

Design & Technology
AQA GCSE

Selection of materials and components

Materials required for questions

- Pencil
- Rubber
- Calculator

Instructions

- Use black ink or ball-point pen
- Try answer all questions
- Use the space provided to answer questions
- Calculators can be used if necessary
- For the multiple choice questions, circle your answer

Advice

- Marks for each question are in brackets
- Read each question fully
- Try to answer every question
- Don't spend too much time on one question

Good luck!

Q1. When selecting materials for a prototype, what does *functional need* refer to?

- A** The material must look attractive
- B** The material must perform well in its intended use
- C** The material must be recyclable

Q2. Which of the following would be the most cost-effective material for making a one-off cardboard model?

- A** Carbon fibre
- B** Plywood
- C** Corrugated card

Q3. Why is it important to consider *availability* when selecting a material?

- A** To ensure it matches competitor designs
- B** To make sure the material can be sourced easily and quickly
- C** To choose the most expensive option

Q4. Which material would be most appropriate for a lightweight, waterproof electronics casing prototype?

- A** Acrylic
- B** MDF
- C** Cotton

Q5. The table below shows a range of products.

		
Mail packaging	Baseball bat	Screwdriver blade
		
Babys drinking cup	Gym wear	Electronic device with display

Choose **one** product from the table above.

My chosen product is:

Q5a. Name the specific main material/component of your chosen product. **(1 mark)**

Q5b. Name one property of the material of your chosen product. **(1 mark)**

Q5c. Describe why the property is needed for the product to function properly.
(2 marks)

Answers

Q1. B

Q2. C

Q3. B

Q4. A

Q5.

Product	Specific main material	Property of the material	Why is the property needed for the product to function properly?
Mail packaging	• Corrugated cardboard	• Lightweight • Impact resistance • Thermal protection	• Does not add to package weight significantly. • Protection against penetration
Baseball bat	• Ash • Hickory	• Tough • Durable • Springy wood	• Prevents excessive marking due to ball impact.
Screwdriver blade	• Steel • Chrome vanadium steel • High carbon steel	• Hardness • Durability	• Ability to turn a screw head without stripping screwdriver tip.
Baby's drinking cup	• Polypropylene • Polycarbonate • Melamine	• Heat resistant • Moisture resistant • Soft touch polymer	• Dishwasher safe. • Non-reactive – does not taint food. • Resist knocks and impacts.

			• Scratch resistant. • Soft so not hard on baby's gums.
Gym wear	• Cotton • Nylon • Nylon microfibre • Polyester • Polyester microfibre • Knitted fabric	• Breathable • Lightweight • Wear resistant • Durability • Flexibility • Washable	• Comfortable to wear – hugs the body. • Improved long term performance after washing. • Stretchy, dries quickly (not for cotton), crease resist (not for cotton).
Electronic device with display	• Liquid Crystal Display (LCD) or Light-emitting Diode (LED)	• Conductivity	• Liquid crystals respond electronically to emit light.