# Output by the Hour

Calculating productivity from local businesses to the national economy

**SS24.E.10a** "Explain how the relationship between inputs and outputs is used to calculate productivity at various levels of the economy."

NAME _____ DATE _____

## 1 READ AND MARK

Read it twice

**YOUR JOB** Underline the sentence that tells you how to calculate labor productivity. Then circle each output unit and box each labor input in the table so you can match the units before dividing.

### What Does an Hour Produce?

1. A print shop makes 90 posters in 15 worker-hours. Its labor productivity is 90 divided by 15, or 6 posters per worker-hour. Output is what gets produced; labor hours are one input used to produce it. A higher output per hour can mean that workers, equipment, or organization are being used more effectively.

2. The table follows a bakery, a regional baking industry, and a national economy. For each row, divide output by labor hours to find labor productivity. Compare rates directly only when output units match. Loaves per hour can be compared across dates or groups, but loaves per hour cannot be directly compared with dollars per hour.

**OUTPUT AND LABOR AT THREE ECONOMIC LEVELS**

| Level and period | Output | Labor input |
|---|---|---|
| Bakery, Monday | 240 loaves | 30 worker-hours |
| Bakery, Tuesday | 300 loaves | 30 worker-hours |
| Regional baking industry | 2,400 loaves | 300 worker-hours |
| National economy | $600 billion real GDP | 10 billion worker-hours |

3. At the national level, inflation-adjusted gross domestic product, or real GDP, measures the value of final goods and services produced. Real GDP per labor hour gives a broad productivity measure when industries make different products. This measure does not show how output is shared among workers, and it does not count unpaid work.

## 2 ANSWER WITH EVIDENCE

Use the passage

1. Calculate the bakery's labor productivity on Monday. Include the unit in your answer.

2. Calculate the bakery's labor productivity on Tuesday. How did it change from Monday in loaves per worker-hour and as a percentage?

3. Calculate the regional baking industry's labor productivity. How does its rate compare with the bakery's Monday rate?

4. Calculate national labor productivity. Why should you not directly compare its numerical rate with the bakery's?

## 3 YOUR TURN

Your own words

Invent a non-bakery business and a regional industry that produce the same kind of output. Give output and worker-hours for each, calculate both productivity rates, and explain what the rates tell you.

ANSWER KEY

# Output by the Hour

GRADE 12 · SS24.E.10a

## PART 1 · READ AND MARK

Underline the sentence that tells you how to calculate labor productivity. Then circle each output unit and box each labor input in the table so you can match the units before dividing. Accept any marking that follows this job and points at the right text.

## PART 2 · ANSWERS

| # | QUESTION | ANSWER |
|---|---|---|
| 1 | Calculate the bakery's labor productivity on Monday. Include the unit in your answer. | **240 loaves ÷ 30 worker-hours = 8 loaves per worker-hour.** |
| 2 | Calculate the bakery's labor productivity on Tuesday. How did it change from Monday in loaves per worker-hour and as a percentage? | **300 ÷ 30 = 10 loaves per worker-hour, an increase of 2 loaves per worker-hour, or 25%, from Monday.** |
| 3 | Calculate the regional baking industry's labor productivity. How does its rate compare with the bakery's Monday rate? | **2,400 ÷ 300 = 8 loaves per worker-hour, the same as the bakery's Monday rate.** |
| 4 | Calculate national labor productivity. Why should you not directly compare its numerical rate with the bakery's? | **$600 billion ÷ 10 billion worker-hours = $60 of real GDP per worker-hour. The bakery's rate measures loaves per worker-hour, so the output units differ.** |

## PART 3 · YOUR TURN (SAMPLE ANSWER)

A candle factory makes 80 candles in 40 worker-hours, so its productivity is 2 candles per worker-hour. The regional candle industry makes 900 candles in 300 worker-hours, or 3 candles per worker-hour. The industry produces one more candle per worker-hour than the factory, but these rates do not show why.

Accept plausible invented outputs and worker-hours if both calculations and units are correct and the comparison matches the rates. A productivity difference alone does not establish its cause.