

Name _____

Class _____

Date _____

By the end of this worksheet I can...

- ☐ explain ferrous, non-ferrous and alloy
- ☐ describe the properties and uses of iron, cast iron, mild steel and stainless steel
- ☐ describe the properties and uses of high-speed steel, tin and zinc
- ☐ describe the properties and uses of aluminium, copper and brass

I DO

Worked example Read how a full-mark answer is built

Two outdoor picnic benches: a park bench (galvanised mild steel frame, recycled HDPE slats, stainless steel bolts) and a garden bench (cast aluminium ends, oak slats).

1 Explain why the materials chosen for these benches are suitable. You should make six valid points. (6 marks)

Full-mark answer each ✓ is one mark

The galvanised mild steel frame is strong enough to carry the weight of several adults ✓, and the zinc coating stops it rusting outdoors ✓. The recycled HDPE slats are weatherproof and will not rot like timber ✓, and because the colour runs through the material, scratches do not show ✓. The stainless steel bolts will not corrode and stain the slats ✓. The oak slats on the garden bench are very durable outdoors and have an attractive grain that suits a garden setting ✓.

Why marks are not awarded

"Mild steel is strong. HDPE is waterproof. Stainless steel is strong. Oak is strong."

1-2 marks: properties are stated, not explained; "strong" repeated scores once.

WE DO

Guided practice Use the starters and word bank to help you

2 Explain why high-speed steel is used for drill bits and why steel buckets are coated in zinc. (2 marks)

Sentence starters

One reason is ... because ...
Another reason is ... so ...

Word bank

Galvanising · rusting · protects · High-speed steel · cutting edge · coating · temperatures · scratched

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) Brass is an alloy of copper and...
☐ Tin ☐ Zinc ☐ Iron ☐ Aluminium
- b) Which metal is used to coat steel food cans?
☐ Zinc ☐ Tin ☐ Copper ☐ Brass
- c) Which metal suits kitchen cutlery?
☐ Mild steel ☐ Cast iron ☐ Stainless steel ☐ Copper
- d) Which metal is ferrous?
☐ Mild steel ☐ Brass ☐ Aluminium ☐ Copper

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

1. Ferrous metal	_____	A Copper + zinc alloy: polishes well, corrosion resistant. Taps, fittings.
2. Alloy	_____	B A metal mixed with other elements to improve its properties.
3. Mild steel	_____	C Ductile, malleable, easily welded. Car bodies, nuts and bolts.
4. Stainless steel	_____	D Contains iron; magnetic (except stainless); rusts.
5. Aluminium	_____	E Corrosion resistant and hygienic. Cutlery, sinks.
6. Brass	_____	F Lightweight with good strength-to-weight ratio. Cans, ladders, aircraft.

5 Explain why stainless steel is suitable for a kitchen sink. (2 marks)

6 Give the properties and one use of Copper. (2 marks)

7 Give the properties and one use of High-speed steel. (2 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?
