

If Output Sells For \$20 Per Unit, What Is The Marginal Revenue Product Of The Fifth Worker? A. \$2 B.

If Output Sells For \$20 Per Unit, What Is The Marginal Revenue Product Of The Fifth Worker? A. \$2 B.

Understanding the concept of Marginal Revenue Product (MRP) is essential for businesses aiming to optimize their labor force and maximize profits. When analyzing labor decisions, particularly the addition of the fifth worker, it's crucial to determine the MRP to assess whether hiring this worker is economically justified. This article will explore the fundamental principles behind MRP, how it is calculated, and how to interpret its value in the context of a product priced at \$20 per unit. By the end, you'll understand how to determine the MRP of the fifth worker and the implications for business decision-making.

What Is Marginal Revenue Product (MRP)?

Definition of Marginal Revenue Product

Marginal Revenue Product (MRP) measures the additional revenue generated by employing one more unit of a resource, typically labor. It reflects the value of the extra output attributable to the last worker hired, multiplied by the price at which the output is sold.

Mathematically, the MRP is expressed as:

$$\text{MRP} = \text{Marginal Product of labor} \times \text{Price per unit}$$

Where:

- Marginal Product of labor (MP): The additional output produced by the fifth worker.
- Price per unit: The selling price of each unit of output, which in this case is \$20.

The Relationship Between Output Price and MRP

Impact of Price on MRP

The price at which output is sold directly influences the MRP. When the selling price increases, the MRP increases proportionally, assuming the marginal product remains constant. Conversely, if the price falls, the MRP decreases.

In our scenario, the output sells for \$20 per unit, which simplifies the calculation of MRP by directly multiplying the marginal product (MP) of the fifth worker by \$20.

Calculating the Marginal Revenue Product of the Fifth Worker

Step 1: Determine the Marginal Product of the Fifth Worker

The marginal product (MP) of an additional worker is derived from the production function or data showing how output changes with each additional worker.

Suppose the data is as follows:

- Output with 4 workers: 100 units
- Output with 5 workers: 115 units

The MP of the fifth worker would be:

$$MP = 115 - 100 = 15 \text{ units}$$

Step 2: Calculate the MRP

Using the formula:

$$MRP = MP \times \text{Price per unit}$$

$$MRP = 15 \times 20 = \$300$$

Therefore, the marginal revenue product of the fifth worker is \$300.

Interpreting the MRP in Business Decisions

Should a Business Hire the Fifth Worker?

The decision to hire an additional worker depends on comparing the MRP to the wage rate:

- If the wage rate is less than the MRP, hiring the worker increases profit.
- If the wage exceeds the MRP, hiring would decrease profit and should be avoided.

For example:

- If the wage rate is \$250, hiring the fifth worker is profitable since $MRP (\$300) > \text{wage}$.
- If the wage rate is \$350, hiring the fifth worker would reduce profit.

Implications for Labor Optimization

Understanding MRP helps firms allocate resources efficiently:

- Hire workers up to the point where MRP equals the wage rate.
- Avoid hiring beyond this point as it reduces overall profit.

Additional Factors to Consider

Variable vs. Fixed Costs

While MRP focuses on revenue, businesses must also consider costs:

- Variable costs (like wages) directly affect the decision.
- Fixed costs are generally unaffected by the addition of a worker in the short term.

Market Conditions and Price Fluctuations

Changes in the market price impact MRP:

- An increase in price raises the MRP.
- A decrease lowers the MRP.

Summary: MRP Calculation for the Fifth Worker

Step	Description	Calculation	Result
1	Find the change in output (marginal product)	115 units - 100 units	15 units
2	Multiply by the selling price	15 units × \$20	\$300

The marginal revenue product of the fifth worker, given the data, is \$300.

Conclusion: Understanding the Value of the Fifth Worker

Determining the MRP is vital for making informed employment decisions. When output sells for \$20 per unit and the marginal product of the fifth worker is 15 units, the MRP is \$300. This figure indicates the additional revenue generated by hiring the fifth worker and helps businesses decide whether the wage rate justifies employment.

In summary:

- The MRP is directly proportional to the marginal product and the selling price.
- A higher MRP suggests the worker adds significant value.
- Businesses should compare MRP to wages to optimize staffing levels and maximize profits.

By mastering the concept of MRP, firms can strategically manage their workforce, adapt to changing market conditions, and enhance overall profitability.

Remember: Always gather accurate production data and market prices when calculating

MRP to make the most informed employment decisions.

Frequently Asked Questions

If output sells for \$20 per unit, what is the marginal revenue product of the fifth worker?

The marginal revenue product of the fifth worker is calculated by multiplying the marginal product of the fifth worker by the price per unit. Without the marginal product value, the exact number cannot be determined, but the formula is $MRP_5 = MP_5 \times \$20$.

How do you determine the marginal revenue product when the output price is given?

You multiply the marginal product of the worker by the price of the output. So, $MRP_5 = MP_5 \times \text{Price}$.

If the marginal product of the fifth worker is 0.1 units, what is their marginal revenue product at a \$20 selling price?

The marginal revenue product would be $0.1 \text{ units} \times \$20 = \$2$.

What does the marginal revenue product indicate in a production context?

It indicates the additional revenue generated by employing one more unit of input, such as a worker.

Why is understanding the marginal revenue product important for hiring decisions?

Because it helps determine whether hiring an additional worker adds enough revenue to justify their cost, aiding in profit-maximizing decisions.

If the options are A. \$2 and B. (missing value), how do you identify the correct marginal revenue product?

You need the marginal product of the fifth worker. Once known, multiply it by \$20 to find the marginal revenue product and match it to the options.

Can the marginal revenue product be negative? Under what circumstances?

Yes, if hiring an additional worker decreases overall output or increases costs more than revenue generated, the MRPl can be negative.

What assumptions are made when calculating the marginal revenue product in this scenario?

Assumptions include perfect competition where the output price remains constant regardless of the quantity sold and that the marginal product is accurately measured.

How does the concept of marginal revenue product relate to the demand for labor?

The demand for labor is derived from the marginal revenue product; firms hire workers up to the point where the MRPl equals the wage rate.

Additional Resources

If Output Sells For \$20 Per Unit, What Is The Marginal Revenue Product Of The Fifth Worker? A. \$2 B. — this question touches on a fundamental concept in economics: the Marginal Revenue Product (MRP). Understanding how to calculate MRP is essential for businesses and economists alike, as it helps determine the value of additional labor and guides decision-making regarding hiring and resource allocation. In this article, we will explore the concept of MRP in detail, analyze the specific scenario where output sells for \$20 per unit, and walk through the process of calculating the MRP of the fifth worker.

What Is Marginal Revenue Product (MRP)?

Definition and Importance

The Marginal Revenue Product of labor is the additional revenue generated by employing one more worker, holding all other factors constant. It is a key measure used to assess the productivity and value of labor in a firm.

Mathematically, it is expressed as:

$$\text{MRP} = \text{Marginal Product (MP) of labor} \times \text{Marginal Revenue (MR) per unit}$$

- Marginal Product (MP): The additional output produced by an additional worker.
- Marginal Revenue (MR): The additional revenue earned from selling one more unit of output.

Why MRP Matters

- Hiring Decisions: Firms compare the MRP of labor to the wage rate to decide whether to hire more workers.
- Profit Maximization: Firms aim to hire workers up to the point where the MRP equals the wage rate.
- Resource Allocation: Understanding MRP helps allocate resources efficiently across different inputs.

Scenario Breakdown: Output Sells for \$20 Per Unit

In the given scenario, output sells for \$20 per unit. This piece of information is crucial because it allows us to determine the Marginal Revenue (MR) for each additional unit of output.

Key Assumption: Perfect Competition in Output Market

Usually, when the price per unit is constant at \$20, we assume the firm operates in a perfectly competitive market. This implies:

- The firm is a price taker.
- The Marginal Revenue (MR) from selling an additional unit equals the price, i.e., \$20.

Implication for MRP Calculation

Given the above, the formula simplifies to:

$$\text{MRP} = \text{MP} \times \text{Price}$$

Because price remains constant at \$20, the calculation of MRP for the fifth worker depends solely on their marginal product.

Calculating the Marginal Revenue Product of the Fifth Worker

Step 1: Understand the Marginal Product of the Fifth Worker

To compute the MRP, we need the Marginal Product (MP) of the fifth worker, which is the additional output produced when the fifth worker is hired.

Suppose we have data on total output with different numbers of workers:

Number of Workers	Total Output (Units)
4	100
5	110

- The marginal product of the fifth worker is:

$$\text{MP of 5th worker} = \text{Total Output with 5 workers} - \text{Total Output with 4 workers}$$

MP of 5th worker = $110 - 100 = 10$ units

Step 2: Calculate the Marginal Revenue (MR)

Since output sells for \$20 per unit, $MR = \$20$.

Step 3: Calculate MRP of the Fifth Worker

Using the formula:

$$MRP = MP \times MR$$

$$MRP = 10 \text{ units} \times \$20 = \$200$$

This indicates that the marginal revenue product of the fifth worker is \$200.

Interpreting the Results and Answer Choices

The question provides options, such as:

- A. \$2
- B. (Assuming the options include \$200 among others)

Given our calculation, if the options include \$200, that would be the correct answer.

Why is this important?

Understanding that the MRP of the fifth worker is \$200 helps firms determine whether hiring the fifth worker is profitable:

- If the wage rate is less than \$200, hiring the fifth worker adds profit.
- If the wage rate exceeds \$200, it might not be profitable to hire them.

Broader Implications and Considerations

When Price Changes

If the selling price per unit drops or rises, the MR will change accordingly.

- Lower price: MR decreases, reducing the MRP.
- Higher price: MR increases, raising the MRP.

Diminishing Marginal Returns

In most production processes, marginal product tends to diminish after a certain point due to factors like limited resources or congestion.

- As more workers are added, the marginal product may decrease.
- This causes the MRP to decline, guiding firms to optimize employment levels.

Marginal Revenue vs. Marginal Revenue Product

While MR is constant in perfect competition, in imperfect markets or monopolies, MR may decrease with increased output, affecting MRP calculations.

Summing Up: Key Takeaways

- The Marginal Revenue Product of a worker is the additional revenue generated by that worker.
- In a perfectly competitive market where output sells for \$20 per unit, $MR = \$20$.
- The MRP of the n th worker is calculated by multiplying their marginal product by the price per unit.
- Accurate data on total outputs with different numbers of workers is essential to determine the marginal product.
- The decision to hire additional workers depends on whether MRP exceeds the wage rate.

Final Thoughts

Understanding If Output Sells For \$20 Per Unit, What Is The Marginal Revenue Product Of The Fifth Worker? hinges on grasping the concepts of marginal product, revenue, and market structure. By analyzing the marginal product of the fifth worker and multiplying it by the selling price, firms can effectively assess the value addition of each worker and make informed employment decisions. This process exemplifies the practical application of economic theory to real-world business strategy, highlighting the importance of data-driven analysis in maximizing profitability.

Disclaimer: The specific numeric value for the marginal product of the fifth worker was assumed for illustration purposes. Actual calculations depend on the detailed data on total outputs at different employment levels.

If Output Sells For 20 Per Unit What Is The Marginal Revenue Product Of The Fifth Worker A 2 B

If Output Sells For 20 Per Unit What Is The Marginal Revenue Product Of The Fifth Worker A 2 B

Related Articles

- [If A Time Series Reverses Direction, Then A Quadratic Trend Model Will Allow For The](#)

[Curvature To Be](#)

- [How Will A Gauge Visualization Provide Impressive One-glance Information On Your Company's Sales For](#)
- [Matt, A Senior Technician, Has Installed A Switch For The Purpose Of Identifying Devices On The Lan.](#)

[Back to Home](#)