



# Victorian Certificate of Education 2011

SUPERVISOR TO ATTACH PROCESSING LABEL HERE

## STUDENT NUMBER

Figures

Words


Letter

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# DESIGN AND TECHNOLOGY

## Written examination

Wednesday 9 November 2011

Reading time: 9.00 am to 9.15 am (15 minutes)

Writing time: 9.15 am to 10.45 am (1 hour 30 minutes)

## QUESTION AND ANSWER BOOK

### Structure of book

<i>Section</i>	<i>Number of questions</i>	<i>Number of questions to be answered</i>	<i>Number of marks</i>
A	3	3	40
B	10	10	50
			Total 90

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners and rulers, coloured pencils, markers, a shape template and a female human figure template and a male human figure template.
- Students are NOT permitted to bring into the examination room: blank sheets of paper and/or white out liquid/tape.
- No calculator is allowed in this examination.

### Materials supplied

- Question and answer book of 14 pages including a detachable Design Brief insert in the centrefold.
- Grid paper and male and female templates are included with the Design Brief insert.

### Instructions

- Detach the Design Brief insert from the centre of this book during reading time.
- Write your **student number** in the space provided above on this page.
- You may use diagrams, notes or sketches to help explain your answers.
- Use the space provided in this book for your design brief drawings.
- Do not draw directly onto the grid paper or the human figure templates.
- All written responses must be in English.

### At the end of the examination

- You may keep the detached Design Brief insert.

**Students are NOT permitted to bring mobile phones and/or any other unauthorised electronic devices into the examination room.**

**SECTION A****Instructions for Section A**

Answer **all** questions in the spaces provided.

**Question 1**

Select the most appropriate answer (A.–D.) for each of the following questions/statements and write your answer in the box.

- a. A product manufactured from a **sustainable material** is one which
- A. uses materials which are plentiful.
  - B. uses materials which cannot be reused, damaged or recycled.
  - C. uses materials which do not pollute or cause environmental damage.
  - D. uses materials which can be continuously sourced without significantly damaging the environment or depleting resources.

1 mark

- b. Designers often use the term ‘Cradle to Grave’ when referring to
- A. products designed for people at specific ages.
  - B. the environmental impact of a product during its life cycle.
  - C. objects mainly manufactured from timber products.
  - D. the energy and resources used to recycle products.

1 mark

- c. **Style obsolescence** is evident when
- A. a person becomes too old to appreciate new fashions.
  - B. a product becomes rare and is regarded as an antique.
  - C. the aesthetics of a product become unfashionable and no longer desirable to the user.
  - D. the product is broken; parts are not available and it cannot be repaired.



1 mark

- d. Occupational Health and Safety (OH&S) risk assessment is a process developed to determine
- A. the likelihood of injury or illness in the design stage and manufacturing process.
  - B. if a product will fail to meet consumer expectations.
  - C. the danger of the product making a financial loss.
  - D. if a product will function correctly.

1 mark

**Question 2**

Aaron has established a party hire company, Outrage, specialising in outdoor furniture. Customers can collect the furniture from the warehouse or it can be delivered. For consistency and uniformity, Aaron has decided to stock only one style of chair. He has reduced the options to two possible designs. Both chairs cost a similar amount to buy and are equally comfortable.

<b>Product A</b>	<b>Product B</b>
	
<p>Made from plastic that is recyclable            Chair is stackable            Can hold a person weighing up to 90 kg            Chair weighs 2 kg            Waterproof</p>	<p>Hardwood originating from China with polyester fabric            Chair folds flat            Can hold a person weighing up to 100 kg            Chair weighs 4 kg            Not waterproof</p>

- a. Briefly describe two tests that would give Aaron the information he needs when choosing which chair to stock.

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

2 marks

- b. Identify one evaluation criterion that Aaron could use to establish the quality of the product.

\_\_\_\_\_

\_\_\_\_\_

1 mark

c. How would this criterion influence Aaron’s choice of chair?

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2 marks

d. **Function** is integral to good product design.

Identify and discuss **one** important **functional** aspect that Aaron should consider when choosing the most appropriate chair for his business.

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4 marks

e. Customers prefer Product B for appeal, but Aaron prefers Product A for appeal.

Why is there a difference in opinion between customers and supplier?

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2 marks

f. Aaron assumes both products will have an environmental impact in terms of production and recycling.

What are the environmental costs of recycling these products?

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2 marks

- g.** Aaron has been told that during manufacture **quality management** for both products has been excellent. Identify **one** quality management technique and explain its purpose.

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4 marks

- h.** Aaron wants to extend the market for the hire of the chairs for special occasions, such as weddings and birthday parties.

A textile manufacturer has produced an example of a cover for the chairs, as shown below, that will fit a range of chair designs.



Identify and briefly explain two characteristics or properties the chair-cover material would require to make it suitable.

1. \_\_\_\_\_

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2. \_\_\_\_\_

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4 marks

**Question 3**

**Folding plug**

Due to copyright restriction,  
this material is not supplied.

This electric plug won a design award in England in 2010. This clever design allows the plug to fold flat. The two horizontal prongs can rotate in line with the top vertical one, and the body then folds in half, resulting in a thickness of about 1 cm. The plug works in either position, with a slimline power strip created or designed to accept three of these slender prongs at once. The designer saw the contradiction between thin technology equipment such as laptops, iPads, phones and the large plug attached to it – so bulky that you need a large bag to carry it. The folding plug does not alter the technology of existing products, only the packaging.

Adapted from: [www.guardian.co.uk/artanddesign/2010](http://www.guardian.co.uk/artanddesign/2010)

- a. The designer saw a problem with the traditional plug meeting the needs of the products of the 21st century. Why is it important to establish a need for a product?

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2 marks

- b. What specific need do you consider the designer was meeting by developing the folding plug design?

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2 marks

c. Identify and discuss two design factors that are apparent in the folding plug design.

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

4 marks

d. The folding plug is a development of a product that has been available for many years. Briefly explain how design can add value in the product cycle.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3 marks

e. Identify an end user for the folding plug product.

\_\_\_\_\_

1 mark

f. Create a poster which will be used to promote this product at the promotion stage, showing **at least two** of its innovative features.



3 marks

**END OF SECTION A  
TURN OVER**

**SECTION B****Instructions for Section B**

Read the Design Brief insert. **Circle** the product you will design and the world you have chosen to work in. List the main material(s) that you intend to use. If you are designing the costume, circle Jude's gender.

**Product** • Wardrobe • Three stools • Bed • Costume • Body adornment

• Decorated container

**World** • Gothic Supernatural • Comic Strip • Ice

**Main material(s)** \_\_\_\_\_

**Gender of Jude Jet** • Male • Female

**Question 1**

The Design Brief requires that the product meets client specifications.

a. List a specific client specification.

\_\_\_\_\_ 1 mark

b. Identify how you will meet this specification in **your** design.

\_\_\_\_\_ 1 mark

c. Develop one evaluation criterion, in question form, that could be used to evaluate this specification.

\_\_\_\_\_  
 \_\_\_\_\_ 1 mark

d. How will you test this specification in the completed product?

\_\_\_\_\_  
 \_\_\_\_\_ 1 mark



**Question 2**

What is the role of establishing evaluation criteria based upon the identified specifications?

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2 marks

**Question 3**

Why is it necessary to indicate how the completed product would be tested or checked against the criteria prior to making the product?

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2 marks

**Question 4**

Read the Design Brief and draw and annotate your design for the product that you have selected on page 8. Use the blank space below for rough ideas.

<b>i.</b> Function/suitability for intended use	3 marks
<b>ii.</b> Identification, on the drawing, of two processes with a degree of difficulty	3 marks
<b>iii.</b> Use of visual and aesthetic design factors – fundamentals and applications	3 marks
<b>iv.</b> Annotations, on the drawing, that indicate how the specifications have been met	3 marks
<b>v.</b> Clarity and detail of drawing	2 marks
<b>vi.</b> Innovation and creativity	4 marks

Space for rough ideas

**Draw your design on this page.**

18 marks

**SECTION B – continued**  
**TURN OVER**

**Question 5**

a. List one purpose of a work plan.

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1 mark

b. Explain how the work plan will assist you in the production of your product.

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3 marks

**Question 6**

Illustrate a process from the degree of difficulty list that you have used in your annotated design.

Process \_\_\_\_\_

Explain where and why this process would be used.

<p><b>i.</b> Drawing of process</p>	<p><b>ii.</b> Where would you use this process?</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <p><b>iii.</b> Why would you use this process?</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
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2 + 2 + 2 = 6 marks

**Question 7**

During the production of your product you discover you need to make some minor technical modifications. You have recorded the modifications but have decided not to contact the client.

Explain why this is an appropriate decision on this occasion.

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3 marks

**Question 8**

a. List a finishing technique you can use to successfully complete the product you have designed.

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1 mark

b. Explain the technique, its purpose, and how this technique will enhance your product.

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3 marks

**Question 9**

Explain the difference between 'effectiveness' and 'efficiency' within your planning and production activities.

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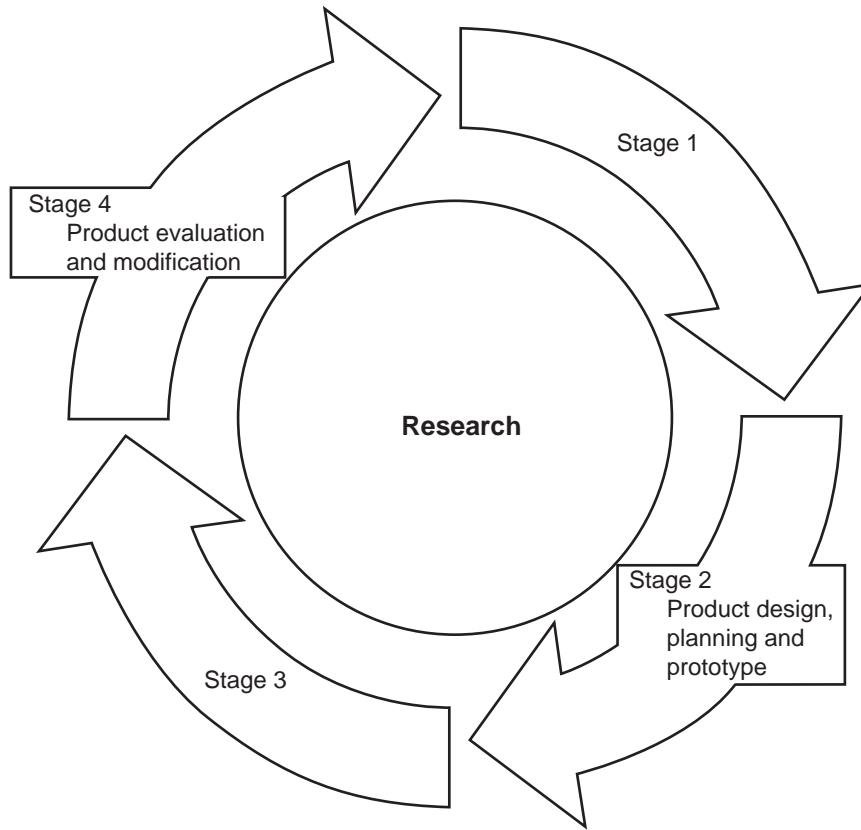
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3 marks

**Question 10**

The **product development process** in industry has a number of stages.

In the diagram below, certain stages have been omitted.



Identify the numbered stages below. Identify one person involved in that stage.

Stage	Person involved
Stage 1	
Stage 3	

4 marks

**Please remove from the centre of this book during reading time.**

Isometric grid paper and a female and male human shape have been included with the Design Brief to assist you with your design.

## D E S I G N     B R I E F

Jude Jet is a twenty-year-old rock singer. Jude Jet's record company has asked for a **music video** to be produced to promote a new song, 'Other Worlds'. In the music video, the director wants to create three worlds or scenes. Jude Jet will move from one world to another as the video proceeds.

The director wants you to design and create furniture, a costume, body adornment or a decorated container for Jude for **one** of the worlds.

As there will be some close-ups in the video, all products need to be finished to a high standard and all products must be **highly** creative and original.

The three worlds will be

1. **Gothic Supernatural** – This is a scary world with an evil feel. This world is dark, with vampires, bats, spiders and other scary animals and creatures.
2. **Comic Strip** – This world looks and feels like an animated movie. In this world, the objects are exaggerated, brightly coloured and cheerful.
3. **Ice** – This world is close to Antarctica. In this world, things are icy, cold, sharp, pointed and frosty.

In each world, Jude Jet will wear a costume and body adornment that are suitable for the environment in the particular world.

Jude will perform in these different worlds with furniture, a costume, body adornment and a decorated container to set the scene and to assist in creating the images.

Some of the furniture and the decorated container will need to be used as a gateway from one world to another.

Some of the furniture and the decorated container will be used as supports when Jude is dancing; hence the furniture and the decorated container will need to be strong and stable.

The costume and the body adornment must relate to one specific world.

Note: In your preliminary work, you will need to

1. select **one** world from Gothic Supernatural, Comic Strip or Ice
2. select **one** product from the list of objects provided
3. make sure you are aware of the specific requirements for each of the products
4. decide on the gender of Jude if you are choosing the costume option.

**TURN OVER**

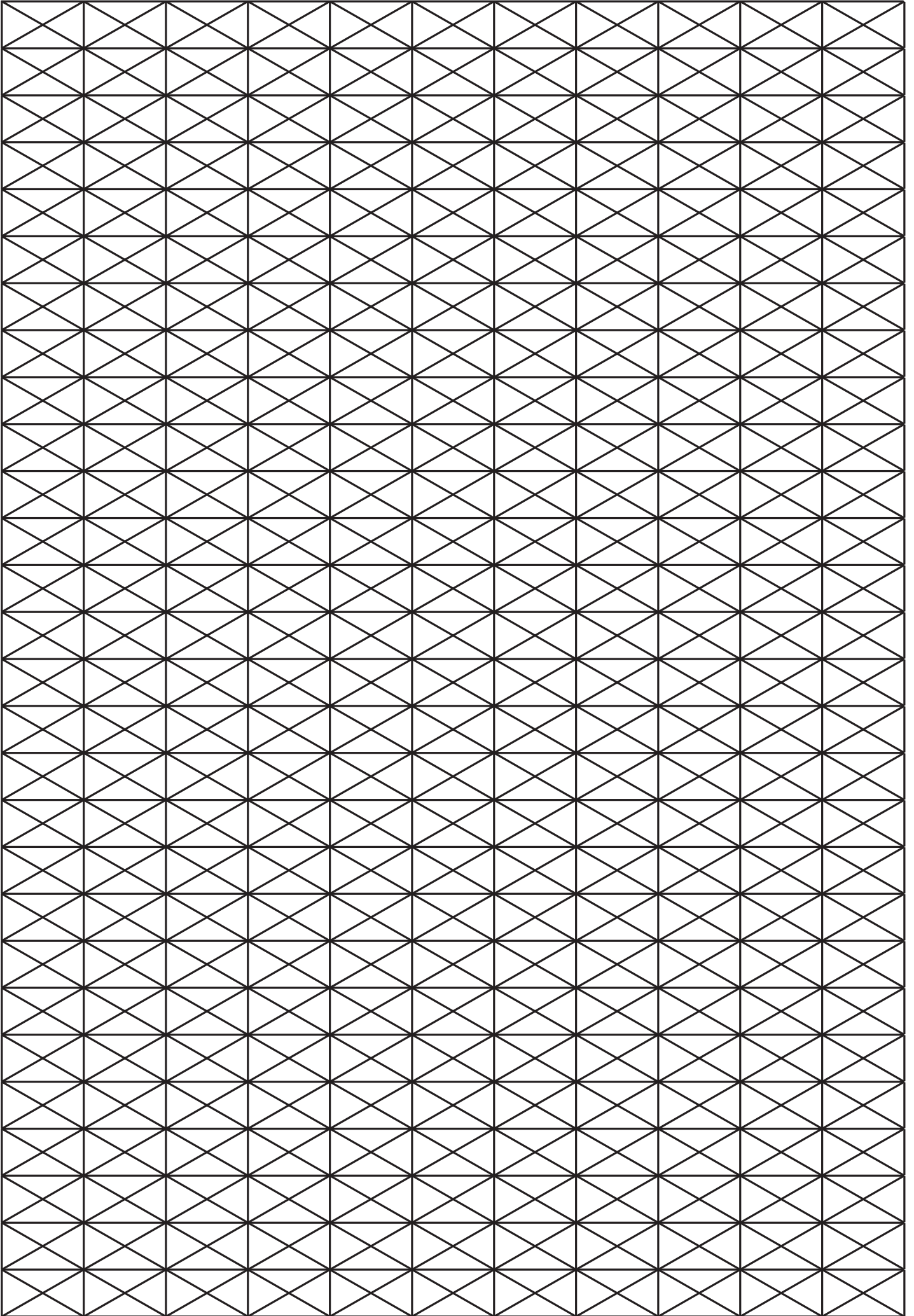
<p style="text-align: center;"><b>Wardrobe</b></p> <p>Jude will need to be able to enter the wardrobe in order to be transported to another world. The wardrobe must have at least two doors. The size of the wardrobe <b>must not exceed</b> 900 mm wide, 2000 mm high and 500 mm deep, but Jude must be able to fit inside.</p>	<p style="text-align: center;"><b>Decorated container</b></p> <p>Jude will need to be able to use the container as a support while dancing and/or being transported to another world. The container will need to be able to conceal Jude from view. The container will need to be 1000 mm high. The container will need to be highly decorated. The decoration will need to reflect the chosen theme. The container can be used for storage.</p>
<p style="text-align: center;"><b>Three stools</b></p> <p>Jude will need to be able to sit on the stools and dance on them. The three stools will need to support Jude’s weight. The three stools need to be slightly different, but still complement each other. The three stools need to be approximately 700 mm high. The three stools need to have a back rest. Each stool needs a footrest and storage to hide electronics.</p>	<p style="text-align: center;"><b>Bed</b></p> <p>Jude will need to be able to stand on the bed before being transported to another world. The bed will need to be <b>at least</b> 400 mm high, 2000 mm long and 1500 mm wide. The design should <b>not</b> include mattress, doona, blanket, pillow, etc.</p>
<p style="text-align: center;"><b>Costume</b></p> <p>Jude’s music video routine includes some jumping and gymnastics, so the costume needs to allow for ease of movement. The costume has to hide a radio microphone. The director would like the costume to be not too revealing so the music video can gain a PG (Parental Guidance) censorship classification. Note: Jude dislikes stretch materials.</p>	<p style="text-align: center;"><b>Body adornment</b></p> <p>Jude requires body adornments to wear. It must be a four-piece set and include at least two different pieces from the following list.     earrings, neckpiece/necklace, ankle bracelet, belt buckle, wrist bracelets, rings The pieces must be strong enough to stay on during rehearsals and while doing dance routines.</p>

Your design should include at least two processes with a degree of difficulty; one of these processes **must** be from the **degree of difficulty** list below.

<b>Degree of difficulty list</b>		
<b>Wood/Metal</b>	<b>Textiles</b>	<b>Plastics/Ceramics</b>
<ul style="list-style-type: none"> <li>• laminating</li> <li>• dovetail joining</li> <li>• metal folding</li> <li>• welding</li> <li>• milling</li> <li>• routing</li> <li>• riveting</li> <li>• ripping</li> <li>• staining</li> <li>• rolling</li> <li>• annealing</li> <li>• enamelling</li> <li>• biscuit joining</li> <li>• turning (on lathe)</li> <li>• twisting</li> <li>• forging</li> <li>• veneering</li> <li>• fastening</li> <li>• silver soldering</li> </ul>	<ul style="list-style-type: none"> <li>• collar making and attaching</li> <li>• cuff making and attaching</li> <li>• surface decorating</li> <li>• buttonhole making</li> <li>• dyeing</li> <li>• hemming</li> <li>• overlocking</li> <li>• zip insertion</li> <li>• pockets</li> <li>• pleating</li> <li>• gathering</li> <li>• tucks</li> </ul>	<ul style="list-style-type: none"> <li>• sand blasting</li> <li>• casting</li> <li>• glazing</li> <li>• vacuum forming</li> <li>• slumping</li> <li>• riveting</li> <li>• drilling</li> </ul>

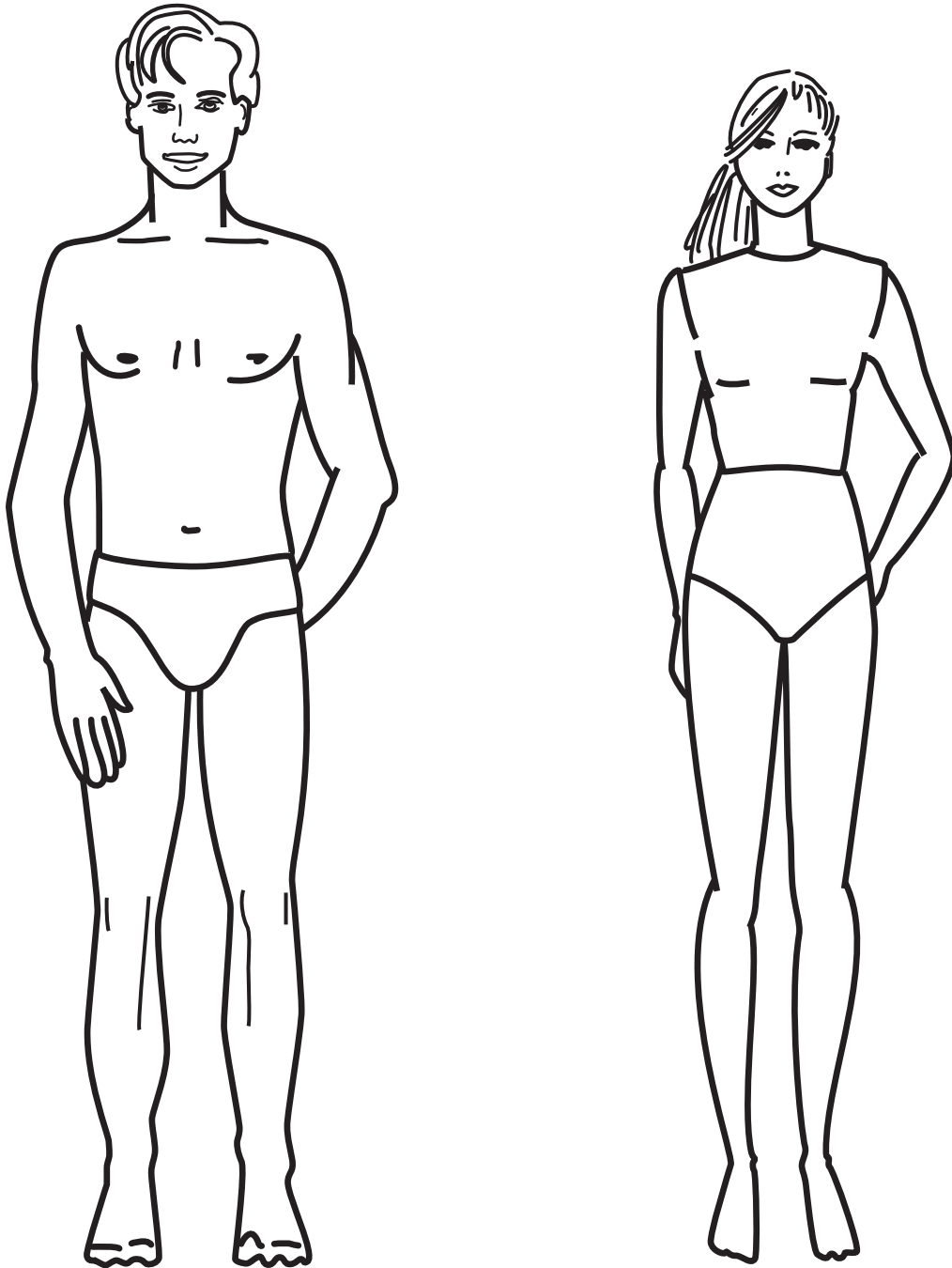


**Do not** draw your final design on this grid.



**TURN OVER**

Use for tracing **not** drawing.



**END OF DESIGN BRIEF INSERT**