

Name _____

Class _____

Date _____

By the end of this worksheet I can...

- ☐ compare one-off and mass production
- ☐ explain why standard components and knock-down fittings are used
- ☐ describe batch production and the issues that decide the production system
- ☐ explain how automation, CAD/CAM, CNC, Gantt and flow charts, jigs and JIT improve production

I DO

Worked example Read how a full-mark answer is built

1 Outline three benefits to a manufacturer of using standard components. (3 marks)

Full-mark answer each ✓ is one mark

They are cheaper to buy in bulk than making the parts in-house ✓. They are made to a consistent quality, so the manufacturer knows they will work ✓. They are readily available, so fewer production stages are needed and production is faster ✓.

Why marks are not awarded

"Easy to replace if they break."

0 marks: this is a benefit to the consumer, not the manufacturer.

WE DO

Guided practice Use the starters and word bank to help you

2 Explain issues a manufacturer should consider before choosing a production system for a new kettle. (3 marks)

Sentence starters

One reason is ... because ...

Another reason is ... so ...

Also, ... which means ...

Word bank

volume · machinery · workforce · investment
· demand · expected · needed · tooling

Tip: 3 marks = 3 separate, developed points.

YOU DO

On your own No notes. Check your answers afterwards.

3 Quick check: tick one box for each.

- a) What is a drawback of just-in-time production?
☐ Large warehouses are needed to store spare stock ☐ Deliveries to customers are always much slower ☐ More materials are wasted during production ☐ Cannot easily cope with a sudden increase in orders
- b) Which system has the highest set-up cost but the lowest cost per item?
☐ One-off ☐ Mass ☐ Prototype ☐ Hand-made
- c) How does a jig improve production?
☐ Reduces marking out and improves accuracy and repeatability ☐ Removes the need for accurate measuring tools altogether ☐ Lets every part be made to a slightly different size ☐ Replaces the need for skilled workers in the factory
- d) Which is a disadvantage of standard components for a manufacturer?
☐ Quality can't be guaranteed at all ☐ They are difficult and slow to source ☐ Dependence on an outside supplier ☐ Parts must always be made in-house

4 Key terms: write the letter of the matching description next to each term.

1. Mass production	___	A A single unique product made by highly skilled workers.
2. One-off production	___	B A set quantity made at once; production can switch between products.
3. Batch production	___	C Large volumes of identical products; automated; low skill; low unit cost.
4. Standard component	___	D Device that guides a tool for accurate, repeatable work.
5. Just-in-time	___	E Supplies arrive exactly when needed, so no large stock is held.
6. Jig	___	F A part made in large numbers to an agreed standard (e.g. bolts, hinges).

A manufacturer of the chairs uses standard components.

5 Explain the benefits and drawbacks to the manufacturer of using standard components. (4 marks)

6 Describe how Gantt charts and just-in-time production are used in the development and manufacture of products. (4 marks)

7 Explain why production and planning systems are used in the development and manufacture of new products. (8 marks)

Check and reflect

Mark your answers with the answer sheet. Go back to the checklist on the site and re-rate each “I can” statement above. Which one still needs work?
