



Oxford Cambridge and RSA

Monday 2 June 2025 – Morning

**A Level in Design and Technology:
Fashion and Textiles**

H405/01 Principles of Fashion and Textiles

Time allowed: 1 hour 30 minutes



You can use:

- a ruler (cm/mm)
- a scientific calculator
- geometrical instruments



Please write clearly in black ink. **Do not write in the barcodes.**

Centre number

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Candidate number

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First name(s)

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Last name

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INSTRUCTIONS

- Use black ink. You can use an HB pencil, but only for graphs and diagrams.
- Write your answer to each question in the space provided. You can use extra paper if you need to, but you must clearly show your candidate number, the centre number and the question numbers.
- Answer **all** the questions.
- Where appropriate, your answer should be supported with working. Marks might be given for using a correct method, even if your answer is wrong.

INFORMATION

- The total mark for this paper is **80**.
- The marks for each question are shown in brackets [].
- Quality of extended response will be assessed in questions marked with an asterisk (*).
- This document has **20** pages.

ADVICE

- Read each question carefully before you start your answer.

1 Fig. 1.1 shows **three** views of a shoulder bag.

Fig. 1.1



(a) The shoulder bag shown in **Fig. 1.1** is made from a woven fabric.

Identify **two** advantages of using a woven fabric for the shoulder bag.

Justify **each** of your answers.

- 1
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-
-
- 2
-
-
-

[4]

(b) The shoulder bag uses a zip fastening.

Identify **one other** pre-manufactured component that has been used to increase the functionality of the shoulder bag for the user.

Justify your answer.

Pre-manufactured component

Justification

.....
[2]

(c) Fig. 1.2 shows the internal pocket with zip fastening.

Fig. 1.2



Use annotated sketches and/or notes to show how to insert the zip.

Include any relevant equipment, machinery and materials.

[6]

Discuss how digital textile cutting technology, such as laser cutting, is changing modern manufacturing systems.

[6]

- (e) The shoulder bag will be sold globally.

Identify and explain **three** benefits to the manufacturer of complying with International Organization for Standardization (ISO) requirements.

1

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2

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3

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[6]

- (f) Identify and explain **one** factor the manufacturer needs to consider when planning the global distribution of the shoulder bag.

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[2]

- 2 A company manufactures gym bags.

The target weight for each gym bag is 700 grams (g).

The company collects the following data on the weight of 30 gym bags:

702, 700, 701, 699, 696, 700, 697, 701, 705, 693, 706, 698, 701, 700, 702, 697, 699, 704, 695, 703, 701, 696, 702, 700, 699, 700, 703, 696, 701, 700

- (a) Complete **Fig. 2.1** below. Some data has already been completed for you.

[4]

Fig. 2.1

Weight of Gym Bag in g	Frequency	Cumulative Frequency
693	1	1
695	1	
696	3	5
697		7
698	1	8
699	3	
700		
701	5	22
702	3	25
703		27
704	1	28
705		29
706	1	

(b) The company also manufactures rucksacks.

The target weight for the product is 600 grams (g).

Each rucksack in a batch of 200 is weighed.

Rucksacks are grouped based on how much they weigh in excess of 600 g.

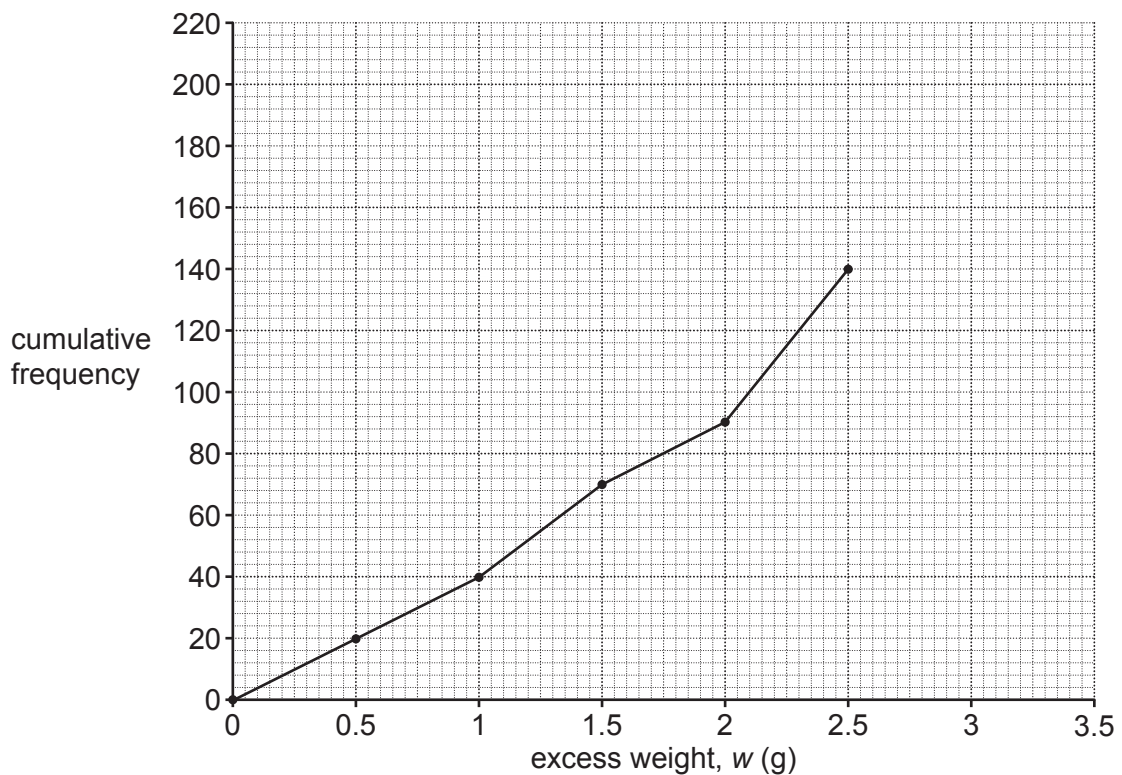
The data is shown in **Fig. 2.2**. The excess weight (w) is measured in g.

Fig. 2.2

Excess Weight, w (g)	Frequency
$0 < w \leq 0.5$	20
$0.5 < w \leq 1$	20
$1 < w \leq 1.5$	30
$1.5 < w \leq 2$	20
$2 < w \leq 2.5$	50
$2.5 < w \leq 3$	40
$3 < w \leq 3.5$	20

The following cumulative frequency diagram (**Fig. 2.3**) was produced from the data.

Fig. 2.3



(i) Complete the cumulative frequency diagram in **Fig. 2.3** from the data shown in **Fig. 2.2**. [2]

(ii) Use **Fig. 2.3** to estimate the median value.

Median value g [1]

(iii) Use **Fig. 2.3** to estimate the interquartile range. Give your answer in g and show your working. [3]

Interquartile range g

(iv) Use **Fig. 2.2** to calculate the percentage of rucksacks in the batch that had an excess weight between 1 and 3 grams. Show your working. [2]

..... %

(v) A safe packed rucksack weight should be no more than 15% of a person's body weight.

Calculate the **maximum** safe packed rucksack weight for a person weighing 63.5 kgs. Give your answer in kgs to **1** decimal place and show your working. [2]

Maximum safe packed rucksack weight kgs

- 3 Fig. 3 shows a garment which incorporates electrochromic fibres.

Fig. 3



- (a) Designers use market research to find new product opportunities.

Identify **two** methods of market research a designer could use to find a gap in the market for an electrochromic garment such as that shown in Fig. 3.

Justify **each** of your answers.

1

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2

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[4]

(b)* Discuss how smart materials have changed the functionality of textile products.

Use examples of smart materials in your answer.

[8]

- 4 **Fig. 4.1** shows a dog coat with a pleated tartan kilt. The fabric used is made from an acrylic wool blended yarn.

Fig. 4.1



- (a) Identify and explain **one** advantage and **one** disadvantage of using an acrylic wool blended yarn for the fabric of the dog coat in **Fig. 4.1**.

Advantage

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Disadvantage

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[4]

- (b) The pleated kilt on the dog coat in **Fig. 4.1** is made from a tartan fabric.

Describe how the check pattern is created in a tartan fabric.

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..... [2]

- (c) Adding the pleated tartan kilt to the dog coat in **Fig. 4.1** improves functionality.

Identify and explain **one other** benefit to the company of adding the pleated tartan kilt.

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..... [2]

- (d) Other than the pleated tartan kilt, identify **one other** design feature which increases the functionality of the dog coat for either the dog and/or the owner.

Justify your answer.

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..... [2]

- (e) The tartan kilt on the dog coat has knife pleats as part of the design.

Use annotated sketches and/or notes to show how to work a series of **three** knife pleats.

Include any relevant equipment, machinery, and materials.

[6]

- (f) Identify **one** finish that could be applied to the fabric of the dog coat in **Fig. 4.1** to improve its performance.

..... [1]

- (g) The design of the dog coat in **Fig. 4.1** is protected by Intellectual Property (IP) legislation.

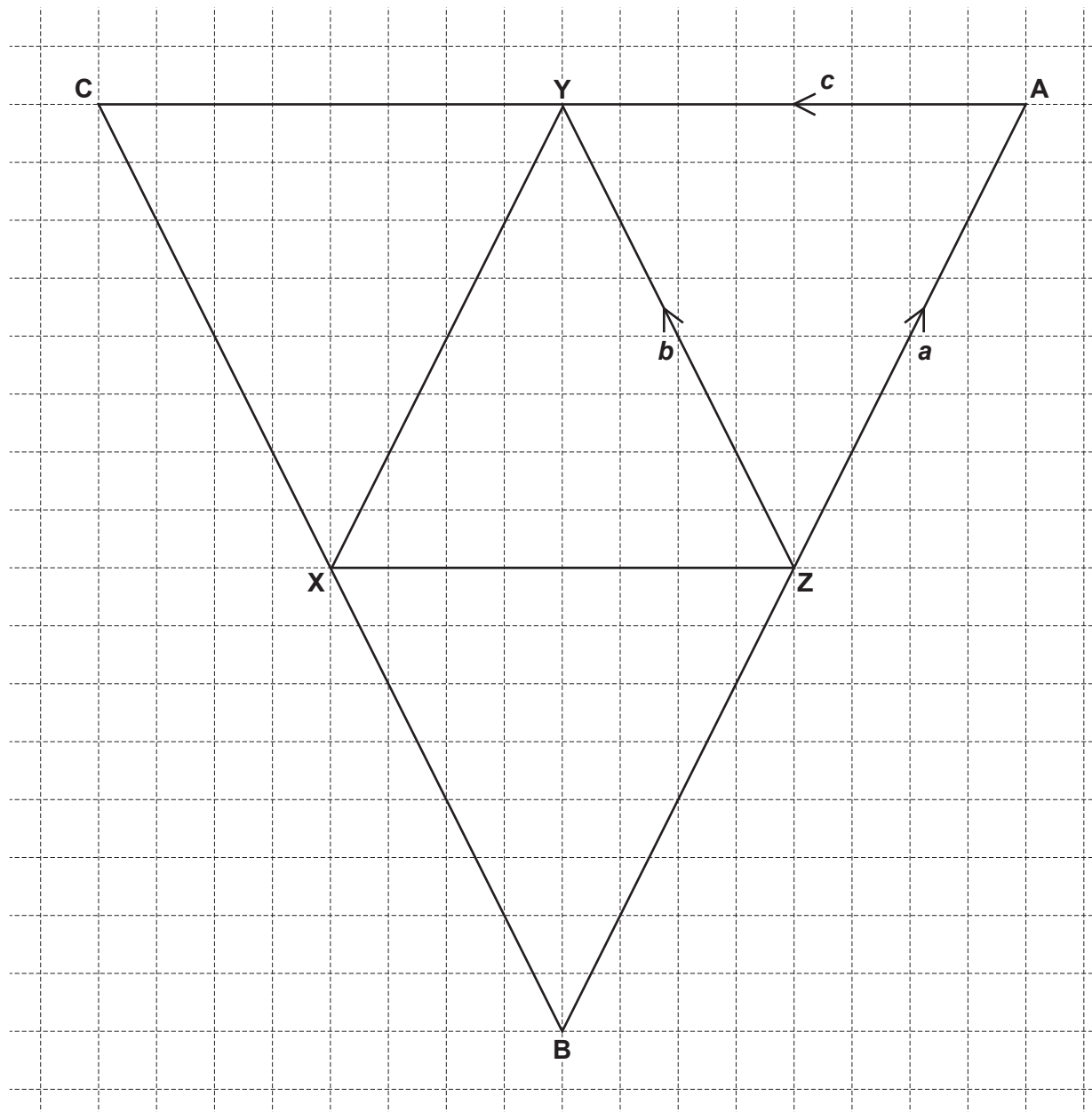
Describe **one** way in which IP legislation would protect the designer of the dog coat.

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..... [2]

- (h) The company wants to increase its product range.

It wants to add a decorative design to the fabric for a new dog coat. The design is shown in Fig. 4.2 and is based on isosceles triangles.

Fig. 4.2



Write in terms of $\mathbf{a}$, $\mathbf{b}$ and $\mathbf{c}$ the following vectors:

[3]

$\overrightarrow{XC}$

$\overrightarrow{ZX}$

$\overrightarrow{ZB}$

- (i) Discuss how surface pattern technology such as pleating and embossing can be used to enhance the aesthetic qualities of textile products.

Use examples of surface pattern technologies in your answer.

..... [6

END OF QUESTION PAPER

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