

Name _____

Class _____

Date _____

By the end of this worksheet I can...

- ☐ describe how design and manufacturing technologies have changed the workforce
- ☐ describe the impact on the supply of products and society
- ☐ describe the impact on energy use and pollution
- ☐ describe methods to support sustainability (6 Rs)
- ☐ describe how to design for recyclability and reuse, and efficient use of materials
- ☐ investigate a product's sustainability and its impact on the environment

I DO

Worked example Read how a full-mark answer is built

1 Describe four steps designers could take to make products more sustainable. (4 marks)

Full-mark answer each ✓ is one mark

Label each plastic part with its recycling code so it can be sorted ✓. Use screws rather than glue so the product can be taken apart at the end of its life ✓. Make parts such as batteries replaceable so the product lasts longer ✓. Use less material and less packaging ✓.

Why marks are not awarded

"Use recycled materials and make it in a factory with solar panels."

0–1 mark: in some years recycled materials were given in the question, and points about the factory do not answer "designers".

WE DO

Guided practice Use the starters and word bank to help you

2 Describe the impact of mass manufacturing on the workforce. (2 marks)

Sentence starters

One ... is ..., which means ...

Another ... is ..., so ...

Word bank

replace · machines · jobs · traditional · CAD ·
needed · manual · workers

Tip: 2 marks = 2 separate, developed points.

YOU DO

On your own No notes. Check your answers afterwards.

3 Quick check: tick one box for each.

- a) Which is a negative impact of automation on the workforce?
☐ More jobs for CAD technicians and engineers ☐ Safer working conditions on the factory floor ☐ Loss of traditional craft skills and fewer jobs ☐ Higher accuracy and fewer faulty products
- b) Sourcing materials locally mainly reduces...
☐ Product aesthetics ☐ Transport pollution ☐ Strength ☐ Branding
- c) Designing a product to be fixed easily, extending its life, is which R?
☐ Reduce ☐ Refuse ☐ Rethink ☐ Repair
- d) Which design decision best supports recycling?
☐ Using one material and labelling it ☐ Gluing different plastics together ☐ Painting every part ☐ Using permanent fixings

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

- | | | |
|--------------------------------------|-------|--|
| 1. Sustainability | _____ | A Using resources responsibly so future generations can still meet their needs. |
| 2. The 6 Rs | _____ | B Sustainable/local materials, less transport, less energy, less waste. |
| 3. Clean manufacturing | _____ | C Fewer jobs and loss of traditional skills; demand for CAD and maintenance skills. |
| 4. Impact of automation on workforce | _____ | D Nothing goes to waste; products are reused, repaired or returned. |
| 5. Circular economy | _____ | E Reduce, Rethink, Refuse, Recycle, Reuse, Repair. |
| 6. Design for recyclability | _____ | F Single materials, labelled parts, easy disassembly. |

5 Describe how automated production could affect the workforce and society. (4 marks)

6 Describe steps designers and manufacturers could take to reduce the negative environmental impact of products. (4 marks)

7 Describe how environmental concerns have influenced the design, manufacture, use and disposal of 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?
