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# AS DESIGN AND TECHNOLOGY: PRODUCT DESIGN

Paper 1 Written Paper

Monday 13 May 2019

Afternoon

Time allowed: 1 hour 30 minutes

## Materials

For this paper you must have:

- normal writing and drawing instruments
- a scientific calculator.

## Instructions

- Use black ink or black ball-point pen. Use pencil 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 80.
- There are 45 marks in **Section A** and 35 marks in **Section B**.

## Advice

- Illustrate your answers with sketches and/or diagrams wherever you feel it is appropriate.

For Examiner's Use	
Pages	Mark
2–3	
4–5	
6–7	
8–9	
10–11	
12–13	
14	
<b>TOTAL</b>	



J U N 1 9 7 5 5 1 W 0 1

IB/G/Jun19/E10

**7551/W**

**Section A – Technical Principles**Answer **all** questions in this section.

Question 1 is a multiple-choice question. Only **one** answer for this question is allowed.

For this question completely fill in the circle alongside the appropriate answer.

CORRECT METHOD



WRONG METHODS



If you want to change your answer you must cross out your original answer as shown.



If you wish to return to an answer previously crossed out, ring the answer you now wish to select as shown.



**0 1** Which of the following is a wasting process?

A Brazing

B Injection moulding

C Lamination

D Milling

**[1 mark]**

**0 2** Name a thermoset which can be used for an electrical socket.

**[1 mark]**


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**0 3** Explain the benefits of using pressure treatment for outdoor wooden products.

**[6 marks]**


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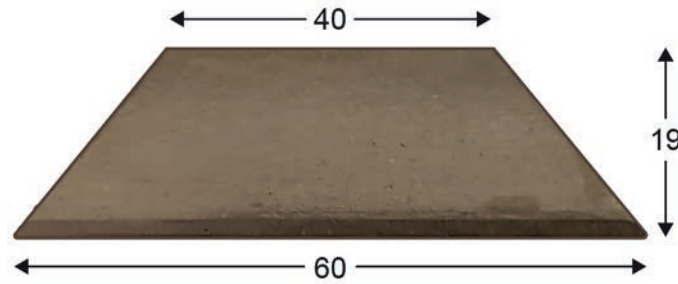




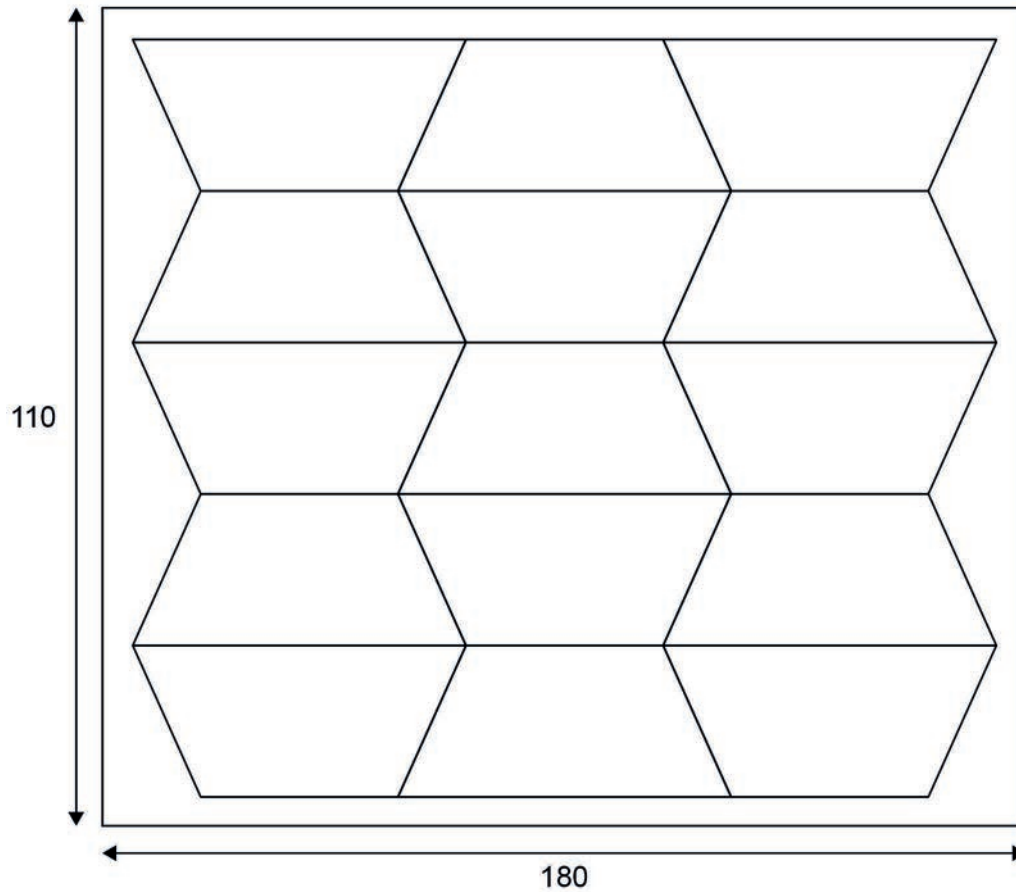
**0 7 . 1** Figure 3 shows a craft knife blade.

The craft knife blade is manufactured from stainless steel in the shape of a trapezium.

**Figure 3**  
All dimensions in mm  
Not drawn to scale



The craft knife blades are cut from a sheet of stainless steel:











**Section B – Designing and Making Principles**

Answer **all** questions in this section.

**1 0** **Figure 4** and **Figure 5** each show a clock.

**Figure 4**

**Arts and Crafts Movement-style clock made from a hardwood (oak)**



**Figure 5**

**Art Deco-style clock made from a thermoset (Bakelite)**



Evaluate how well each of the clocks meets the design principles of the movement to which it belongs.

**[6 marks]**

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1 1

Margaret Calvert is known for her work in the design of road signs, similar to the one shown in **Figure 6**.

**Figure 6**  
**Road sign**



Assume the road sign is an equilateral triangle with a side length of 600 mm. Calculate the surface area of this sign.

Show your working out.

**[6 marks]**

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12

Turn over ►





**1 3**

Explain **three** ways in which prototypes can be used when designing products.

**[6 marks]**

1 \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2 \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3 \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**1 4**

When testing materials, state **three** variables that must be maintained or controlled to achieve fair results.

**[3 marks]**

1 \_\_\_\_\_

\_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

\_\_\_\_\_

15

Turn over ►



**1 5**

Explain how **two** different quality control checks are used to monitor consistency during the injection moulding process.

**[4 marks]**

1 \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2 \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**1 6**

Describe **two** ways that 3D Computer Aided Design (CAD) software can assist in the design of bespoke products.

**[4 marks]**

1 \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2 \_\_\_\_\_

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\_\_\_\_\_

\_\_\_\_\_

8

**END OF QUESTIONS**



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1 6



1 9 6 A 7 5 5 1 / W

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