



Pearson
Edexcel

Mark Scheme (Standardisation)

Summer 2019

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

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Summer 2019

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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: <ul style="list-style-type: none"> • resistant to water / waterproof (1) • fungus / insect resistant (1) • durable / weather resistant / rot resistant (1) 	(1)

Question number	Answer	Additional guidance	Mark
1 (a) (ii)	Any one property from: <ul style="list-style-type: none"> • hard / hardness / good resistance to wear / hard wearing (1) • compressive strength (1) • good fluidity / casts well (1) 	Do not accept unqualified response in relation to strong or strength. Do not accept brittle.	(1)

Question number	Answer	Mark
1 (a) (iii)	Any one property from: <ul style="list-style-type: none"> • water resistant / waterproof / weather resistant (1) • durable (1) • crease / stain / abrasion resistant (1) • resistant to mildew / bacteria (1) • fibres have high tensile strength (1) 	(1)

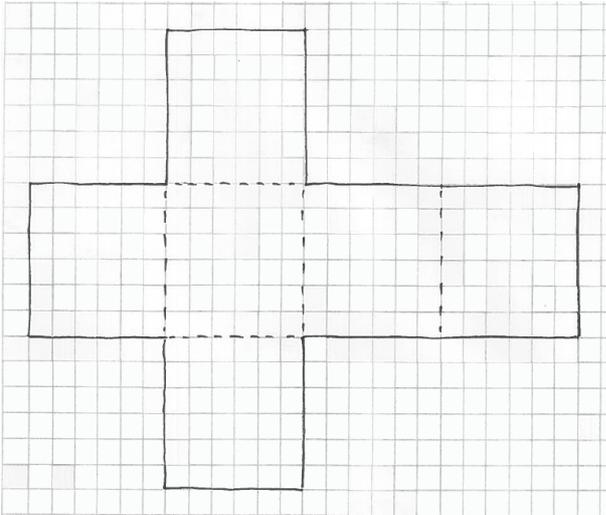
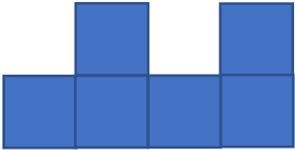
Question number	Answer	Mark
1 (a) (iv)	Any one property from: <ul style="list-style-type: none"> • rigid / stiffness (1) • hygienic and safe for food use (1) • pure with no smell or taste / inert (1) • good printability (1) • good insulator of <u>heat</u> (1) 	(1)

Question number	Answer	Additional guidance	Mark
1 (b)	<p>A calculation that includes:</p> <ul style="list-style-type: none"> • correct working $\frac{7.6 - 5.4}{7.6} \times 100$ <p>(1)</p> <ul style="list-style-type: none"> • correct answer to whole number <p>29%</p> <p>(1)</p>	<p>Award full marks for correct numerical answer without working.</p> <p>Allow for ECF if candidate gets part of calculation wrong.</p>	(2)

Question number	Answer	Mark
1 (c)	<p>Any one negative effect (1) and a linked justification of that negative effect (1).</p> <ul style="list-style-type: none"> • Smaller workforce required (1) therefore there would be loss of jobs / cost of redundancies (1) • The company might go out of business / close / downsize (1) resulting in a loss of jobs / profits reduced / loss of income prosperity in the area (1) • Money will be tied up in old machinery used to make bags / degrading (1) which cannot be used for anything else / still need to be kept serviced / maintained (1) 	(2)

Question number	Answer	Mark
2 (a)	<ul style="list-style-type: none"> • Isometric drawing / projection (1) (Only answer) 	(1)

Question number	Answer	Mark
2 (b)	<p>Any one explanation that includes an accurate statement about the use of calico (1) and a linked justification of that statement (1).</p> <ul style="list-style-type: none"> • Calico is a <u>relatively</u> cheap material (1) therefore it keeps the cost down in terms of prototyping / developing the product (1) • Calico can accept a range of surface finishes (1) therefore colours and designs can also be prototyped / tested out (1) • Calico is absorbent (1) therefore it can accept a range of surface finishes (1) • Calico is rigid / stiff when sewn along a seam (1) which means it can hold its shape / allows a 3D shape to be formed / supports its own weight (1) • Calico is the same on both sides / looks / feels the same on both sides (1) therefore it does not matter which way round the material is used (1) 	(2)

Question number	Answer	Mark
2 (c)	<p>A net that includes an image drawn with a ruler or free hand. Marks to be awarded for the following.</p> <ul style="list-style-type: none"> • 6 surfaces separated by lines (1) • Correct size – all surfaces 6 squares by 6 squares (1) • Top surface will fold down to fit (using dashed lines) (1) • Bottom surface will fold up to fit (using dashed lines) (1) <div style="text-align: center;">   </div> <p>(The third and fourth bullets points above are there to reflect that the top and bottom cannot both be at the top or the bottom since it would leave the play cube without a top or bottom I have shown this below. This would score 2 marks since the top two squares would fold onto each other and there are no dashed lines.)</p>	(4)

Question number	Answer	Mark
2 (d)	<p>Any one reason that includes an accurate statement about why designers use tracing paper (1) and a linked justification of that reason (1).</p> <ul style="list-style-type: none"> • It is transparent / translucent / see-through (1) which means it can be placed over a drawing and drawn on to make a copy of the drawing / trace the image / see the pattern of fabric (1) • It can be placed over a drawing and drawn on (1) which means it can be used to transfer images / used as an overlay / used to be written / drawn on to provide additional information / detail (1) 	(2)

Question number	Answer	Mark
3 (a)	<p>Any one property given:</p> <ul style="list-style-type: none"> • transparent / translucent / clear / see-through (1) • good electrical insulator (1) • lightweight (1) • waterproof (1) • durable / weather resistant (1) 	(1)

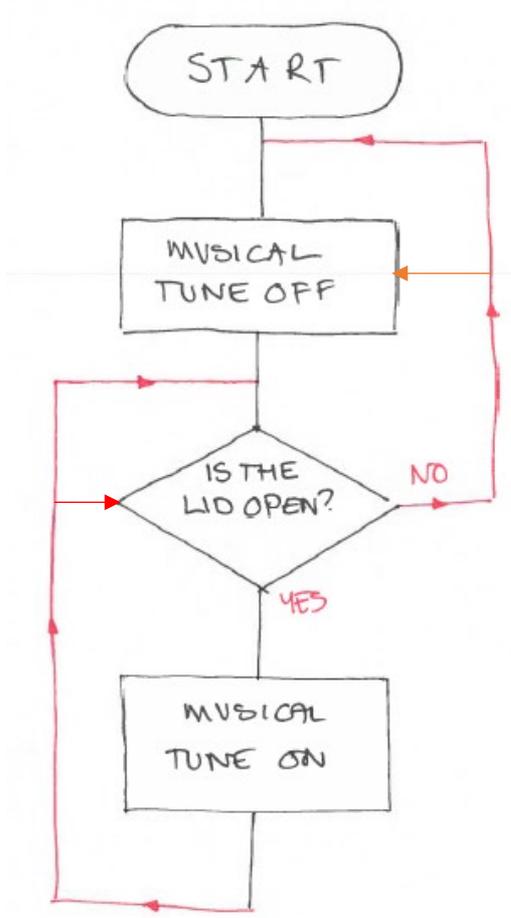
Question number	Answer	Mark
3 (b)	<p>Any one reason for using stainless steel (1) and a linked justification of that reason (1).</p> <ul style="list-style-type: none"> • Stainless steel is a hard material / has good compressive strength (1) therefore it can be pushed into the ground without bending / deforming (1) • Stainless steel is resistant to corrosion (1) therefore it will not rust in the wet / damp ground / retain its aesthetic characteristics (1) • Stainless steel is tough (1) which means it can be knocked into the ground with a hammer / withstand bumps / knocks from lawnmower (1) 	(2)

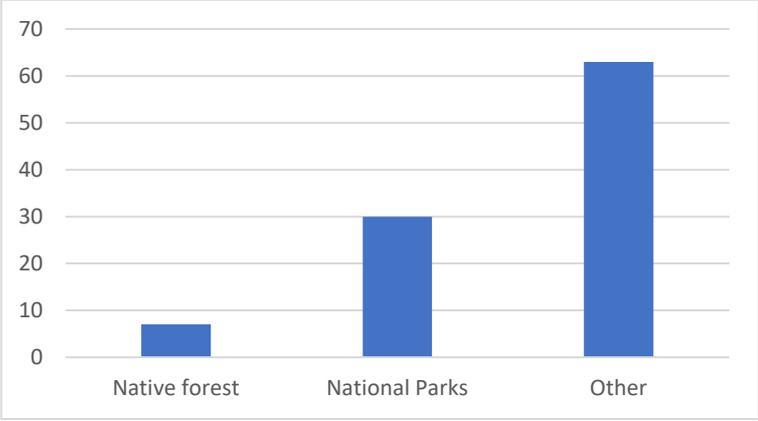
Question number	Answer	Mark
3 (c)	<p>Any one explanation that references how the company can reduce their carbon footprint (1) and a linked justification of that way (1).</p> <ul style="list-style-type: none"> • They can try and use renewable energy sources / maximise energy efficiency for heating / lighting / powering their factory (1) therefore reducing the demand on finite sources / reducing emissions / fumes (1) • They can use new modern / energy efficient machinery / energy recovery systems (1) which will reduce their energy use / consumption (1) • They can use virtual chat rooms / work rooms / video conference for meetings / robots for production (1) which means they will not have to travel / reducing pollution (1) • Potential replacement parts could be sent to customers as electronic files to be produced in situ (1) rather than sending physical components by road / air creating pollution (1) • Any fumes / pollution / waste generated at the factory can be cleaned / scrubbed / carbon filtered / CO² capture (1) therefore reducing the amount of pollutants released into the atmosphere (1) • They could use biofuels / electric vehicles (1) to help reduce emissions / fumes (1) 	(2)

Question number	Answer	Additional guidance	Mark
3 (d)	<p>A calculation that includes:</p> <ul style="list-style-type: none"> • correct working <p>£4.97 x 1/12</p> <ul style="list-style-type: none"> • correct answer to 2 s.f. <p>£0.41 or 41 pence</p>	<p>Award full marks for correct numerical answer without working.</p> <p>(1) Allow for ECF if candidate gets part of calculation wrong.</p> <p>(1) Do not accept 41 on its own</p>	(2)

Question number	Answer	Mark
3 (e)	<p>Any two ways that references the effects of new and emerging technologies for the apprentices (1) and a linked justification of that way (1)</p> <ul style="list-style-type: none"> • The apprentices will be exposed to the latest technology / manufacturing methods (1) therefore they will be trained / experienced in the latest / most current methods (1) • They will be very employable / in demand (1) as the technologies develop and spread to other companies / parts of the country / world (1) • They may be highly specialised / highly skilled / ready to move into advanced roles (1) therefore they can command higher salaries (1) • Once they have completed their training they may find themselves out of a job (1) because the new technology has replaced manual workers / more efficient technology (1) • Improved / safer working environments (1) because of the use of electronic control systems (1) • Lower skilled technician roles (1) results in lower paid positions (1) 	(4)

Question number	Answer	Mark
4 (a)(i)	<ul style="list-style-type: none"> • LDR / Light Dependent Resistor (1) (Only answer) 	(1)

Question number	Answer	Mark
4 (a)(ii)	<p>A flowchart that includes feedback loops and labels to the decision box.</p> <ul style="list-style-type: none">• 'Yes' and 'No' correctly labelled (1)• Feedback loop with directional arrow from 'No' to above / to the 'MUSICAL TUNE OFF' box (1)• Feedback loop from below 'MUSICAL TUNE ON' to the / just above the diamond decision box (1)  <pre>graph TD; Start([START]) --> TuneOff[MUSICAL TUNE OFF]; TuneOff --> LoopOpen{IS THE LOOP OPEN?}; LoopOpen -- YES --> TuneOn[MUSICAL TUNE ON]; TuneOn --> LoopOpen; LoopOpen -- NO --> TuneOff;</pre>	(3)

Question number	Answer	Mark								
4 (b)	<p>A bar chart that includes:</p> <p>Correct height for National Parks at 30 (1)</p> <p>Correct height for other at 63 (range of 62-64) (1)</p>  <table border="1"><caption>Bar Chart Data</caption><thead><tr><th>Category</th><th>Value</th></tr></thead><tbody><tr><td>Native forest</td><td>7</td></tr><tr><td>National Parks</td><td>30</td></tr><tr><td>Other</td><td>63</td></tr></tbody></table>	Category	Value	Native forest	7	National Parks	30	Other	63	(2)
Category	Value									
Native forest	7									
National Parks	30									
Other	63									

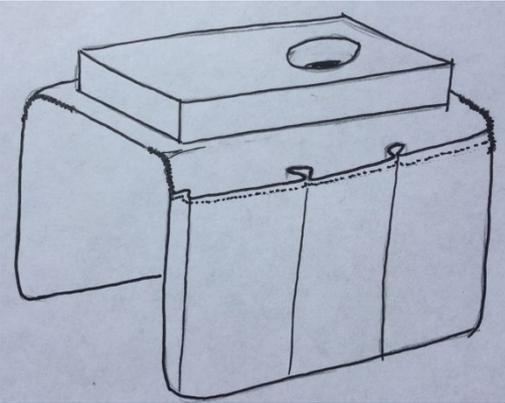
Question number	Indicative content	Mark
4 (c)	<ul style="list-style-type: none"> • Collaboration could be used whereby different people look at problems from different perspectives / viewpoints such as technically / from a manufacturing perspective / materials / users' needs and wants • Collaboration allows people / teams to bounce ideas off each other, sparking imagination • Teams might be in different countries and contribute over the internet in chat rooms / video conference • User-centred design considers the needs and wants of others at the centre / heart of all decisions • User-centred design also ensures that users' views and opinions are considered at every stage of the design process • Feedback is taken very seriously in user-centred design ensuring users' needs and opinions are gathered and acted upon • Systems thinking looks at the whole problem and breaks it down into individual parts / blocks • Systems thinking looks at how different parts of a design / system fit / work / interact / feedback back into other parts of the system • Systems thinking considers where any energy / power will come from and what inputs / control / outputs will be required and work together • Evaluation / analysis of existing products / designers / movements • Use of external stimulus / triggers / biomimicry • Iteration is used to fine tune / develop ideas in response to consumer feedback 	(6)

Level	Mark	Descriptor
	0	No rewardable content
Level 1	1 - 2	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Interrogates and deconstructs information and provides sustained connections and logical chains of reasoning.

		<ul style="list-style-type: none">• A well-balanced appraisal of the information/issues, containing judgements that show a thorough awareness of the interrelationships between factors or competing arguments.
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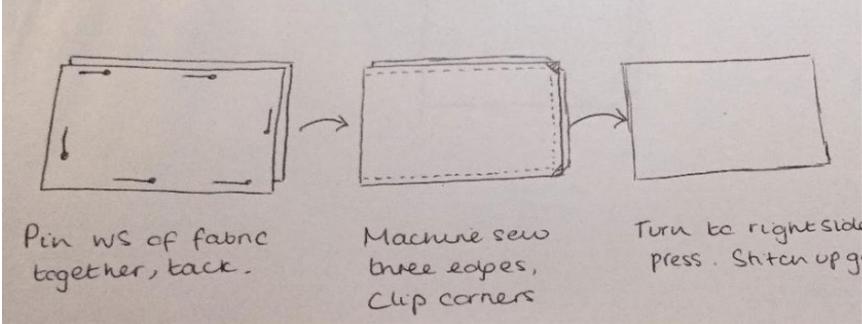
Component 1 Mark scheme – 1DT0/1E

Section B – Textiles

Question number	Answer	Mark
5 (a)	<p>Marks will be awarded for understanding of design and technology, not graphical skills.</p> <p>Notes and sketches that include:</p> <ul style="list-style-type: none"> • be able to be securely fitted to chair arms that are 200mm to 240mm wide • provide a method to hold the coffee cup without the risk of it being tipped over • store two remote controls so that they are both separate and cannot fall out of the organizer • be secure (1) to fit on chair arms that are 200mm to 240mm wide (1) e.g. elasticated / ties / stretch fabric / tension • provide a method to hold the coffee cup (1) without the risk of it being tipped over (1) e.g. hole for coffee cup to hold at least half the height / larger top / surface with grip e.g. rubber mat • store two remote controls so they are both separate (1) and cannot fall out of the organiser (1) e.g. divided / deeper pockets / drawers / flaps / bags <p>Example of candidate response.</p> <div style="display: flex; align-items: flex-start;">  <div style="margin-left: 20px;"> <p>Rigid raised surface added on top which is tall enough to hold the bottom half of the coffee cup to avoid spillages</p> <p>Elasticated corners allow it to fit a variety of arm chair sizes and keeps the organiser in place securely</p> </div> </div> <p>Pockets are divided into sections to allow remote controls to be stored separately</p>	(6)

Question number	Answer	Additional guidance	Mark
5(b)	<p>Any two explanations that include a way the unit meets or fails to meet the requirement (1) and a linked justification of that way (1).</p> <ul style="list-style-type: none"> • The head is life sized / correctly proportioned (1) which means the glasses can fit into place without having to be folded (1) • The bridge of the glasses will sit on the nose and the side bits on a small shelf like the ears (1) which simulates how the glasses will be worn / allows the user to see what they look like on (1) • The arms just sit on a small shelf like bit without anything to stop them moving (1) which means the glasses might fall / slip off / move around (1) • The felt covering provides more grip (1) which means that the glasses are more likely to stay in the correct position (1) • The angle of the nose is very steep (1) which may mean that the glasses slide down so are not secure (1) • Large solid / stable base (1) which means it has a large surface area in contact with the table / difficult to fall over (1) 	Do not accept anything related to secure in relation to theft	(4)

Question number	Answer	Mark
6 (a)	<p>Any two advantages which include an advantage (1) and a linked justification (1)</p> <ul style="list-style-type: none"> • The book can be marked / marketed as made from a upcycled material (1) which might increase sales / widen potential market appeal /allows consumers to make informed choices about products (1) • The book parts come from offcut / waste fabrics from other products (1) which means they will not go to landfill / less use of natural fibres / reduced carbon footprint (1) • Less crude oil will be used to make new synthetic fabrics (1) which means resources will last longer due to reduced demand (1) • Material costs are reduced (1) because you do not have to buy any new materials (1) 	(4)

Question number	Answer	Additional guidance	Mark
6 (b)	<p>Marks will be awarded for understanding of design and technology, not graphical skills.</p> <p>Notes and sketches that include:</p> <ul style="list-style-type: none"> • Pin RS of fabric together (1) • Hold together with tacking (1) • Machine sew / overlock around three edges / leave a gap (1) • Clip corners / trim seam allowance (1) • Turn fabric to right side / turn inside out (1) • Press (1) • Stitch up gap by hand / machine (1) <p>Example of candidate response:</p>  <p>Pin WS of fabric together, tack. Machine sew three edges, Clip corners Turn to right side, press. Stitch up gap.</p> <p>Notes: Pin RS of fabric together, tack. Machine sew three edges. Clip corners. Turn to right side. Press. Stitch up gap.</p>	<p>Cap at 3 marks if no sketches or all sketches no notes</p> <p>Do not accept responses related to bonding or making a four page booklet</p>	(4)

Question number	Answer	Mark
6 (c)	<p>Any one explanation that includes a reason for using different fabrics (1) and a linked justification for that reason (1).</p> <ul style="list-style-type: none"> • Different fabrics have different colours / textures / effects (1) therefore they can be used to show different parts of the features / simulate water / foliage (1) • Small scraps / upcycled fabrics can be used up for the different parts of the images (1) therefore reducing waste / making efficient use of the material you have available (1) • Different fabrics have different tactile properties (1) which makes the book more interactive / educational (1) 	(2)

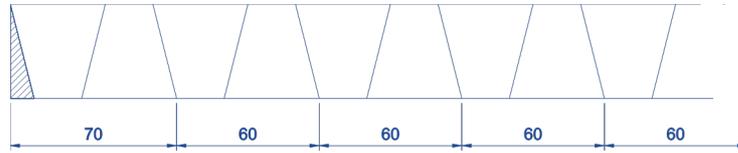
Question number	Answer	Mark
6 (d)	<p>Any two explanations that include a technique (1), plus two linked justifications of that technique (1) + (1).</p> <ul style="list-style-type: none"> • Technique – CAM/laser cutter (1) Explanation – which can repeat cut (1) therefore making identical components quickly / accurately (1) • Technique – die cutting / stamping (1) Explanation – which can cut all sides at the same time (1) therefore making the process more efficient (1) • Technique – hand / rotary cutting (1) Explanation – layers are built up / folded over each other (1) which means many parts can be cut at once (1) 	(6)

Question number	Answer	Additional guidance	Mark
7 (a)	<p>One surface finish given from:</p> <ul style="list-style-type: none"> • Fabric paint / paint (1) • Fabric markers (1) • Embroidery (hand / computerised) (1) • Printed (1) • Sublimation printing (1) • Screen printing (1) • Transfer printing (1) • Block printing (1) • Use of components e.g. buttons, sequins (1) 	Do not accept patchwork, quilting, dyeing	(1)

Question number	Answer	Mark
7 (b)	<p>Any two explanations that include a reason for using a stock sized bias binding (1) and a linked justification for the reason (1)</p> <ul style="list-style-type: none"> • It can be bulk purchased / bought in / pre-cut (1) therefore no need to make it / just cut to length (1) • It would be wasteful to make bias binding from sheet / roll stock material (1) therefore it reduces waste (1) • It would be a time-consuming process to do it via another method (1) therefore it speeds up the overall production / manufacturing time (1) • The edges are pre-ironed / folded (1) therefore less steps are needed in manufacture of the bunting (1) • Stock sizes would be used from available range / sizes (1) therefore allowing design / manufacturing decisions to be made to suit (1) • Do not have to invest money in machinery (1) saving capital / training costs (1) 	(4)

Question number	Answer	Additional guidance	Mark
7 (c)	<p>A calculation that includes:</p> <ul style="list-style-type: none"> • Conversion of units either at the start or at the end (1) • Tessellation to show that two pieces require minimum of 70cm (400 + 200 + 100 mm) or (X + Y + 10cm) (1) • Calculation of maximum number of tessellations from 1810 cm length 1810 cm – 10 cm = 1800 (1) • 1800/ 60 cm = 30 (1) • 30 x 2 pieces per tessellation = 60 (1) <p>Conversion of units (1) 1810/40 = 45.25 rounded to 45 whole bodies (1)</p>	<p>Do not award the final mark if the final answer is not a whole number.</p> <p>Award full marks for correct numerical answer without working.</p> <p>Allow ecf if candidate gets part of calculation wrong.</p>	(5)

Alternative graphical solution:



- Conversion to cm:
Fabric strip = 181cm
Pair of bodies = 6cm
- Calculation $181/6 = 30$ (with required 1cm remaining)
- Therefore 30 pairs can be obtained from strip
- Answer = 60 bodies

Alternative solution

$$1810 \times 40 = 72400 \text{ cm}^2 \quad (1)$$

$$\frac{1}{2} (40 + 20) \times 40 = 1200 \text{ cm}^2 \quad (1)$$

$$72400 \div 1200 \text{ OR } 7240000 \div 120000 \quad (1)$$

$$= 60.3 \quad (1)$$

$$= 60 \quad (1)$$

Question number	Answer	Additional guidance	Mark
7 (d)	<p>Any two explanations that includes a working property (1), and two linked justifications of that working property (1) + (1).</p> <ul style="list-style-type: none"> • Woven nylon is durable (1) which means it will withstand weathering elements (1) increasing its life span (1) • Woven nylon is colour fast (1) which means it will maintain its appearance (1) and has got fade resistance (1) • Woven nylon has some water resistance / poor absorbency (1) which means it will dry quickly / not rot (1) so can be used outdoors (1) 	Do not accept waterproof	(6)

Question number	Answer	Mark
8 (a)(i)	<p>Any one explanation that includes a reason (1) and a linked justification of that reason (1).</p> <ul style="list-style-type: none"> • It will prevent the garment catching fire (1) therefore protecting the wearer from the risk of burns (1) • The apron can be removed and used as a fire blanket (1) to extinguish / smother / put out a fire / stop the spread of fire (1) 	(2)

Question number	Answer	Mark
8 (a)(ii)	<p>Any one explanation that includes a working property (1), and one linked justification of that property (1) + (1).</p> <ul style="list-style-type: none"> • It is a close weave / durable / dense material (1) therefore will take more wear and tear (1) which means it offers more protection from heat / fluids (1) • It is a flexible material (1) which means that it is not too cumbersome (1) to allow the wearer freedom of movement (1) • It drapes well (1) therefore stays looking presentable (1) and will not really crease badly (1) 	(3)

Question number	Answer	Mark
8 (b)	<p>Any two explanations that include a negative effect (1) and a linked justification of that negative effect (1)</p> <ul style="list-style-type: none"> • Dyes include hazardous chemicals (1) which causes potential harm to humans / plants / animals / soil (1) • Increased demand / pressure on water supplies (1) due to increased rinsing / washing of fabrics (1) • Rivers can become polluted (1) if dyes are expelled / leaked into the water systems (1) • More energy is used / potential use of finite resources (1) as dyeing requires increased processing (1) 	(4)

Question number	Indicative content	Mark
8 (c)	<ul style="list-style-type: none"> • Not really a fashion item so unlikely to be affected by trends • Difficult to meet demand / measure / gauge demand worldwide • Current demand requires cotton so cotton may need to be harvested from other regions / countries around the world • Loss of land to cotton farming causes issues for local communities in terms of land use / fertility of soil and local eco-habitats / use of pesticides in farming • Use of child labour / exploitation / low and unfair wages • Consider the use of ethically sourced cotton • Transportation and pollution issues to local communities because of high volume farming / increased air miles • A cotton fabric is easier to recycle as extra materials do not have to be separated first • Any short lengths of fibre from the production of the twill weave can be used for other things • Fire proofed coating would increase the difficulty of recycling the fibres 	(9)

Level	Mark	Descriptor
	0	No rewardable content
Level 1	1 - 3	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.