

Mark Scheme (Results)

Summer 2010

GCSE

GCSE Design and Technology:
Graphics Product (3972)
Paper 2F
Foundation Written Paper.

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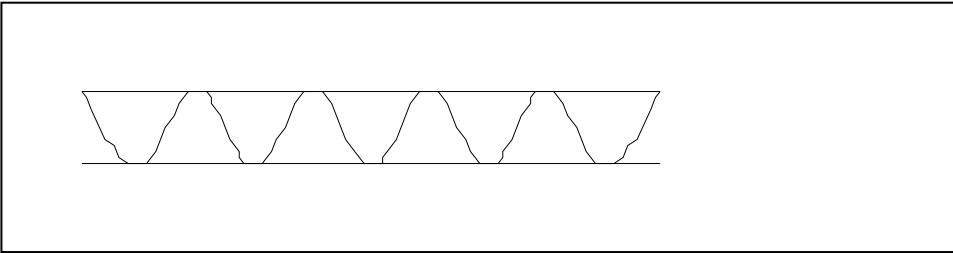
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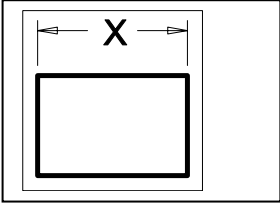
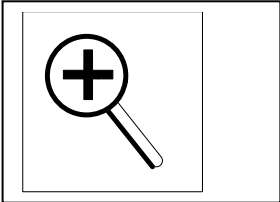
General Marking Guidance

- 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.

Question Number	Answer	Mark										
1(a)	<p>Name: pencil (<i>only answer</i>) (1) Use: drawing / writing / colouring / shading / pushing holes into paper (1)</p> <p>Name: Protractor / angle measurer (1) Use: Measuring / marking angles (1)</p> <p>Name: Compasses / compass / dividers (1) Use: Drawing circles/arc/curves / distances (1)</p> <p>Name: Vinyl Cutter / Plotter / Roland cutter / CAMM 1 / Laminator (1) Use: Cutting /plotting /printing / Laminating (1)</p> <p>Name: Vacuum former (1) Use: Vacuum forming / heating / shaping / moulding plastic (1)</p> <p style="text-align: right;">(10x1)</p>	(10)										
1(b)	<ul style="list-style-type: none"> • Safety rule/safety ruler (1) • Cutting mat / safety mat (1) <p style="text-align: right;">(2x1)</p>	(2)										
1(c)	<p>Each answer must be different</p> <table border="1"> <thead> <tr> <th>Material</th> <th>Glue</th> </tr> </thead> <tbody> <tr> <td>Paper</td> <td>Glue Stick</td> </tr> <tr> <td>Pine</td> <td>PVA/ Contact (impact) / Hot melt (glue gun)</td> </tr> <tr> <td>Acrylic</td> <td>Tensol / Epoxy / Superglue / Spray mount</td> </tr> <tr> <td>Aluminium</td> <td>Epoxy (araldite) / Superglue / Contact (impact) / Spray mount</td> </tr> </tbody> </table> <p style="text-align: right;">(3x1)</p>	Material	Glue	Paper	Glue Stick	Pine	PVA/ Contact (impact) / Hot melt (glue gun)	Acrylic	Tensol / Epoxy / Superglue / Spray mount	Aluminium	Epoxy (araldite) / Superglue / Contact (impact) / Spray mount	(3)
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1(d) (i)	<ul style="list-style-type: none"> • Batch (1) 	(1x1)	(1)
1(d)(ii)	<ul style="list-style-type: none"> • Lay planning / layout planning / laying out (1) 	(1x1)	(1)
1(d)(iii)	<ul style="list-style-type: none"> • Registration / checking alignment (1) • Colour/greyscale bars/marks/boxes / checking ink density / checking ink colours /densitometer (1) 	(2x1)	(2)
1(e)	<p>Any three from</p> <ul style="list-style-type: none"> • Virus problems (1) • Hacking problems (1) • Costs of equipment (1) • Costs of connection (1) • Lack of personal contact (1) • Hardware failures (1) • Software problems (1) • Deception / fake identity (1) • Recipient may not notice arrival / loose / accidentally delete (1) • May be read by others (1) • Restrictions can be placed on content / size (1) <ul style="list-style-type: none"> • RSI (1) • Back pain (1) • Eyestrain (1) • Not everyone has email (1) • Not everyone has a computer/phone/blackberry (1) • Slower (1) • Requires written communication skills (1) 	(3x1)	(3)
Total for question 1			22 Marks

Question Number	Answer	Mark															
2(a)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Name of property</th> <th style="width: 40%;"></th> <th style="width: 30%;">Meaning of property</th> </tr> </thead> <tbody> <tr> <td>Texture</td> <td style="border: none;"></td> <td>How hard it is to break a material</td> </tr> <tr> <td>Strength</td> <td style="border: none;"></td> <td>The way a material looks</td> </tr> <tr> <td>Rigidity</td> <td style="border: none;"></td> <td>How hard it is to bend a material</td> </tr> <tr> <td>Visual Impact</td> <td style="border: none;"></td> <td>How a materials feels to touch</td> </tr> </tbody> </table> <p style="text-align: right;">(3x1)</p>	Name of property		Meaning of property	Texture		How hard it is to break a material	Strength		The way a material looks	Rigidity		How hard it is to bend a material	Visual Impact		How a materials feels to touch	(3)
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2(b)	<div style="border: 1px solid black; padding: 10px; text-align: center;">  </div> <ul style="list-style-type: none"> • Inner corrugation(s) (1) • At least one outer layer (1) <p style="text-align: right;">(2x1)</p>	(2)															
2(c)	<ul style="list-style-type: none"> • It would be faster (1) • The colour would be smoother / give a better finish (1) • A wider range of colours would be possible (1) • Colours could be blended (1) • Softer edges (feathered) can be produced (1) • Masks can be used to create details (1) <p style="text-align: right;">(2x1)</p>	(2)															
2(d)	<ul style="list-style-type: none"> • Transparent/see through/clear (1) • Flexible (1) • Can be glued to walls (1) • Thin (1) • Tough / strong (1) <p style="text-align: right;">(2x1)</p>	(2)															

2(e)	<div style="display: flex; flex-direction: column; align-items: flex-start;"> <div style="margin-bottom: 20px;">  <p>Measure/dimension / modify dimension</p> </div> <div>  <p>Zooms / changes view size</p> </div> </div> <p style="text-align: right;">(2x1)</p>	(2)
2(f)	<ul style="list-style-type: none"> • Faster (1) • Fewer staff needed (1) • More accurate / reliable / less materials wasted(1) • Virtual models / no need for physical materials (1) • Theoretical testing / no need to make real models(1) • Automatic lay planning / waste minimisation (1) • Electronic communication / reduce postage costs (1) • Reduces space needed for physical resources / building costs(1) • JIT (1) <p style="text-align: right;">(2x1)</p>	(2)

2(g)(i)	<ul style="list-style-type: none"> • Small (1) • No heat/low heat (1) • Can be bent / shaped (1) • No risk of electrical shock (1) • Energy efficient (1) • Durable (1) • Remote light source (1) • Looks good (1) • High tech solution (1) • Wide range of colours possible (1) • Single light source (1) 	(2)
2(g) (ii)	<ul style="list-style-type: none"> • Safe/safer (1) • Reliable (1) • High quality/better quality (1) • Accurate Information will be available (1) • Marketing point (1) • Customer confidence (1) • Faults identified for manufacturer (1) • Manufacturer can correct faults (1) 	(2)
2(h)	<ul style="list-style-type: none"> • Waste is created (1) • Pollution is created (1) • Landfill used up (1) • Materials consumed (1) • Energy consumed (1) • Encourages a throw away society (1) 	(2)
2(i)	<ul style="list-style-type: none"> • Access to a large amount of information (1) • Diverse type of information available e.g. pictures (1) • Information available from numerous sources (1) • Information available without costs associated with alternative methods (1) • Cost effective (1) • Information found can be saved / copied (1) • Information available 24/7 (1) • Information available quickly (1) • Search engines help find information (1) • Email links (1) • Easier to find information (1) 	(3)
Total for question 2		22 Marks

Question Number	Answer	Mark
3(a)	<p>A prototype package is required to hold the pen and pencil.</p> <p>The specification for the package is that it must:</p> <ul style="list-style-type: none"> • allow the pen and pencil to be seen inside a sealed package • hold the pen and pencil separately • have space to display the words “Pen and Pencil” and “Gift Set” • be made using materials and processes suitable for one-off production. 	
	<p>Design idea 1</p> <p>Each point of specification has two marking points.</p> <p>1 mark should be awarded for evidence of each point of specification resolved in the design</p> <p>For each point with both elements viably satisfied 2 marks For each point with only one element viably satisfied 1 mark Where the answer does not viably answer a specification point 0 marks</p> <p>Candidates may answer any specification point in either graphical form or by annotation.</p> <p>No marks are awarded for quality of communication.</p>	

	Design idea 1	
	<p>allow the pen and pencil to be seen inside a sealed package.</p> <ul style="list-style-type: none"> • There is an indication that the pen and/or pencil can be seen. (1) <i>E.g. A cover is labelled as being clear</i> • There is an indication the package is capable of being sealed. (1) <i>E.g. A cover taped on to base (There must be a positive seal indicated implication is insufficient)</i> <p>hold the pen and pencil separately.</p> <ul style="list-style-type: none"> • There is an indication that the pen and/or pencil are prevented from moving in at least one direction (1) <i>E.g. The drawing indicates the pen fits into a slot the same size as the pen.</i> • There is an indication that the pen and pencil are kept apart (1) <i>E.g. There is a section of card between the pen and pencil</i> <p>have space to display the words "Pen and Pencil" and "Gift Set".</p> <ul style="list-style-type: none"> • There is an indication that the words "Pen and Pencil" can be displayed on the package. (1) <i>E.g. A line and annotation indicates where the text will be put.</i> • There is an indication that the words "Gift Set" can be displayed on the package. (1) <i>E.g. A line and annotation indicates where the text will be put.</i> <p>be made using materials and processes suitable for one-off production.</p> <ul style="list-style-type: none"> • There is an indication of one material suitable for one-off/school workshop. (1) <i>E.g. The drawing is annotated to show one part is made from pine.</i> • There is an indication of one process suitable for one-off/school workshop. (1) <i>E.g. The drawing is annotated to show one part shaped with a file.</i> 	<p style="text-align: right;">(8x1)</p> <p style="text-align: right;">(8)</p>

Question Number		Mark
	Design idea 1 example	
	<p>CLEAR PLASTIC NET FOLDED TO MAKE A LID</p> <p>WHEN THE LID IS PUT ON IT CAN BE STICKY TAPPED TO BASE TO SEAL IT WRITING</p> <p>LID PUSHES DOWN ONTO BASE</p> <p>PEN GOES HERE</p> <p>PENCIL GOES HERE</p> <p>BLOCK OF PINE WITH 2 SLOTS FILLED FOR THE PEN + PENCIL</p> <p>PEN + PENCIL GIFT SET</p>	
	Design Idea 2 example	
	<p>SPACE AT TOP FOR TEXT + GRAPHICS</p> <p>SPACE FOR PEN</p> <p>END VIEW</p> <p>X = PEN + PENCIL</p> <p>CLEAR PS COVER - ALLOWS PEN + PENCIL TO BE SEEN</p> <p>BLISTER PACK</p> <p>PEN + PENCIL GIFT SET</p> <p>CARD BACK - GLUED TO FRONT THIS SEALS THE PEN + PENCIL IN</p> <p>SPACE FOR PENCIL</p> <p>PLASTIC COVER VACUUM FORMED</p>	

Design idea 2

Specification points 1,2 and 4 must be fully resolved in the second idea using **technically or conceptually different** solutions that are significantly different, e.g. simply changing proportions would not be significantly different.

Specification point 3 must be fully resolved again in design idea 2. Specification point 3 is **not** subject to the requirement to be different, eg if the graphics are placed top centre on design 1 and design 2 it will score in both designs.

- There is an indication of a design that is **technically different** to idea one that allows the pen and pencil to be seen. (1)
- There is an indication of a **technically different** method of sealing the package. (1)
- There is an indication of a **technically different** method of closing the package. (1)
- There is an indication of a design that is **technically different** to idea one that separates the pen and pencil (1)
- There is an indication that the words "Pen and Pencil" can be displayed on the package. (1)
- There is an indication that the words "Gift Set" can be displayed on the package. (1)
- There is an indication of **one different** material suitable for one off/school workshop. (1)
- There is an indication of **one different** process suitable for one off/school workshop. (1)

(4x2)

(8)

3b	<p>Each point clearly evaluated</p> <p>If a candidate has indicated Design idea 1 (or 2) then evaluates Design 2 (or 1) for all or part (i), (ii) & (iii) then the idea in greater evidence should be marked.</p> <p>The evaluation of the design must contain reference to either positive or negative qualities not simply a description of the design.</p> <p>The answers must contain new information from that credited in the design solutions. Repetition of original specification scores 0</p>	
3(b)(i)	<p>Evaluation of allow the pen and pencil to be seen inside a sealed package</p> <ul style="list-style-type: none"> • How the package allows the pen and pencil to be seen. <i>E.g. The <u>entire</u> front of the package is see-through.</i> • How the package can be sealed. <i>E.g. Sticky tape will join the top and bottom <u>strongly</u> together.</i> 	(2x1) (2)
3(b)(ii)	<p>Evaluation of hold the pen and pencil separately</p> <ul style="list-style-type: none"> • How the package holds the pen and pencil. <i>E.g. The pen and pencil fit into dips <u>tightly</u>.</i> • How the pen and pencil are separated. <i>E.g. There is a <u>wide gap</u> between the pen and pencil.</i> 	(2x1) (2)
3(b)(iii)	<p>Evaluation of be made using materials and processes suitable for one-off production.</p> <ul style="list-style-type: none"> • A material suitable for one-off /school workshop. <i>E.g. Pine is a material that is <u>easy to shape</u></i> • A process suitable for one-off /school workshop. <i>E.g. Files are tools that are <u>common in most workshops</u>.</i> 	(2x1) (2)
Total for question 3		22 Marks

Question Number	Answer	Mark
4(a)(i)	<p>Quality Point: The case should be free from damage Reason: Consumer satisfaction / maintain sales</p> <p>Point: The case should hold the contents in place Reason: Consumer satisfaction / aesthetic appearance</p> <p>Point: Any text should be easy to read / clearly printed Reason: Consumer satisfaction / brand reputation</p> <p>Point: The materials the game is made from should be durable /reliable Reason: Consumer satisfaction / brand reputation</p> <p>Point: The set should comply with relevant legal standards Reason: Moral and legal obligation</p> <p style="text-align: right;">(2x1)</p>	(2)
4 (a)(ii)	<p>Environment Point: Minimum materials used Reason: Resource conservation</p> <p>Point: Made from recycled materials / Possible to be recycled Reason: Resource conservation / waste minimisation / consumer choice</p> <p>Point: The manufacture of the case should not cause pollution Reason: Protection of the environment</p> <p>Point: The case should display a recycle symbol Reason: Consumer awareness</p> <p style="text-align: right;">(2x1)</p>	(2)
4 (a)(iii)	<p>Safety Point: There should be no sharp edges Reason: To prevent cuts / harm</p> <p>Point: The contents should be an appropriate size Reason: To prevent choking</p> <p>Point: No parts should be toxic Reason: To prevent poisoning</p> <p>Point: The case should display suitable age range Reason: To prevent young children using it</p> <p>Point: The case should be tested to Standards / display warnings Reason: legal and moral / increased sales</p> <p style="text-align: right;">(2x1)</p>	(2)

4 (b)	<ul style="list-style-type: none"> • It is rigid /strong / durable (1) • It is non-toxic / safe (1) • It is cost effective / cheap (1) • It can be the shaped / finished (1) • Lightweight (1) • Warm to hold (1) • Looks attractive (1) • labels stamps can be glued to it (1) • Pine is a renewable resource (1) <p style="text-align: right;">(2x1)</p>	(2)
4 (c)	<ul style="list-style-type: none"> • Cost effective (1) • Low set up costs (1) • High quality prints (1) • Common Process (1) • Large choice of suppliers (1) • Fast process (1) • It is a full colour process (1) • It prints on paper / card (1) • Appropriate quality / cost for product (1) • Batch production e.g. up to 100,000 (1) <p style="text-align: right;">(2x1)</p>	(2)
4 (d)	<ul style="list-style-type: none"> • The label will be durable because varnish protects it. • The label will look good because varnish gives a gloss finish. • The label will look good / be durable therefore increasing sales / owner satisfaction <p style="text-align: right;">(2x1)</p>	(2)

<p>4 (e)</p>	<p>Point: Acrylic is transparent (1) Reason: This allows the contents to be seen (1)</p> <p>Point: Acrylic is rigid (1) Reason: This protects the contents / allows the case to maintain its shape (1)</p> <p>Point: Acrylic is tough / strong (1) Reason: Makes the case durable / protects contents / safety (1)</p> <p>Point: Acrylic is non toxic (1) Reason: Prevents harming the user (1)</p> <p>Point: Acrylic is waterproof / easy to clean (1) Reason: Allows the user to maintain appearance (1)</p> <p>Point: Acrylic can be coloured / tinted (1) Reason: Improves appearance /reduces the need for finishing / marketing (1)</p> <p>Point: Acrylic is a thermoplastic (1) Reason: Allows it to be moulded (1)</p> <p>Point: Acrylic has a smooth surface finish (1) Reason: Allows it be cleaned (1)</p> <p>Point: Acrylic can be fabricated (1) Reason: Makes manufacture quicker / cheaper / easier (1)</p> <p>Point: Lightweight (1) Reason: Makes it easy to carry (1)</p>	<p>(2x1) (2x1) (4)</p>
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4 (f)	<ul style="list-style-type: none"> The case will be tested to ensure it meets its specification therefore maintaining quality of the product / prevent spoilage <p style="text-align: right;">(2x1)</p>	(2)
4 (g)	<p>(i) Protect the contents</p> <ul style="list-style-type: none"> The lid will be secure / will not fall off. This will prevent contents becoming lost / falling out / contaminants getting in Acrylic is rigid/ tough. This will prevent damage through impacts. The contents all fit inside the package. This prevents loss. <p>(ii) Allow the retailer to easily monitor sales of the stamping set</p> <ul style="list-style-type: none"> There is a bar code printed on the side of the package. This enables EPOS. <p style="text-align: right;">(2x1) (2x1)</p>	(4)
Total for question 4		22 Marks
Total for question paper 88		

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