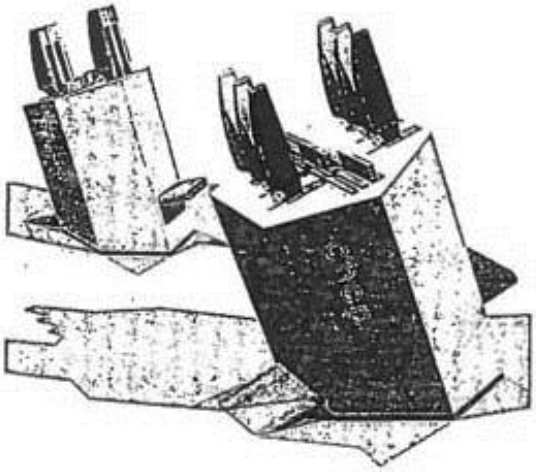
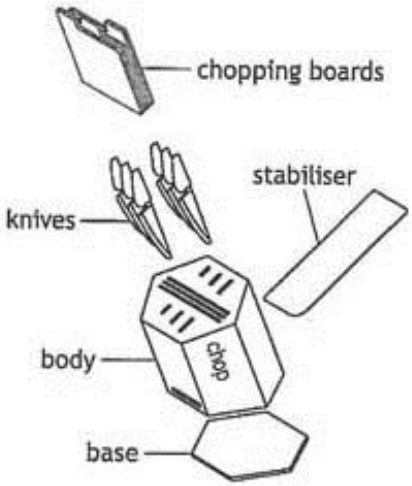
Candidate 1 evidence

Total marks — 80

Attempt ALL questions

1. A knife and chopping board storage system is shown below. The body is made from sheet metal. A CAD technician produced the rendered 3D CAD illustration and the pictorial line drawing shown below.





A 3D CAD model rather than a physical model of the storage system was created during the development stage.

(a) State two reasons why a 3D CAD model was more suitable than a physical model. 2

A 3D CAD model requires less time to make and so would be quicker to have that early on in the process

Mistakes can be corrected with a button click

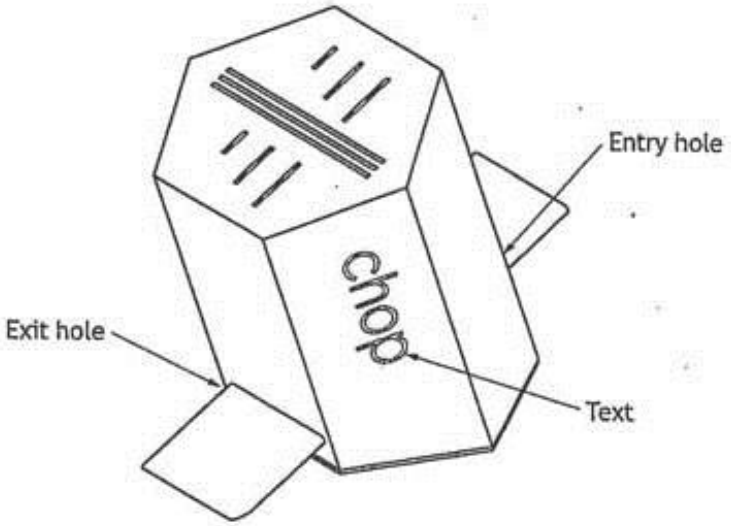
To produce the CAD model the CAD technician was given information about the storage system. One dimension stated: A/F 300mm.

(b) State the meaning of A/F. 1

That is the combined length of sides A-F of the Body shape

1. (continued)

The CAD technician has been asked to produce an appropriate surface development for the storage system and identify where key features will be placed.

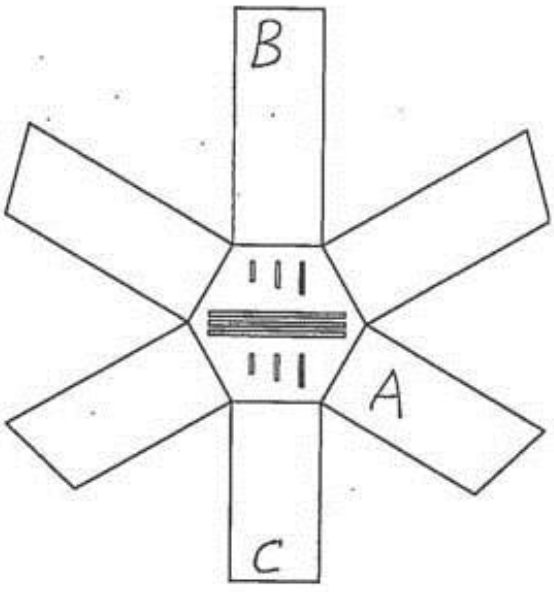


(c) Indicate, on the graphic below, where the Text, Entry hole and Exit hole would be located. 3

Use A to indicate on the panel where the Text would be located.

Use B to indicate on the panel where the Entry hole would be located.

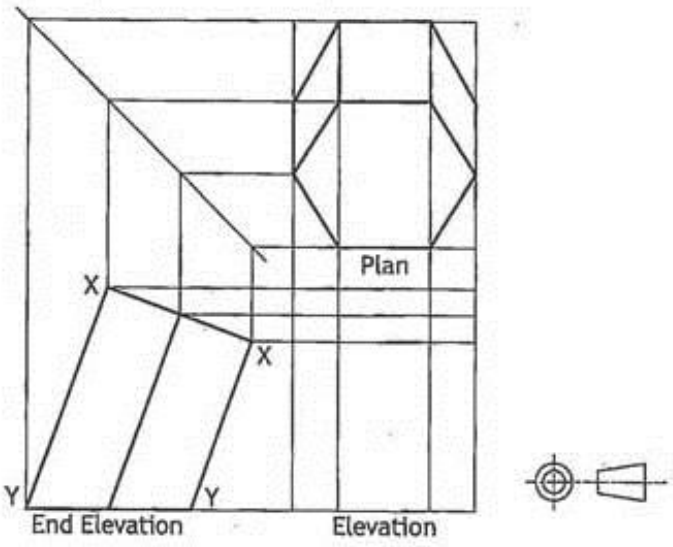
Use C to indicate on the panel where the Exit hole would be located.



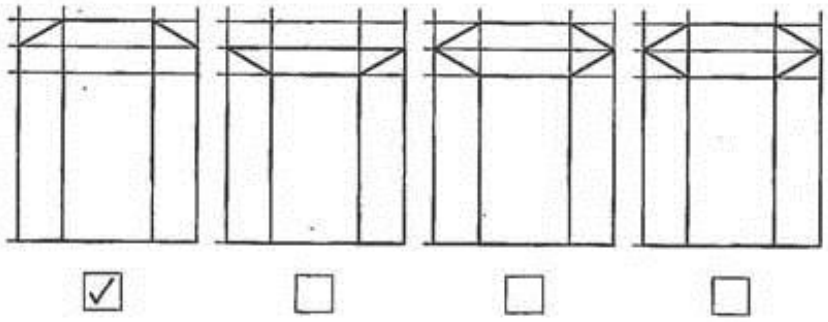
1. (continued)

To aid the production of the storage system the CAD technician was asked to complete the orthographic drawing shown below.

Hidden detail and slots removed for clarity.

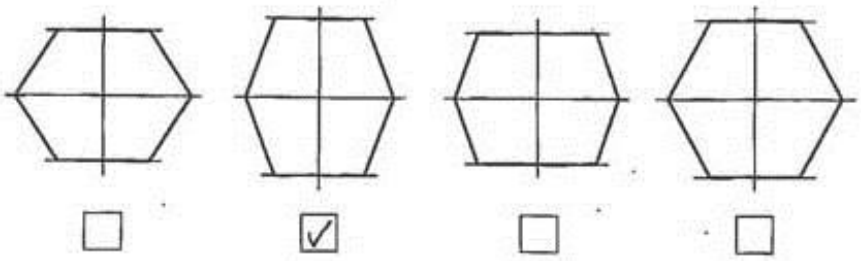


(d) Identify, using a tick (✓), the correct elevation. Ignore wall thickness. 1



A true shape of surface X–X was required.

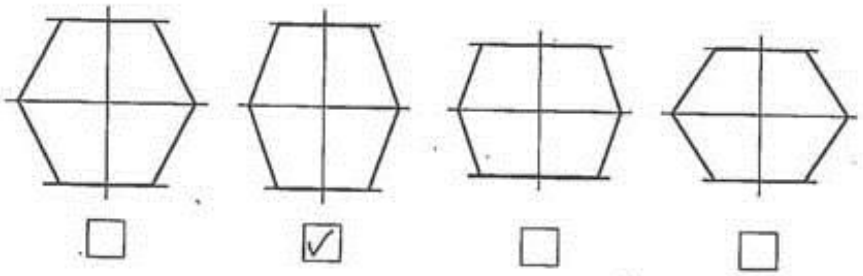
(e) Identify, using a tick (✓), the correct true shape. Use a ruler or trammel to measure. 1



1. **(continued)**

A true shape of surface Y–Y was required.

(f) Identify, using a tick (✓), the correct true shape. Use a ruler or trammel to measure. 1



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1. **(continued)**

The CAD technician was then asked to provide surface developments of the body of the knife block, without the top.

(g) Identify the two correct surface developments, shown opposite, of the knife block when opened out at surface generators 'A' and 'B'.

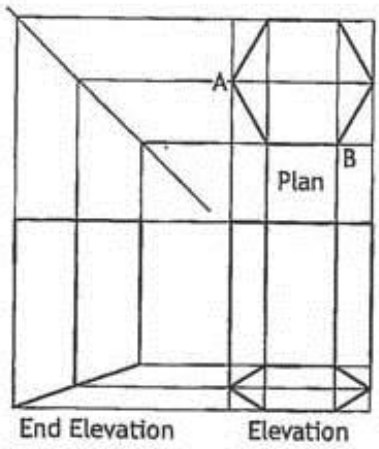
You should refer to the orthographic drawing below.

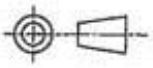
(i) When opened out at generator A, the correct surface development is view. 1

6 *Insert number*

(ii) When opened out at generator B, the correct surface development is view. 1

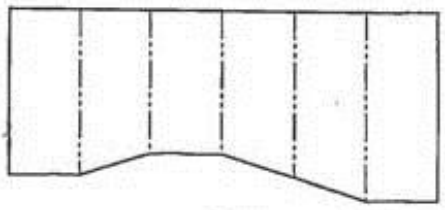
4 *Insert number*



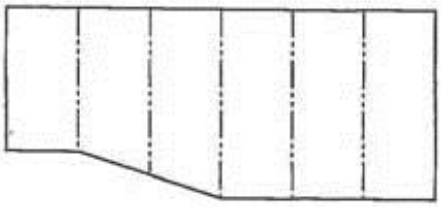


1. (continued)

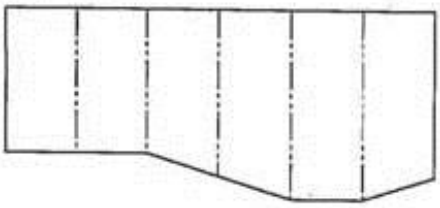
The range of surface developments are show below.



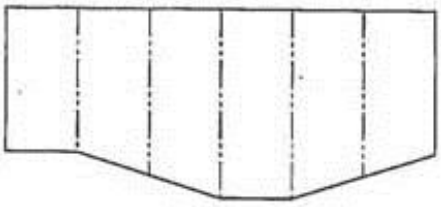
1.



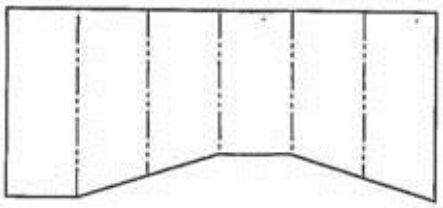
2.



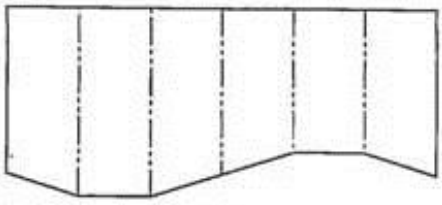
3.



4.



5.



6.

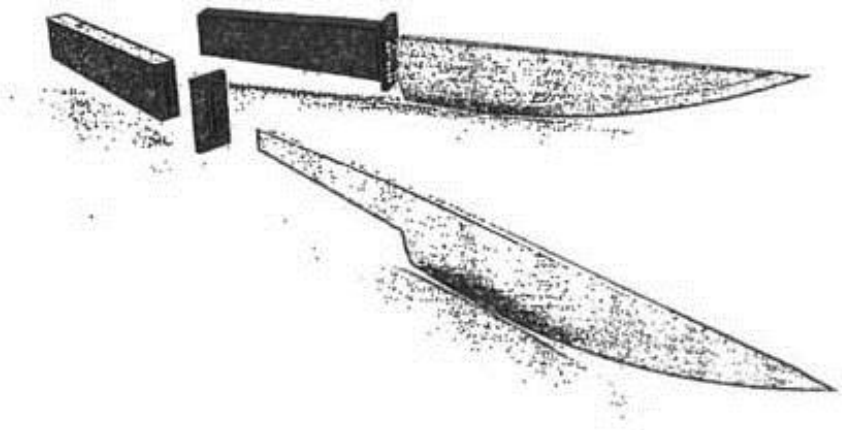
A number of the knife blocks are to be produced from a single sheet of material.

(h) Explain, in terms of environmental impact, why it is important to carefully consider the layout of multiple parts. 1

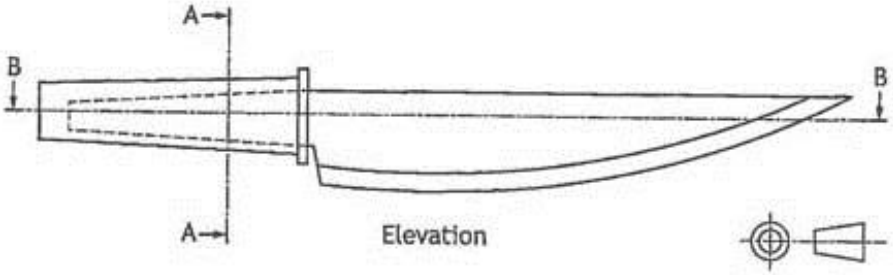
Because if one part is wrong then a number of knife blocks will be scrapped, wasting materials

1. (continued)

(i) A knife set to complement the knife block is to be produced. Rendered pictorials and orthographic views of one knife are shown below.

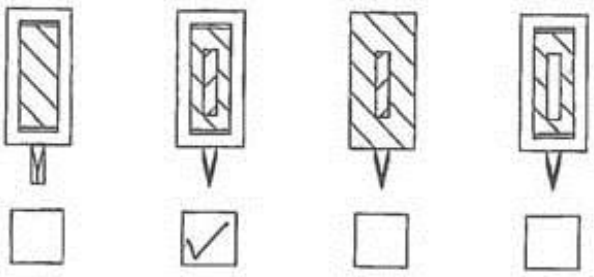


Plan



Elevation

(i) Identify the correct sectional end elevation A-A by ticking (✓) a box below. 1



1. (i) (continued)

(ii) Identify the correct sectional plan **B-B** by ticking (✓) a box below. 1

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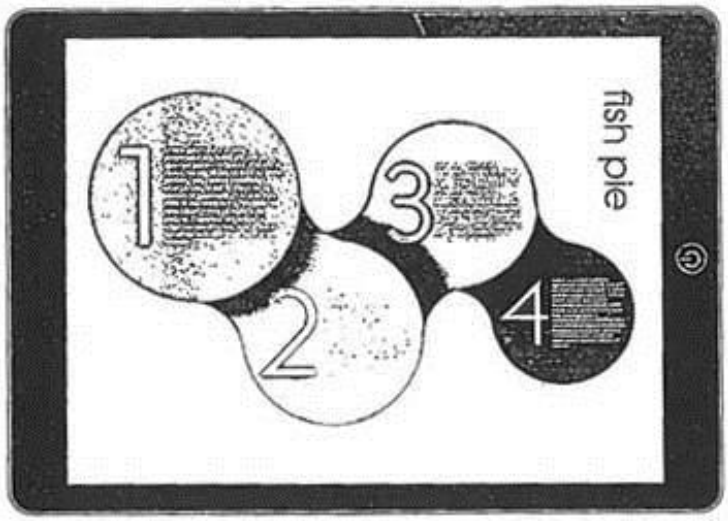
2. A recipe app has been produced. The graphic artist was asked to ensure that the graphic layout was easy to follow.



(a) Describe three ways, other than the numbering system, that the graphic artist has graphically communicated the sequence of the recipe shown above. 3

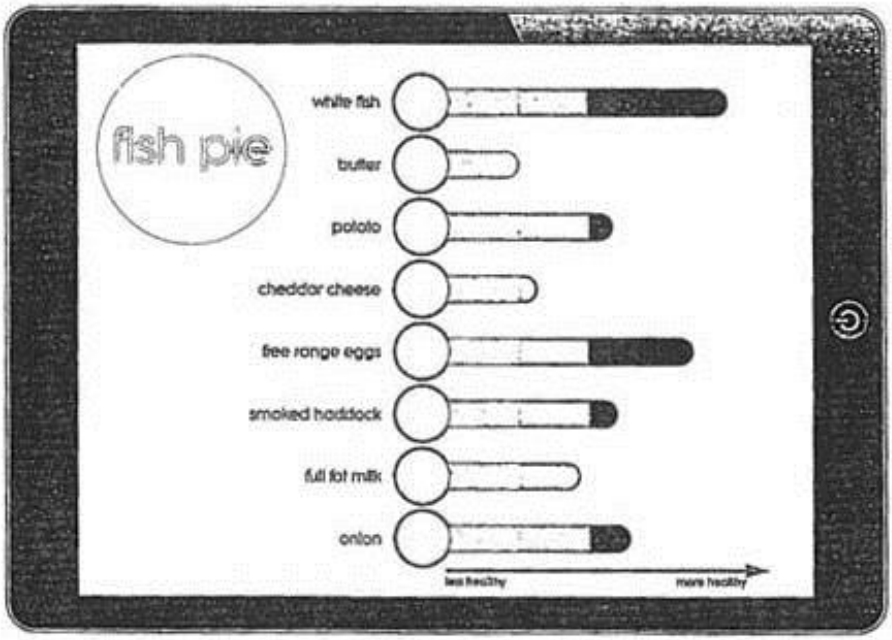
The colours change from cold to warm colours as the sequence goes on
Through 'Depth' each next in the sequence has a shadow going on to the next in the sequence
The steps go from left to right, showing the sequence through direction

(b) Describe two benefits that producing a recipe app, rather than physically printing a recipe book, would have for the environment. 2

Paper would be saved through not being mass produced

2. (continued)

The app also contains an additional feature that analyses individual ingredients and calculates the overall health rating of the recipe.



(c) Name the type of graph or chart that was used in the graphic shown above. 1

Column Chart

(d) Describe one way that the graphic artist has graphically communicated the health rating of the individual ingredients. 1

The less healthy it is the lighter colour it takes on

2. (continued)

Two different sets of statistics that have been provided are shown below.

Statistics A	
Nutritional Data – Nuts	
Cashew	170 Calories, 13g Fat, 8g Carb, 5g Protein, 1g Fibre
Hazelnut	180 Calories, 18g Fat, 4g Carb, 4g Protein, 2g Fibre
Peanut	170 Calories, 14g Fat, 6g Carb, 7g Protein, 2g Fibre
Walnut	210 Calories, 20g Fat, 6g Carb, 5g Protein, 2g Fibre

Statistics B	
Healthy diet plan	
Fruit and Vegetables	33%
Carbohydrates	33%
Protein	12%
Milk and Dairy	15%
Fats and sugars	7%

(e) (i) State the most suitable type of informational graphic to present the data shown in **Statistics A**. 1

Mixed Bar Chart

(ii) Explain why this is an appropriate type of informational graphic to present. 1

So that multiple Bars are shown for each, easily showing calories, fat, carb and more

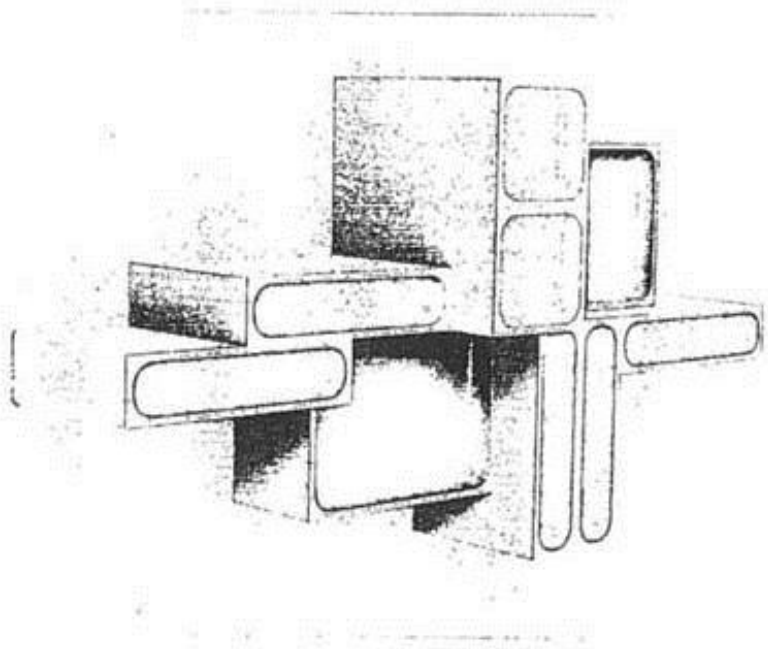
(f) (i) State the most suitable type of informational graphic to present the data in **Statistics B**. 1

Pie Chart

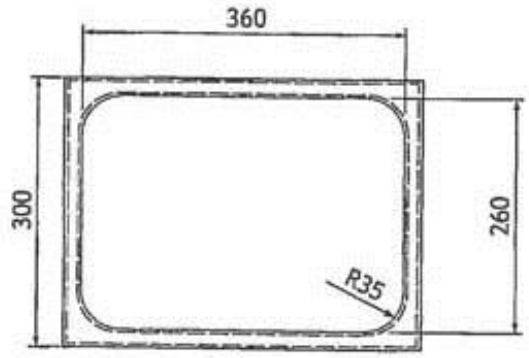
(ii) Explain why this is an appropriate type of informational graphic to present. 1

Pie Charts are very simple to see what percentages are higher just by looking, so it would be easy to understand

3. A modular lighting system is shown below. There are three sizes of coloured lighting pods that can be arranged in a variety of ways. A rendered 3D CAD illustration is shown below.

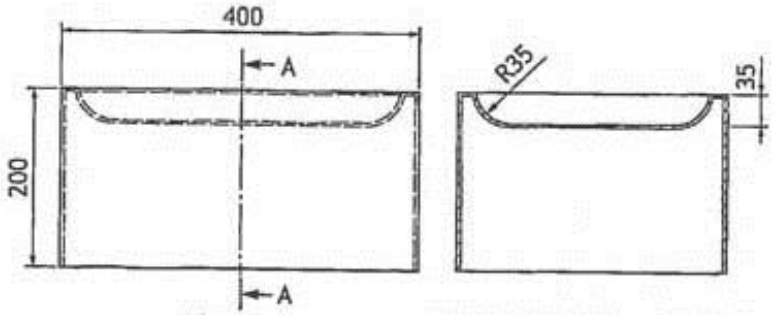


An orthographic drawing of one of the orange lighting pods is shown below.



Plan

Please note:
Wall thickness = 3 mm

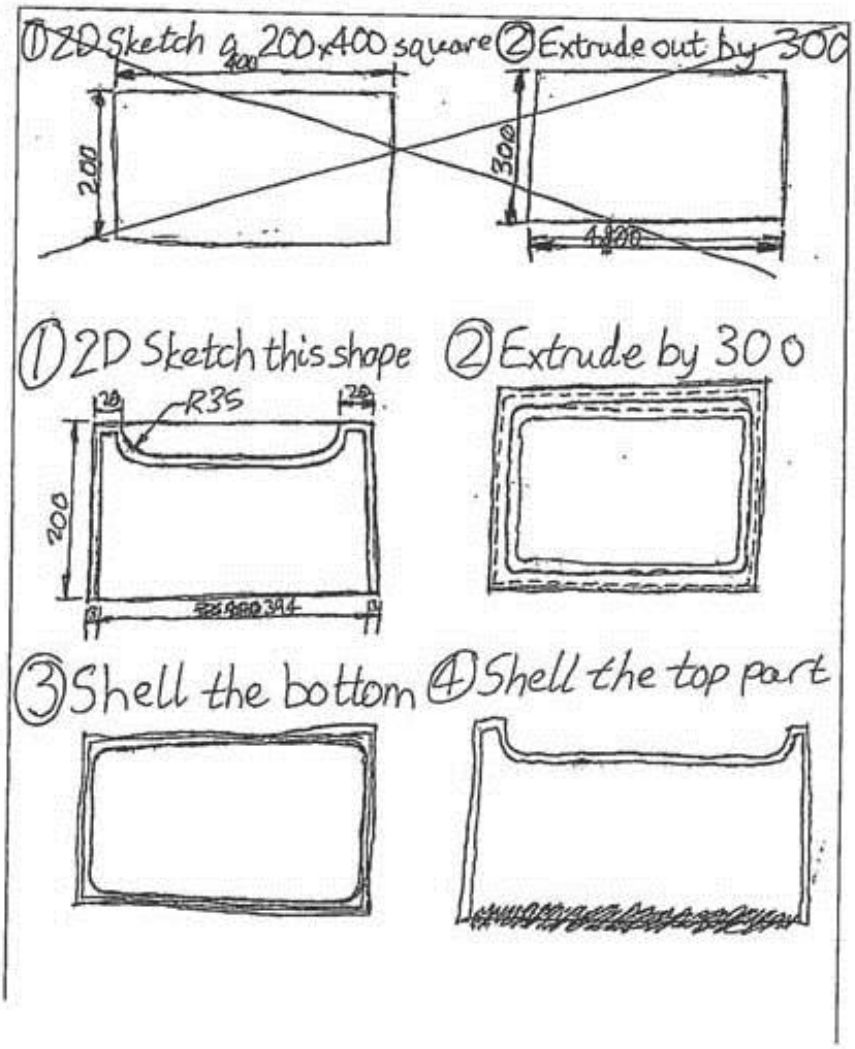


Elevation

Sectional End Elevation A-A

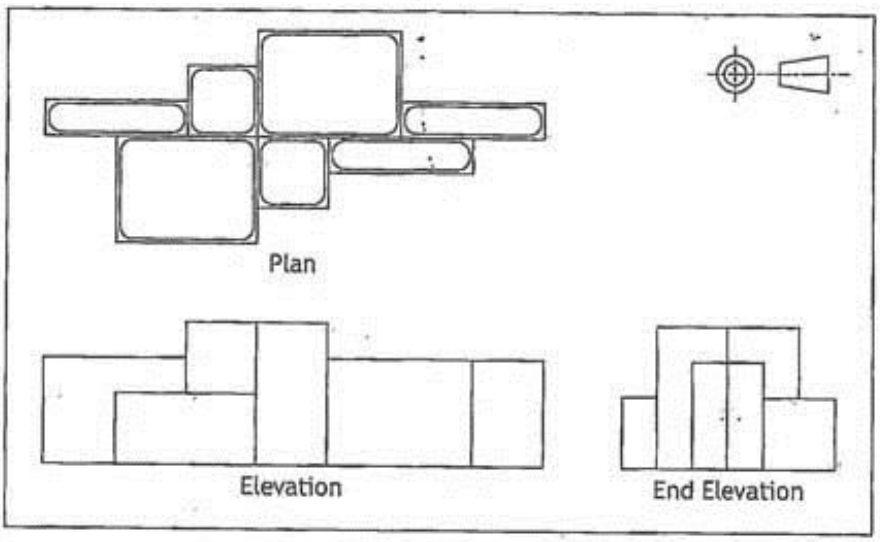
3. (continued)

(a) Describe, using the correct dimensions and 3D CAD modelling terms, how you would use 3D CAD software to model the orange lighting pod. You may use sketches to support your answer. 6



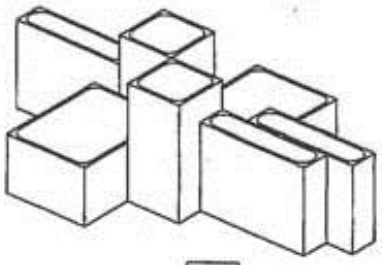
3. (continued)

Orthographic assembly views of an arrangement of the lighting system are shown below. Hidden detail removed for clarity.



3. (continued)

(b) Identify, using a tick (✓), the two pictorial assembly drawings that match the arrangement in the orthographic assembly drawing shown. 2



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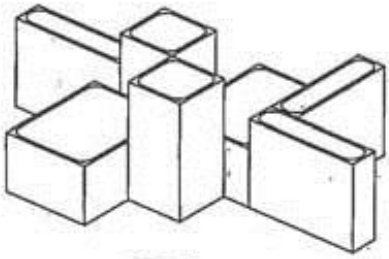

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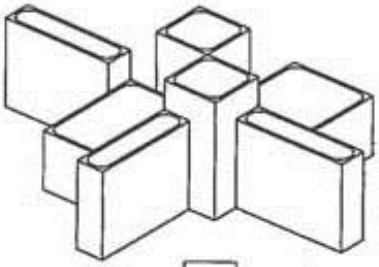

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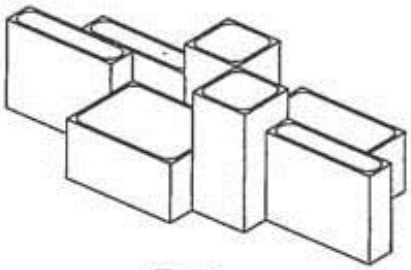

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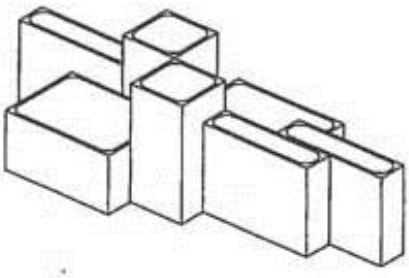

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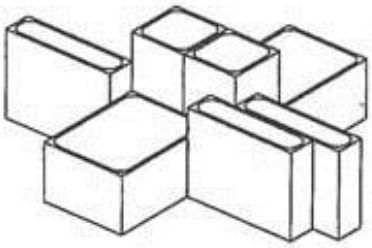

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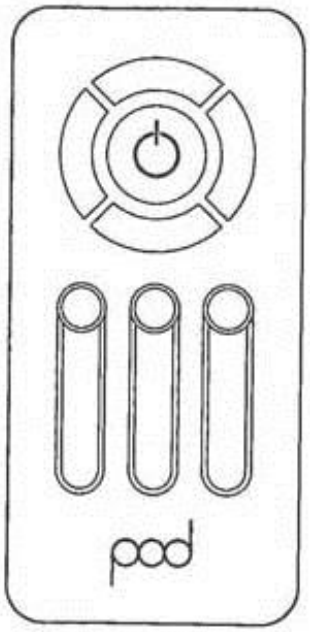
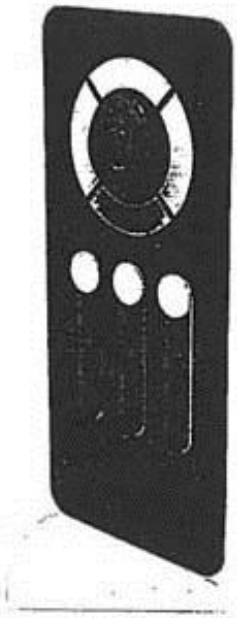
3. (continued)

A 2D CAD line drawing, produced using 2D CAD software, and a 3D CAD model of a control panel for the lighting system are shown below.



2D CAD Line Drawing



3D CAD Model

(c) Explain why the 2D CAD line drawing can be produced more quickly than the 3D CAD model of the control panel. 1

Because it's a simple drawing that makes it more clear what everything is. The 3D CAD Model looks more complex and harder to produce

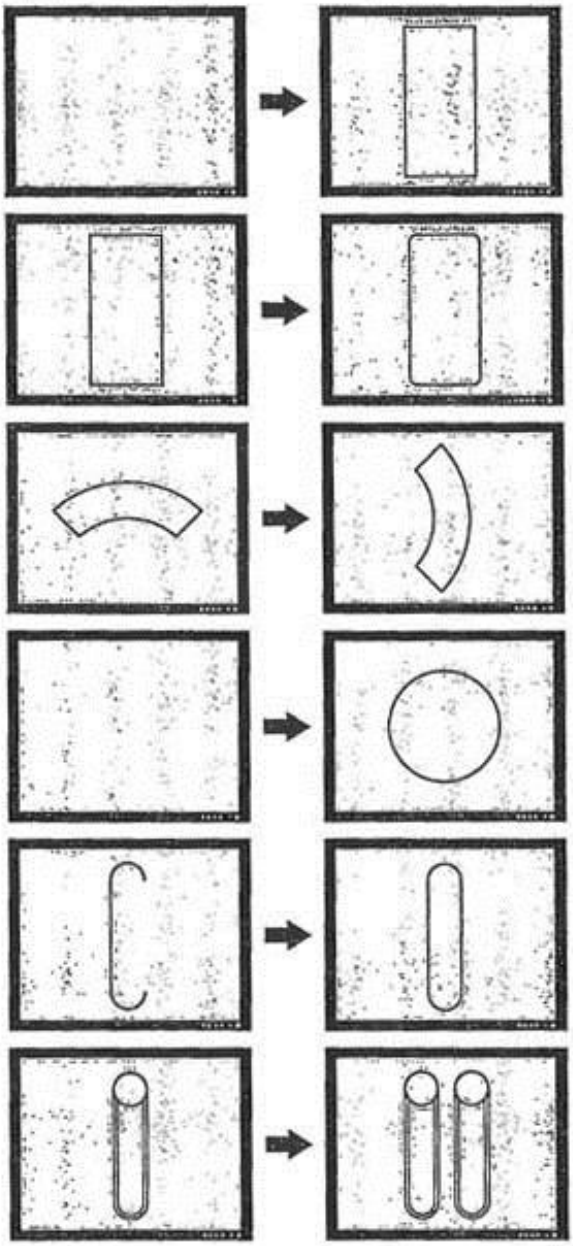
(d) Describe two benefits of a 3D CAD model over a 2D CAD drawing. 2

The 3D CAD Model is 3D so you can see if any parts are sticking out, whereas 2D is flat You get more detail on a 3D CAD Model, such as colour, than you can on 2D CAD Models

3. (continued)

To create the features of the control panel a number of 2D CAD tools were used.

(e) State the name of the single CAD tool used in each case. 6



(i) Tool used
Line Tool

(ii) Tool used
Champher

(iii) Tool used
Rotate

(iv) Tool used
2D Sketch Circle

(v) Tool used
_____

(vi) Tool used
Duplicate

3. (continued)

Three line types that will be used to complete the 2D CAD drawings to British Standard conventions are shown below.

(f) State the uses of the following line types.

(i) A chain thin line 1

Shows the centre of any circular elements

(ii) A continuous thick line 1

Shows the outline of the shape

(iii) A long dash dotted thin line, thick at ends. 1

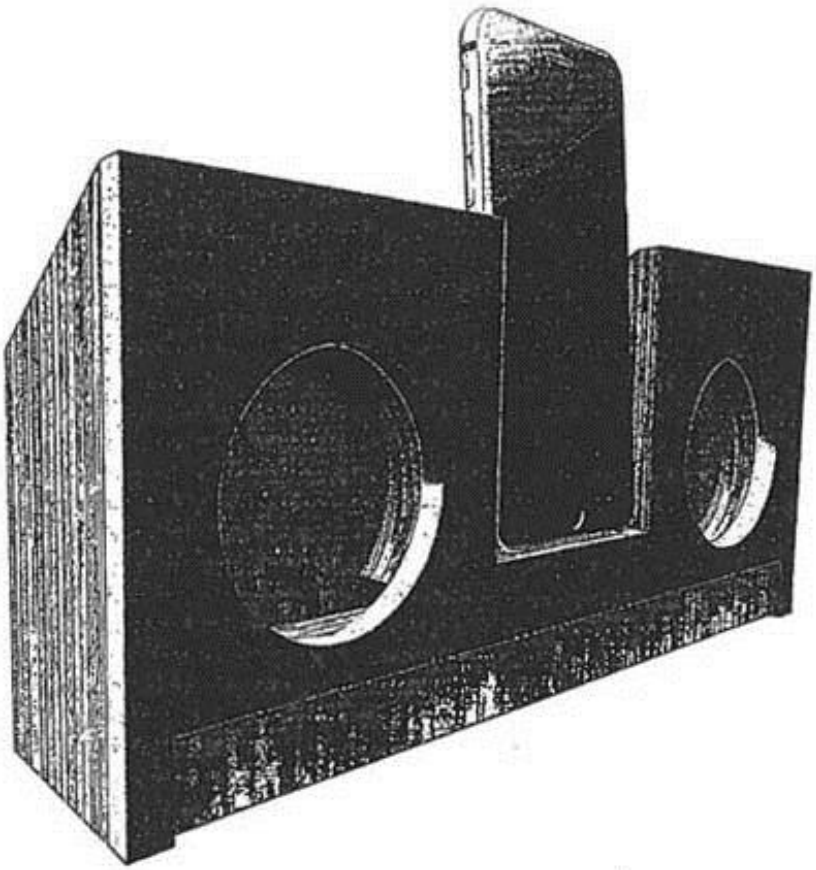
Shows where the object will be hatched

The 2D CAD drawings are to be drawn using a scale.

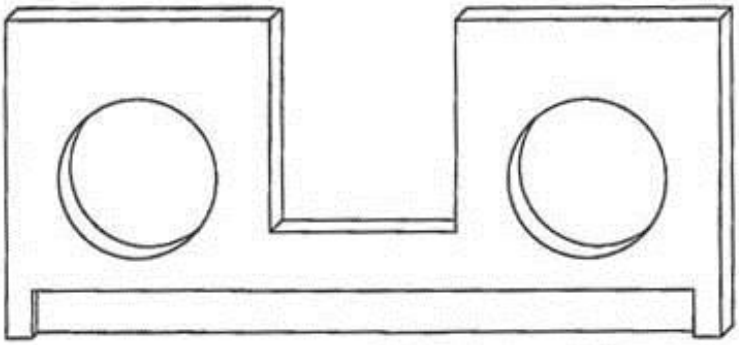
(g) Explain what is meant by the term scale 2:1. 1

The drawing is 2x bigger than it actually is

4. A speaker has been designed using 3D CAD software. A rendered illustration is shown below.



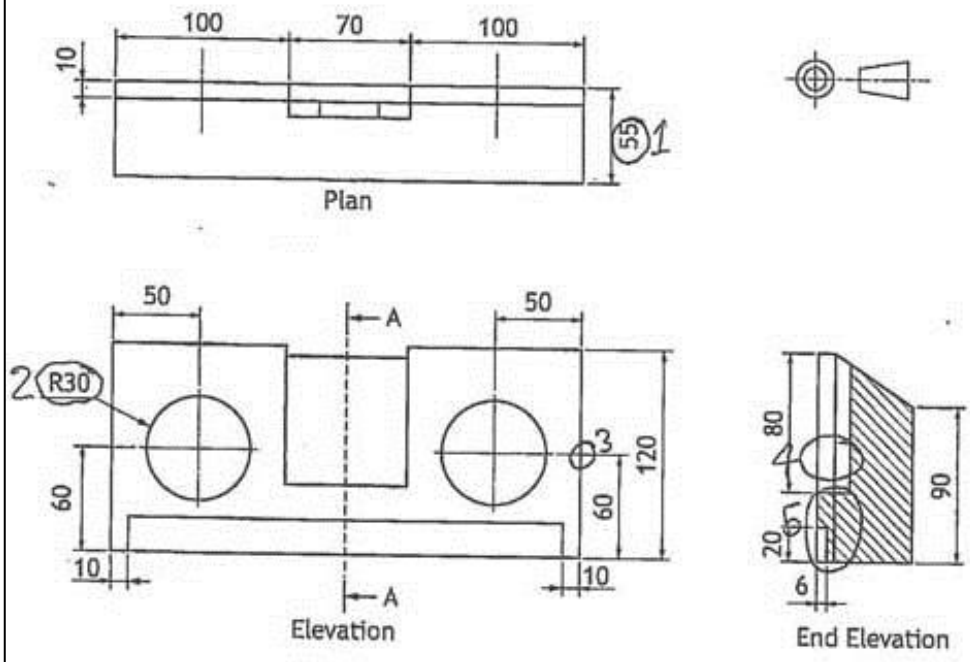
A pictorial view of one of the speaker components is shown below.



(a) State the type of pictorial view shown above. 1

4. (continued)

A working drawing of the speaker assembly is shown below.



Five pieces of information in the working drawing do not adhere to British Standard conventions.

(b) State the five errors found in this drawing. 5

You may annotate the orthographic drawing to support your answer.

1 The 55 should be on the other side of the line

2 This should be a dianeter

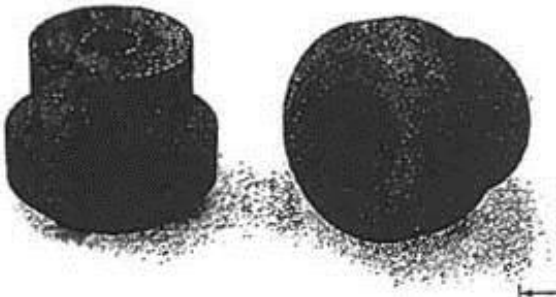
3 Dimension Lines shouldn't touch the object

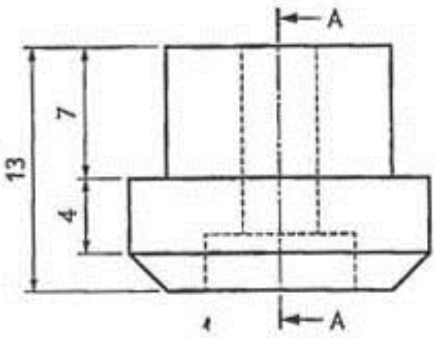
4 There should be a Centre Line here

5 These are different materials so the Hatching Lines should be different

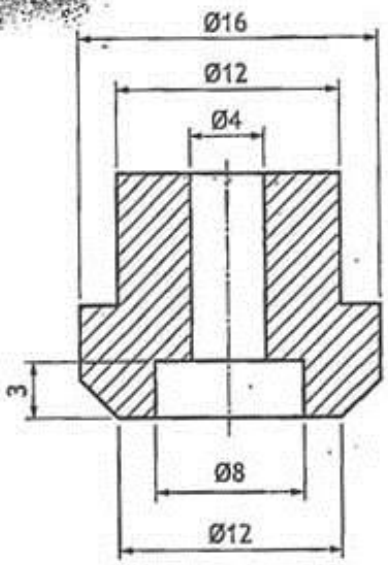
4. (continued)

Rubber feet are to be added to the base. Orthographic views and 3D illustrations of a rubber foot are shown below.





Elevation

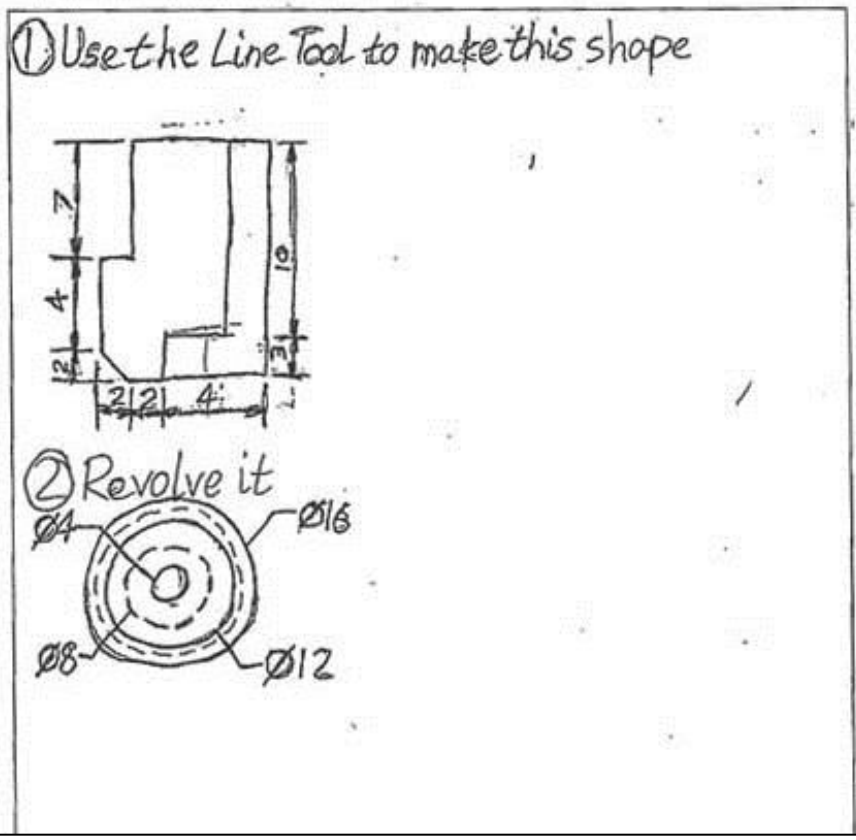


Sectional End Elevation A-A

4. (continued)

(c) Describe, using the correct dimensions and 3D CAD modelling terms, how the rubber foot, shown opposite, would be produced. 3

You may use sketches to support your answer.



4. (continued)

The orthographic drawings of the speaker were shared online.

(d) Describe two benefits of sharing these orthographic drawings online. 2

People can see how they're made
People can make some for themselves

(e) Explain why it would be useful to adhere to British Standard conventions and protocols when sharing these types of drawings. 2

So that anyone can understand it

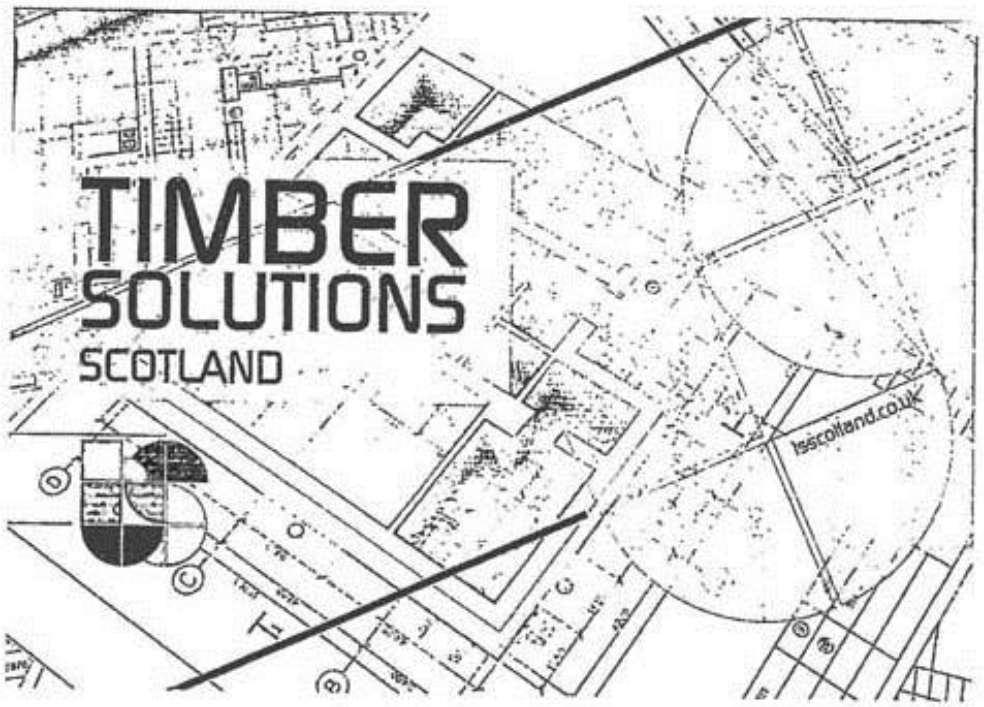
(f) Explain the purpose of the following types of production drawings.

(i) Sectional views To show the inside of a product or part 1

(ii) Assembly drawings To show each part and how they fit together 1

5. Many companies now specialise in applying promotional graphic posters, to advertise services to the public, around commercial vehicles.

A finished layout for a small building company is shown below.



5. (continued)

The design work for the layout was produced by a graphic designer.

(a) Describe two ways in which the graphic designer used the following design elements and principles to enhance the layout.

(i) Line 2

(ii) Dominance 2

Having "TIMBER SOLUTIONS SCOTLAND" be so big lets it stand out more.

(iii) Colour 2

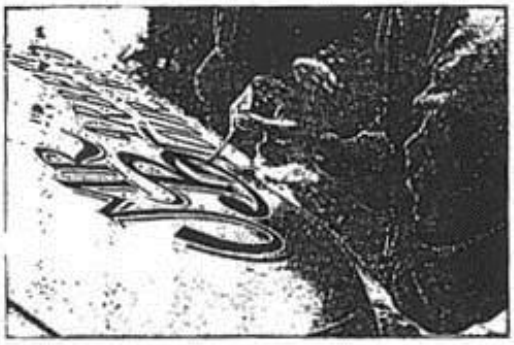
By having "TIMBER SOLUTIONS SCOTLAND" in a different colour it makes it stand out

(iv) Unity 2

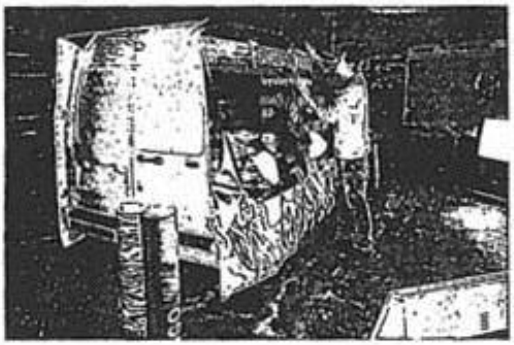
[Turn over

5. (continued)

Vehicles were traditionally hand painted to include information about a company. Modern processes involve printing promotional graphics which are then applied to a vehicle.



Traditional painting technique



Modern printed technique

(b) Describe two advantages to the client of modern printing techniques over traditional painting techniques. 2

As the modern technique shown is bigger it's much more noticeable and stands out more than the traditional technique The modern technique is easier to take off and replace when new events or sales start

6. A graphic designer submitted a draft layout for an architectural magazine article to the editor. The draft is shown below.

The editor provided some feedback to the graphic designer on how to improve the layout.

(a) Describe, using the feedback shown below, four improvements the graphic designer should make to the layout using **Desktop Publishing techniques.**

(i) *The word 'house' in the heading is difficult to see* 1

They could change the colours so the text is easier to see

(ii) *The large column of extended text makes it difficult to read* 1

They could make the text bigger so it can be read easier

(iii) *The bottom image would look better without the sky in the background* 1

They could crop the sky out the image

(iv) *The body text is too close to the edge of the paper* 1

They could move the text away from the edge

6. (continued)

The graphic designer used a sans serif font for the heading.

(b) State two reasons why the graphic designer has chosen a sans serif font for the heading. 2

It looks more modern, like the '[redacted]' idea 'Future of Architecture'

It looks more appealing to a younger crowd

When inserting an image, the graphic designer used the handles of the image to increase its size. This resulted in the image being out of proportion, shown below.

(c) Describe how the graphic designer could have resized the image without altering the proportions. 1

Holding 'Shift' will equally resize the width and length together

6. (continued)

During the production of the layout, using desktop publishing software, the graphic designer used **guidelines**.

(d) Describe two advantages of using guidelines in the creation of promotional layouts. 2

The layout looks more neat and organised

There's a better sense of where everything should go

[END OF QUESTION PAPER]