

Please write clearly, in block capitals.

Centre number

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Candidate number

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Surname

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Forename(s)

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Candidate signature

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# A-LEVEL DESIGN AND TECHNOLOGY PRODUCT DESIGN

Paper 2 Designing and Making Principles

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Additional specimen

Morning Time allowed: 1 hour 30 minutes

## Materials

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.
- Answer **all** questions.
- You must answer the questions in the spaces provided
- 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 total number of marks available for this paper is 80.
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**Section A**

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

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- 0 1** . **1** **Figure 1** shows a 2010s modern cordless kettle. **Figure 2** and **Figure 3** show a 1980s kettle.

Compare the two kettles shown.

In your answer you should refer to:

- Product safety
- Energy efficiency
- Ergonomics

**[12 marks]**

**Figure 1**



**Figure 2**

















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**Turn over for the next question**





0 4 . 1

**Figure 6** shows a standing workstation. The ideal height for the desk top is level with the elbow height of the user as shown in **Figure 7**.

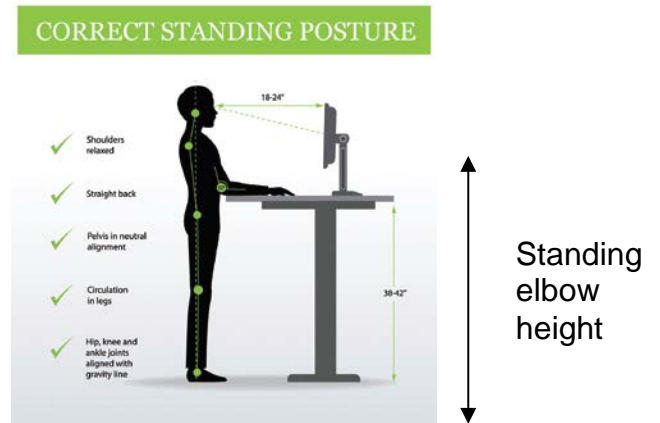
Calculate the range of height adjustment required to accommodate the 15<sup>th</sup> to 85<sup>th</sup> percentiles of the sample shown in **Table 1**.

[2 marks]

**Figure 6**



**Figure 7**



**Table 1** shows the ideal elbow height from a range of users.

Standing elbow height	Number in sample
937	5
962	12
987	17
1012	23
1037	30
1062	38
1087	32
1112	26
1137	19
1162	14
1187	4

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**0 4 . 2**

Discuss specific pieces of anthropometric data that would be used when designing adjustment controls for the standing workstation.

**[6 marks]**

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**0 7**

List the stages of **six sigma**. Stage 1 has been completed for you.

**[4 marks]**

Stage 1: Define the issue with the process

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**Stage 2:**

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**Stage 3:**

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**Stage 4:**

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**Stage 5:**

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**0 8**

Give **three** reasons why consumers may look for the FSC logo on products they purchase.

**[3 marks]**

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**There are no questions printed on this page**

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