For this paper you must have:
- a black pen, a pencil, a ruler, an eraser, a pencil sharpener and coloured pencils.

Time allowed
- 2 hours

Instructions
- Use black ink or black ball-point pen. Use pencil and coloured pencils only for drawing.
- Fill in the boxes at the top of this page.
- Answer all questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 120.
- The question in Section A relates to the context referred to in the Preliminary Material that was previously issued.
- All dimensions are given in millimetres unless otherwise stated.
- You are reminded of the need for good English and clear presentation in your answers. Quality of Written Communication will be assessed in Question 5(c).
There are no questions printed on this page
Question 1 is about promotional packaging to celebrate a special event.

You are advised to spend about 25 minutes on this question.

1. The 2014 Commonwealth Games will be in Glasgow, Scotland. The images below have been designed to promote the games.

1 (a) Describe two methods of gathering information from people to find out what they think makes a good image to promote the games.

[4 marks]

Method 1 ........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

Method 2 ........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
1 (b) The insulated mug below will be on sale as a promotional gift at the games.

**Specification for the mug**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Volume</strong></td>
<td>400 ml</td>
</tr>
<tr>
<td><strong>Space needed by the mug</strong></td>
<td>170 mm × 120 mm × 80 mm</td>
</tr>
<tr>
<td><strong>Materials</strong></td>
<td>Stainless steel and polypropylene</td>
</tr>
<tr>
<td><strong>Care</strong></td>
<td>Dishwasher safe</td>
</tr>
<tr>
<td><strong>Features</strong></td>
<td>Sealable lid to keep heat in</td>
</tr>
</tbody>
</table>

Sketch a design for packaging the insulated mug.

Marks will be given for:

- a creative packaging solution promoting the unique nature of the sporting event
- the construction of the packaging to hold and display the mug
- the protection of the mug during transport and storage before purchase
- information to the customer and end user about the product specification, features and dimensions.

[15 marks]
Primary processing is required to convert raw timber into workable paper and card for use in packaging.

The diagram below shows the main stages of processing.

Complete the table below inserting the correct letter under the appropriate description.

One of the boxes in the table has been completed for you.

[3 marks]

<table>
<thead>
<tr>
<th>Chips of wood are processed in water and chemicals to make wood pulp</th>
<th>Pulp is poured over a fine mesh.</th>
<th>Trees are cut and converted into logs.</th>
<th>Waste paper for recycling may be added.</th>
<th>Cut logs are debarked.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>
1 (d) Promotional packaging can make use of applied finishing processes to improve its appearance and function.

Six finishing processes are listed below.

<table>
<thead>
<tr>
<th>Screen Printing</th>
<th>Flexography</th>
<th>Dye Sublimation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laminating</td>
<td>Embossing</td>
<td>Block Printing</td>
</tr>
</tbody>
</table>

Complete the diagram below by selecting the process that best matches each description.

Do not use any process more than once.

An example is given for you.

[5 marks]

<table>
<thead>
<tr>
<th>Process</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Offset Lithography</strong></td>
<td>A commercial printing method for paper and card</td>
</tr>
<tr>
<td></td>
<td>A technique used to print onto plastic film e.g. carrier bags</td>
</tr>
<tr>
<td></td>
<td>A decorative surface finish applied to paper and card</td>
</tr>
<tr>
<td></td>
<td>A process where at least two layers of material are fixed together</td>
</tr>
<tr>
<td></td>
<td>A hand process used to create repeating patterns</td>
</tr>
<tr>
<td></td>
<td>Uses heat and is suitable for printing onto a wide variety of materials in short print runs</td>
</tr>
</tbody>
</table>
Section B

Answer all questions in the spaces provided.

Question 2 is about product evolution and environmental issues.

You are advised to spend about 20 minutes on this question.

2 (a) Explain the term ‘product evolution’.

[2 marks]

........................................................................................................................... .................
........................................................................................................................... .................
........................................................................................................................... .................
........................................................................................................................... .................

2 (b) The pictures below show different designs for milk containers.

Traditional glass milk bottle  HDPE plastic milk carton  Reusable jug and plastic milk bag

Give two reasons why the designs for milk containers have evolved.

[4 marks]

1 ........................................................................................................................... ...............
........................................................................................................................... .................
........................................................................................................................... .................
........................................................................................................................... .................

2 .......................................................................................................................... ................
........................................................................................................................... .................
........................................................................................................................... .................
........................................................................................................................... .................
2 (c) Complete the table below.
Do not use the same answer more than once. Some parts of the table have been completed for you.

[9 marks]

<table>
<thead>
<tr>
<th>Container</th>
<th>Two advantages of this container</th>
<th>Two disadvantages of this container</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Can be sterilised</td>
<td>1.</td>
</tr>
<tr>
<td><img src="image1.jpg" alt="Image" /></td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td><img src="image2.jpg" alt="Image" /></td>
<td>1. Heavy to carry</td>
<td>1.</td>
</tr>
<tr>
<td><img src="image3.jpg" alt="Image" /></td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td><img src="image4.jpg" alt="Image" /></td>
<td>1. Bag can be printed onto</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>2.</td>
</tr>
</tbody>
</table>
2 (d) Explain the following terms. [6 marks]

1. Product miles ..............................................................................................................
   ..............................................................................................................................
   ..............................................................................................................................
   ..............................................................................................................................
   ..............................................................................................................................

2. Carbon footprint ............................................................................................................
   ..............................................................................................................................
   ..............................................................................................................................
   ..............................................................................................................................
   ..............................................................................................................................

3. Fairtrade ......................................................................................................................
   ..............................................................................................................................
   ..............................................................................................................................
   ..............................................................................................................................
   ..............................................................................................................................
Question 3 is about safety and consumer issues.

You are advised to spend about 20 minutes on this question.

3 (a) Before using tools and equipment you should always complete a risk assessment.

Select one tool or piece of equipment from the list below. Circle your choice.

<table>
<thead>
<tr>
<th>Soldering iron</th>
<th>Sewing machine</th>
<th>Pillar drill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper and card die cutting machine</td>
<td>Vacuum forming machine</td>
<td>Vertical belt sander</td>
</tr>
<tr>
<td>Food processor</td>
<td>Laser cutter</td>
<td>Ceramics oven</td>
</tr>
</tbody>
</table>

An example risk assessment for the use of a craft knife has been completed below.

<table>
<thead>
<tr>
<th>Potential hazard</th>
<th>Action to minimise hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>You can cut your fingers.</td>
<td>When possible use a safety ruler to protect your fingers.</td>
</tr>
</tbody>
</table>

In the table below complete a risk assessment for two hazards associated with the tool or piece of equipment you have selected.

<table>
<thead>
<tr>
<th>Potential hazards</th>
<th>Action to minimise hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1..................</td>
<td>1..........................</td>
</tr>
<tr>
<td>2..................</td>
<td>2..........................</td>
</tr>
</tbody>
</table>
3 (b) Before selling a product, both the designer and manufacturer must consider the safety of the end user.

Look at the picture below.

3 (b) (i) Label three features on the bicycle that improve its safety for the cyclist. [3 marks]

3 (b) (ii) Explain with examples how safety could be improved by:

- additional features on the bicycle
- specialist equipment for the cyclist to wear. [6 marks]
3 (c) The symbol below was printed on the maintenance and care instructions for the bicycle.

![](image)

3 (c) (i) What is the name of the symbol? [1 mark]
..........................................................................................................................................................
..........................................................................................................................................................

3 (c) (ii) What does the symbol tell the consumer about the bicycle? [2 marks]
..........................................................................................................................................................
..........................................................................................................................................................
..........................................................................................................................................................
..........................................................................................................................................................

3 (d) Government legislation exists to protect consumers.

3 (d) (i) Name one piece of legislation that ensures products are safe to use. [1 mark]
..........................................................................................................................................................

3 (d) (ii) Explain how the legislation you have identified protects consumers. [2 marks]
..........................................................................................................................................................
..........................................................................................................................................................
..........................................................................................................................................................
..........................................................................................................................................................
Question 4 is about manufacturing products.

You are advised to spend about 25 minutes on this question.

4 A school business and enterprise group wants to set up a company to produce personalised birthday products for sale to family and friends.

The Design & Technology department has agreed to help with the manufacture of the personalised birthday products. They will be made in batches of twenty in school.

Choose one of the above products to manufacture later in this question.

My chosen product is ........................................................................................................ ..
4 (a) (i) Name a suitable specific main material for your birthday product. [1 mark]

.................................................................................................................................................................

4 (a) (ii) Explain why the specific main material you have chosen in part (a)(i) is suitable for this scale of production. [2 marks]

.................................................................................................................................................................
.................................................................................................................................................................
.................................................................................................................................................................
.................................................................................................................................................................

Question 4 continues on the next page
4 (b) Use notes and sketches in the space below to show how you would make your chosen product.

There are marks for:

- a clear layout and correct order of processes
- identification of appropriate tools and equipment
- quality of communication.

[12 marks]
When manufacturing in batches the following aids can be helpful.

<table>
<thead>
<tr>
<th>Templates</th>
<th>Jigs</th>
<th>Moulds</th>
<th>Formers</th>
<th>Dies</th>
</tr>
</thead>
</table>

Choose **three** of the aids given above. Use notes and/or sketches to explain their use. **[9 marks]**

**Manufacturing aid choice:**

**Explanation:**

**Manufacturing aid choice:**

**Explanation:**

**Manufacturing aid choice:**

**Explanation:**

**Manufacturing aid choice:**

**Explanation:**
There are no questions printed on this page
Question 5 is about design movements and design methodology.
You are advised to spend about 15 minutes on this question.

5 (a) (i) Name a design movement that has influenced design thinking.

........................................................................................................................................
[1 mark]

5 (a) (ii) Name a designer associated with the movement you have named in part (a)(i).

........................................................................................................................................
[1 mark]

5 (b) Describe two features associated with the design movement you have named in part (a)(i).

[4 marks]

Feature 1 ................................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

Feature 2 ................................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

Question 5 continues on the next page
5 (c) Designers sometimes use an image or a style from the past. This is called ‘retro design’.

The pictures of the radios below show how design from the past has been used in a more modern radio.

A 1940s radio
A modern digital radio/CD player

Use examples to explain how ‘retro design’ has influenced the design of products which can be made using modern technology.

Quality of written communication will be assessed in your answer.

[9 marks]
Question 6 is about communicating and representing ideas.
You are advised to spend about 15 minutes on this question.

6 (a) (i) Name a two dimensional (2D) drawing technique.  

..................................................................................................................................................  

[1 mark]

6 (a) (ii) Explain the advantages of your chosen drawing technique.  

..................................................................................................................................................  
..................................................................................................................................................  
..................................................................................................................................................  
..................................................................................................................................................  
..................................................................................................................................................  
..................................................................................................................................................

[3 marks]

6 (b) (i) Name a three dimensional (3D) drawing technique.  

..................................................................................................................................................

[1 mark]

6 (b) (ii) Explain the advantages of your chosen drawing technique.  

..................................................................................................................................................
..................................................................................................................................................
..................................................................................................................................................
..................................................................................................................................................
..................................................................................................................................................
..................................................................................................................................................

[3 marks]
Describe how information and communication technology (ICT) can be used to communicate and present ideas during design development. [6 marks]
There are no questions printed on this page.

Acknowledgement of copyright-holders and publishers

Permission to reproduce all copyright material has been applied for. In some cases, efforts to contact copyright-holders have been unsuccessful and AQA will be happy to rectify any omissions of acknowledgements in future papers if notified.

Question 1: © Thinkstock
Question 2: © Getty Images
Question 3: © Thinkstock
Question 4: © Thinkstock
Question 5: © Thinkstock

Copyright © 2014 AQA and its licensors. All rights reserved.