Paper 2 Answer-Writing Guide: Command Terms Made Simple

IB DP Design Technology (first assessment 2027) · Oct 16, 2026 · @Chaitra

How to use this guide

The command term tells you exactly what to write. If you answer the command term, you get the marks. If you answer a different question, you lose them, even when your facts are right.

What Paper 2 is. Paper 2 has short-answer and extended-response questions. They are set in a design technology context, such as a product, a user or a case. Questions mix ideas from different topics (for example, materials + sustainability + manufacturing).

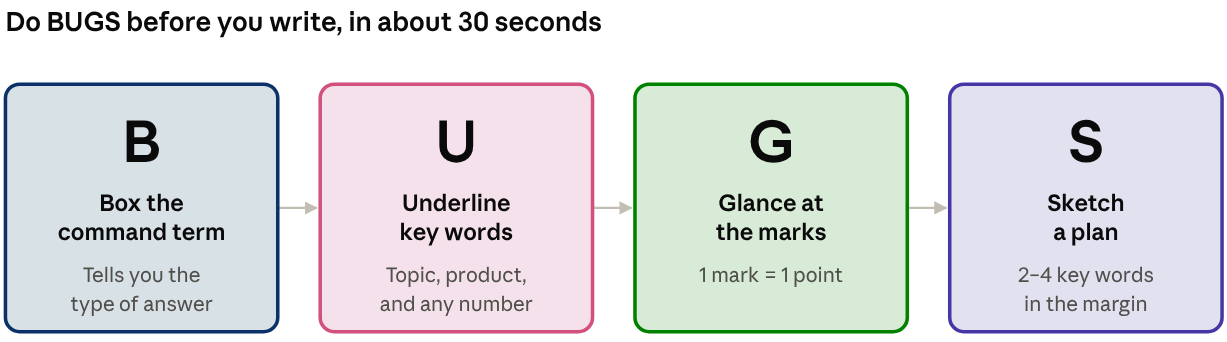
How to work through this guide:

1. Learn the 4-step method (next section). Use it on every question.
2. Learn the command terms one level at a time. Start with Level 1.
3. Copy the sentence frames until you no longer need them.
4. Do the practice questions. Mark yourself with the checklist at the end.

Tip: Do not try to learn everything in one sitting. One command term per day is enough.

The 4-step method: B-U-G-S

Use BUGS on every question before you write a single sentence. It takes 30 seconds and stops most lost marks.



BUGS method · 4 steps before writing

Step	What you do	Example: "Explain **two** reasons why a designer may make a product adjustable. [4]"
Box the command term	Draw a box around it. It tells you the *type* of answer.	Box **Explain** → I must give a reason + why it matters.
Underline the key words	Underline the topic, the product, and any number.	Underline *two*, *adjustable*.
Glance at the marks	Marks in brackets = number of points the examiner wants.	[4] marks, 2 reasons → 2 marks each → reason + because.
Sketch a plan	Write 2–4 key words in the margin, one per mark.	"fits 5th–95th %ile" / "one product many users" / "lower cost than many sizes" / "more users satisfied"

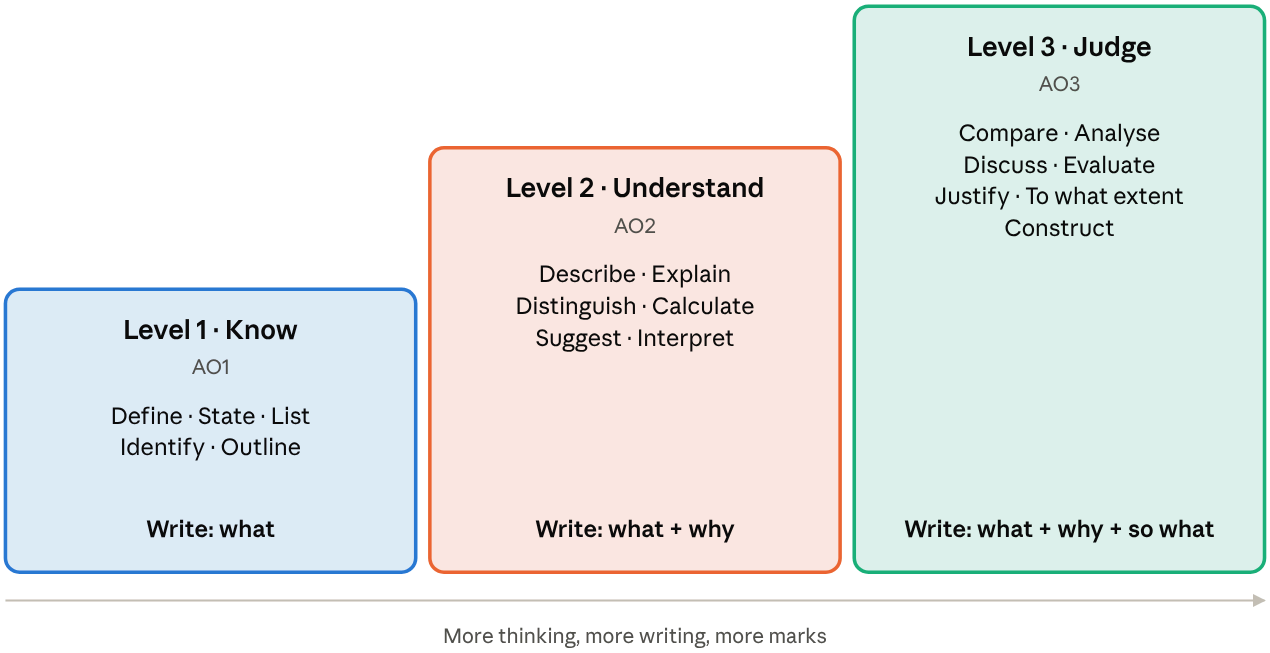
The marks rule: 1 mark ≈ 1 clear, correct point. For a 4-mark question, aim for 4 separate points. Do not write a long story for a 1-mark question.

The context rule: If the question names a product or user, mention that product or user in every point. A general answer that ignores the context often scores lower.

The command term ladder

Command terms sit on three levels. The higher the level, the more thinking and writing the examiner expects. Each level matches an assessment objective (AO) in the DP Design Technology guide.

Climb the ladder: each level adds more to write



command term ladder · 3 colour-coded levels

The colours stay the same through this guide: blue = Level 1, orange = Level 2, green = Level 3.

Level	Command term	What the examiner wants (plain words)	How much to write
1 (AO1: know)	Define	The exact meaning of a word or idea	1 sentence
1	State / List	A name, word or short answer. No explanation	A word or short phrase each
1	Identify	Pick out the right answer from options or a scenario	A word or short phrase
1	Outline	A brief account or summary	1–2 sentences per mark
2 (AO2: understand + apply)	Describe	A detailed account: what it is, what it looks like, what it does	1 sentence per mark, with detail

Level	Command term	What the examiner wants (plain words)	How much to write
2	Explain	Reasons or causes. Say *what* and *why*	Point + "because" + effect
2	Distinguish	Make the differences clear between two things	Difference sentences using "whereas"
2	Calculate	A number answer, with working and units	Formula → substitute → answer + unit
2	Suggest	A sensible idea or answer that fits the context	An idea + why it fits
2	Interpret	Use knowledge to recognise trends and draw conclusions from data	Read the data → say what it means
3 (AO3: construct, analyse, evaluate)	Compare / Compare and contrast	Similarities (and differences) between two or more things, referring to both every time	Matched points, one per mark
3	Analyse	Break it into parts and show how the parts link	Part → what it does → effect on whole
3	Discuss	A balanced review: arguments for and against, then a conclusion	Both sides + conclusion
3	Evaluate	Weigh strengths and limitations, then judge	Strengths + limitations + judgement
3	Justify	Give valid reasons or evidence for a choice or answer	Choice + reasons + evidence

Level	Command term	What the examiner wants (plain words)	How much to write
3	To what extent	Weigh how far something is true, then judge	Agree + disagree + "to a large/limited extent because…"
3	Construct	Show information in a logical, organised form (diagram, plan, flow diagram)	A drawn or organised answer

Memory hook: Level 1 = *what*. Level 2 = *what + why/how*. Level 3 = *what + why + so what (judgement)*.

Check against the guide: the full IB glossary of command terms is in the Design technology guide appendix. Use it as the final word if this table and the guide ever differ.

Level 1: Define, State, List, Identify, Outline

Level 1 answers are short and exact. Do not explain unless the question asks. Extra writing here wastes time you need for Level 3.

Define

Frame: "[Term] is …" (one sentence, using the key technical words).

Practice Q (A1.1.2): Define *anthropometrics*. [1]

Model answer: Anthropometrics is the measurement of human body dimensions, such as height or reach, used to inform the design of products.

Why it scores: one clear sentence, includes "measurement" and "human body dimensions".

State / List

Frame: a word or short phrase per mark. For List, write each on a new line.

Practice Q (B1.1.4): List **three** usability objectives. [3]

Model answer:

- Learnability

- Memorability
- Satisfaction

(Efficiency or errors would also score.)

Identify

Frame: "The [answer] is …" or just the answer.

Practice Q (A1.1.3): Identify the percentile a designer should use to set the height of a doorway. [1]

Model answer: The 95th percentile (for height).

Watch out: Identify does not ask why. One word or phrase is enough.

Outline

Frame: "[Thing] is/does … by …" (1–2 short sentences per mark, no long reasons).

Practice Q (A2.2.6): Outline fused deposition modelling (FDM). [2]

Model answer: FDM is a rapid prototyping process that melts a thermoplastic filament and extrudes it through a heated nozzle (1). The part is built up one layer at a time from a CAD model (1).

Outline vs Describe: Outline is a *summary*. Describe needs *more detail*. If you see Outline, stay brief.

Level 2: Describe, Explain, Distinguish, Calculate, Suggest, Interpret

Level 2 answers need detail and reasons. The key word for this level is **because**.

Describe

Frame: "[Thing] is … It has/uses … This means …" (one detailed point per mark).

Practice Q (A2.2.1): Describe a low-fidelity prototype. [2]

Model answer: A low-fidelity prototype is a quick, simple model made from cheap materials such as card, foam or paper (1). It shows the basic form or layout of an idea but not the final materials, finish or full function (1).

Explain

Explain is the most common Paper 2 term. Every point needs two parts: the **point** and the **reason**.

Frame (P + B): "[Point]. This is **because** [reason], which means [effect on user/product]."

Practice Q (A1.1.4): Explain **two** reasons why a designer may make an office chair adjustable. [4]

Model answer:

1. An adjustable chair can fit a wider range of users, from the 5th to the 95th percentile (1). This is because one seat height cannot suit both short and tall users, so adjustability lets each user set a comfortable, safe position (1).
2. Making one adjustable chair can be cheaper than making it in many fixed sizes (1). This is because the manufacturer only needs one set of tooling and one product to stock, which reduces production and storage costs (1).

Why it scores: two separate reasons, each developed with "because", and both linked to the chair.

Distinguish

Frame: "[A] is …, **whereas** [B] is …"

Practice Q (B2.1.2): Distinguish between primary and secondary research. [2]

Model answer: Primary research is first-hand data the designer collects themselves, such as interviews or user observation (1), **whereas** secondary research uses data already collected by a third party, such as government statistics or university research (1).

Watch out: writing about A in one paragraph and B in another is weaker. Put both in the same sentence with "whereas".

Calculate (mainly HL)

Frame: Formula → numbers in → answer → unit. Always show working; method marks can be given even if the final answer is wrong.

Practice Q (B3.2.5, HL): A shelf bracket fails at 12 kN. The allowable load is 4 kN. Calculate the safety factor. [2]

Model answer:

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SF = \frac{\text{Ultimate load}}{\text{Allowable load}} = \frac{12\
\text{kN}}{4\ \text{kN}} = 3
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SF = 3 (no unit, because it is a ratio).

Practice Q (B3.4.3, HL): A current of 0.02 A flows through a 330 Ω resistor. Calculate the voltage across it. [2]

Model answer: V = I × R = 0.02 A × 330 Ω = 6.6 V.

Suggest

Frame: "The designer could … This would … because …" (a sensible idea that fits the context).

Practice Q (C2.2.2): Suggest **one** way a designer could make an electric kettle easier to repair. [2]

Model answer: The designer could join the casing with screws instead of glue or permanent snap fits (1). This would let a technician open the kettle and replace the heating element, so the product lasts longer instead of being thrown away (1).

Tip: there is no single right answer for Suggest. Any idea that is realistic and linked to the context can score.

Interpret

Frame: "The data/image shows … This means …"

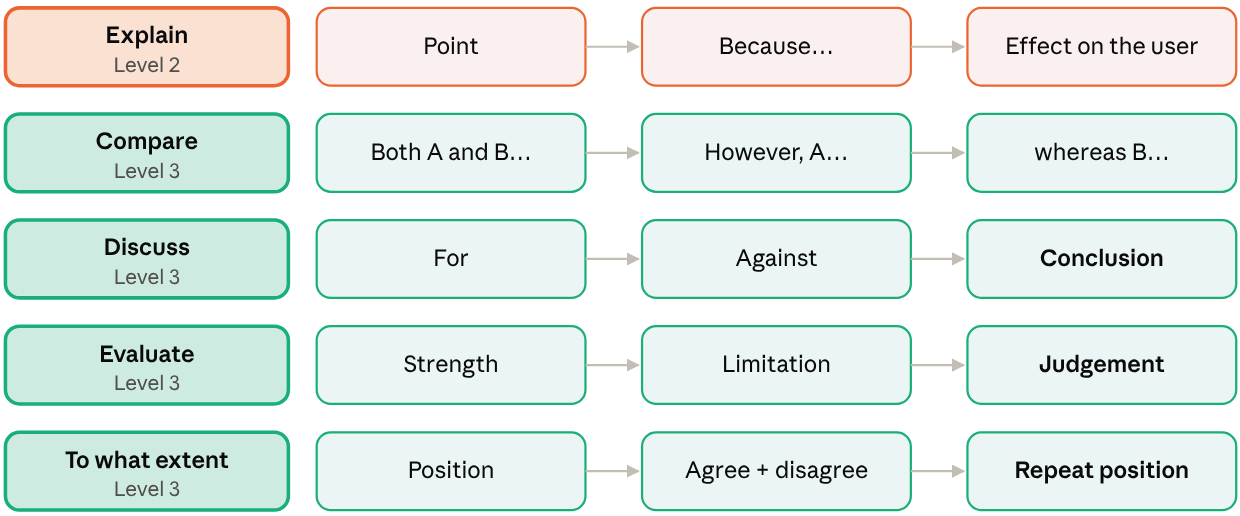
Practice Q (B2.2.4): An FEA image of a plastic bracket shows a red area at the corner where the arm joins the base. Interpret this result. [2]

Model answer: The red area shows the highest stress in the bracket, at the corner joint (1). This means the bracket is most likely to fail there, so the designer could add a fillet or rib to strengthen that corner (1).

Level 3: Compare, Analyse, Discuss, Evaluate, Justify, To what extent

Level 3 answers carry the most marks. They need **both sides** and usually a **judgement**. An answer with only advantages, or no conclusion, is capped at a lower mark.

Every command term has its own answer shape



Each block = at least one sentence. Never skip the last block.

answer shapes · Explain and Level 3 terms

Compare / Compare and contrast

Frame: "**Both** [A] and [B] … (similarity). **However**, [A] …, **whereas** [B] … (difference)."

Rule: every sentence must mention **both** things. Compare = similarities (and differences if asked). Compare and contrast = always both.

Practice Q (A2.2.6): Compare and contrast stereolithography (SLA) and fused deposition modelling (FDM) for making a prototype. [4]

Model answer: Both SLA and FDM are additive processes that build a part layer by layer from a CAD file (1). **Both** let designers make physical prototypes quickly for user feedback (1). **However**, SLA cures liquid resin with a laser, **whereas** FDM melts and extrudes plastic filament (1). SLA gives a smoother, more detailed surface finish, **whereas** FDM parts show visible layer lines but are cheaper to print (1).

Analyse

Frame: "[Part/feature] … This affects [the whole/user] by … **therefore** …"

Practice Q (C2.1.2): Analyse how a bamboo toothbrush meets **two** of Datschefski's principles of sustainable design. [4]

Model answer:

1. **Cyclic:** the bamboo handle is biodegradable (1), **therefore** it breaks down at the end of its life instead of adding to plastic waste in landfill (1).
2. **Solar:** bamboo grows quickly using sunlight with little fertiliser or irrigation (1), **therefore** the raw material is renewable and has a lower environmental impact than oil-based plastic (1).

Discuss

Frame (FAC): For → **A**gainst → **C**onclusion.

- For: "One advantage is … because …"
- Against: "However, a disadvantage is … because …"
- Conclusion: "Overall, … because …"

Practice Q (C1.1.3): Discuss the use of planned obsolescence in mobile phones. [6]

Model answer:

For: Planned obsolescence makes users replace phones more often, which increases sales and profit for the manufacturer (1). This supports the economic part of the triple bottom line and can fund research into new technology (1).

Against: However, short-life phones create large amounts of electronic waste (1). Phones contain metals that are hard to recover, so pollution and resource depletion increase (1). Users also pay more over time, which is unfair to people on lower incomes (1).

Conclusion: Overall, planned obsolescence benefits the manufacturer but harms people and the planet, so it conflicts with a designer's responsibility to the environment and community (1).

Evaluate

Frame (S-L-J): Strength → **L**imitation → **J**udgement.

Practice Q (A2.1.5): Evaluate the use of a primary persona when designing a smart thermostat. [4]

Model answer: *Strength:* a persona gives the design team a clear picture of the main user's needs and goals, so decisions stay focused on real people rather than the designer's own preferences (1). *Limitation:* a persona is a fictional summary, so it can miss users who do not match it, such as elderly users with limited vision (1). *Judgement:* a persona is useful early in the design process (1), but it should be checked against real user testing so that important user groups are not left out (1).

Justify

Frame: "[Choice] is the best because [reason 1]. **Evidence:** … Also, [reason 2] …"

Practice Q (B3.1.1): Justify the choice of ABS for the casing of a children's toy. [3]

Model answer: ABS is a suitable choice because it has high toughness, so the toy will not crack if dropped (1). It can be injection moulded in bright colours, so no paint is needed that could chip off (1). It is also lightweight and has a smooth, easy-to-clean surface, which is safer and more hygienic for young children (1).

To what extent

Frame: "To a [large / limited] extent … because … However, … Overall, …" State your position in the first line and repeat it in the last line.

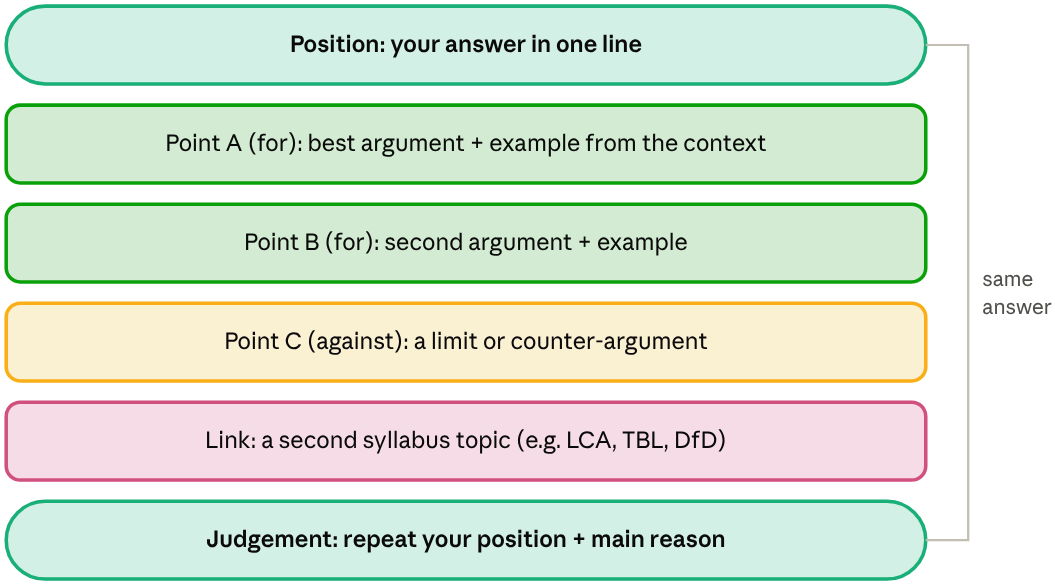
A full worked example is in the next section.

Watch out for all Level 3 terms: the judgement must come from the points you wrote. A conclusion that introduces a new idea does not score.

Extended response: the PLAN-WRITE frame

Extended responses link two or more syllabus topics. Spend about 2 minutes planning before writing; a plan stops you drifting off the question.

Build an extended response like a burger



Plan in key words first (about 2 minutes), then turn each layer into a PEEL paragraph.

extended response structure · 6 layers

Green layers argue *for*, the amber layer argues *against*, and the matching top and bottom layers hold your position.

Planning grid (copy this into your exam margin):

Box	What goes in it	Key words only
1. Position	Your answer to the question in one line	"Large extent"
2. Point A (for)	Strongest argument + example from the context	
3. Point B (for)	Second argument + example	
4. Point C (against)	A limit or counter-argument + example	
5. Link	The other syllabus topic that connects (e.g. LCA, DfD, TBL)	
6. Judgement	Repeat position + the main reason	

Paragraph recipe (PEEL): **P**oint → **E**xplain (because) → **E**xample (from the context) → **L**ink back to the question.

Worked example

Practice Q (B3.1 + C2.2 linking question): A café is replacing its single-use coffee cups. To what extent does material selection affect a product's suitability for a circular economy? [8]

Plan:

Box	Key words
Position	Large extent, but not alone
Point A	Plastic-lined paper cup = mixed materials → hard to recycle
Point B	Single material (stainless steel, PP) → reuse + recycle
Point C	Design for disassembly + take-back also needed
Link	C2.2.4 recover/restore; C4.1 DfD
Judgement	Material is the starting point; system makes it work

Model answer:

To a large extent, material selection decides whether a coffee cup can stay in a circular economy, although it is not the only factor.

First, many single-use cups are paper with a thin plastic lining. This is a problem **because** the two materials are bonded together and are difficult to separate, so most of these cups cannot be recycled and go to landfill. Choosing a combination material therefore pushes the cup into a linear "take-make-dispose" model.

Second, a cup made from a single material, such as stainless steel or polypropylene, is far more suitable. Stainless steel is durable and corrosion resistant, so one cup can be reused hundreds of times. At the end of its life it can be recycled without losing quality, which keeps the material in use, as the circular economy aims to do.

However, material choice alone is not enough. A reusable cup only stays in the loop if users return it, so the café also needs a deposit or take-back scheme to recover and restore products. The designer should also design for disassembly, for example a lid that separates easily from the body, so each part can be cleaned, replaced or recycled.

Overall, material selection affects circular-economy suitability to a large extent, because a poor material choice makes recovery almost impossible. However, the cup only becomes truly circular when the right material is combined with design for disassembly and a system for recovery.

Why it scores: position stated at the start and the end; both sides; every point linked to the coffee cup; a second topic (recovery, design for disassembly) is brought in; the judgement follows from the points.

Practice bank

Work down the levels: do all Level 1 questions first, then Level 2, then Level 3. Use BUGS on each one and mark yourself with the checklist below. HL-only topics are labelled.

Level 1 (short, exact)

#	Syllabus	Question	Marks
1	A1.1.1	Define *ergonomics*.	1
2	A3.1.6	State **two** mechanical properties of a material.	2
3	A3.1.8	Identify the smart material property used in sunglasses that darken in sunlight.	1
4	B2.1.1	List the five stages of the design process.	5
5	C1.1.3	Outline *style obsolescence*.	2
6	A3.3.1 (HL)	State the four types of motion.	4

Level 2 (detail + because)

#	Syllabus	Question	Marks
7	A1.1.3	Explain why the 5th percentile is used to set the reach to a car's dashboard controls.	2
8	A2.2.1	Distinguish between low-fidelity and high-fidelity prototypes.	2

#	Syllabus	Question	Marks
9	A3.1.7	Explain why a composite material is used for a bicycle frame.	3
10	A1.1.7	Describe how sound can be used to influence the design of a car door.	2
11	C1.2.3	Suggest how a "design for extremes" strategy could improve a kitchen tap.	2
12	B3.3.2 (HL)	A driver gear has 20 teeth and a driven gear has 60 teeth. Calculate the velocity ratio.	2

Level 3 (both sides + judgement)

#	Syllabus	Question	Marks
13	B2.1.3 / A2.1.4	Compare interviews and surveys as primary research methods for a school bag redesign.	4
14	C3.1.3	Analyse a reusable water bottle using a SWOT analysis.	4
15	A2.2.5	Discuss the use of virtual reality (VR) prototypes in product development.	6
16	C2.1.3	Evaluate the use of the triple bottom line when designing low-cost furniture.	4
17	B3.1.3	Justify the choice of a material for an outdoor bench.	3
18	C1.2.2 + A1.1.4	To what extent is it appropriate to design a public seat for the "average" person?	8
19	A4.1.11 (HL)	Evaluate the manufacturing techniques used to produce a plastic garden chair.	6

Answer key for teachers: 4 → empathize; defining the project; ideation and modelling; designing a solution; presenting a solution. 12 → VR = 60 ÷ 20 = 3:1 (the driven gear turns 3 times slower).

Self-check and common mistakes

Tick each box after every practice answer. A box you cannot tick shows where marks were lost.

Every answer:

- [ ] I boxed the command term and answered *that* term.
- [ ] I wrote one clear point for each mark.
- [ ] I used technical words from the syllabus (e.g. percentile, toughness, biodegradable).
- [ ] I named the product or user from the question in my points.

Level 2 answers:

- [ ] Every point has a "because" or "which means".
- [ ] Calculations show formula, working, answer and unit.

Level 3 answers:

- [ ] I wrote about both sides (for/against or strengths/limitations).
- [ ] Compare answers mention both items in every sentence.
- [ ] I ended with a judgement that follows from my points.

Most common mistakes:

Mistake	Fix
Describing when the question says Explain	Add "because…" to every point
Writing a paragraph for a 1-mark Define	One sentence, then move on
Listing advantages only for Evaluate or Discuss	Always add "However…" and a judgement
General answer that ignores the product	Name the product in every point
Repeating the same point in different words	Check that each point is new
Missing units or working in calculations	Formula → numbers → answer + unit