



# GCSE

## Design and Technology

General Certificate of Secondary Education

Unit **A534**: Graphics: Technical Aspects of Designing and Making

## Mark Scheme for June 2013

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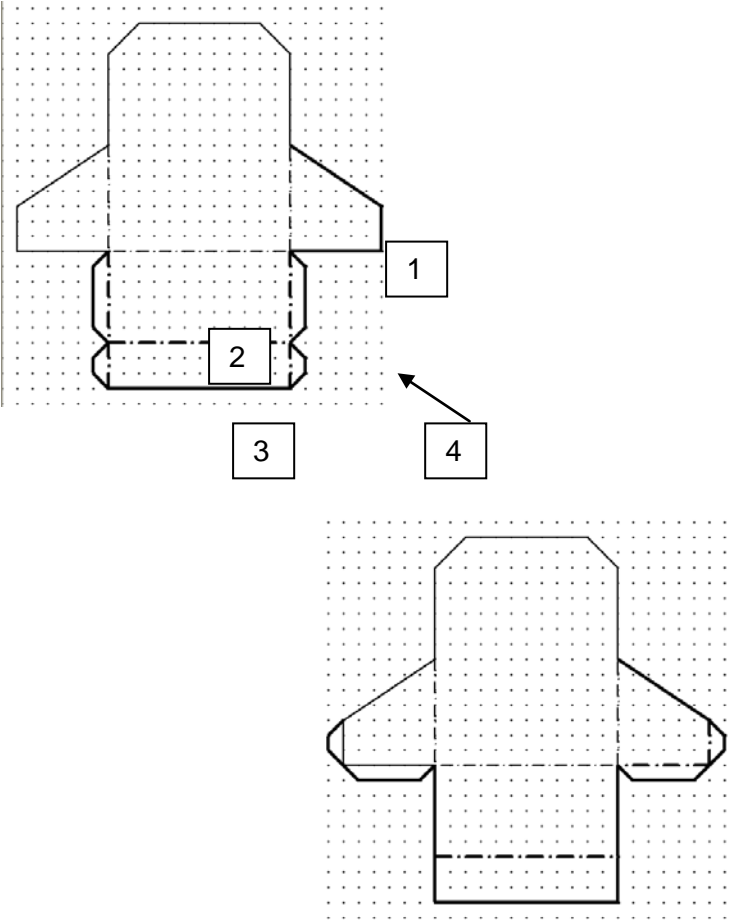
All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

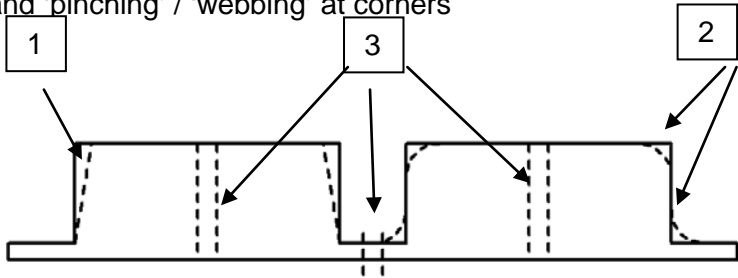
Mark schemes should be read in conjunction with the published question papers and the report on the examination.

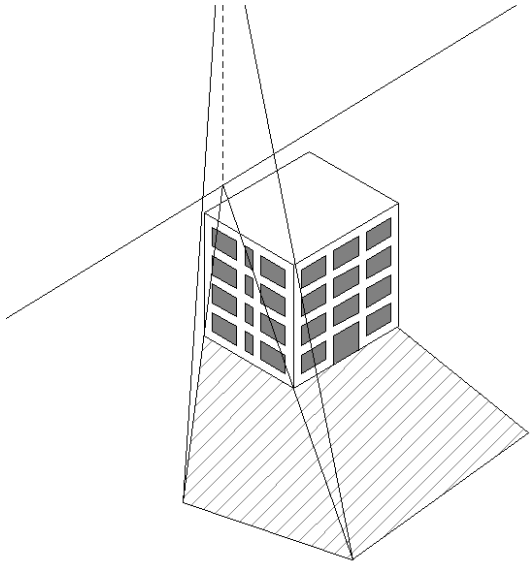
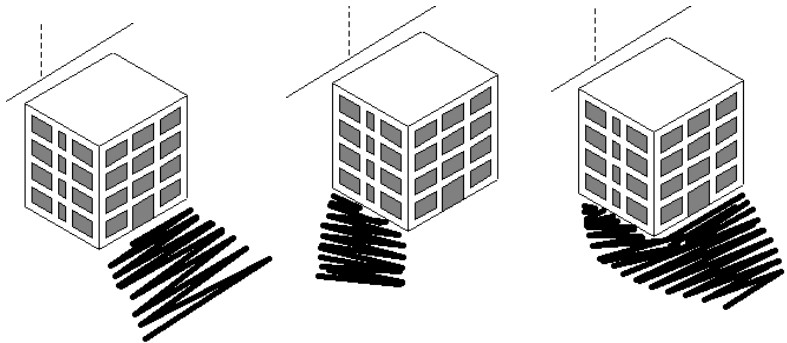
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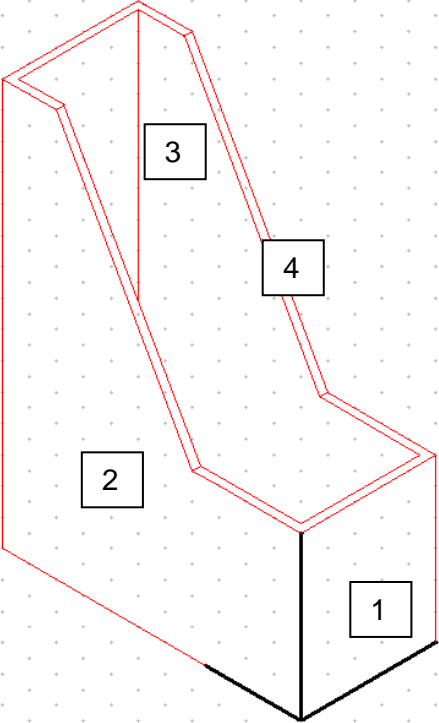
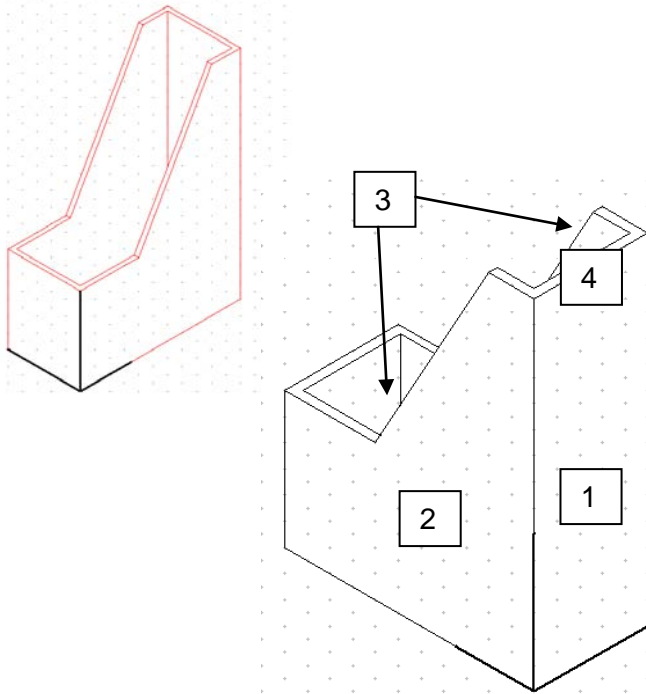
Descriptor	Award mark
On the borderline of this level and the one below	At bottom of level
Just enough achievement on balance for this level	Above bottom and either below middle or at middle of level (depending on number of marks available)
Meets the criteria but with some slight inconsistency	Above middle and either below top of level or at middle of level (depending on number of marks available)
Consistently meets the criteria for this level	At top of level

Question		Answer	Mark	Guidance
1	(a)	<p>The four aspects to this answer are:</p> <p>1. Side of POS completed correctly [1] 2. Base of POS completed correctly [1] 3. Front of POS completed correctly [1] 4. <b>Four</b> flaps/tabs added correctly (either configuration) [1]</p> 	[4]	<p>Tick (✓) to indicate where a mark has been awarded.</p> <p>Award marks for flaps in either of the two locations shown opposite or a mixture of the two providing the flaps do not clash.</p> <p>Freehand or accurate drawings within 1mm of grid lines.</p>

	<b>(b)</b>	1. Craft knife, scissors, scalpel, Stanley knife [1] 2. Laser cutter , vinyl cutter, specific named CAM machine e.g. Roland CAMM , Stika, etc [1] 3. Die cutter [1]	<b>[3]</b>	These are the only correct answers  Do not accept CAM or Laser on its own.
	<b>(c)</b>	<b>(i)</b> To hold the bottles upright, stop the bottles from moving/falling over, to make them easier to pick up,  Any of the above answers	<b>[1]</b>	
	<b>(c)</b>	<b>(ii)</b> Computer Numerical Control	<b>[1]</b>	This is the only correct answer  All three words needed to award the mark.
	<b>(d)</b>	Polystyrene, Polystyrene sheet, High Impact Polystyrene sheet or HIPS.	<b>[1]</b>	These are the only acceptable answers.  Spelling mistakes should not be penalised, providing you can understand what word says.
	<b>(e)</b>	1. Draft added to <b>vertical</b> mould sides as shown (to facilitate easy removal of the tray from the former OR 2. Corners rounded off to ensure fewer stress line cracks and 'pinching' / 'webbing' at corners  OR 3. Holes shown drilled vertically in the mould in the two raised areas or the middle valley should also be accepted.	<b>[2]</b>	Accept either of the two answers shown opposite.  Answers which relate to drilling holes in the mould or answers showing.

Question	Answer	Mark	Guidance
2 (a)	To check/test sizes, dimensions, proportions, aesthetics/looks of the building are correct before the real thing is built. To identify modifications or improvements. To check that it looks right before it is built.	[1]	Do not accept testing on its own. Do not accept testing for strength/structural/stability.
(b)	It is rigid, lightweight, easy to cut/shape, high strength to weight ratio, good surface for adding colour/graphics/print.	[2]	Any two of those given opposite. Do not accept answers such as cheap, strong tough etc. unless qualified. Do not accept easy to glue/join.
(c)	<p>The correct answer is shown below:</p> 	[2]	<p>Award both marks for correct answer constructed and drawn as opposite.</p> <p>If correct procedure has not been used: Award 1 mark for any shadow within the hatched area as shown opposite &amp; below.</p>  <p>1 mark</p> <p>No marks for shading the block itself. Answer refers to shadows.</p>

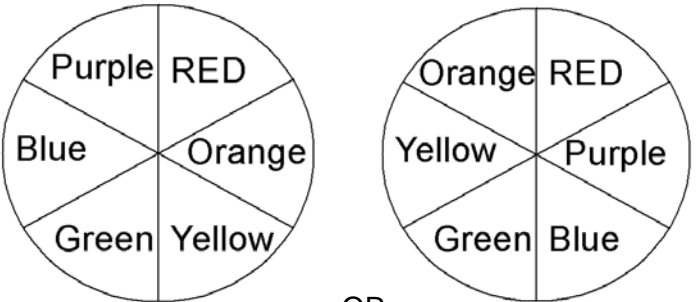
Question		Answer	Mark	Guidance
	(d)	<p><u>Draw the shape onto foamboard:</u></p> <ul style="list-style-type: none"> <li>Pencil, ruler, pen, try square, marker, plotter</li> </ul> <p>Any two of the above</p> <p><u>Cut out the shape:</u></p> <ul style="list-style-type: none"> <li>Cutting mat, craft knife, scalpel, safety ruler, steel edge, steel rule, laser cutter</li> </ul> <p>Any two of the above</p>	<p>[2]</p> <p>[2]</p>	<p>Award 1 mark for each correct answer Do not accept CAD</p> <p>For cutting out, do not accept unqualified ruler on its own.</p>
	(e)	<p><u>Sides:</u> Length – 320mm [1]</p> <p><u>Top:</u> Length – 240mm [1]</p> <p><u>Top:</u> Width – 190mm [1]</p>	[3]	<p>Award one mark for each correct answer.</p> <p>Award mark if mm are not specified.(i.e. Just 320)</p> <p>If both length and width of top are correct but in wrong boxes (i.e. length 190 x width 240) award one mark.</p>

Question	Answer	Mark	Guidance
3 (a)	<p>The four aspects to this answer are:</p> <ul style="list-style-type: none"> <li>1. Front face completed correctly [1]</li> <li>2. Side face completed correctly [1]</li> <li>3. Back &amp; Inside detail completed correctly [1]</li> <li>4. Thickness / top edge completed correctly [1]</li> </ul> 	[4]	<p>Allow freehand or accurate drawings that are within 2mm of lines.</p> <p>Do not double penalise eg. If front face is drawn incorrectly but side face has been drawn correct to their solution, award one mark for the side.</p> <p>Thickness of top edge to be no greater than one square</p> <p>Box file can be drawn either way around:</p> 



Question			Answer	Mark	Guidance
	(b)		Eyelet  Click rivet, clic rivet, push rivet or plastic rivet		This is the only correct answer  These are the only acceptable answers. Do not accept ratchet rivet, clinch rivet, or any other type of rivet. Do not award mark for just 'rivet' on its own.

Question			Answer	Marks	Guidance	
3	(c*)				Content	Levels of response
			<p>The discussion should focus on the benefits and possible drawbacks of using CAD and CAM to produce a prototype box file.</p> <p>Key factors to be discussed:</p> <ul style="list-style-type: none"> <li>• The differences in speed of production between the two methods</li> <li>• The high cost of CAD and CAM equipment weighed against the possible financial gains.</li> <li>• The need for less manual labour or workforce against the need for staff training.</li> <li>• The ability to produce difficult or complicated designs and shapes which would be otherwise extremely taxing to do manually.</li> <li>• The ability to re-model and experiment with design changes very quickly and simply in accordance with client's requirements.</li> <li>• Comparisons between the quality of the final prototyping methods</li> </ul>	<p><b>Level 3</b> (5-6 marks)</p> <p><b>Level 2</b> (3-4 marks)</p> <p><b>Level 1</b> (1-2 marks)</p> <p><b>(0) marks</b></p>	<p>Note – A bullet pointed list – max two marks</p>	<p>Thorough discussion, showing detailed understanding of the advantages and disadvantages of CAD and CAM compared to manual methods. Specialist terms will be used appropriately and correctly. The information will be presented in a structured format. The candidate can demonstrate the accurate use of spelling, punctuation and grammar.</p> <p>Discussion shows some understanding of the advantages and/or disadvantages of CAD and CAM compared to manual methods. There will be some use of specialist terms, although these may not always be used appropriately. The information will be presented for the most part in a structured format. There may be occasional errors in spelling, grammar and punctuation</p> <p>Discussion shows limited understanding of any advantages or disadvantages of CAD and CAM compared to manual methods. There will be little or no use of specialist terms. Answers may be ambiguous or disorganised. Errors of grammar, punctuation and spelling may be intrusive.</p> <p>If the given answer is not worthy of any credit the answer should be tagged 'seen' and awarded 0 marks.</p>

Question		Answer	Marks	Guidance
4	(a)	 <p>OR</p>	[2]	<p>Award one mark for:</p> <ul style="list-style-type: none"> <li>• Purple opposite Yellow [1]</li> <li>• Blue opposite Orange [1]</li> </ul> <p>Award final mark for all colours in correct places as shown opposite.</p>
	(b)	<p>Allows some light to pass through.</p> <p>Partially clear/partially see through</p> <p>Light can get through but is diffused so that objects, etc. on the opposite side are not clearly visible.</p>	[1]	<p>Accept answers which state that only a certain amount of light can pass through them.</p> <p>Do not accept see through or one word answers such as:</p> <p>Frosted, Un-transparent etc.</p>
	(c)	<p>Sketch showing a flag and tube</p> <p>Appropriate method of fixing the flag to the tube shown</p> <p>Appropriate adhesive/fixing method stated</p>	<p>[1]</p> <p>[1]</p> <p>[1]</p>	<p>The answer must clearly show a method that will work. E.g.</p> <ul style="list-style-type: none"> <li>– A slot in the tube which the flag can be fixed into.</li> <li>- Flag wrapped around tube and fixed to tube with adhesive tape</li> <li>- Flag wrapped around tube and glued to back of flag</li> </ul> <p>Do not accept answers which specify unsuitable adhesive eg. PVA to stick paper to plastic tube etc.</p>

Question		Answer	Marks	Guidance
	(d)	<p>The design must:</p> <ul style="list-style-type: none"> <li>• made from a rigid waterproof graphic material [1]</li> <li>• be portable (specific feature e.g. handle/wheel/stand) [1]</li> <li>• reflect the theme of Sports Day [1]</li> <li>• show <b>six</b> team's total points [1]</li> <li>• be easily updated [0-2]</li> </ul>	[6]	<p>Award one mark for each correct aspect. Tick (✓) to indicate where a mark has been awarded.</p> <p>Award one mark for each of the four points opposite. Accept, corriflute, laminated card, thin plastic sheet up to 1mm thick.</p> <p>Use of a lightweight material does not in itself qualify as portable</p> <p>Award 1 mark for a simple design eg. Cross out/rub out last total/rings/hooks.</p> <p>Award 2 marks for designs that are innovative, will work and make scores easy to update.</p> <p>Award 1 mark only for designs using electric/electronic methods eg. LEDs, digital signs etc.</p>

Question			Answer	Marks	Guidance	
5	(a*)				Content	Levels of response
			<p>The two bags should be compared in relation to how well they meet the needs of the <b>user</b>, not the vendor/manufacturer.</p> <p>Key points:</p> <ul style="list-style-type: none"> <li>• Brown paper is weaker than vinyl – will rip or tear more easily.</li> <li>• Brown Paper will go soggy if it gets wet. Vinyl is waterproof and will protect contents better.</li> <li>• Vinyl will last longer but is harder to recycle than brown paper.</li> <li>• Brown paper is easier to recycle but has metal rings and string so will need separating.</li> <li>• Handles on vinyl bag make it difficult to carry if it is full.</li> <li>• Handles on vinyl bag may tear if too much weight in bag.</li> <li>• Vinyl bag is cheaper as it is quicker and easier to produce (less component parts used). So less cost added on to the product.</li> </ul>	<p><b>Level 3</b> (5-6 marks)</p> <p><b>Level 2</b> (3-4 marks)</p> <p><b>Level 1</b> (1-2 marks)</p> <p><b>(0)</b> marks</p>		<p>Thorough comparison, showing detailed understanding of Specialist terms will be used appropriately and correctly. The information will be presented in a structured format. The candidate can demonstrate the accurate use of spelling, punctuation and grammar.</p> <p>Comparison shows some understanding of the differences between the two bags and/or how they meet the needs of the user. There will be some use of specialist terms, although these may not always be used appropriately. The information will be presented for the most part in a structured format. There may be occasional errors in spelling, grammar and punctuation.</p> <p>Comparison shows limited understanding of the differences between the two bags or how they meet the needs of the user.. There will be little or no use of specialist terms. Answers may be ambiguous or disorganised. Errors of grammar, punctuation and spelling may be intrusive.</p> <p>If the given answer is not worthy of any credit the answer should be tagged 'seen' and awarded 0 marks.</p>

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					Note – A bullet pointed list – max two marks	

Question		Answer	Mark	Guidance
5	(b)	<u>Disadvantage:</u> As image grows larger the quality is lost, Image becomes pixellated as it gets bigger. The bigger it gets the more blurry it becomes.	[1]	Accept answers which state that: As the image size <b>increases</b> , the quality of the image <b>decreases</b> . Do not accept distorted.
		<u>Solution:</u> Saving/converting/changing to a different type of file/format /optimise image [1] Stating file type eg. JPEG /GIF/TIF/ vector image [1]	[2]	These are the only correct answers. Do not accept 'rasterise'
	(c)	The two aspects to this answer are hand size & average people.  The width of an average person's hand Peoples average hand size / finger size Palm size of average person. Spacing of average person's fingers	[1]	Award mark for answers which relate to <b>hand / finger sizes</b> of the <b>average person</b> (or a survey carried out)  Do not award mark if answer does not relate to both aspects.
	(d)	<ul style="list-style-type: none"> <li>- Size/weight of the items going inside (so they will fit in).</li> <li>- Comfort of bag in use</li> <li>- Strength/durability of materials used</li> <li>- Cost of bag related to shop owner</li> <li>- Recyclability/Environmental issues in use</li> <li>-The target audience / type of person who will most likely shop there:</li> <li>-Different colours/images/text will appeal to different types of people. eg. Gender / Age / Class / Race/ Culture etc.</li> <li>-Image is relevant to the product.</li> </ul> Any two of the above answers	[2]	Do not award mark for one word answers eg. Size , colour, quality with no description.

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