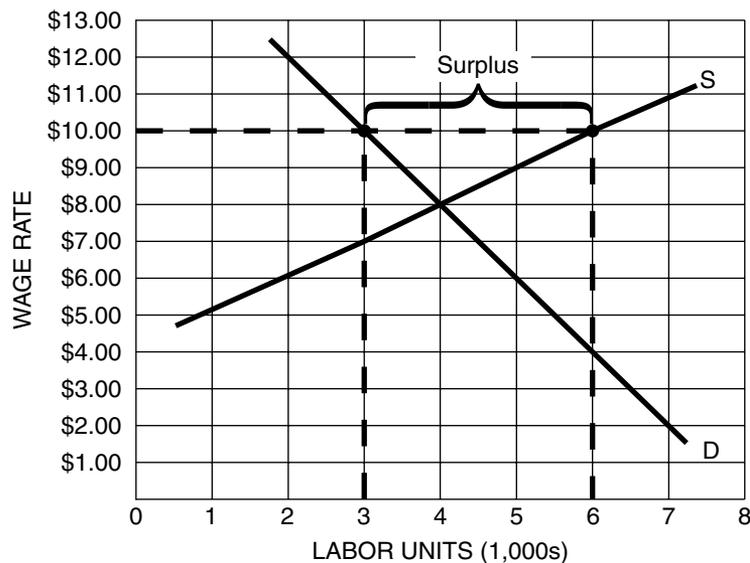


Figure 4-5.1 illustrates a perfectly competitive labor market. Labor is measured in thousands of labor hours. Answer the following questions based on this graph.

1. What are the equilibrium wage and number of labor hours in this labor market?
\$8.00 and 4,000 hours of labor
2. Why is the demand for labor downward sloping?
Firms will hire more workers if the wage is reduced.

3. Why is the supply of labor upward sloping?
Workers will offer more hours of labor at a high wage than at a low wage.

Part B: A Minimum Wage

4. Why does the government create a minimum wage in a labor market?
It does so to help low-income workers earn a higher income.
5. If the government sets a minimum wage of \$10.00 in the labor market shown in Figure 4-5.1, will there be a shortage or surplus of labor? How large is this shortage or surplus? Indicate this on the graph at the wage of \$10.00.
There will be a surplus of 3,000 labor hours. At this wage, the quantity supplied is 6,000 labor hours and the quantity demanded is 3,000 labor hours.
6. Are some workers made better off because of the minimum wage? Are some workers made worse off because of it? Explain.
Those workers who keep a job are better off because they receive a higher wage. Those workers who are fired are worse off because a wage of \$8.00 is better than no wage at all.
7. Would skilled or unskilled workers be more likely to lose their jobs because of a minimum wage law?
Unskilled workers would be more likely to lose their jobs because their MRP is lower than that of skilled workers.
8. If the demand for labor were more inelastic, would more or fewer workers lose their jobs because of the minimum wage? Explain.
If demand were more inelastic, employers would not have so strong a tendency to reduce their quantity demanded of labor when the wage increases. Thus, fewer workers would lose their jobs as a result of the minimum wage.

Part C: A Monopsonistic Labor Market

Assume the Ross Textile Company is a monopsony in a small town. Because it faces the upward sloping market supply of labor, Ross must raise its wage if it wants to increase the quantity supplied of workers. The company pays the same wage to all its employees, so if it increases the wage to attract another worker, the marginal resource cost of that worker is greater than the wage paid to the worker: $MRC > Wage$.

! Student Alert: If the wage is raised to hire another worker, then $MRC > Wage$.

9. Table 4-5.1 shows the supply of labor to Ross. Complete the table.



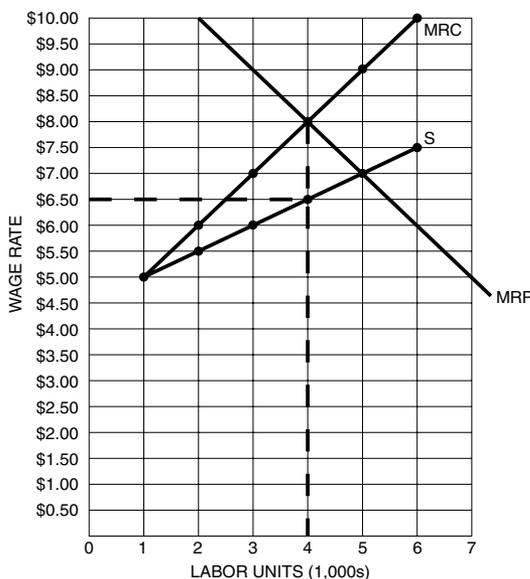
Table 4-5.1
Labor Supply Schedule

Workers	Wage	Total labor cost	Marginal resource cost
1	\$5.00	\$5.00	\$5.00
2	\$5.50	\$11.00	\$6.00
3	\$6.00	\$18.00	\$7.00
4	\$6.50	\$26.00	\$8.00
5	\$7.00	\$35.00	\$9.00
6	\$7.50	\$45.00	\$10.00

10. Plot the Ross Company's labor supply (S) curve and MRC curve in Figure 4-5.2. The firm's marginal revenue product (MRP) curve is already in the graph.



Figure 4-5.2
A Monopsonistic Labor Market



11. Why is the MRC curve above the S curve?
Because the firm pays all workers the same wage, when it increases its wage to attract another worker then the true cost to the firm of that worker is greater than the wage paid to that worker. The worker's MRC is his or her wage plus the increase in wages for all other workers.
12. What is more important to Ross as it considers hiring another worker—the wage paid to the worker or the worker's MRC? Why?
The MRC is more important. The firm hires the number of workers where $MRP = MRC$, not where $MRP = \text{Wage}$, because it is a monopsonist and not a perfectly competitive employer. The extra cost of an additional worker is the worker's MRC, not the worker's wage.
13. How many workers will Ross hire? What wage will it pay to each of these workers?
The firm will hire 4,000 workers because that is where $MRP = MRC$. It goes to the labor supply curve to find the wage needed to attract 4,000 workers: \$6.50.
14. Is the MRP curve the firm's D curve for labor?
No. Because the firm is a monopsonist, the wage is not equal to the MRC. The firm finds its profit-maximizing amount of labor where $MRP = MRC$, but it does not get the wage from the intersection of the MRP and MRC curves; it must go to the labor supply curve for the wage. A monopsonist in the resource market does not have a labor demand curve, similar to the way a monopsonist in the product market does not have a supply curve.
15. What would be the equilibrium wage and employment if this were a perfectly competitive market? How do these values compare with those of the monopsonist?
In a perfectly competitive market, equilibrium would be where the MRP curve intersects the S curve. The wage would be \$7.00 and the employment would be 5,000 workers. The wage and employment would be higher than in the case of monopsony.
16. If any firm hires the amount of labor at which $MRP = MRC$, is it also true that the firm is producing the output level at which $MR = MC$? Does the answer depend on whether the firm is perfectly competitive or monopolistic in the goods market, or whether it is perfectly competitive or monopsonistic in the labor market?
Hiring the amount of labor at which $MRP = MCL$ is the rule a firm follows to maximize its total profit. Thus, it must mean the firm is producing the profit-maximizing quantity of its product, which is found by producing where $MR = MC$. The degree of competition in the product and resource market does not change these two profit-maximizing rules.

Wages and Employment in Competitive and Monopsonistic Labor Markets

This activity asks you to show how changes in economic conditions, government policy, and union activity affect different types of labor markets. The impact of such changes depends on the degree of competition on the demand and supply sides of the labor market. The symbols W_C , L_C , W_M , and L_M refer to the wages and labor in the competitive and monopsonistic labor markets. You are to consider the short-run effects in the specified labor market.

Part A: Perfect Competition and Monopsony



Figure 4-6.1

Perfectly Competitive and Monopsonistic Labor Markets

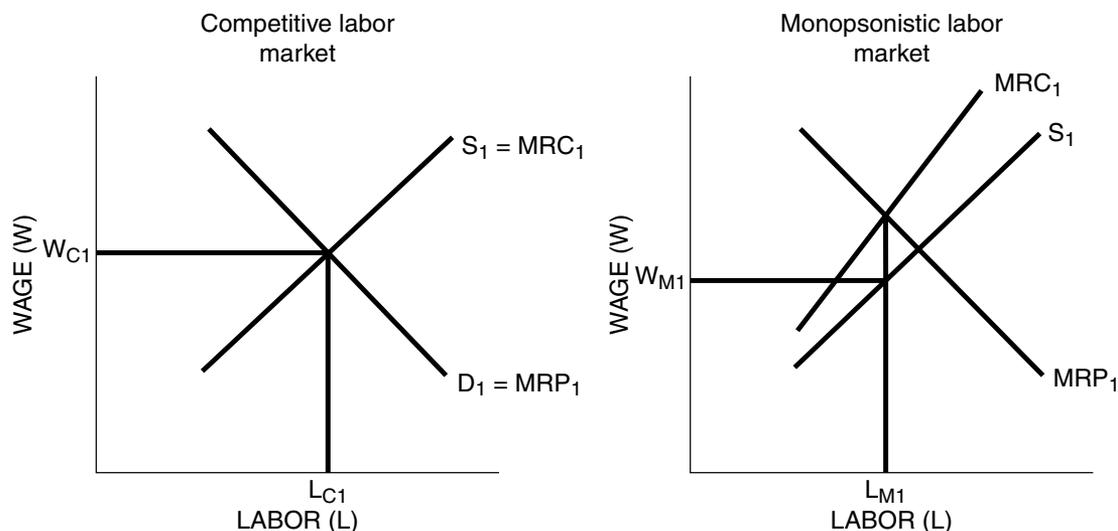


Figure 4-6.1 presents the basic setup of a perfectly competitive labor market and a monopsonistic labor market. Answer the following questions based on this figure.

1. Why is the marginal revenue product (MRP) curve equal to the market demand (D) curve for labor in the perfectly competitive labor market?

Because the firm hires labor in a perfectly competitive labor market, the wage it pays each worker is equal to the marginal resource cost of a worker. This means that by going to the marginal revenue product curve at each wage, the firm determines the number of workers to hire. This means the MRP curve is the firm's demand curve for labor.

2. Why is the MRP curve not equal to the market D curve for labor in the monopsonistic labor market?

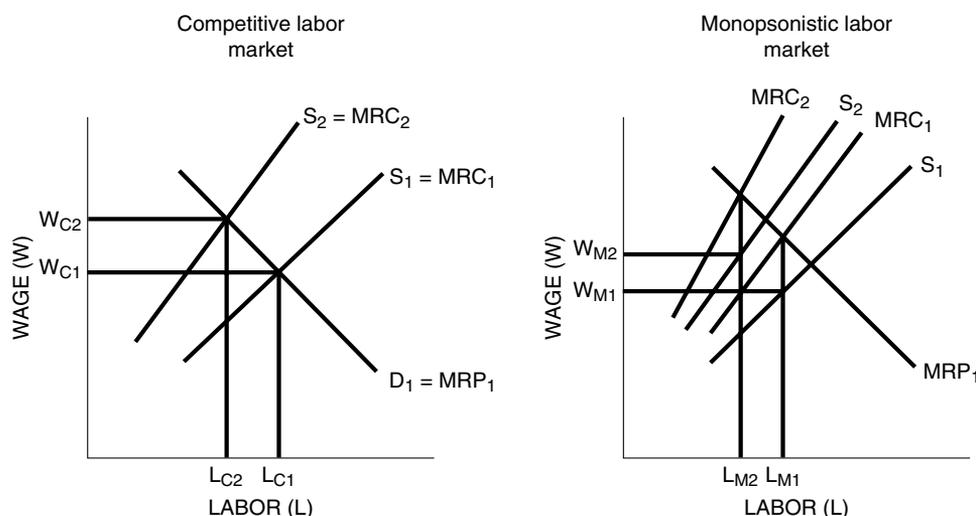
A monopsonist does not have a labor demand curve because there is no one curve the firm can go to at a given wage to find its optimal number of workers. It uses the MRP and MRC curves to determine the number of workers, then uses the labor supply curve to find the wage.

- Why is the marginal resource cost (MRC) curve equal to the market labor supply (S) curve in the perfectly competitive labor market?
In a perfectly competitive labor market, the market wage is the firm's MRC of an extra worker. The firm can hire all the workers it wants at the market wage and does not have to increase the wage to attract another worker.
- Why is the MRC curve not equal to the market labor S curve in the monopsonistic labor market?
The monopsonist must increase its wage to attract another worker. Since it pays this higher wage to all workers, the MRC of an extra worker exceeds the wage paid to that worker.
- In the appropriate graph, indicate by W_{C1} and L_{C1} , or W_{M1} and L_{M1} , the market wage and quantity of labor.

Part B: Analyzing Changes in the Labor Market

For each of the following scenarios, analyze the short-run effect of the specified event on each labor market. In the perfectly competitive labor market graph, indicate by W_{C1} and W_{C2} the market wage before and after the event. Indicate by L_{C1} and L_{C2} the equilibrium quantity of labor before and after the event. In the monopsonistic labor market graph, indicate by W_{M1} and W_{M2} the market wage before and after the event. Indicate by L_{M1} and L_{M2} the equilibrium quantity of labor before and after the event. State whether the event increases, decreases, or does not change the market wage and labor. Be sure to shift the curves that are affected by the events, leading to the changes in wage and labor.

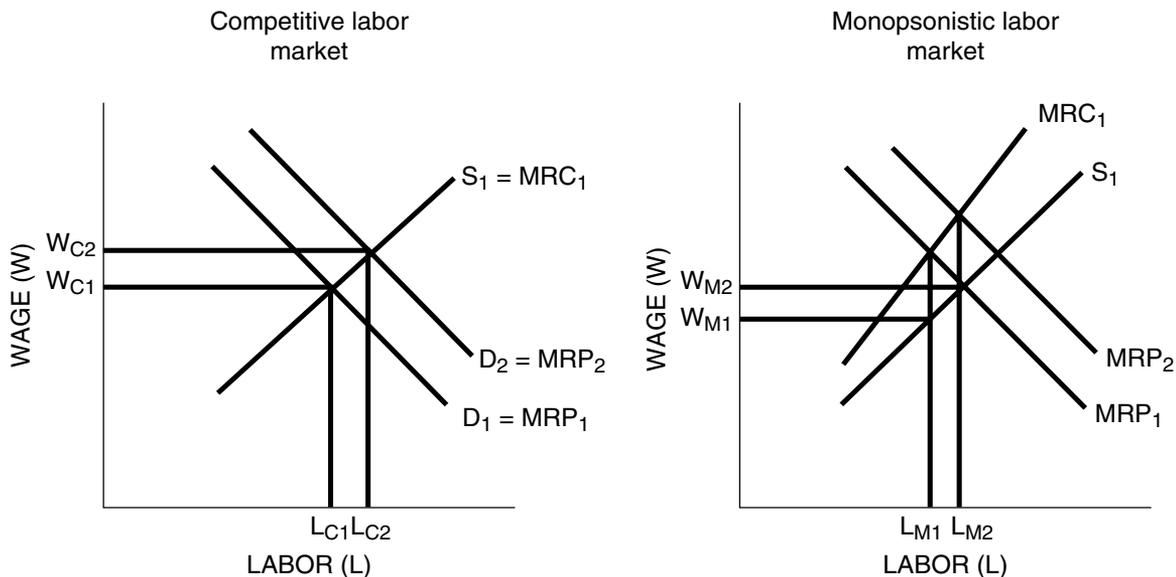
- Event: The state passes legislation requiring new teachers to pass a competency test in order to be employed by any school in the state. (The graphs refer to the labor market for teachers.)



Competitive labor market: wage increases, labor decreases

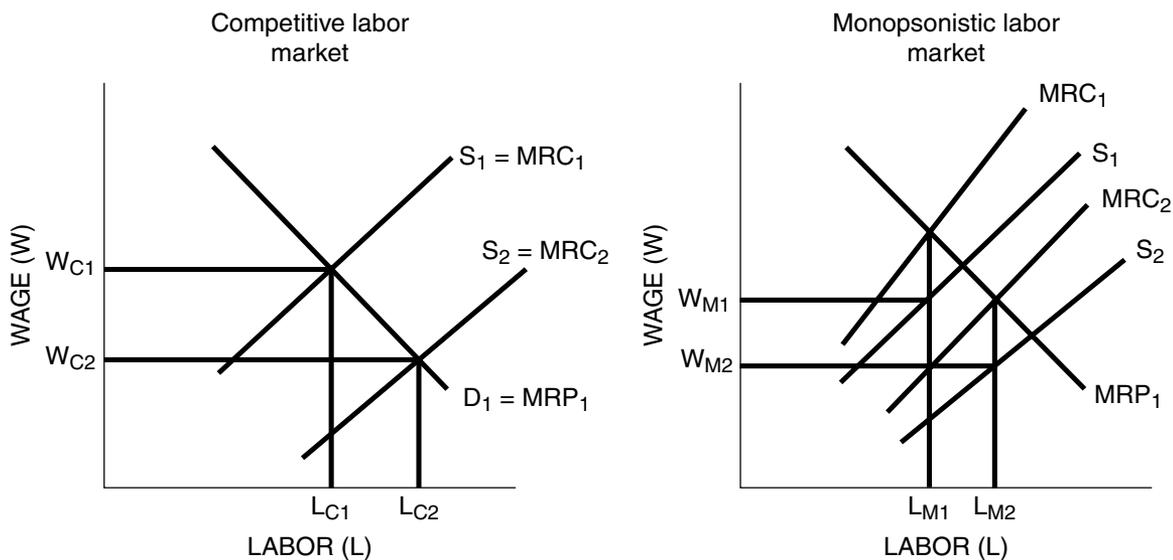
Monopsonistic labor market: wage increases, labor decreases

7. Event: New training methods increase the productivity of workers in the automobile industry. (The graphs refer to the labor market for automobile workers.)



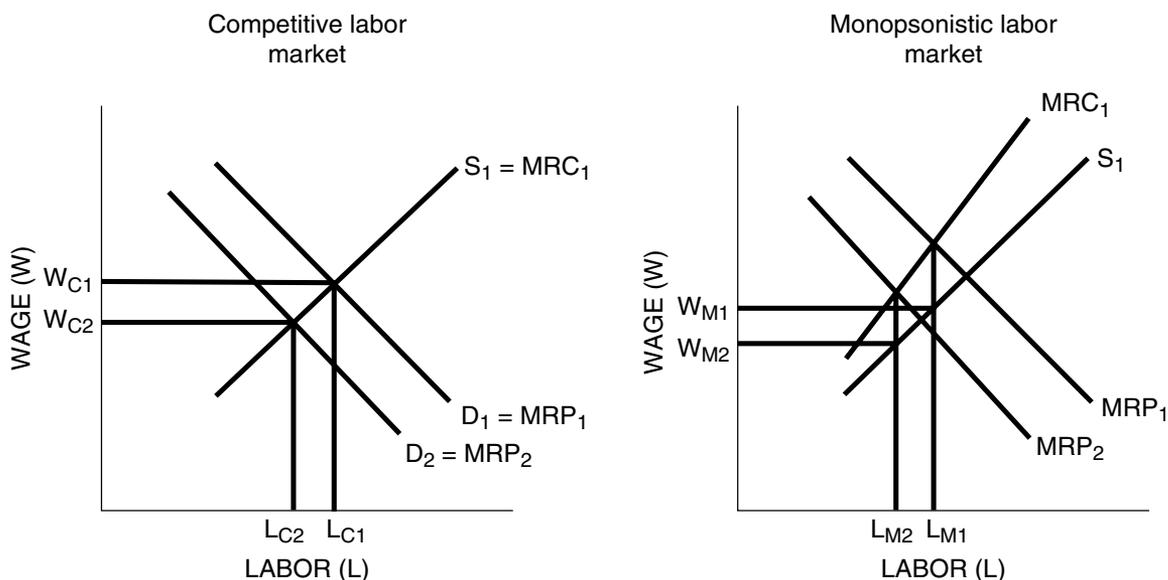
Competitive labor market: wage increases, labor increases
Monopsonistic labor market: wage increases, labor increases

8. Event: The U.S. government relaxes a tough immigration law, making it easier for construction workers from other countries to enter the United States. (The graphs refer to the American labor market for construction workers.)



Competitive labor market: wage decreases, labor increases
Monopsonistic labor market: wage decreases, labor increases

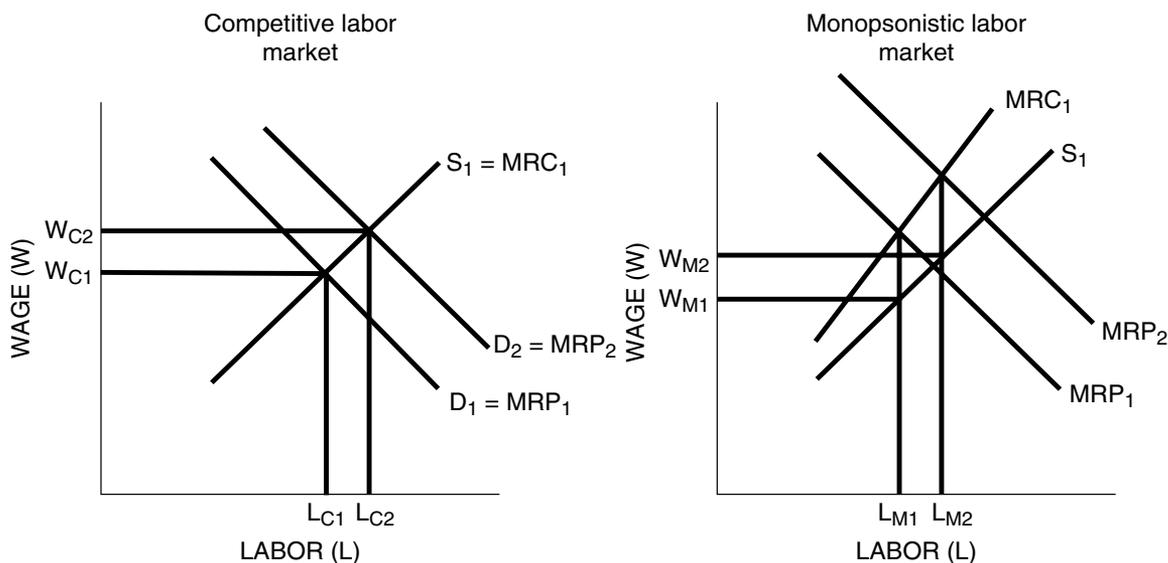
9. Event: The German government lowers tariffs on shoes imported into Germany. (The graphs refer to the labor market for shoe workers in Germany.)



Competitive labor market: wage decreases, labor decreases

Monopsonistic labor market: wage decreases, labor decreases

10. Event: Labor unions conduct a successful advertising campaign urging people to buy goods and services produced by American workers. (The graphs refer to the labor market for all American workers.)



Competitive labor market: wage increases, labor increases

Monopsonistic labor market: wage increases, labor increases

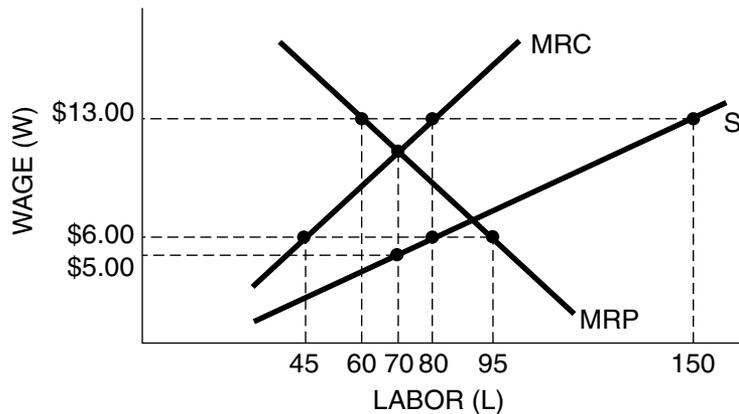
Part B: Monopsony and a Minimum Wage

Figure 4-6.2 illustrates the labor market in which there is only one employer. This monopsonist sells its good in a perfectly competitive product market.



Figure 4-6.2

A Monopsonistic Labor Market



1. What is the profit-maximizing amount of labor for this monopsonistic firm? Why?
The firm will hire 70 units of labor because that is where $MRP = MRC$.
2. What wage will it pay each unit of labor? Why?
It will pay a wage of \$5.00, as shown on the S curve at 75 units of labor.
3. If the government sets a minimum wage of \$13.00, how many units of labor would be hired? How many units of labor will be unemployed with this minimum wage? Explain.
At a minimum wage of \$13.00, 60 units of labor will be hired where the MRP curve intersects the revised MRC curve. The MRC of labor will be shown as a horizontal line at \$13.00 out to the labor supply curve at 150 units because the firm can attract up to 150 labor units at a wage of \$13.00. To attract more than 150 labor units, the firm will have to offer a wage higher than \$13.00. The cost of an extra unit of labor jumps up to the original MRC curve beyond 150 labor units. At the high minimum wage of \$13.00, 150 labor units are supplied but only 60 units are hired. The result is unemployment of 90 labor units.
4. If the government sets a minimum wage of \$6.00, how many units of labor would be hired? How many units of labor will be unemployed with this minimum wage? Explain.
At a minimum wage of \$6.00, 80 units of labor will be hired where the MRP curve intersects the revised MRC curve. The MRC of labor will be shown as a horizontal line at \$6.00 out to the labor supply curve at 80 units because the firm can attract up to 80 labor units at a wage of \$6.00. To attract more than 80 labor units, the firm will have to offer a wage higher than \$6.00. The cost of an extra unit of labor jumps up to the original MRC curve beyond 80 labor units. At the minimum wage of \$6.00, 80 labor units are supplied and all 80 units are hired. The result is zero unemployment at a minimum wage of \$6.00.