National
Qualifications
2023

2023 Graphic Communication

Higher

Finalised Marking Instructions

These marking instructions have been prepared by examination teams for use by SQA appointed markers when marking external course assessments.

General marking principles for Higher Graphic Communication

Always apply these general principles. Use them in conjunction with the specific marking instructions, which identify the key features required in candidates' responses.

(a) Always use positive marking. This means candidates accumulate marks for the demonstration of relevant skills, knowledge and understanding; marks are not deducted for errors or omissions.

(b) If a candidate response does not seem to be covered by either the principles or detailed marking instructions, and you are uncertain how to assess it, you must seek guidance from your team leader.

(c) For 'Describe' questions
Candidates must provide a statement or structure of characteristics and/or features, not just an outline or a list. For example, they can refer to a concept, experiment, situation or facts in the context of and appropriate to the question. The number of marks available for a question indicates the number of factual/appropriate points required.

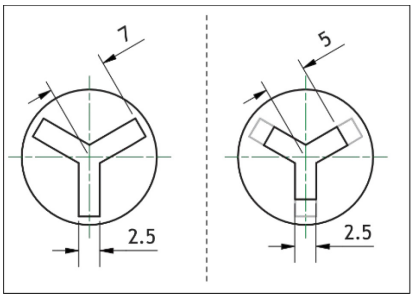
(d) For 'Explain' questions
Candidates must relate cause and effect and/or define relationships. This must be in the context of the question, or a specific area within the question.

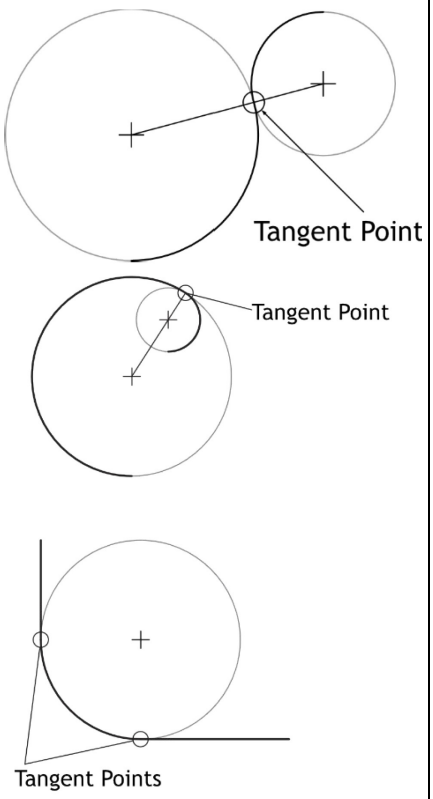
(e) For 'Compare' questions
Candidates must demonstrate knowledge and understanding of the similarities and/or differences between things, methods, or choices. This must be in the context of the question, or a specific area within the question.

(f) Candidates can respond to any question using text, sketching, annotations or combinations of these. Award marks for the information conveyed. Do not award marks for the quality of sketching.

Marking instructions for each question

Question			Expected response	Max mark	Additional guidance
1.	(a)	(i)	<u>Spindle to handle (max 2 marks):</u> • 3 mate surface constraints correctly applied **(2 marks)** • 2 mate surface constraints correctly applied **(1 mark)** • 1 mate surface constraint correctly applied **(0 marks)** <u>Rose to handle (max 2 marks):</u> • Centre axis constrain correctly applied **(1 mark)** • Offset (15mm) constraint correctly applied **(1 mark)**	**4**	
		(ii)	• Components create an assembly **<u>that is used</u>** within another assembly	**1**	One example of a **cause** with an **effect** will gain 1 mark
		(iii)	• Top-down modelling allows you to project geometry from other parts • Top-down modelling allows parts to be modelled in situ and will not need constraints to assemble • Changes made in top-down modelling will result in other parts dynamically changing/updating	**2**	
	(b)	(i)	• Revolved section	**1**	Accept 'revolved'
		(ii)	• Gives a larger view of a specific area **<u>allowing for</u>** greater clarity in the view	**1**	One example of a **cause** with an **effect** will gain 1 mark
		(iii)	• Shows how the parts fit together • Shows how many parts there are • Allows someone to see how to assemble the object • Allows someone to see the order of assembly	**2**	
	(c)		• Profile (ellipse major 20 x minor 12) • Path sketched correctly on perpendicular workplane with dimensions • Sweep along a path **OR** Extrude along a path	**3**	Major and minor axis must be labelled correctly

Question			Expected response	Max mark	Additional guidance
2.	(a)		**Extrude Method** • Ø16 extrude 12, Ø10 extrude 80, Ø16 extrude 6 **(1 mark)** • Fillet R3 x 2 **(1 mark)** • Bottom profile (4 from bottom) sketched correctly – R12, trim to 10, extrude 4 on both sides **(1 mark)** • Hex (8 AC) extrude subtract 8 **(1 mark)** • Circular profile sketched correctly (dia. 2.5) and in correct location (7 from edge of Ø16 extrusion) on an appropriate work plane **(1 mark)** • Use of linear array, repeats 7 spacing 11, with extrude subtract **(1 mark)** • Profile for radial array (6 height, 5 top, 7 bottom) with extrude thickness of 2.5 **(1 mark)** • Use of radial array, 3 repeats **(1 mark)** **Revolve Method** • Half profile with following dimensions; 8, 12, 5, 80, 6, 8 with fillet R3 x 2 **(1 mark)** • Revolve around centre axis **(1 mark)** • Bottom profile (4 from bottom) sketched correctly – R12, trim to 10, extrude 4 on both sides **(1 mark)** • Hex (8 AC) extrude subtract 8 **(1 mark)** • Circular profile sketched correctly (dia. 2.5) and in correct location (7 from edge of Ø16 extrusion) on an appropriate work plane **(1 mark)** • Use of linear array, repeats 7 spacing 11, with extrude subtract **(1 mark)** • Profile for radial array (6 height, 5 top, 7 bottom) with extrude thickness of 2.5 **(1 mark)** • Use of radial array, 3 repeats **(1 mark)**	**8**	**Top section** can be lofted by creating the following sketches: **1 mark** for two correct sketches  **1 mark** for offset plane (6mm) and loft command Top section can be created with an irregular chamfer **1 mark** for sketch on left above with extrude of 6 **1 mark** for irregular chamfer 6x2

Question			Expected response	Max mark	Additional guidance
2.	(b)	(i)	• When two circles/arcs connect at a single point • When two circles/arcs connect but do not overlap • The smooth transition from one arc to the next • The smooth transition from an arc to a straight line (or vice-versa)	**1**	A sketch depicting these descriptions that clearly identifies a tangent point would also be accepted, eg 
		(ii)	• 8 • 17	**2**	
	(c)		• Profile and dimensions **(1 mark)** • Centre axis & radius **(1 mark)** • Helix command **(1 mark)** • Pitch (24mm), length (96mm), number of revolutions (4) **(any two for 1 mark)**	**4**	Must use correct terminology of helix, pitch and revolutions. Pitch can be implied with a vertical dimension if response includes sketches.

Question			Expected response	Max mark	Additional guidance
3.	(a)		• The sketches could include realistic material representations • Further illustration techniques can be applied to enhance the initial sketch • They can be built up in a series of layers to ease editing • They are automatically stored electronically and do not require scanning to upload to the website • Sketches can be exported into other packages • A wider range of tools/brushes are available • Easy to share **with an example** • Library of resources can be utilised • Accept ease of editing **with** an example	**2**	Do not accept ease of sharing without mention of e-mail/ cloud services.
	(b)		• Photo real image of how the vehicle will look • Realistic representation of materials • Useful for users who cannot read or interpret 2D drawings • Rendered CAD pictorials can be sent out to users via email • Alternative versions showing different colours or finishes can be quickly and easily created • Light sources can be simulated	**3**	Accept reference to illustration techniques such as; light sources, materials, reflections, shade and texture
	(c)		• A rendered scene that places an object in a physical setting/environment • A rendered scene that places the object in a specific context and gives a greater sense of believability • A rendered scene that uses the surrounding environment to show how products appears in light/sunny/dark conditions • Gives a sense of scale	**2**	
	(d)		• High resolution images allow for photorealistic images to be saved **as** each pixel can be a different colour allowing for subtle changes in colour • Allows for rich and detailed images **due to** use of pixels over shapes • Do not require specialist software to open **so** can be used almost anywhere and on any device	**2**	One example of a **cause** with an **effect** will gain 1 mark

Question			Expected response	Max mark	Additional guidance
3.	(e)		• Cloud computing gives the ability to work remotely **which allows** ease of collaboration • Companies working on a project across different locations can give access to the same files **which ensures** they work from the most up to date versions • Cloud computing allows employees to be more flexible in their work practices in terms of **the ability to** quickly and easily access data at any time • Cloud computing systems are regularly updated **making sure** the latest versions of software is being used • Cloud computing can allow access to more high spec. servers **which will** allow for a higher quality output	**2**	One example of a **cause** with an **effect** will gain 1 mark Do not accept responses that mention 'you need to have internet/ wi-fi access'
	(f)		• Create rectangle (200 x 120) and extrude by 30 **(1 mark)** • Revolve rectangle profile by 90° around centre axis (60 from edge) **(1 mark)** • Apply irregular fillet 60 at front to 30 at extruded side **(1 mark)** • Shell, removing end surface, with wall thickness 10 **(1 mark)** • Circle Ø80 with centre identified (vertical 60, horizontal 100) on profile, offset workplane 100 with square 50 **(1 mark)** • Loft between profiles **(1 mark)**	**6**	Candidate could also gain first 2 marks by creating the main body of the wing mirror via sweep/extrude along a path (path and profile mentioned for **2 marks**) **OR** 2D sketch with all dims. of plan extruded 120 **2 marks** If a candidate creates the revolve with an R60 fillet they should only lose the mark for the irregular fillet, provided everything else is correct. **Only first two bullet points are interchangeable.**
	(g)		• 3D models can be used to directly manufacture (CNC/CAM) • To enable dimensions to be extracted from the CAD model, without production drawings • 3D models can be used to show how complex items are assembled • 3D models do not need a manufacturer to interpret complex production drawings • Production drawings can be created and fully dimensioned from the CAD model. • Allows for a range of tests to be undertaken prior to manufacture.	**2**	Any two points Do not accept 'for manufacture', without reference to CNC or CAM technologies. Candidates must justify the purpose of the drawing eg dimensions, tolerances, materials, surface finish. Generic 'test the model' should not be accepted .

Question			Expected response	Max mark	Additional guidance
4.	(a)		• Stepped section cuts through the object on two planes **meaning we can see** the details clearly of the outer locating holes as well as the holes on the central part of the object	**1**	One example of a **cause** with an **effect** will gain 1 mark
	(b)		• Top right	**1**	
	(c)	(i)	• (15-2) + 10 = **23**	**1**	Calculation not required
		(ii)	• M7	**1**	Accept '7'
5.	(a)	(i)	***Explain limited colour pallete and simple graphics*** • No single colour dominates the layout **which creates** a less busy/modern/calm layout • Consistent use of blue OR orange **creates** harmony OR unity in the layout • Use of orange contrasts with the blue **which makes** areas stands out • Reference to simple colours (such as the blues and orange) **allows** the graphics to stand out • Reference to simple graphics (such as chair symbols) **allow** the user to interpret layout more easily	**2**	One example of a **cause** with an **effect** will gain 1 mark
		(ii)	***Describe Emphasis*** • Darker blue lozenge behind Search Flight • Larger image of Rome • Drop shadow applied to Rome option • Orange dot under Rome option • Orange outline around selected flight • Bookable seats in darker blue • Orange seat symbol used for selected seats • Bold text in headlines/ subheadings/ airport codes	**2**	

Question			Expected response	Max mark	Additional guidance
5.	(b)	(i)	***Describe Depth*** • Any instances of layering of two or more elements • Transparency of orange boxes on front cover and page 2 • Shadow caused by "peeling" of banner on back cover • Drop shadows of planes on pages 1 and 2 • Shaped images/layer mask acting as windows, not seeing the whole image • Depth created by perspective in the photographs	**2**	Accept drop shadow on laptop/ mug on Front Cover
		(ii)	***Explain proportion*** • Images are of a similar size **meaning** no image stands out more than others • Orange image of country larger in white areas which **draws** attention to it • Reference to enlarged text (such as 'Travel', 'Go' or Country names) **draws attention** to text • Page 6, images down left-hand side increase in size **to draw** reader's eye down the layout • Images take up proportionately more space than text **which** draws attention to the images	**2**	One example of a **cause** with an **effect** will gain 1 mark
		(iii)	***Describe Rhythm*** • Drop cap at the start of each piece of body text • Larger, bolder, orange type face used for each of the subheadings throughout the layout • Rows of orange and grey dots used to separate white boxes • Layout of elements in white boxes the same on each layout • Plane shaped bullet points • Styling of country names the same throughout	**2**	

Question			Expected response	Max mark	Additional guidance
5.	(b)	(iv)	***Explain Shape*** **Cause** • Shaped images mirrored on each spread • White boxes to emphasise country information • Orange shape of country used in each section • Reference to circular shapes • Reference to rectangular shapes • Cropped circle used to highlight favourite and spotlight destinations **Effect** • Creating visual interest • Creating symmetrical balance • Creating unity • Creating contrast • Creating structure • Creating emphasis • Creating rhythm	**2**	One example of a **cause** with an **effect** will gain 1 mark
		(v)	***Describe mass*** • Images in centre of layout are of similar mass • Text boxes are all similar mass • Large white circle behind Japan information • Large image of map across pages 1 and 2	**2**	Accept a response that makes reference to features being large
	(c)		***Explain Drop Caps*** • Highlights the starting point of a piece of body text **so that** the reader knows where to start reading from • Emphasises the start of each piece of the body text **which** makes the document easier to follow • Contrasts in size with the rest of the body text **which** draws attention to the paragraph • Consistent use of the drop cap in each piece of body text creates rhythm **which** helps guide between sections	**2**	One example of a **cause** with an **effect** will gain 1 mark
	(d)		• Identify the edge of the trimmed publication **so that** post printing, it is cut to the correct size • Identifies bleed area **to ensure** edge-to-edge printing	**1**	One example of a **cause** with an **effect** will gain 1 mark

Question			Expected response	Max mark	Additional guidance
5.	(e)		• No purchasing costs • No issues concerning copyright of image • The company are not restricted by the stock images available • The company can capture images which suit their needs exactly • The image can be captured in the correct orientation (portrait, landscape)	**2**	
	(f)		• Scalable without pixelation/loss of quality • Colour can be changed within DTP software • Small file sizes	**2**	
	(g)		***Explain edits to layout for environment impact*** **Cause** • Invert grey to white areas • Reduce number of images • Reduce size of images • Reduce number of pages from 8 to 4 (4 spreads to 2 pages) • Reduce size of typeface • Reverse text • Apply transparency to images **Effect** • to use less ink/toner • Reduce number of pages from 8 to 4 (4 spreads to 2 pages) **to use** less paper	**2**	Any two. Do not accept responses that mention changing size of layout Do not accept responses related to soy inks or recycled paper as these are not edits to the layout

[END OF MARKING INSTRUCTIONS]