

Surname	Centre Number	Candidate Number
Other Names		0

**GCSE**

4101/01



S16-4101-01

DESIGN AND TECHNOLOGY**UNIT 1****FOCUS AREA: Graphic Products**

A.M. TUESDAY, 24 May 2016

2 hours

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
Section A	1.	15
	2.	10
	3.	10
	4.	25
Section B	5.	10
	6.	15
	7.	20
	8.	15
Total	120	

4101
010001**ADDITIONAL MATERIALS**

You will need basic drawing equipment, coloured pencils and a calculator for this examination.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet. Where the space is not sufficient for your answer, continue at the back of the book, taking care to number the continuation correctly.

You are reminded of the necessity for good English and orderly presentation in your answers.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question.

Section A

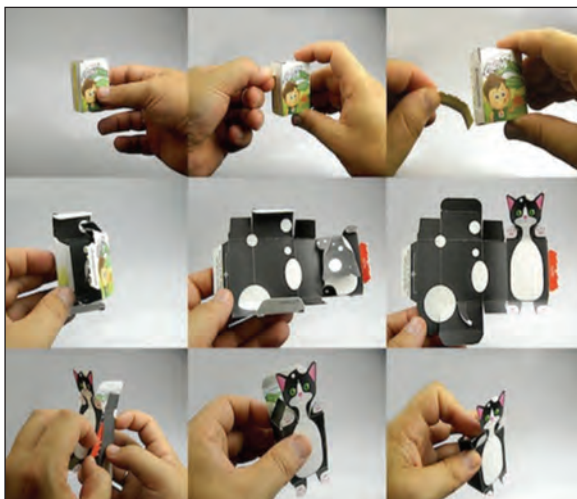
Marked out of 60 60 minutes

1. This question is about Product Analysis. It is worth a total of 15 marks.

The photographs below show packaging for raisins sold in Europe that are designed to appeal to young children.



The packaging can be disassembled and turned into various animals and characters.



- (a) The packaging is made from 480 micron folding boxboard.
- (i) State **one** property of 480 micron boxboard that makes it suitable to use for the packaging. [1]
- Property:
- (ii) State why the boxboard must be a duplex board. [1]
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(b) Explain why the manufacturer has produced boxes that can be transformed into various animals and characters. [2]

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(c) (i) The package is made using batch production. Explain why this is the most suitable scale of production. [2]

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(ii) Explain the disadvantages to the raisin company of producing such a complex package. [3]

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(iii) Explain why sales of the raisins have increased amongst consumers older than the company's target market. [3]

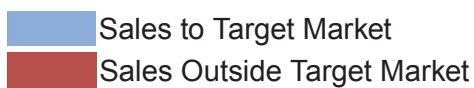
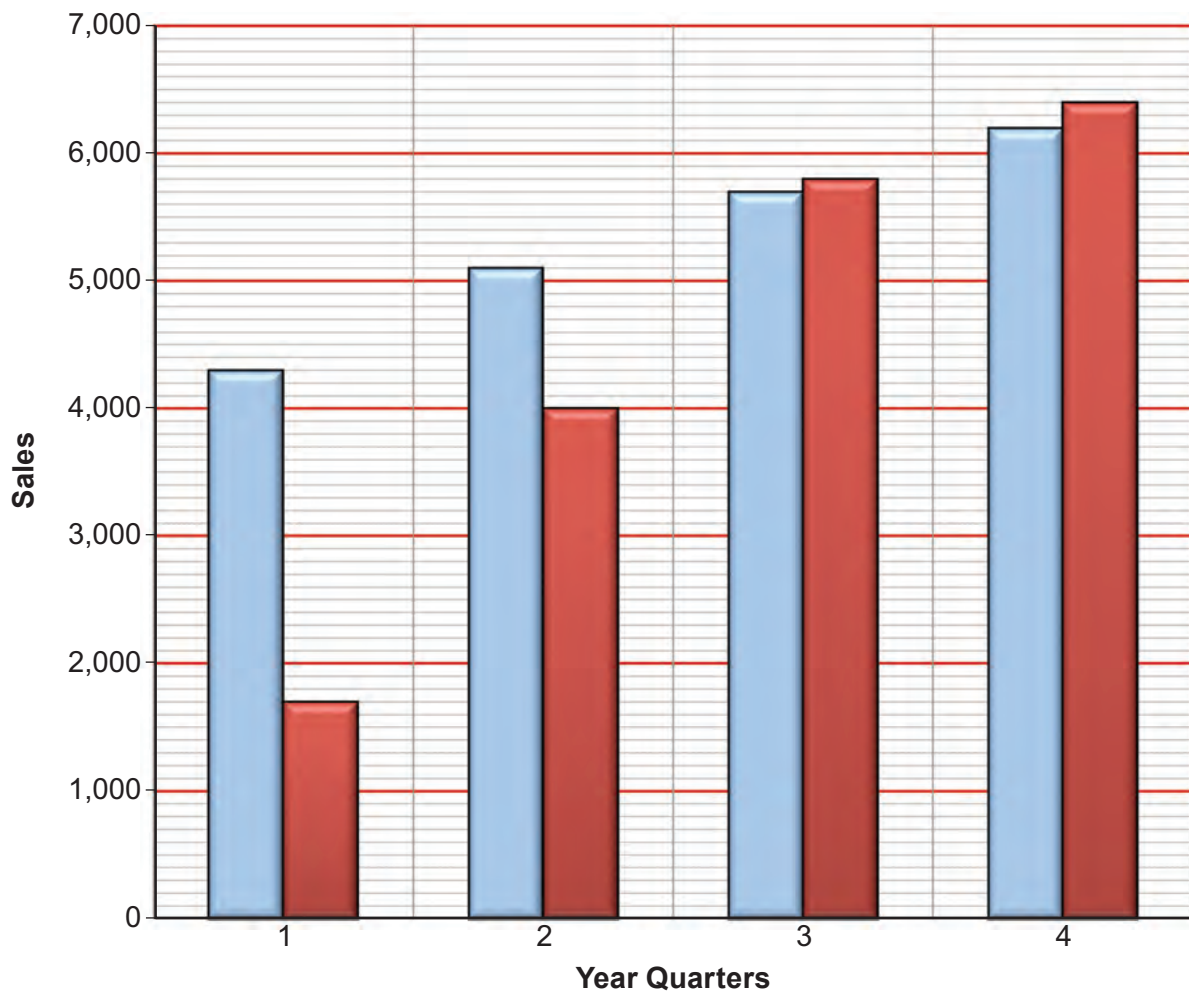
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(d) Study the graph below which shows the quarterly sales for the raisin boxes for the year.



Total Yearly Sales = 39,200

- (i) State how many boxes of raisins were sold in the first quarter of the year. [1]



- (ii) Calculate as a percentage how many raisin boxes were sold in the last quarter of the year. (*Show all your workings.*) [2]

2. This question is about the general issues of Design & Technology. It is worth a total of 10 marks.

(a) (i) State the function of the three organisations represented by the logos shown below. [1]



(ii) Some products carry a trademark or logo of the BSI and the CEN as shown below. State which logo belongs to **each** organisation.

	
..... [1] [1]

(b) (i) Describe how designers will use a life cycle analysis when designing a new product or re-designing an existing one. [2]

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(ii) Explain what you understand by the term 'sustainable design'. [2]

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(c) Explain how the Packaging (Essential Requirements) Regulations (P(ER)R) 2003 affect packaging design. [3]

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4. This question is about the Design Process and how it is used. It is worth a total of 25 marks.

(a) (i) State **two** activities designers can undertake to carry out research. 2 × [1]

I. II.

(ii) State **two** areas included in a design specification. 2 × [1]

I. II.

(b) Planning the manufacture of a product includes many considerations. Name a consideration and explain its importance to the success of a product.

Planning consideration: [1]

Importance:

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[2]

- (c) A shoe company called 'Eco-Step' is trying to be more sustainable by saving on bulky packaging for their new range of slippers pictured below. They are trying to avoid the use of bulky boxes and expensive bags.



The company would like you to design a new logo and an innovative method to display a pair of slippers.

The company states that:

- your logo must convey the company's ethical and sustainable approach;
- your design proposal must be lightweight and be able to display the slippers;
- your proposal must include the company's logo and any relevant information (barcode, recycling symbols, product description, slipper size etc.).

- (i) Draw your design for the company's logo in the space provided.

[3]

A large empty rectangular box provided for drawing the company's logo.

Design your solution for the innovative method to display a pair of slippers in the space provided.
Marks will be awarded for:

- (ii) an innovative method to display a pair of slippers; [4]
- (iii) a fully annotated and coloured sketch of the display method; [5]
- (iv) showing the company's logo and spaces for the relevant information; [2]
- (v) the quality of the drawing and presentation. [4]



Section B

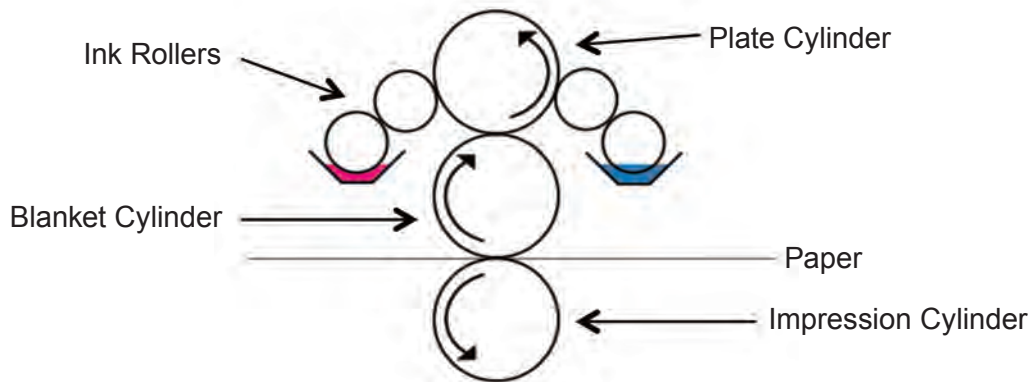
Marked out of 60 60 minutes

5. This question is about Commercial Manufacturing Processes. It is worth a total of 10 marks.

(a) Draw lines connecting each of the stages of production to the correct process. [3]

<i>Stage of production</i>	<i>Process</i>
Pre-Press	Binding
On Press	Colour Separation
Finishing	Screen Printing

(b) Name the printing press that uses water to displace inks as shown below.



Name: [1]

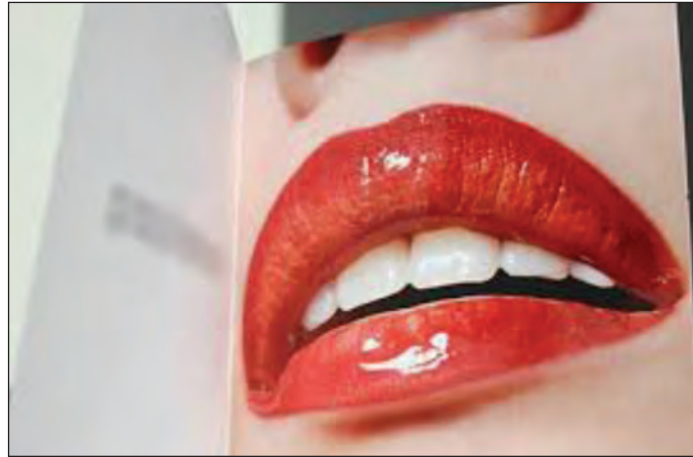
(c) Explain the quality control steps taken by printers to ensure that products are printed correctly. [2]

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(d) The product shown has had a UV spot varnish applied during the finishing process.



Explain how the manufacturer would apply UV spot varnish.

[2]

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(e) Describe what happens to a document during the pre-press stage of commercial printing.

[2]

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6. This question is about Materials and Components. It is worth a total of 15 marks.

(a) Complete the table by stating which material from the list below correctly matches each description. 3 × [1]

Layout Paper Mounting Board Cartridge Paper Tracing Paper

<i>Name of Material</i>	<i>Description</i>
.....	<ul style="list-style-type: none"> • Lightweight paper. • Cheap to manufacture. • Used for initial ideas as it takes a variety of media.
.....	<ul style="list-style-type: none"> • Thin lightweight paper. • Expensive to manufacture. • Is used to make copies of drawings.
.....	<ul style="list-style-type: none"> • Heavyweight material. • Used for a variety of reasons including displaying work and modelling. • Can come in different colours.

(b) Colours can be changed to become shades, tints and tones by adding either black, white or grey to a colour. Study the colour bars below and correctly identify each bar.



Adding white to a colour [1]



Adding grey to a colour [1]

(c) Explain how designers can use hot and cold colour schemes in their work. [2]

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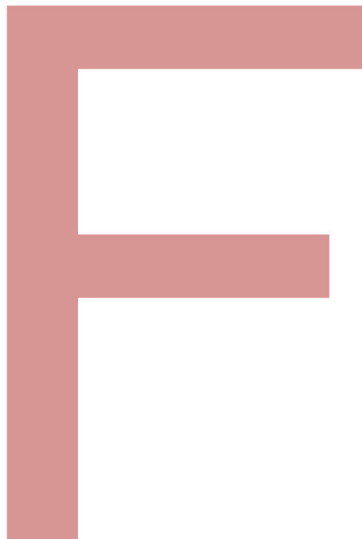
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- (d) (i) Complete the table by selecting the correct typographical term from the list below to match each description. 3 x [1]

Leading Kerning Indent Upper Case Alignment

<i>Typographical Term</i>	<i>Description</i>
.....	Organising text into columns. There are 4 basic styles of this term including justified and centred.
.....	Adjusting the space between letters, to avoid patterns appearing and letters looking too uniform.
.....	The first line of a body of text that starts further from the margin than the rest of the text.

- (ii) Change the letter below by sketching the parts needed to make it a serif font. [2]



- (e) Describe how micro and nano technologies have allowed designers to become more innovative when designing graphic products. [3]

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7. This question is about Tools, Equipment and Making. It is worth a total of 20 marks.

(a) (i) Name the piece of equipment shown below. [1]



Name:

(ii) State **two** pieces of equipment a designer would use to render their work. [2]

I.

II.

(b) Other than die cutting, give **two** different uses for the machine shown below.



Use 1:

[1]

Use 2:

[1]

(c) Identify **two** important safety checks that need to be carried out before manufacturing a product using CAM (Computer Aided Manufacture).

Check I: [1]

Check II: [1]

(d) The following logo has been designed using computer software.



(i) State the most suitable type of software to use. [1]

(ii) Explain why this is the most suitable type of software. [2]

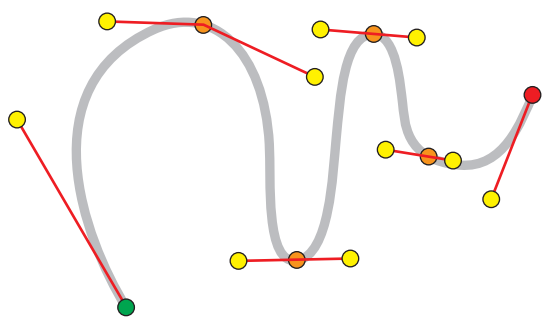
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(e) (i) State the name of the shape shown below. [1]



Name:

(ii) State the purpose of the coloured nodes. [1]

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(iii) Explain what has been done to the digital image below to make it clearer. [2]



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(iv) Describe in detail what would happen to the digital image by adjusting the levels. [3]

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(v) Explain how using layers can help a designer when working on a digital image. [3]

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8. This question is about ICT, CAD, CAM, Systems and Processes. It is worth a total of 15 marks.

(a) Complete the table by choosing the correct file format from the list below for **each** task described. [2]

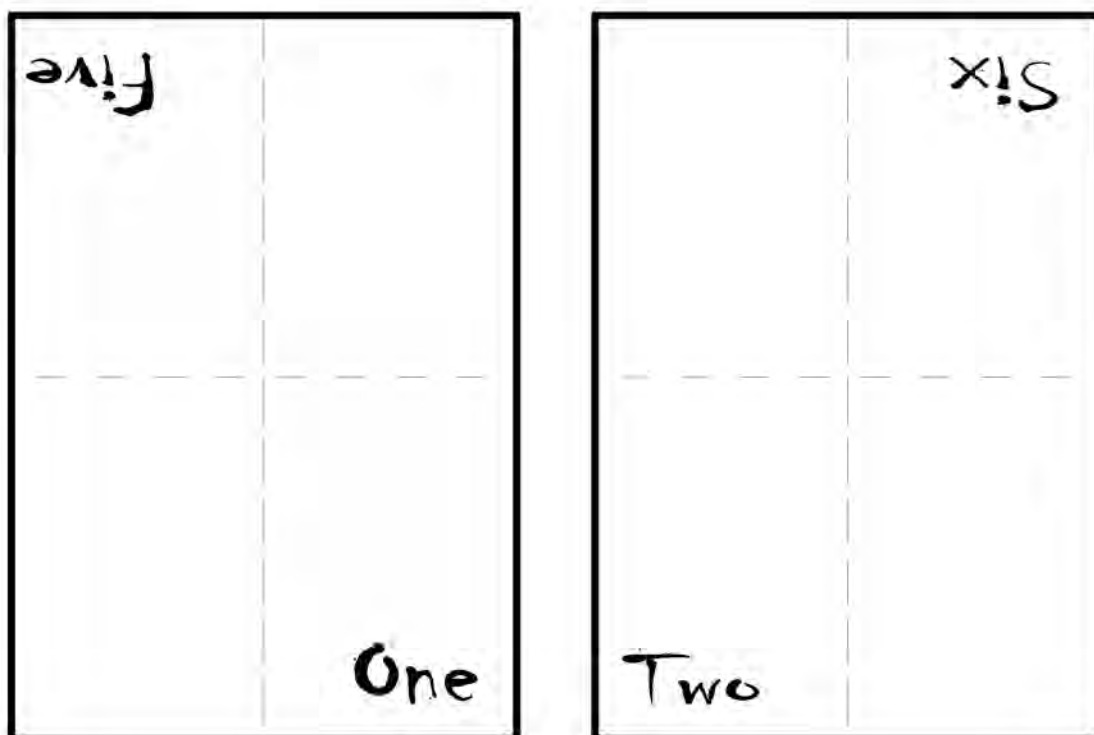
pdf	html	gif
<i>File Format</i>	<i>Task</i>	
.....	Used when saving simple images like logos or for animations, but is unable to support colour photographs.	
.....	Makes vector, bitmap and text documents easy to transfer for use on other software or operating systems.	

(b) The following 8 page booklet is to be printed on a desktop printer from a single sheet of A4 paper, folded and then trimmed.

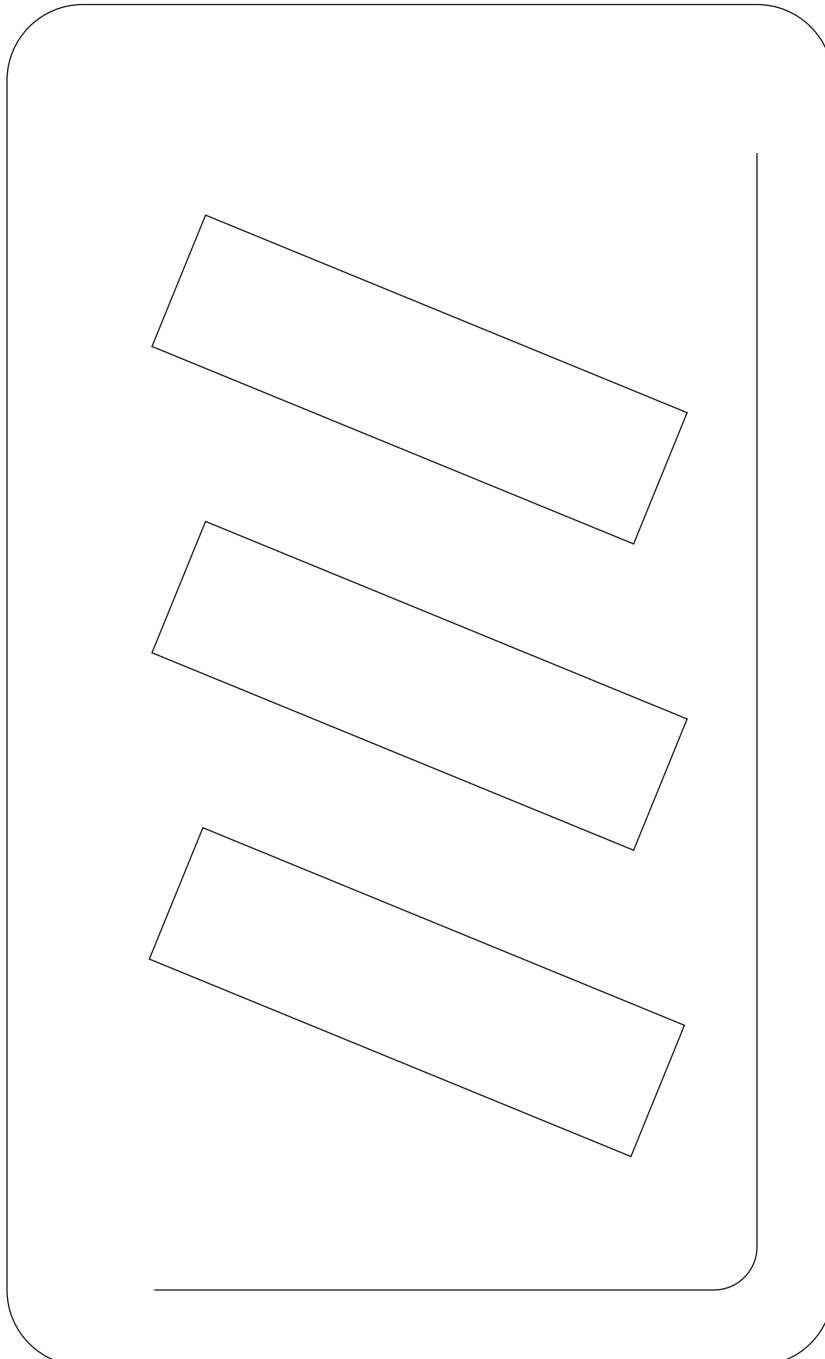


Complete the diagram by correctly numbering the pages.

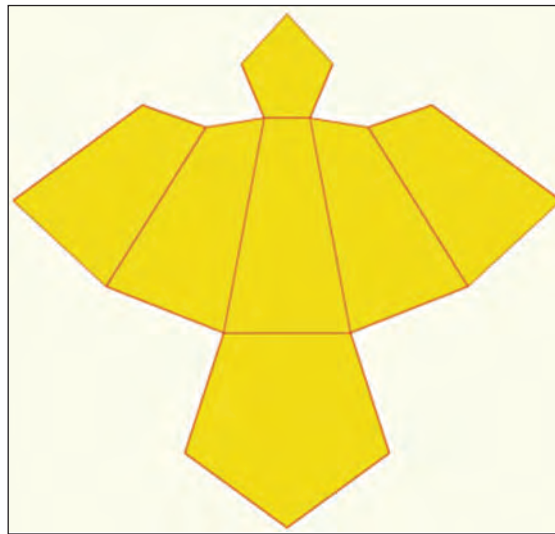
4 × [1]



- (c) The road sign below is constructed using straight lines and quarter circles. Use drawing tools to add the missing parts of the drawing 10 mm inside the outline of the sign. [5]
Marks will be awarded for showing all construction lines. The construction has been started for you.

Examiner
only

(d) The following net is to be used as a charity box.



In the space provided, make a 3D drawing of the shape that the net will create.

[4]

END OF PAPER

For continuation only.

Lined area for continuation with horizontal dotted lines.