

Please check the examination details below before entering your candidate information

Candidate surname					Other names				
Centre Number					Candidate Number				
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Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Monday 19 June 2023

Morning (Time: 1 hour 45 minutes) **Paper reference** **1DT0/1E**

Design and Technology
COMPONENT 1: Textiles

You must have:
 calculator, ruler, HB pencil, protractor, pair of compasses

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
 – *there may be more space than you need.*
- Calculators may be used.
- Any diagrams may NOT be accurately drawn, unless otherwise indicated.
- You must **show all your working out** with **your answer clearly identified** at the **end of your solution**.

Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets
 – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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SECTION A

Core

Answer ALL questions. Write your answers in the spaces provided.

- 1 (a) The materials that products are made from are chosen because of their properties.

Figure 1 shows a table of products.

For each of the products shown, give a property of the material it is made from that makes the material suitable for the product.

The first one has been done for you.


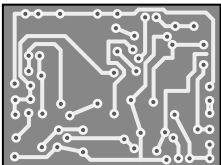
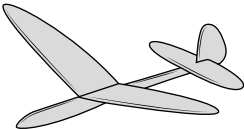

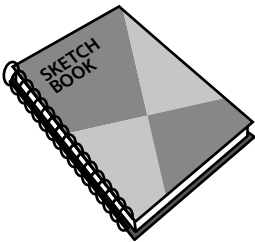
Picture of product	Material and product	Property
	Cotton T-shirt	Soft
	Polyester resin printed circuit board (PCB)	(1) (i)
	Balsa wood toy plane	(1) (ii)
	Stainless steel kitchen scissors	(1) (iii)
	Solid white board hardback book cover	(1) (iv)

Figure 1

A printing company wants to use a new and emerging technology. It operates as a privately-owned business.

- (b) (i) Explain **one** advantage for the company of operating as a privately-owned business.

(2)

The printing company has invested £150,000 of its own money to buy new and emerging technology but wants to raise an additional 30% by crowdfunding.

- (ii) Calculate how much additional money it will raise by crowdfunding.

(2)

Answer £

(Total for Question 1 = 8 marks)

2 Figure 2 shows a concrete candle holder.

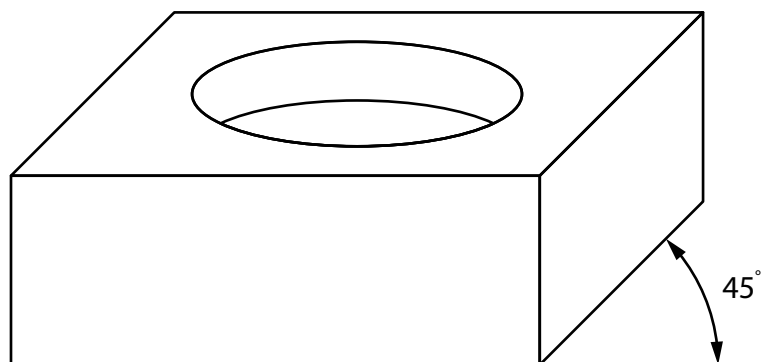


Figure 2

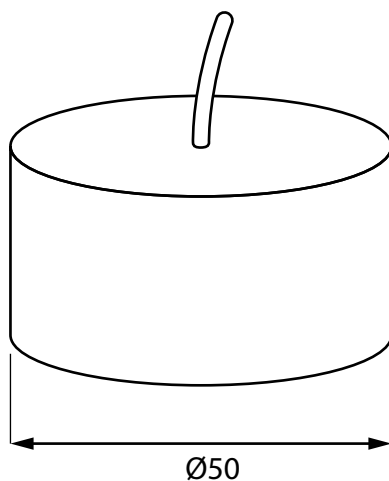
(a) Name the drawing method that has been used to show the concrete candle holder in Figure 2.

(1)

(b) Explain **one** reason for using concrete for the candle holder.

(2)

Figure 3 shows a standardised size of candle.



All dimensions in mm

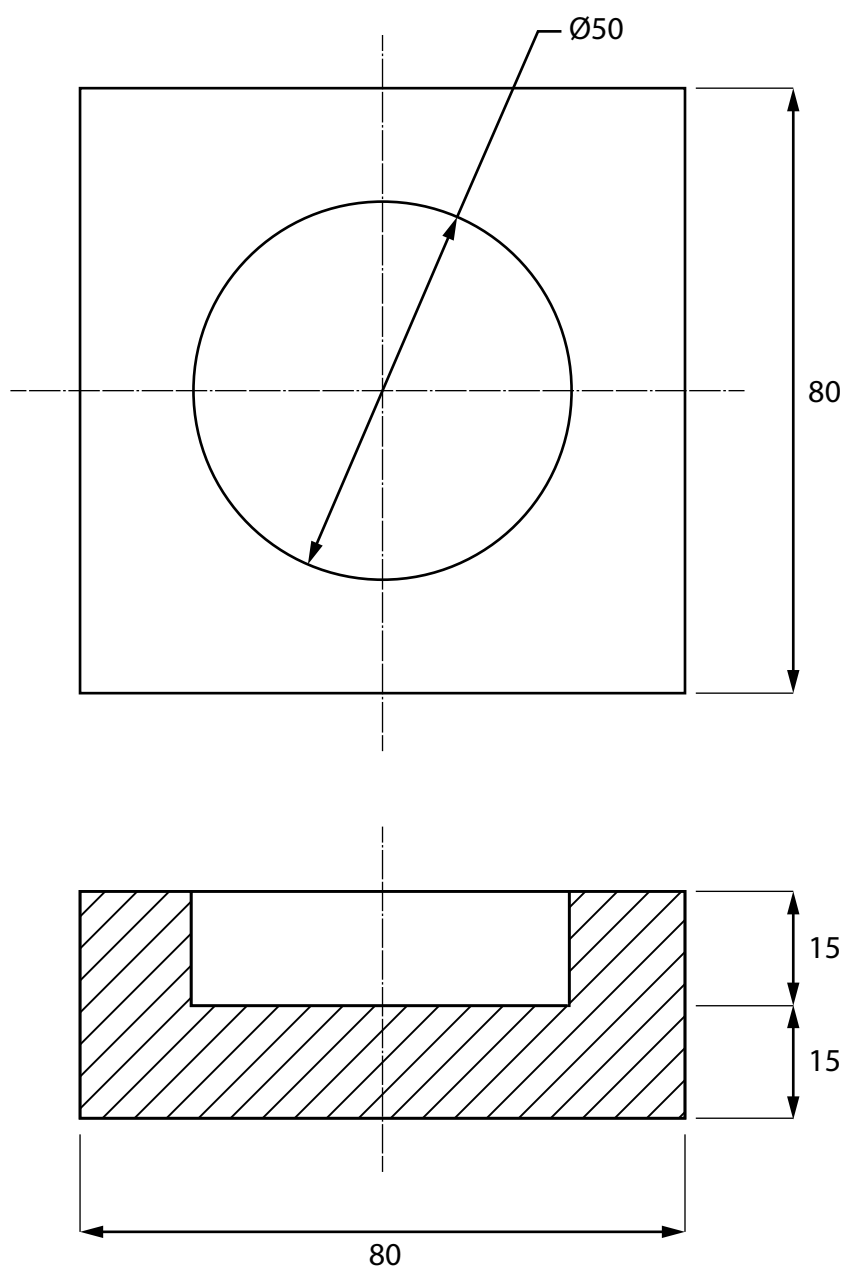
Ø – diameter

Figure 3

- (c) Explain **one** reason for manufacturing the concrete candle holder to hold a standardised size of candle.

(2)

Figure 4 shows a dimensioned drawing of the concrete candle holder.



All dimensions in mm

Volume of cylinder = $\pi \times r^2 \times h$

Use $\pi = 3.142$

Figure 4

(d) Calculate the volume of concrete required to make the candle holder.

Give your answer in cm^3 to the nearest whole cm^3 .

(4)

Answer cm^3

(Total for Question 2 = 9 marks)

- 3 Figure 5 shows a vegetable growing frame that is manufactured from a softwood.

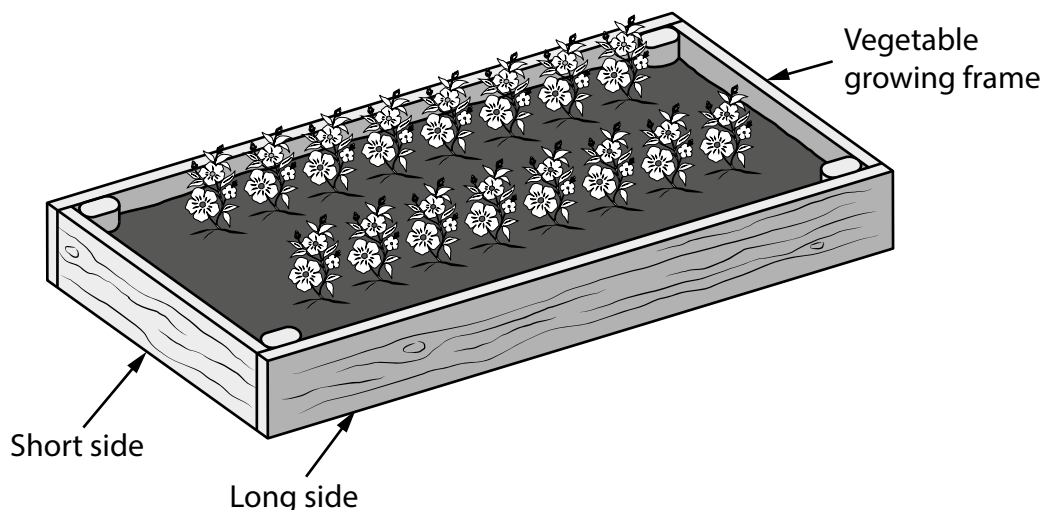


Figure 5

- (a) Name **one** softwood that can be used to manufacture the vegetable growing frame.
- (b) Explain **one** reason for manufacturing the vegetable growing frame from a softwood rather than a hardwood.

(1)

(2)

The original length of timber that is used to make the frame is 300 cm.

The combined length of one short side and one long side of the frame is 270 cm.

- (c) Calculate how much timber is left when a short side and a long side have been cut to size, giving your answer as a fraction of the original length of timber.

Ignore the width of any saw cuts.

(2)

Answer

Figure 6 shows a mild steel fixing that has been used to join the vegetable growing frame together at the corners.

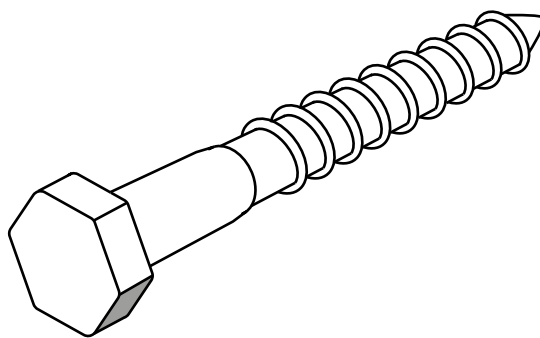


Figure 6

- (d) Explain **one** disadvantage of using mild steel for the fixing.

(2)

The vegetable growing frame is delivered in a box manufactured from corrugated board.

- (e) Explain **two** benefits of using corrugated board to manufacture the box.

(4)

1

2

(Total for Question 3 = 11 marks)

- 4 Figure 7 shows a polyester laptop bag.



Figure 7

- (a) Explain **one** working property of polyester that makes it an appropriate choice of material to make the laptop bag.

(2)

- (b) The material for the laptop bag is 60% new polyester and the rest is recycled polyester.

The laptop bag requires 320 grams of polyester in total.

Calculate how many grams of recycled polyester are required for the laptop bag.

(2)

Answer

grams

The manufacturer carries out a life cycle analysis (LCA) to help reduce the environmental impact of the laptop bag.

- (c) Explain **one** outcome of an LCA that can help to reduce the environmental impact of the laptop bag.

(2)

- (d) Discuss how the features of modern laptops have contributed to remote working.

(6)

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(Total for Question 4 = 12 marks)

TOTAL FOR SECTION A = 40 MARKS

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SECTION B BEGINS ON THE NEXT PAGE.

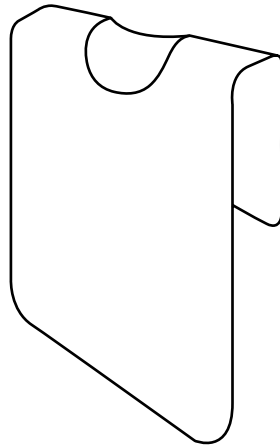


SECTION B

Textiles

Answer ALL questions. Write your answers in the spaces provided.

- 5 Figure 8 shows a design solution for a child's cotton painting apron together with some additional information.



Additional information

Average waist size of a child:	
6–7 yrs	57 cm
7–8 yrs	58 cm
8–9 yrs	60 cm
9–10 yrs	62 cm

Figure 8

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- (a) The child's cotton painting apron needs to be improved to include the following specification points.

The child's cotton painting apron must:

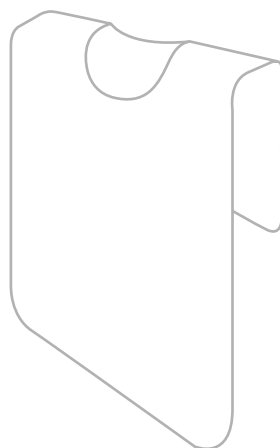
- be easy to keep clean and prevent more of the child's clothes from getting paint on them
- be adjustable to fit a range of waist sizes and be able to be fastened by the child
- be able to be hung up easily and include a visible method that identifies which child it belongs to.

Use notes and sketches to show how the child's cotton painting apron could be modified to include these three specification points.

You will be marked on how you apply your understanding of design and technology, not your graphical skills.

Use the outline of the original design solution to show your modifications.

(6)



- (b) Figure 9 shows a felt-lined wooden puzzle that is used to help develop hand-eye coordination in young children.

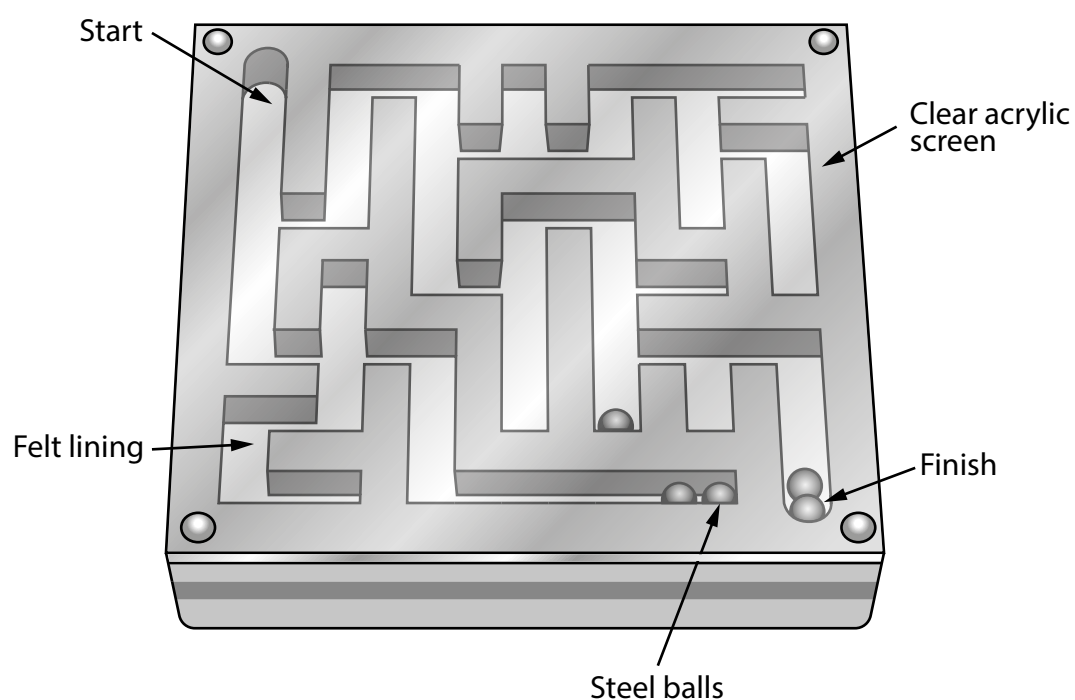


Figure 9

Explain **two** ways that the felt-lined wooden puzzle meets, or fails to meet, the criterion of providing a method to help develop hand-eye coordination in young children.

(4)

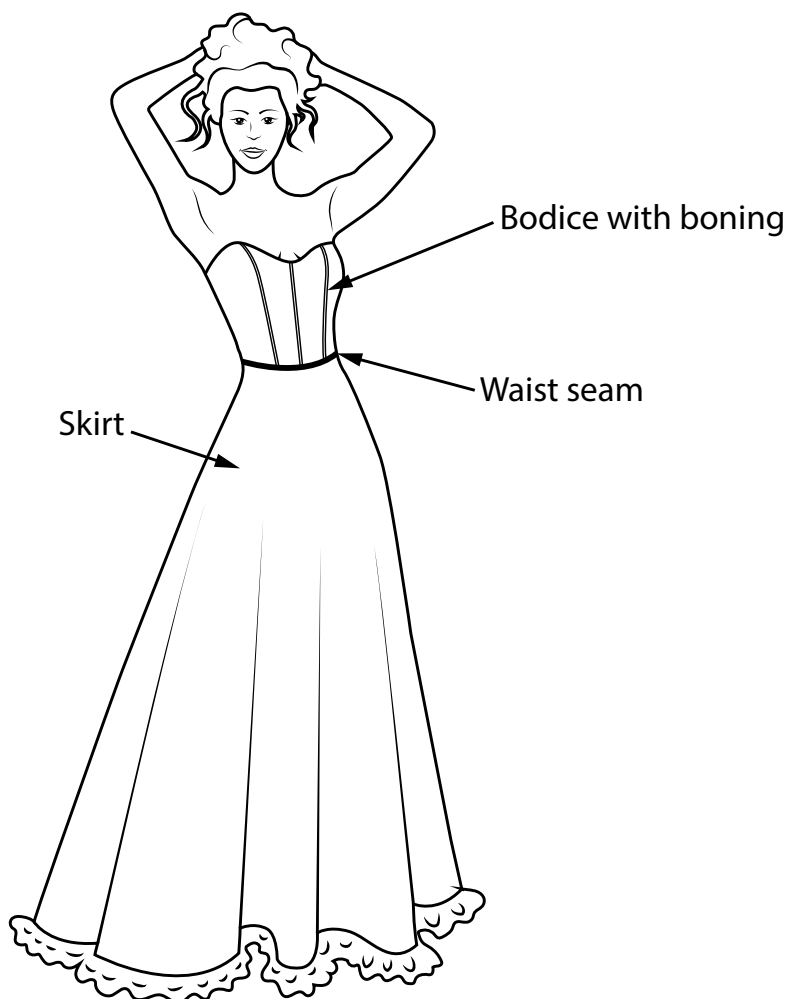
1

2

(Total for Question 5 = 10 marks)

6 Figure 10 shows a wedding dress.

The wedding dress is manufactured from white silk fabric.



(a) Explain **two** characteristics of silk that make it an ideal material from which to make the wedding dress.

(4)

1

2

- (b) The structure of the wedding dress bodice is shaped with boning.

Use notes and sketches, in the space below, to show how you would add boning to shape the bodice.

You will be marked on how you apply your understanding of design and technology, not your graphical skills.

(4)

- (c) Explain **one** way that the wedding dress shown in Figure 10 may cause offence to potential buyers of a wedding dress in different countries.

(2)

- (d) Give **two** different manufacturing methods that could be used to reduce fullness where the top of the skirt meets the bodice at the waist seam.

Explain **one** reason for using each manufacturing method.

(6)

Method 1

Explanation

Method 2

Explanation

(Total for Question 6 = 16 marks)

7 Figure 11 shows a handbag that is manufactured in a batch of 100.

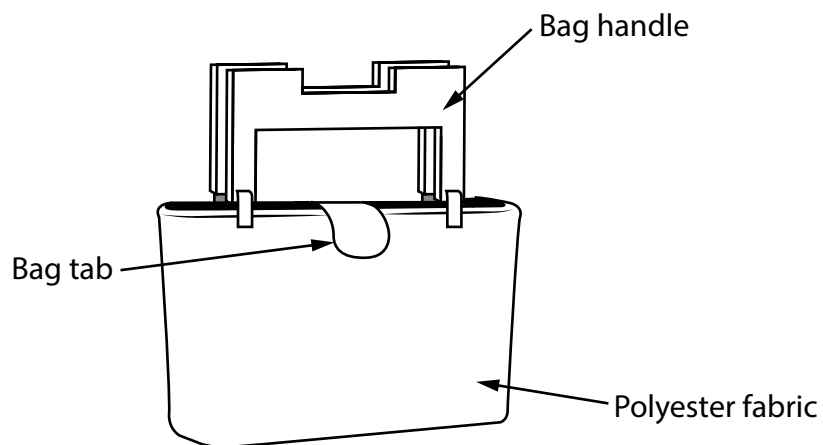
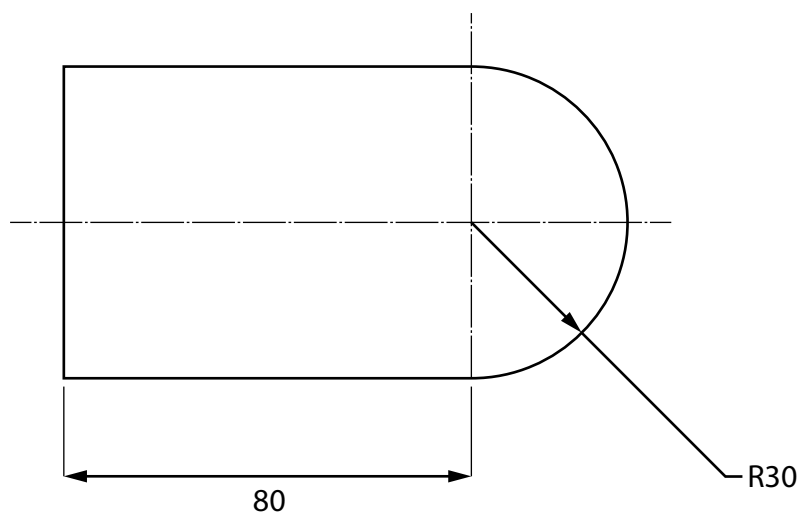


Figure 11

- (a) Name a specific type of fastening that could be used on the bag tab to keep the bag closed.

(1)

Figure 12 shows the bag tab which has been made from polyester using computer-aided manufacturing (CAM).



All dimensions in mm

Figure 12

(b) Explain **two** advantages of using CAM to manufacture the bag tab.

(4)

1

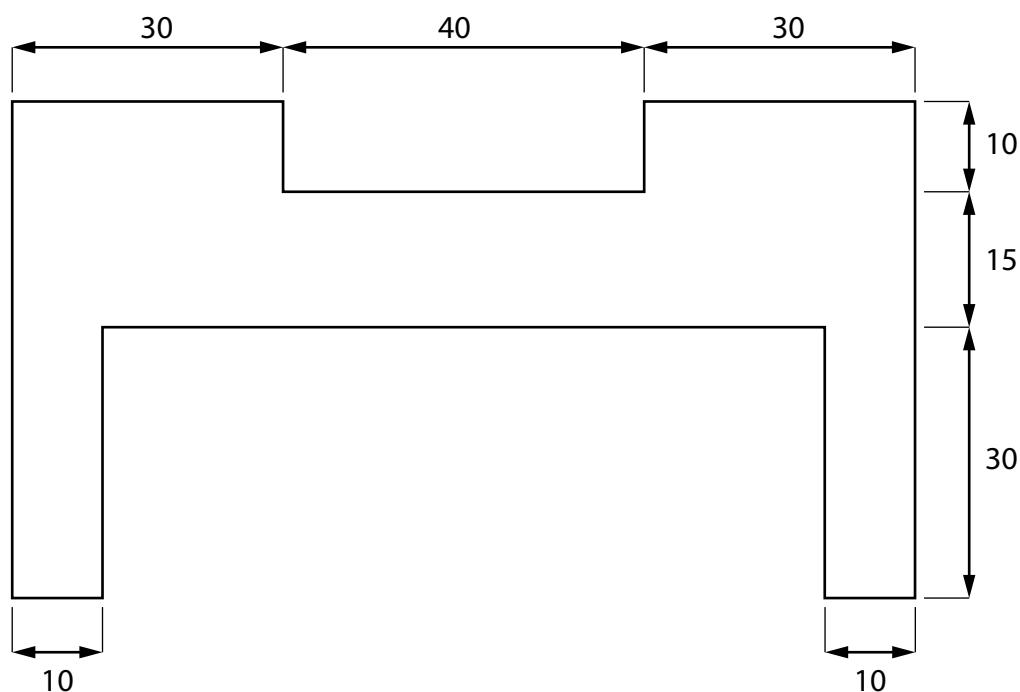
2

(c) Figure 13 shows a dimensioned drawing of a template for the bag handle.

The template will be used to mark out the bag handle and will be made from 5 mm thick material.

Produce an isometric drawing of the template on the grid provided.

(5)



All dimensions in mm

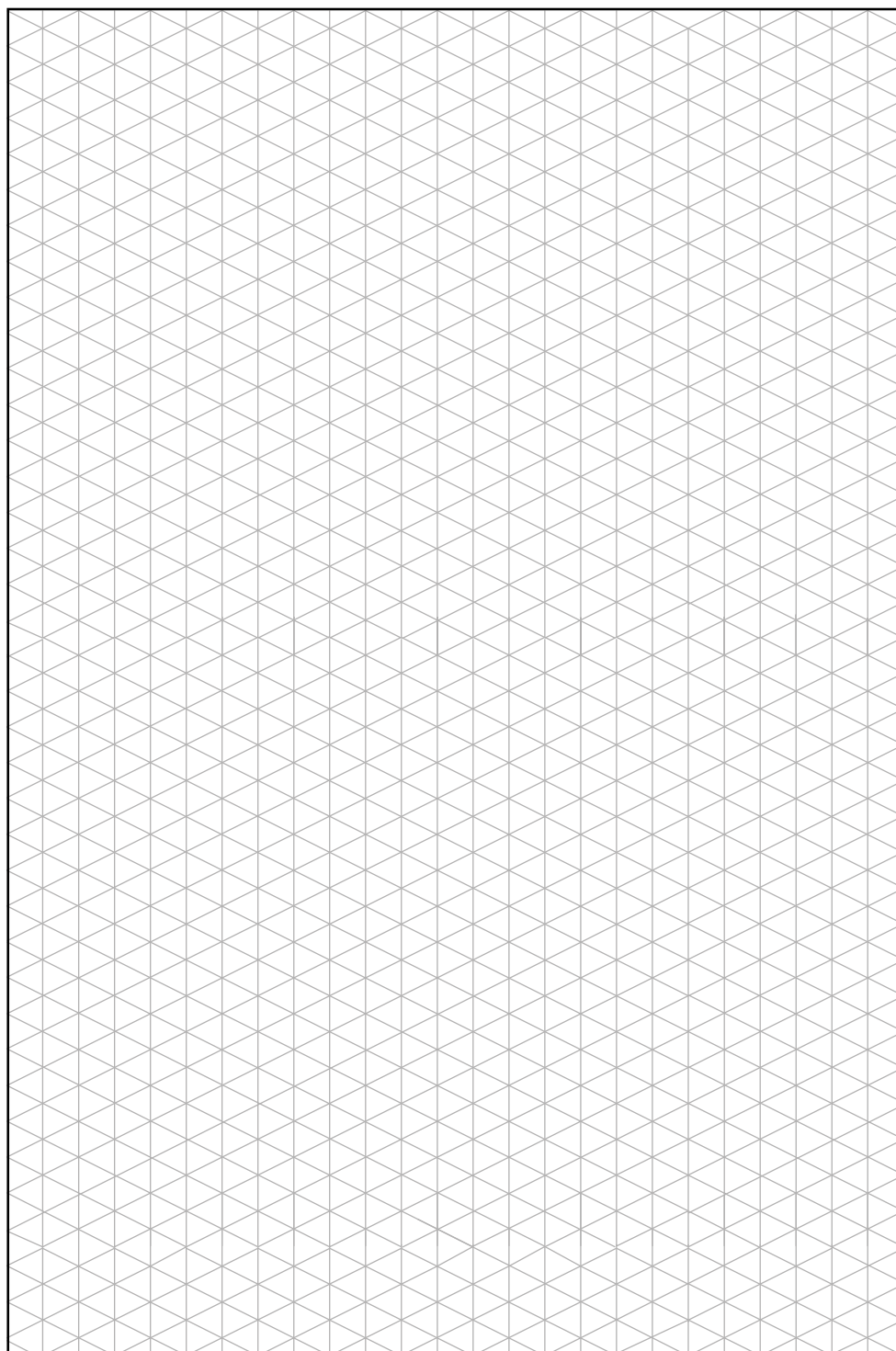
Diagram not to scale

Figure 13

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5 mm isometric grid



(d) Explain **two** disadvantages of using a template to mark out the bag handle.

(6)

1

2

(Total for Question 7 = 16 marks)

- 8 Figure 14 shows a pair of swim shorts manufactured from a blended fabric of nylon and elastane.

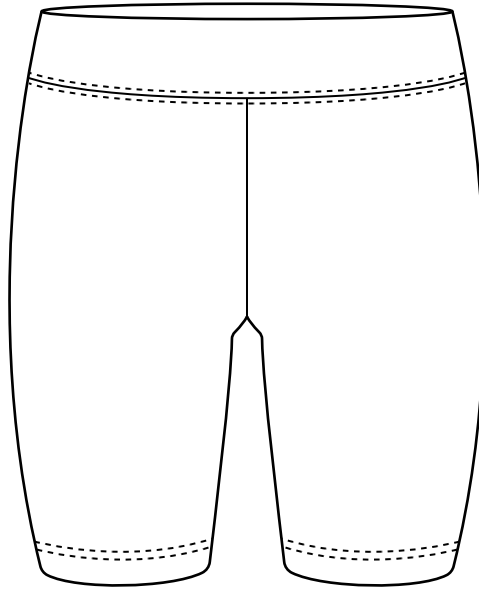


Figure 14

Manufacturing swim shorts from nylon and elastane is cost effective.

- (a) Explain **one other** benefit of manufacturing the swim shorts from a blended fabric of nylon and elastane.

(2)

- (b) Explain **one** cost factor that will have been considered when selecting a blended fabric of nylon and elastane as the material from which to manufacture the swim shorts.

(3)

(c) Explain **two** quality control checks that would be carried out on the swim shorts before they are allowed to leave the factory.

(4)

1

2

(d) The swim shorts are manufactured in China and sold around the world.

Figure 15 shows some additional information about the swim shorts.

Source of nylon	Crude oil from UAE and Saudi Arabia
Country of manufacture	China
Potential market	Holiday makers, athletes, casual swimmers and schoolchildren
Scale of production	Batch

Figure 15

Analyse the information in Figure 15.

Evaluate the swim shorts with reference to social factors including:

- use for different social groups
- trends / fashion
- popularity.

(9)

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(Total for Question 8 = 18 marks)

TOTAL FOR SECTION B = 60 MARKS
TOTAL FOR PAPER = 100 MARKS

