



Western Australian Certificate of Education Examination, 2015

Question/Answer Booklet

Textiles

Number of additional

answer booklets used

(if applicable):

MATERIALS DESIGN AND Please place your student identification label in this box **TECHNOLOGY** Stage 3 **Section Three** Student Number: In figures In words Place a tick (✓) in one of the following boxes to indicate your Time recommended for this section specialised context ninety minutes Suggested working time for this section: Wood Materials required for this section Metal

Important note to candidates

To be provided by the supervisor
This Question/Answer Booklet

To be provided by the candidate

Sections One and Two Question/Answer Booklet

ruler, highlighters

No other items may be taken into the examination room. It is **your** responsibility to ensure that you do not have any unauthorised notes or other items of a non-personal nature in the examination room. If you have any unauthorised material with you, hand it to the supervisor **before** reading any further.

non-programmable calculators approved for use in the WACE examinations

pens (blue/black preferred), pencils (including

coloured), sharpener, correction fluid/tape, eraser,

Standard items:

Special items:

Structure of the examination

The WACE Materials Design and Technology Stage 3 examination consists of a written component worth 50 per cent of the total examination score and a practical (portfolio) component worth 50 per cent of the total examination score.

Structure of this paper

Section	Number of questions available	Number of questions to be answered	Suggested working time (minutes)	Marks available	Percentage of total exam
Section One: Short answer	3	3	20	24	15
Section Two: Extended answer	3	3	40	22	25
Section Three: Candidates to choose one of the following contexts:					
Wood Metal Textiles	5 5 5	5 5 5	90 90 90	67 67 67	60
				Total	100

Instructions to candidates

- 1. The rules for the conduct of Western Australian external examinations are detailed in the Year 12 Information Handbook 2015. Sitting this examination implies that you agree to abide by these rules.
- 2. Answer the questions according to the following instructions.
 - Section Three: Answer **all** of the questions within your specialised field: Wood, Metal or Textiles. Write your answers in this Question/Answer Booklet.
- 3. You must be careful to confine your responses to the specific questions asked and to follow any instructions that are specific to a particular question.
- 4. Spare pages are included at the end of this booklet. They can be used for planning your responses and/or as additional space if required to continue an answer.
 - Planning: If you use the spare pages for planning, indicate this clearly at the top of the page.
 - Continuing an answer: If you need to use the space to continue an answer, indicate in the original answer space where the answer is continued, i.e. give the page number.
 Fill in the number of the question that you are continuing to answer at the top of the page.

Section Three: Sectionalised and extended answer

60% (67 Marks)

You are required to choose **one (1)** of the following options, according to the context you have studied in 2015.

Tick one of the boxes below to indicate your choice of context.

Context	✓	Question	Pages
Wood		7–11	4–14
Metal		12–16	15–25
Textiles		17–21	26–37

Now turn to the relevant pages and answer the questions for the context you have selected.

Spare pages are included at the end of this booklet. They can be used for planning your responses and/or as additional space if required to continue an answer.

Section 1	Three: Wood context	60% (67 Marks)
This secti	on contains five (5) questions. Answer all questions.	
Suggeste	d working time: 90 minutes.	
Question	7	(12 marks)
	a picture of a hammock that has been designed for adults. The hammo	ck has a timber
	For copyright reasons this image cannot be reproduced in the online version of this documer but may be viewed at www.myhammock.com/prodimages/cmarc-1.jpg	ıt,
(a) W	ith reference to its properties, identify a suitable timber for the hammod	k frame. (3 marks)
_		

Before the final material was selected for the frame, it had to be tested to check its physical and mechanical properties.					
Describe in detail a suitable testing method you could use in a school workshop that could help the designer to choose the most suitable material. Use a sketch to help explain your answer. (6 marks)					
Space for sketching					

Question 7 (continued)

(c)	Identify a suitable finish that could be applied to the frame and explain two properties of					
	the finish that will protect the material from the outdoor environment.	(3 marks)				

Question 8 (25 marks)

Design brief

You have been asked by a local furniture company to help it design a new range of outdoor tables for its store. The company has always sold traditional styles of furniture, but in recent times it has seen its sales begin to decline. After conducting market research with a selected group of customers, it discovered that there was a trend toward more modern and stylish furniture.

Design restrictions

The outdoor table must be:

- predominantly wood
- soundly constructed
- capable of being manufactured in quantity
- safe to use
- designed to follow ergonomic design principles
- durable
- stable.

(a)	List seven questions that you could ask the client to get a better idea of the lim	itations. (7 marks)

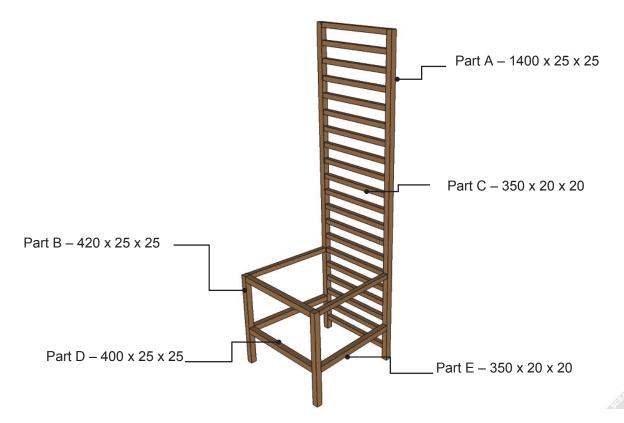
Question 8 (continued)

Define what a trend is and explain how it can impact a target audience.	(3
Outline three techniques that could be used to carry out market research.	(3
	(3
	(3
	(3
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	(3
	(3
	(3
	(3
	(3
	(3
	(3

Design 1			
-			
Design 2			

Question 9 (10 marks)

Using the drawing and price list below, calculate the material requirements and the cost of each component part for making a single chair frame. Complete the table and round your costs to the nearest cent. All sizes are in millimetres.



PINE			
mm	\$/m		
20 x 6	3.92		
40 x 6	6.20		
60 x 6	7.92		
70 x 6	9.23		
90 x 6	10.54		
125 x 6	23.91		

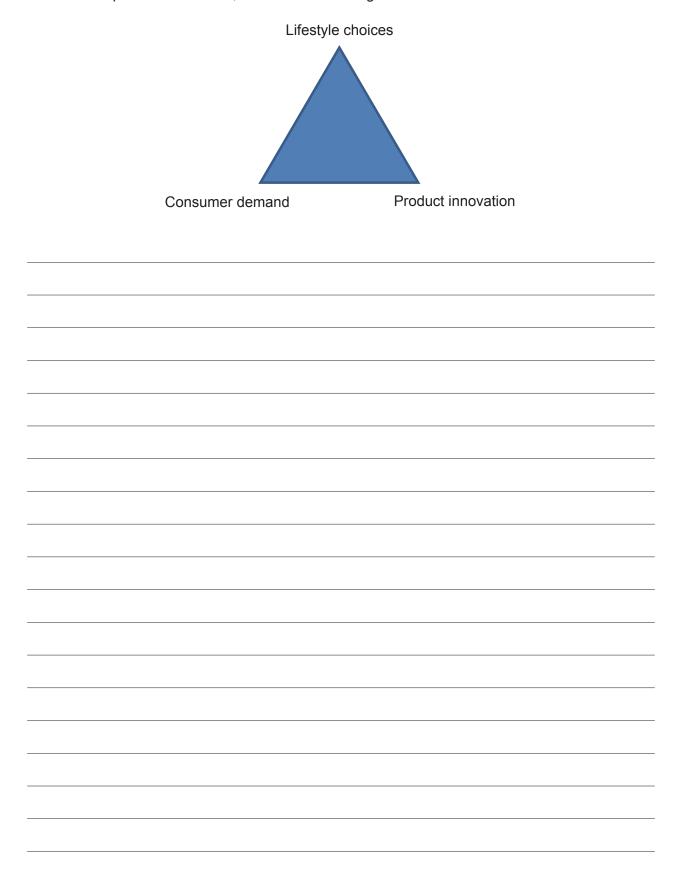
PINE			
mm	\$/m		
20 x 20	5.21		
40 x 20	7.86		
60 x 20	7.92		
70 x 20	12.35		
90 x 20	16.74		
175 x 20	23.91		

PINE			
mm	\$/m		
25 x 25	10.68		
40 x 40	16.32		
60 x 40	21.21		
80 x 40	31.75		
125 x 40	44.69		
60 x 60	39.90		

Part	Material	Size	Number required	Total length (M)	Cost: (\$/m)	Cost: sub-total

Question 10 (10 marks)

Analyse and discuss, using examples, the relationship between lifestyle choices, consumer demand and product innovation, as shown in the diagram below.



Question 10 (continued)		

Question 11 (10 marks)

Because of the environmental degradation that societies are continuing to cause to our planet through carbon emissions, wastage and the clearing of forests, we have a responsibility to design and produce products that last longer, are made from sustainable and recyclable materials, and reduce the impact we make on our environment.

Consider the statement above and explain how the furniture industry can implement strategies to support this statement.				

Question 11 (continued)	

End of questions: Wood

Section Thr	ree: Metal context	60% (67 Marks)
This section	contains five (5) questions. Answer all questions.	
Suggested v	vorking time: 90 minutes.	
Question 12	2	(12 marks)
Below is a p frame and a	icture of a hammock that has been designed for adults. The hamr textile sling.	nock has a metal
	For copyright reasons this image cannot be reproduced in the online version of this docur but may be viewed at www.myhammock.com/prodimages/cmarc-1.jpg	nent,
(a) With	reference to its properties, identify a suitable metal for the hammo	ock frame. (3 marks)

Question 12 (continued)

(b)	Before the final material was selected for the frame, it had to be tested to check its physical and mechanical properties.
	Describe in detail a suitable testing method you could use in a school workshop that could help the designer to choose the most suitable material. Use a sketch to help explain your answer. (6 marks)
	Space for sketching

the finish that will protect the material from the outdoor envi		nvironment.		

Question 13 (25 marks)

Design brief

You have been asked by a local furniture company to help it design a new range of outdoor tables for its store. The company has always sold traditional styles of furniture, but in recent times it has seen its sales begin to decline. After conducting market research with a selected group of customers, it discovered that there was a trend toward more modern and stylish furniture.

Design restrictions

The outdoor table must be:

- predominantly metal
- soundly constructed
- capable of being manufactured in quantity
- safe to use
- designed to follow ergonomic design principles
- durable
- stable.

List seven questions that you could ask the client to get a better idea of the limit	itations. (7 marks)

Define what a trend is and explain how it can impact a target audience.	(3 n	
Outline three techniques that could be used to carry out market research.	(3	
Outline three techniques that could be used to carry out market research.	(3	
Outline three techniques that could be used to carry out market research.	(3	
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Outline three techniques that could be used to carry out market research.	(3	
Outline three techniques that could be used to carry out market research.	(3	

Study the information provided in the design brief and design restrictions stated in

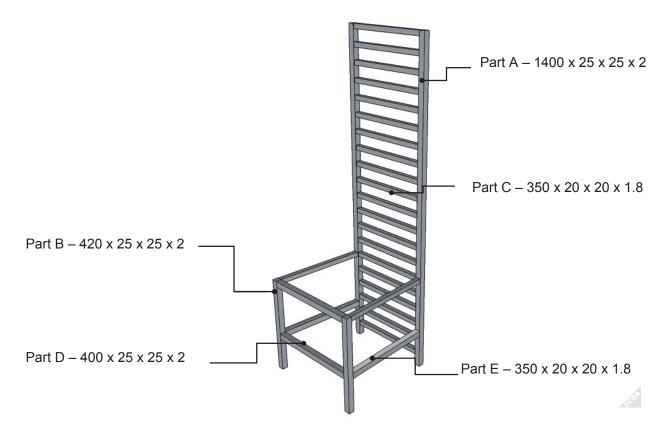
Question 13 (continued)

(d)

	plain the suitability of your concepts. (12
Design 1	
D : 0	
Design 2	

Question 14 (10 marks)

Using the drawing and price list below, calculate the material requirements and the cost of each component part for making a single chair frame. Complete the table and round your costs to the nearest cent. All sizes are in millimetres.



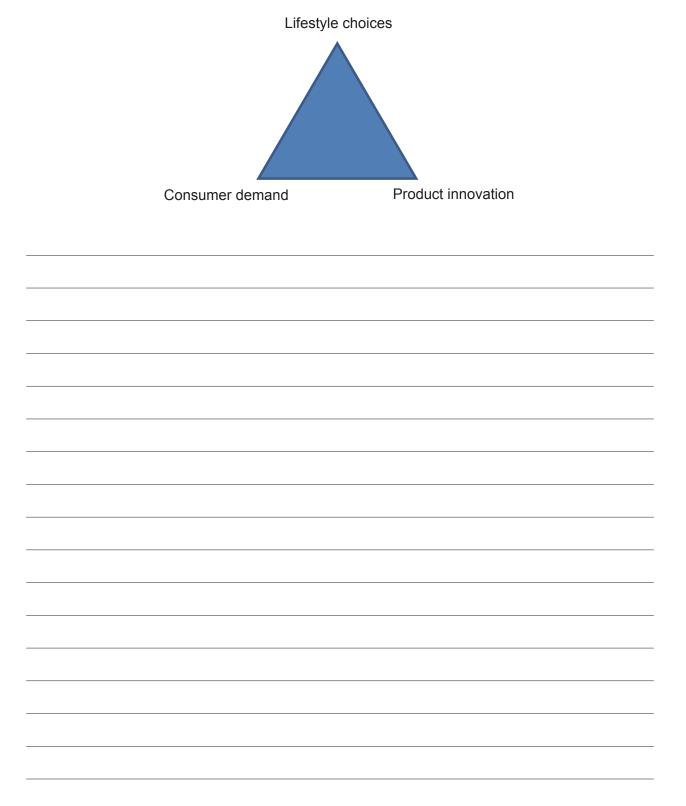
Square Hollow Section				
13 x 13 x 1.8	\$8.76			
15 x 15 x 1.8	\$9.49			
20 x 20 x 1.6	\$7.78			
20 x 20 x 1.8	\$8.68			
25 x 25 x 1.6	\$9.59			
25 x 25 x 2.0	\$12.25			
30 x 30 x 1.6	\$14.78			
30 x 30 x 2.0	\$17.69			
40 x 40 x 1.6	\$20.45			
50 x 50 x 2.0	\$29.85			

E.R.W. Tubing Round				
12.7 x 1.2	\$3.23			
16.0 x 1.2	\$2.97			
16.0 x 1.6	\$3.49			
19 x 1.2	\$3.23			
19 x 1.4	\$3.38			
22.2 x 1.2	\$3.82			
22.2 x 1.6	\$4.90			
25 x 1.2	\$4.49			
25 x 1.6	\$4.85			
28.6 x 1.6	\$3.94			

Part	Material	Size	Number required	Total length (M)	Cost: (\$/m)	Cost: sub-total

Question 15 (10 marks)

Analyse and discuss, using examples, the relationship between lifestyle choices, consumer demand and product innovation, as shown in the diagram below.



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MATERIALS DESIGN AND

METAL CONTEXT

Question 16 (10 marks)

Because of the environmental degradation that societies are continuing to cause to our planet
through carbon emissions, wastage and the clearing of forests, we have a responsibility to
design and produce products that last longer, are made from sustainable and recyclable
materials, and reduce the impact we make on our environment.

Consider the statement above and explain how the metal industry can implement strategies to support this statement.		

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MATERIALS DESIGN AND TECHNOLOGY STAGE 3

METAL CONTEXT

End of questions: Metal

Section	on Three: Textiles context 60)% (67 Marks)
This s	ection contains five (5) questions. Answer all questions.	
Sugge	ested working time: 90 minutes.	
Quest	ion 17	(12 marks)
	is a picture of a hammock that has been designed for adults. The hammock and a textile sling.	has a timber
	For copyright reasons this image cannot be reproduced in the online version of this document, but may be viewed at www.myhammock.com/prodimages/cmarc-1.jpg	
(a)	With reference to its properties, identify a suitable textile for the hammock s	iling. (3 marks)

(b)	Before the final material was selected for the sling, it had to be tested to check its physical and mechanical properties.					
	Describe in detail a suitable testing method you could use in a school workshop that could help the designer to choose the most suitable material. Use a sketch to help explain your answer. (6 marks)					
	Space for sketching					

Question 17 (continued)

(c)	Identify a suitable finish that could be applied to the textile and explain two properties					
	the finish that will protect the material from the outdoor environment.	(3 marks)				

Question 18 (25 marks)

Design brief

You have been asked by a local clothing company to help it design a new range of outdoor clothing for its store. The company has always sold traditional styles of clothes, but in recent times it has seen its sales begin to decline. After conducting market research with a selected group of customers, it discovered that there was a trend toward more modern and stylish clothes.

Design restrictions

The outdoor clothing must:

- be well constructed
- · be capable of being manufactured in quantity
- be water and wind resistant
- be wrinkle resistant
- be durable
- have good thermal properties.

(a)	List seven questions that you could ask the client to get a better idea of the lim	itations. (7 marks)

Question 18 (continued)

Define what a trend is and explain how it can impact a target audience.	(3 r
Outline three techniques that could be used to carry out market research.	(3
Outline three techniques that could be used to carry out market research.	(3 ו
Outline three techniques that could be used to carry out market research.	(3)
Outline three techniques that could be used to carry out market research.	(3)
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Outline three techniques that could be used to carry out market research.	(3
Outline three techniques that could be used to carry out market research.	(3 1
Outline three techniques that could be used to carry out market research.	(3)

Design 1	
Design 2	

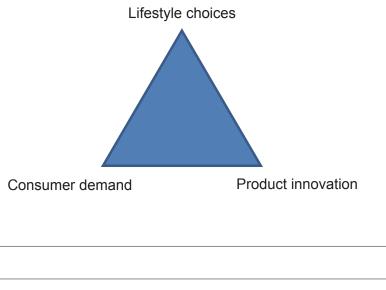
Question 19 (10 marks)

		the near
* * * * * * * * * * * * * * * * * * *		
	For copyright reasons this image cannot be reproduced in the online version of this docume	nt.

Size 12 View A costing			
Materials	Quantity	Cost per unit	Cost per garment
Polyester delustred satin			
Lining			
Fusible interfacing			
Nylon net petticoat			
30 cm Open-ended bodice zip	1		
20 cm Skirt zip	1		

Question 20 (10 marks)

Analyse and discuss, using examples, the relationship between lifestyle choices, consumer demand and product innovation, as shown in the diagram below.



Question 21 (10 marks)

Because of the environmental degradation that societies are continuing to cause to our planet through carbon emissions, wastage and the clearing of forests, we have a responsibility to design and produce products that last longer, are made from sustainable and recyclable materials, and reduce the impact we make on our environment.

Consider the statement above and explain how the textiles industry can implement strategies to support this statement.		

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MATERIALS DESIGN AND

TEXTILES CONTEXT

End of questions: Textiles

Additional working space		
Question number:		

ACKNOWLEDGEMENTS

Section One

Question 1

Image 1 Safety sign 1 [Image]. (n.d.). Retrieved January 21, 2015, from

http://images.labelbar.co.uk/images/products/zoom/1359544428-

73168100.gif

Image 2 Konieczny, R. (2007, February 24). Safety sign 2 [Image]. Retrieved

January 21, 2015, from http://commons.wikimedia.org/wiki/File:Sign_

eyewash.svg

Image 3 NewForestFootwear. (n.d.). Safety sign 3 [Image]. Retrieved January

21, 2015, from www.newforestfootwear.com/resources/wp-

content/uploads/2011/03/p1-6.jpg

Question 2

Figure 1 Mobile phone [Image]. (n.d.). Retrieved January 21, 2015, from

http://cdn0.mos.techradar.futurecdn.net/art/mobile_phones/Huawei/As

cendMate/Review/huawei-mate5-420-90.jpg

Section Two

Question 4

Image 1 Portable speaker (orange) [adapted image]. (n.d.). Retrieved January

21, 2015, from www.amazon.com/ECOXGEAR-Waterproof-Wireless-

Bluetooth-Speaker/dp/B005D91G38/ref=pd_sim_e_3?ie

=UTF8&refRID=1DX7AZJVAX5AF1X8FFGZ

Image 2 Portable speaker [adapted image]. (n.d.). Retrieved January 21, 2015,

from http://ecx.images-amazon.com/images/I/51aKQQHEuwL. SX425

_.jpg

Question 5

Image 1 Old computer [image]. (2014). Retrieved January 21, 2015, from

http://oldcomputers.net/appleii.html

Image 2 Modern computer [image]. (2012). Retrieved January 21, 2015, from

www.nfcworld.com/wp-content/uploads/2012/09/hp-envy-x2-nfc-

460.jpg

Section Three

Question 7 Hammock [adapted image]. (n.d.). Retrieved January 21, 2015, from

www.myhammock.com/prodimages/cmarc-1.jpg

Question 12 Hammock [adapted image]. (n.d.). Retrieved January 21, 2015, from

www.myhammock.com/prodimages/cmarc-1.jpg

Question 17Hammock [adapted image]. (n.d.). Retrieved January 21, 2015, from www.myhammock.com/prodimages/cmarc-1.jpg

Question 19 Adapted from: Simplicity Creative Group. (n.d.). *Simplicity dress pattern* [Image].

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