Exercise walk-through

Profit-Maximizing Behavior in Perfectly Competitive Factor Markets ▪ 5.3

eXercise

You must be able to

- describe a **perfectly competitive factor market** in which firms are **wage takers 工资接受者**
- relate the market wage to an individual firm's hiring decision
- determine the profit-maximizing quantity of labour where $MRP = W$
- apply the **cost-minimizing rule 成本最小化法则**

Method — Wage taker

In a competitive factor market, each firm is too small to affect the wage, so it takes the market wage W as given (its MFC $= W$).

Method — Hiring rule

Hire labour up to the point where $MRP = W$.

Method — Cost-minimizing rule

Combine two inputs efficiently by equalizing the marginal product per dollar:

$$\frac{MP_L}{P_L} = \frac{MP_K}{P_K}.$$

Practice 2.1 ▪ 1 mark

State what a wage taker is.

Solution 2.1

Method: Wage taker

Worked steps

a firm too small to affect the wage, which it takes as given **B1**.

Practice 2.2 ▪ 1 mark

State the rule for how much labour a competitive firm hires.

Solution 2.2

Worked steps

hire until the marginal revenue product equals the wage $(MRP = W)$ **B1**.

Practice 2.3 ▪ 1 mark

State the cost-minimizing rule for combining two inputs.

Solution 2.3

Method: Cost-minimizing rule

Worked steps

set $\dfrac{MP_L}{P_L} = \dfrac{MP_K}{P_K}$ (equal marginal product per dollar for each input) **B1**.

Exam-style 3.1 ▪ 1 mark

In a competitive factor market, a firm is a

- **A** wage maker
- **B** wage taker
- **C** price maker
- **D** monopsonist

Solution 3.1

Method: Wage taker

A wage maker

B wage taker ✓

C price maker

D monopsonist

Worked steps

B.

Exam-style 3.2 ▪ 1 mark

A competitive firm hires labour up to where

A $MRP = W$

B $MRP > W$

C $MRP < W$

D $W = 0$

Solution 3.2

A $MRP = W$ ✓

B $MRP > W$

C $MRP < W$

D $W = 0$

Worked steps

A.

Exam-style 3.3 ▪ 1 mark

The market wage is $\$40$. A firm's MRP for the 1st to 4th workers is $\$70$, $\$55$, $\$40$, $\$25$.
(a) State how many workers it hires.
(b) Explain why it does not hire the 4th worker.

Solution 3.3

Method: Wage taker

Worked steps

(a) 3 workers **B1**. (b) the 4th worker's MRP ($\$25$) is below the wage ($\$40$), so hiring them would add more cost than revenue **B1** **B1**.