Pearson Edexcel

Mark Scheme (Results)

November 2021

Pearson Edexcel GCSE
In Design & Technology (1DT0)
1E: Textiles

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Component 1 mark scheme – 1DT0/1E

Section A – Core content

Question number	Answer	Mark
1 (a) (i)	Any **one** property from: • Hard (1) • Tough (1) • Straight / close grained (1) • Slightly flexible (1) • Compressive strength (1)	**(1)**

Question number	Answer	Additional information	Mark
1 (a) (ii)	Any **one** property from: • Lightweight (1) • Tough (1) • Hygienic / inert (1) • Plasticity (1) • Waterproof (1)	Do not accept 'High impact' on its own Do not accept 'can be recycled' Do not accept 'durable'	**(1)**

Question number	Answer	Mark
1 (a) (iii)	Any **one** property from: • Warm / traps air / insulator (1) • Breathable (1) • Durable (1) • Soft (1)	**(1)**

Question number	Answer	Mark
1 (a) (iv)	Any **one** property from: • Opaque (1) • Absorbent (1) • Rough / textured surface (1)	**(1)**

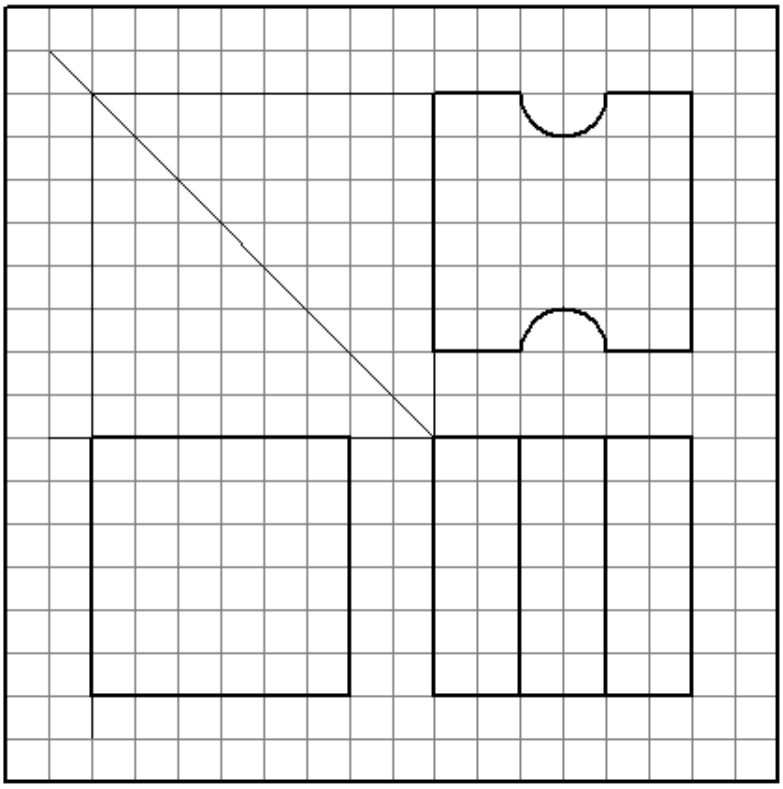
Question number	Answer	Mark
1 (b)	Any **one** advantage of using wind to generate energy (1) and a linked justification of that advantage (1). • The energy generated is free (1) once the installations / construction / investment costs have been paid off (1) • The energy generated is a clean fuel source / does not rely on any burning of materials (1) therefore reducing emissions / greenhouse gases / preserves fossil fuels (1) • It is a sustainable / renewable source of energy (1) which means it will never run out (1) • The UK has good levels of offshore wind / hilly terrain / exposed landscape (1) which provides a good / constant / consistent level of power / electricity (1)	**(2)**

Question number	Answer	Additional guidance	Mark
1 (c)	A calculation that includes: • correct setting out of formula $\frac{800 - 500}{500} \times 100$ (1) • correct answer 60% (1)	Award full marks for correct numerical answer without working. Allow for ECF if candidate gets part of transposition wrong.	**(2)**

Question number	Answer	Mark
2 (a)	Any **one** non-ferrous metal from: • Copper (1) • Brass (1) • Bronze (1) • Pewter (1)	**(1)**

Question number	Answer	Mark
2 (b)	Any **one** reason for using standard sized rods (1) and a linked justification of that reason (1). • They will be readily available from a supplier (1) which means the company do not have to invest in machinery / time to manufacture the rods (1) • They will be able to buy long lengths which they simply cut to the size they require (1) which means only very simple processing is required which will reduce the level of skill required / speed up manufacturing times (1) • A standard 10mm drill bit can be used (1) so no further reduction of the material diameter is required (1) • They would be mass produced by specialist manufacturers (1) which means a reduction in unit cost / cheaper (1)	**(2)**

Question number	Answer	Mark
2 (c)	Any **one** property of felted wool fabric that makes it an appropriate choice of material (1) and a linked justification of that property (1) • It does not fray (1) which means it will leave a neat finish / edge around the base (1) • It is soft / smooth / cushioned (1) which means it will not damage any surface the game is placed on (1)	**(2)**

Question number	Answer	Mark
2 (d)	A completed orthographic drawing that shows:  • correct width of the cube at 30mm for side view = 6 spaces on the grid (1) • correct depth of the cube at 30mm for side view = 6 spaces on the grid (1) • correct size of the semi-circle on the plan view = 2 spaces on the grid (1) • correct position / presence of the second semi-circle at the front edge / bottom edge of the plan view (1)	(4)

Question number	Answer	Additional Guidance	Mark
3 (a)	Any **one** composite from: • Carbon fibre (1) • Concrete (1) • Plywood (1) • MDF (1) • Chipboard (1) • Robotic materials (1) • Reinforced polymers / textiles (1)	Do not accept GRP / fibre glass / glass fibre	**(1)**

Question number	Answer	Mark
3 (b)	Any **one** reason for using fibreglass (1) and a linked reason for the use (1) • Fibreglass is a tough material (1) which means it can withstand the knocks and bumps of hitting rocks / stones (1) • Fibreglass is water resistant (1) which means that it will not absorb water when out on the river (1) • Fibreglass can be moulded into complex shapes (1) which means it can be used to create curved shapes / smooth lines / streamlined shape / create a single piece moulding (1) • A high-quality surface finish can be achieved on the mould / product (1) which will reduce friction / allows to boat to move better through the water (1) • Fibreglass forms a lightweight structure (1) which means it will be easy to lift the boat out of the water (1) • Low maintenance material (1) which means it does not need to be re-varnished / repainted (1) • Resin can be pigmented (1) which means no painting / colouring is needed after moulding (1)	**(2)**

Question number	Answer	Additional guidance	Mark
3 (c)	A calculation that includes: • correct working out 100/2 = 650/x (2 x 650)/100 (1) • correct answer 13ml (1) Alternative method • 6 x 2 = 12ml + (0.5 x 2) = 1 ml (1) • 12 + 1 = 13ml (1) Alternative method • (650/100) x 2 = 6.5 x 2 (1) • 13ml (1) Alternative method • (2/100) x 650 (1) • 13ml (1)	Award full marks for correct numerical answer without working. Allow for ECF if candidate gets part of calculation wrong.	**(2)**

Question number	Answer	Mark
3 (d) (i)	Correct class of lever given • Class 1 / type 1 / 1st class (1)	**(1)**

Question number	Answer	Mark
3 (d) (ii)	Correct type of movement given • Oscillation (1)	**(1)**

Question number	Answer	Mark
3 (e)	Any **two** benefits of sports textiles (1) and a linked justification of the benefits (1). • Sports textiles can be lightweight / flexible (1) therefore they will not weigh down the athlete too much / move with the body (1) • They can have inbuilt sensors / monitors such as heart rate monitors (1) therefore their performance can be monitored and data recorded for analysis later (1) • They can contain UVA/UVB blockers / barriers (1) which means they protect the athlete from harmful rays / sunburn when out training / exercising / performing (1) • They can be used to control bacteria (1) which means the athlete has more protection from infection / odours / reduces body odour (1) • They can have waterproof coatings (1) which means the fabrics will not absorb water / retain water / moisture / wet fabrics rubbing on the skin (1) • They can be wicking fabrics which draw water / moisture away from the body (1) which means they can take away / absorb sweat (1) • They can stretch / hug the body (1) which means they will provide less drag (1) • They can be breathable (1) which allows the moisture to escape from inside the garment (1)	**(4)**

Question number	Answer	Mark
4 (a)	Any **one** working property of corrugated board (1) and a linked justification of that property (1). • It is flexible / easily folded / bent (1) which means it can be folded along the 'grain / flutes' to create the form of the package (1) • It can be easily printed on / has good printability (1) which means surface graphics / branding can be easily applied to the surface (1) • It is a fully biodegradable material (1) which means it is sustainable / can be put into compost bins / does not need to go to landfill (1) • It has good impact resistance (1) which means it will offer some protection to the lightbulb in transit (1)	**(2)**

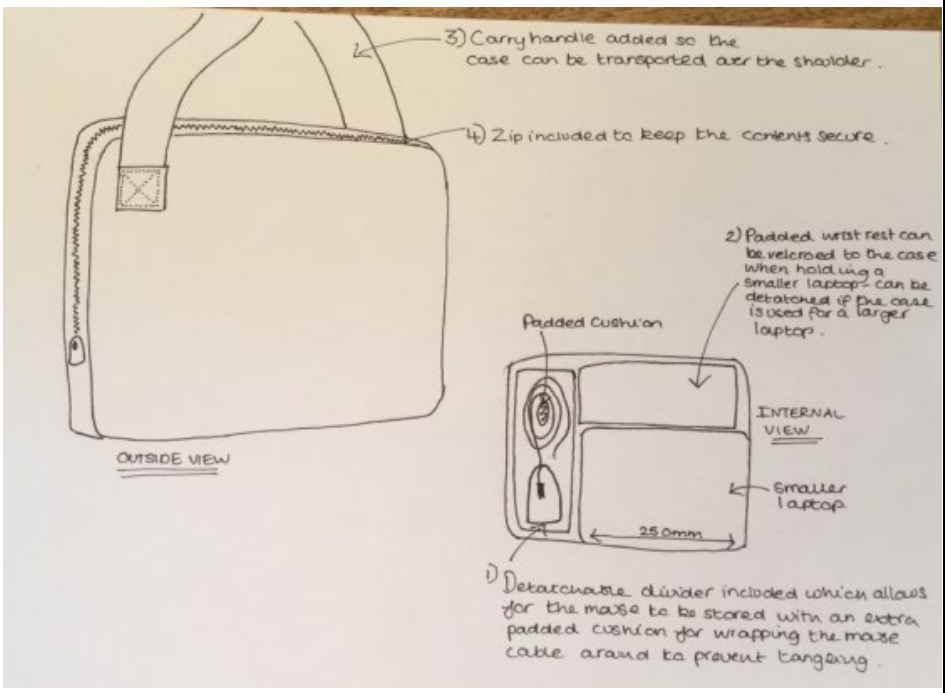
Question number	Answer	Mark
4 (b)	Any **one** explanation that references the way that the cost of materials has been kept to a minimum (1) and a linked justification of that way (1). • Only one material type has been used (1) which means other / separate / additional materials do not need to be purchased / stocked / incur additional / further costs (1) • It is an open-sided package with the bulb held inside a cutting (1) which has reduced the area of material required to make a fully enclosed package (1) • It is a regular / rectangular shape (1) which means that long rectangles can be cut efficiently from the stock material without leaving too much waste / can be effectively lay planned (1)	**(2)**

Question number	Answer	Additional guidance	Mark
4 (c)	A calculation that includes: • correct working out of current area $40 \times 8 = 320cm^2$ (1) • correct working out of increase in area $320 \times 1/8 = 40cm + 320 = 360cm^2$ (1) Alternative method • correct working out of current area $40 \times 8 = 320cm^2$ (1) • correct working out of increase in area $320 \times 1.125 = 360cm^2$ (1) Alternative method • correct working out of current area $40 \times 8 = 320cm^2$ (1) • $320 \times 9/8 = 360cm^2$ (1)	Award full marks for correct numerical answer without working. Allow for ECF if candidate gets part of calculation wrong.	**(2)**

Question number	Indicative content	Mark
4 (d)	• IoT has given rise to services and products like 'Hive' • Electrical plug sockets / light bulbs can sense being used and can monitor and provide feedback / data to relatives to see daily routines are being carried out such as boiling kettles / ovens / toasters • Cameras / webcams can be placed in homes / on front doors so that movements can be observed by relatives / carers / when not at home • Trackers / presence sensors / 'track my mobile' can be used to monitor to see where people are • Personal alarms / alert / call buttons can be worn by users, if they fall / feel unwell the alarms can be pushed and will alert emergency services / relatives • On line shopping / supermarket / home deliveries allow users to shop from their own homes and to have food delivered to their own homes based on what has been eaten / what is left in the cupboards / use of RFID tags • Use of SMART locks / lights / heating • mart appliances can be controlled remotely and through voice activation	**(6)**

Level	Mark	Descriptor
	0	
Level 1	1 - 2	• Attempts to interrogate and deconstruct information but connections and logical chains of reasoning are flawed. • An unbalanced appraisal of the information/issues, containing judgements that show a limited awareness of the interrelationships between factors or competing arguments.
Level 2	3 – 4	• Interrogates and deconstructs information and provides some connections and logical chains of reasoning. • A balanced appraisal of the information/issues, containing judgements that show an awareness of the interrelationships between factors or competing arguments.
Level 3	5 - 6	• Interrogates and deconstructs information and provides sustained connections and logical chains of reasoning. • A well-balanced appraisal of the information/issues, containing judgements that show a thorough awareness of the interrelationships between factors or competing arguments.

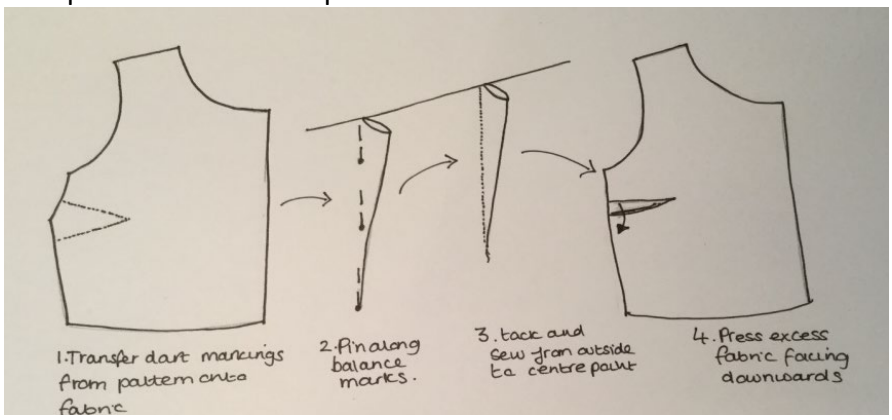
Section B – Textiles

Question number	Answer	Mark
5 (a)	**Marks will be awarded for understanding of design and technology, not graphical skills.** Notes and/or sketches that include: • provide a storage space for the computer mouse (1) that will prevent the mouse cable getting tangled (1) e.g. pockets on the inside or outside / dividers inside the case / additional small pouches that attach and detach / holders to wind cables around / separate compartments for the mouse • provide a method that is adjustable (1) to hold the laptop tightly in place (1) e.g. adjustable internal straps with Velcro / elastic / buckles / detachable cushions / fastening over the top of the laptop / fixed at one point • include a method that allows the user to transport the contents of the laptop case safely (1) while still being able to use both hands (1) e.g. strap that goes over the shoulder / across the body with secure fastening e.g. zip / Velcro Example of candidate response.  	**(6)**

	Annotated notes: 1) Detachable divider included which allows for the mouse to be stored with an extra padded cushion for wrapping the mouse cable around to prevent tangling 2) Elasticated strap fixed at both ends that holds the laptop tightly preventing it from sliding around 3) Strap added so the case can be transported over the shoulder. 4) Zip included to keep the contents secure.	

Question number	Answer	Mark
5(b)	Any **two** explanations that include a way the fabric model of a boot meets or fails to meet the requirement (1) and a linked justification of that way (1). • It has holes on both sides of the boot / shaped like a boot (1) which means that the size / proportions will be the same as their own foot (1) • They will be able to sit down / work at a table when learning (1) which means that they will not have to be bending / reaching down (1) • The boot may move about (1) which would make it difficult when pulling tight on the lace / doing up the bow (1) • The whole boot is quite small (1) therefore it might be difficult to tie knots and bows on (1) • The laces are quite long (1) which means they might get tangled / tied in knots (1)	**(4)**

Question number	Answer	Mark
6 (a)	Any **two** explanations of characteristics of cotton (1) and a linked justification (1) • Cotton is absorbent (1) so will absorb sweat (1) • Cotton can be washed at high temperatures (1) which will make the uniform more hygienic (1) • Cotton can withstand biological detergents / bleach (1) which means it can destroy stains such as blood (1) • Cotton is a breathable fibre (1) so will keep the wearer comfortable in a working environment (1) • Cotton is a durable fibre (1) which means that the uniform can withstand lots of wear and tear whilst being worn on a busy shift (1	**(4)**

Question number	Answer	Mark
6 (b)	**Marks will be awarded for understanding of design and technology, not graphical skills.** Notes and/or sketches that include: • Transfer dart markings from template/pattern to fabric (1) • Fold the dart, matching the lines / balance points (1) • Pin/tack in place (1) • Machine sew from outer edge to centre point (1) • Press excess fabric facing down (1) Example of candidate response:  Annotated notes: Transfer dart markings from pattern onto fabric Pin along balance marks Tack and sew from outside to centre point Press excess fabric facing downwards	**(4)**

Question number	Answer	Mark
6 (c)	Any **one** explanation that includes a reason for manufacturing to a tolerance (1) and a linked justification for that reason (1). • The button should be measured (1) so that the button hole allows the button through and stays securely fastened (1) • The placement of the buttons and buttonholes should be equal either side (1) which enables them to line up and fasten correctly (1)	**(2)**

Question number	Answer	Additional Guidance	Mark
6 (d)	Any **two** chemical surface finishes or treatments (1), plus **two** linked justifications of that surface finish or treatment (1) + (1). • The uniform can be treated with an easy-care finish (1) which will reduce the amount of ironing needed (1) which is good when the uniform has to be frequently laundered (1) • The fabric of the uniform can be mercerised (1) so the surface of the fabric is flat / more even (1) which means that it will crease less and look more presentable (1) • The uniform can be treated with a stain resistant finish/ coating (1) which means that it will repel stains (1) so the uniform is not as dirty and unhygienic (1) • The fabric of the uniform can be treated with a shrink-resistant finish (1) which means that the fabric is pre-shrunk before being made into the garment (1) so the uniform will stay a constant size through frequent laundering (1)	**Do not accept any non-chemical surface finishes or treatments e.g anti-bacterial**	**(6)**

Question number	Answer	Mark
7 (a)	One method from: • Sealed Seams (1) • Taping (1) • Bonding (1)	**(1)**

Question number	Answer	Mark
7 (b)	Any **two** explanations that include an advantage of using CAD (1) plus a linked justification for the advantage (1). • The software can be linked to CNC machines (1) which means that pieces can be cut direct from drawings (1) • Software can be used to lay plan pieces (1) which means efficient use can be made of the material available / plan to minimise waste (1) • Component pieces can be copied and pasted (1) which speeds up the design process (1) • Models can be coloured / surface textures applied (1) which means accurate rendered drawings can be produced to show life like quality / get feedback from potential clients (1)	**(4)**

Question number	Answer	Additional guidance	Mark
7 (c)	A calculation that includes: • Calculation of the cost of front/back walls. (1) 8 x 2 x 3 = £48 • Calculation of the cost of the roof (1) 5.6 x 2 x 3 = £33.60 • Calculation of the area of the side walls (1) 1.5 x 2 = 3m^2 • Calculation of the cost of the side walls (1) 2 x 3 x 3 = £18 • Calculation of the total cost (1) 48 + 33.60 + 18 = £99.60	Award full marks for correct numerical answer without working. Allow ecf if candidate gets part of calculation wrong.	**(5)**

Question number	Answer	Mark
7 (d)	Any **two** explanations that includes a reason for manufacturing in batches (1), plus **two** linked justifications of that reason (1) + (1). • Once the batch has been made the production line can be changed (1) which means that other products can be made (1) therefore ensuring that staff are employed / manufacture continues to utilise machinery / make profits (1) • Specific orders from retailers can be made / met (1) which means that manufacturers do not have to hold lots of stock (1) therefore they do not end up with lots of money invested / tied up in stock (1) • Batch production can generally respond quickly to customers' demands (1) which means any new orders can be turned around quickly / demand met (1) therefore ensuring that supplies reach the retailers in good time / when ordered (1) • Different materials / colours can be swapped in and out (1) therefore different trends / fashions can be met (1) therefore sales / profits keep coming in (1)	**(6)**

Question number	Answer	Mark
8 (a)	Any **one** explanation that includes an effect of the tension (1) and a linked justification of that effect (1). • The tension allows the fabric to hold its shape (1) to maintain its aesthetic appearance (1) • The tension holds the fabric taut (1) so therefore the fabric doesn't touch the lightbulb, ensuring safe use (1) • The tension stretches the fabric (1) to allow the light to shine through evenly (1) • The tension creates a smooth outer surface (1) which means that it is easier to wipe clean (1)	**(2)**

Question number	Answer	Mark
8 (b)	Any **one** explanation that includes an advantage of sub-assembly (1), plus **one** linked justification of that advantage (1) + (1). • It means it will be built to its own specification (1) which means it will be subjected to its own QC checks (1) therefore it can be treated as a separate product / replaced as a complete unit (1) • It could be made by a separate specialist company (1) which means the lamp manufacturer does not need to invest in specialist electrical manufacturing / use of skilled staff (1) therefore keeping investment / specialist staff costs down (1) • The unit could be purchased / manufactured separately (1) which means it can be replaced if it's faulty / breaks / stops working (1) therefore prolonging the lifespan of the lamp / meaning only having to replace the unit rather than the whole lamp (1)	**(3)**

Question number	Answer	Mark
8 (c)	Any **two** explanations that include effects of linen farming (1) and a linked justification of those effects (1). • Flax plants can take nutrients out of the soil (1) which has resulted in the loss of soil fertility for the community to grow their own food(1) • Areas of land are taken up for growing fibres (1) which means that there is less space available for communities to grow food (1) • Growing flax can use up a lot of water (1) which may be needed for other uses in rural communities (1) • Growing flax can use chemicals / fertilizers (1) which can leak into water systems and affect people / animals / habitats (1)	**(4)**

Question number	Indicative content	Mark
8 (d)	**AO3 (9 marks)** • It has a simple style and would fit in with many peoples' type of décor • It has a simple style and therefore would require less processing and be cheaper to produce / buy • It has a simple style and can therefore be upcycled to suit individual taste • Linen can by dyed in a wide variety of colours to suit a range of interiors • Linen can be dyed / painted so the user could change the lampshade if they change their décor • The linen has to be transported across long distances and therefore would have a negative impact on the environment. • Linen is a natural fibre and therefore does not use up finite fossil fuels in its production. • The lamp uses mains voltage supply which puts a demand on electrical energy supplies • Linen is more expensive to produce than cheaper, synthetic alternatives • The simple shape of the lampshade allows for less wastage during production	**(9)**

Level	Mark	Descriptor
	0	
Level 1	1 - 3	• Attempts to interrogate and deconstruct information but connections and logical chains of reasoning are flawed. • An unbalanced appraisal of the information/issues, containing judgements that show a limited awareness of the interrelationships between factors or competing arguments. • A conclusion may be presented but it is likely to be generic assertions rather than supported by relevant judgements.
Level 2	4 – 6	• Interrogates and deconstructs information and provides some connections and logical chains of reasoning. • A balanced appraisal of the information/issues, containing judgements that show an awareness of the interrelationships between factors or competing arguments. • A conclusion is presented that is partially supported by relevant judgements.
Level 3	7 - 9	• Interrogates and deconstructs information and provides sustained connections and logical chains of reasoning. • A well-balanced appraisal of the information/issues, containing judgements that show a thorough awareness of the interrelationships between factors or competing arguments. • A conclusion is presented that is fully supported by relevant judgements.

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