

Exercise walk-through

The nature of operations ■ 4.1

eXercise

You must be able to

- describe the transformation process and how operations add value
- calculate **productivity** and explain efficiency
- analyse and evaluate the choice of production method

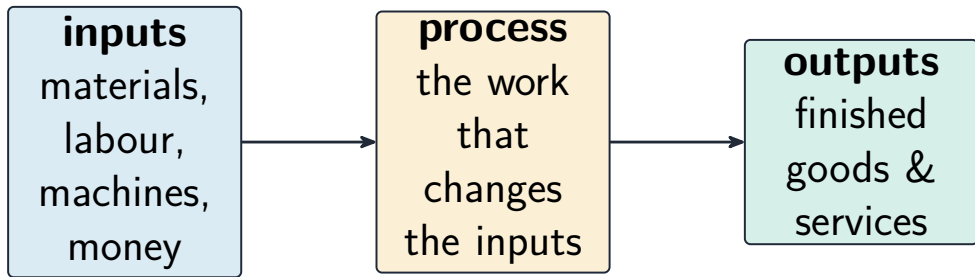
Method — Inputs, outputs and productivity

$$\text{productivity} = \frac{\text{output}}{\text{input used}}$$

- **Worked:** 600 units made by 20 workers $\rightarrow \frac{600}{20} = 30$ units per worker.
- **Methods:** *job* (one unique item), *batch* (a group then a switch), *flow* (non-stop line, low unit cost, needs high steady demand).
- **Capital-intensive** = mostly machines (high set-up, low unit cost);
labour-intensive = mostly people (flexible, personal).

Answer shapes: AO1 + AO2 + AO3 (reasoning chain) + AO4 (a supported judgement *in context*).

Method — Inputs, outputs and productivity



the output is worth more than the inputs $\Rightarrow$ value added

Operations turn inputs into outputs, adding value along the way

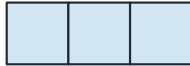
Method — Inputs, outputs and productivity

job



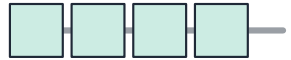
one unique
item at a time

batch



a group, then
switch to another

flow



a non-stop
line

Practice 2.1 ■ 2 marks

Define the term *productivity*.

Solution 2.1

Worked steps

the amount of output produced from a given amount of input (output per unit of input) (2 for a clear definition; 1 for a partial idea).

Practice 2.2 ■ 2 marks

A team of 5 workers makes 200 units in a shift. Calculate the productivity per worker.

Solution 2.2

Method: Inputs, outputs and productivity

Worked steps

$\frac{200}{5} = 40$ units per worker (2; award 1 for a correct method with the wrong figure).

Practice 2.3 ■ 2 marks

State the difference between *job* and *flow* production.

Solution 2.3

Method: Inputs, outputs and productivity

Worked steps

job production makes one unique item at a time; flow production makes identical items non-stop on a line (2 for a clear difference; 1 for a partial idea).

Exam-style 3.1 ■ 3 marks

Explain one benefit to a business of raising its productivity.

Solution 3.1

Method: Inputs, outputs and productivity

Worked steps

[3] **AO1** 1 — name a benefit (lower cost per unit; more output; can compete on price). **AO2** up to 2 — develop it, e.g. higher productivity spreads fixed costs over more units → lower unit cost → the firm can cut price or raise its margin (2 developed / 1 limited).

Exam-style 3.2 ■ 8 marks

Analyse two benefits to a manufacturer of using **flow production**.

Solution 3.2

Method: Inputs, outputs and productivity

Worked steps

[8] For **each** of two benefits: **AO1** 1 + **AO2** 1 + **AO3** up to 2. Example chains —
low unit cost: machines run non-stop → many identical units → economies of scale
→ low cost per unit. *Consistent quality*: a standard line → every unit is the same
→ fewer defects and complaints. Maximum 4 per benefit, 8 total.

Exam-style 3.3 ■ 12 marks

A furniture maker is choosing between **job** and **batch** production. Evaluate which method it should use.

Solution 3.3

Method: Inputs, outputs and productivity

Worked steps

[12] **AO1** 2 / **AO2** 2 / **AO3** 2 / **AO4** up to 6. **Job:** unique, high-quality, custom furniture → higher price, but slow and costly per unit. **Batch:** groups of the same design → lower unit cost and some variety, but switching causes downtime and stock. Judgement: a maker of custom pieces should use job production; one selling several standard ranges should use batch — it depends on how varied the products are and the level of demand.