

Graphic Communication

Auchinleck Academy

Graphic Communication - National 5

Masterclass Revision



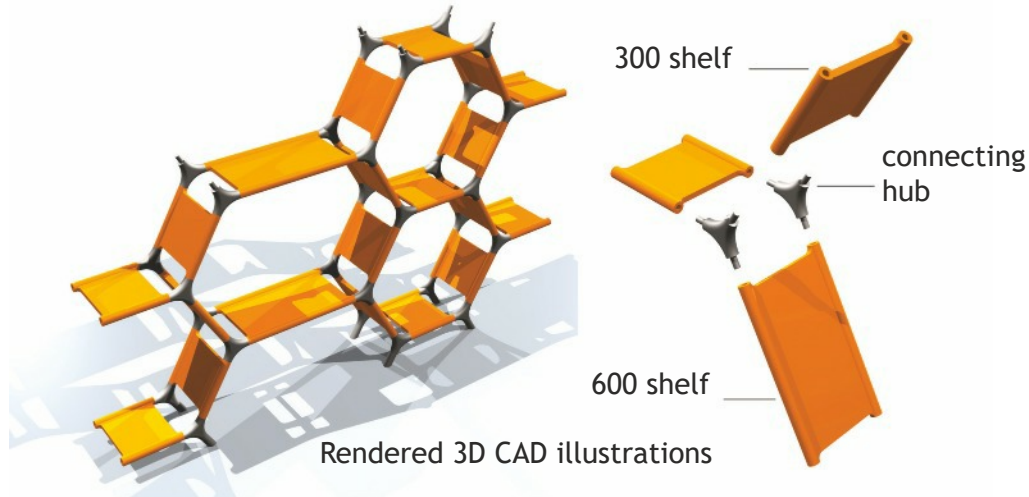
3D Modelling

MARKS

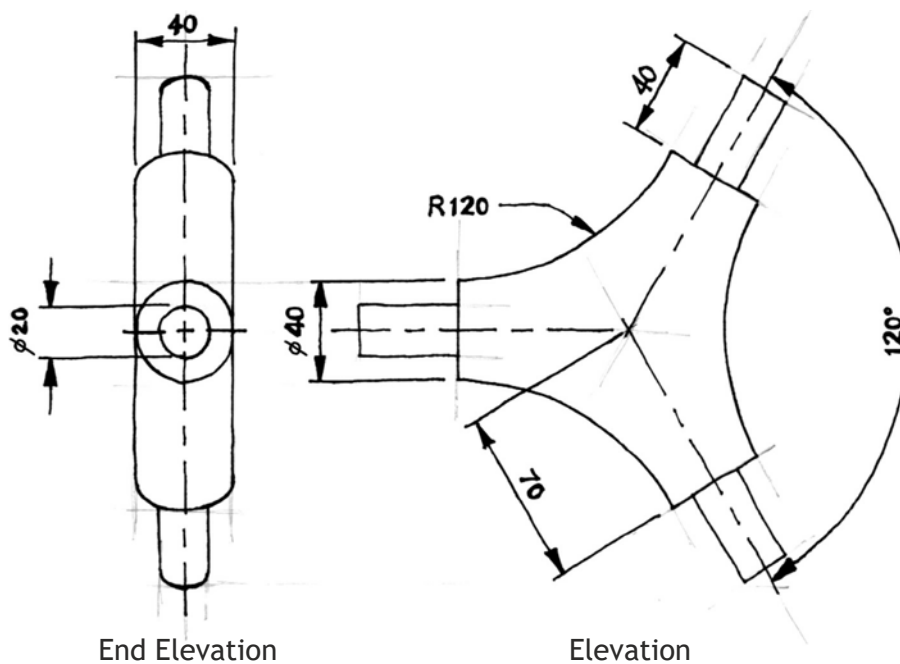
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2. "Module" is a shelving system consisting of two sizes of shelves and connecting hubs that can be arranged in a variety of ways. Rendered 3D CAD illustrations are shown below.



An orthographic sketch of the connecting hub is shown below.



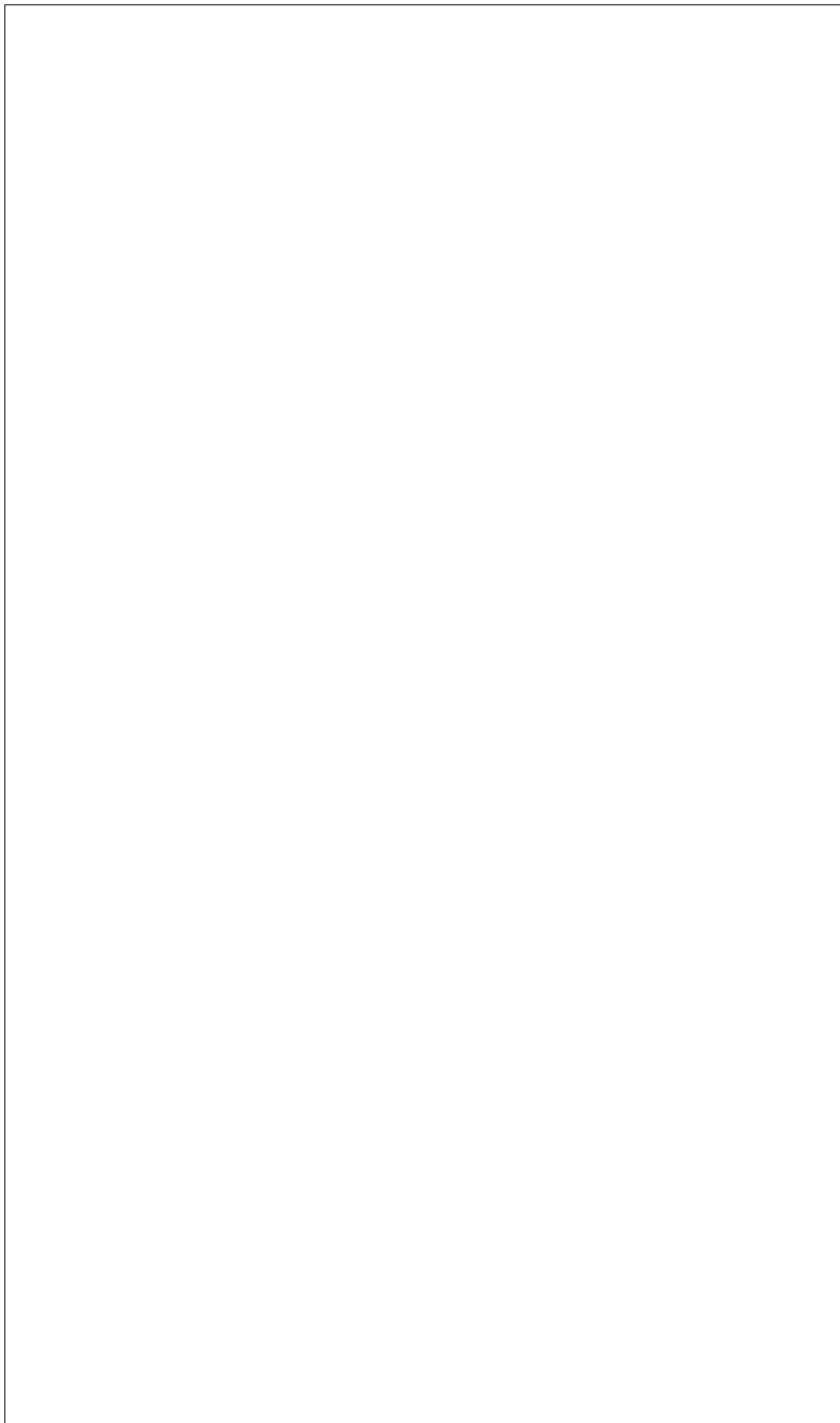
MARKS

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2. (continued)

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

6



* X735750109*

3. (continued)

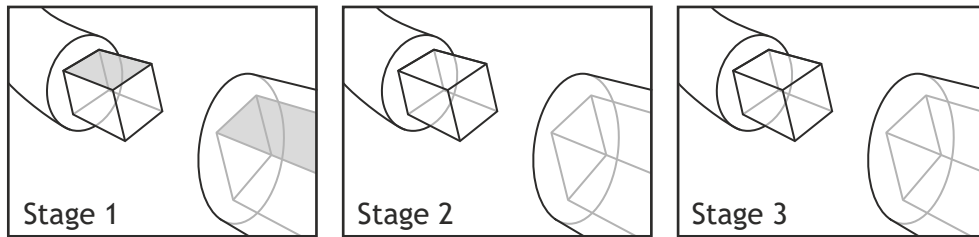
Illustrated views of the 20° connecting bracket and a tube are shown below. There are three stages in the assembly of these components.



(b) Indicate by **shading** the relevant **surfaces** and state using 3D CAD terms how you would assemble and constrain the components shown above.

Stage one has been shaded for you.

5



Stage 1
Constraint used

Stage 2
Constraint used

Stage 3
Constraint used

[Turn over

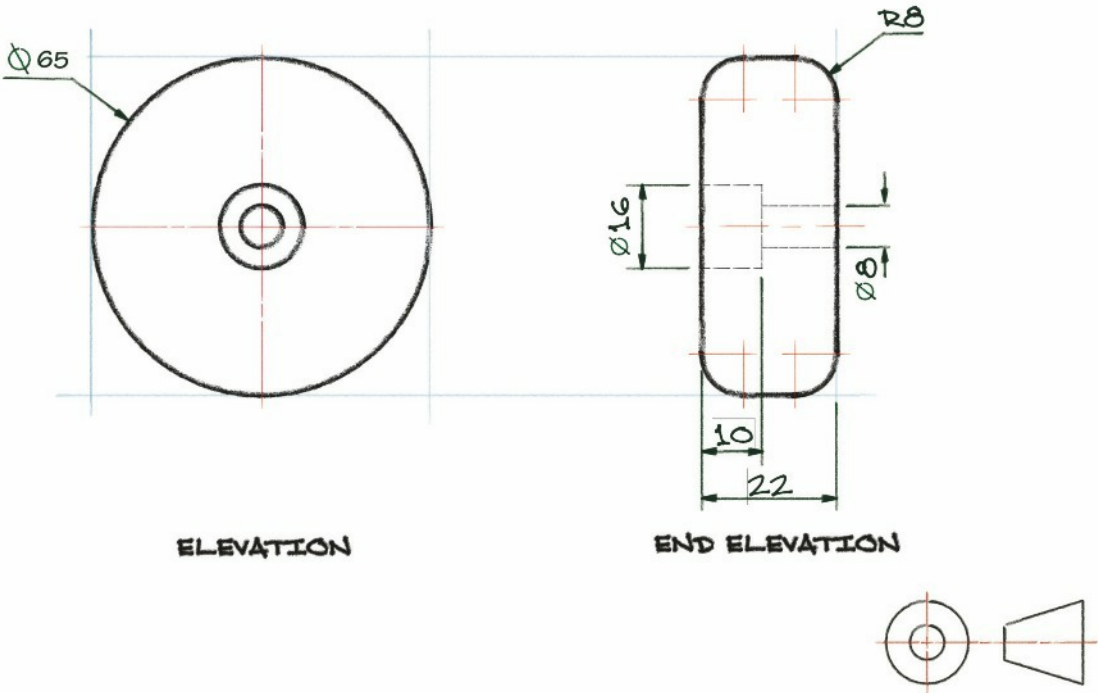
MARKS

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4. An extreme sports company, Equilibrium, have designed a new skateboard.



A CAD technician was provided with orthographic preliminary sketches of the wheel component.



MARKS

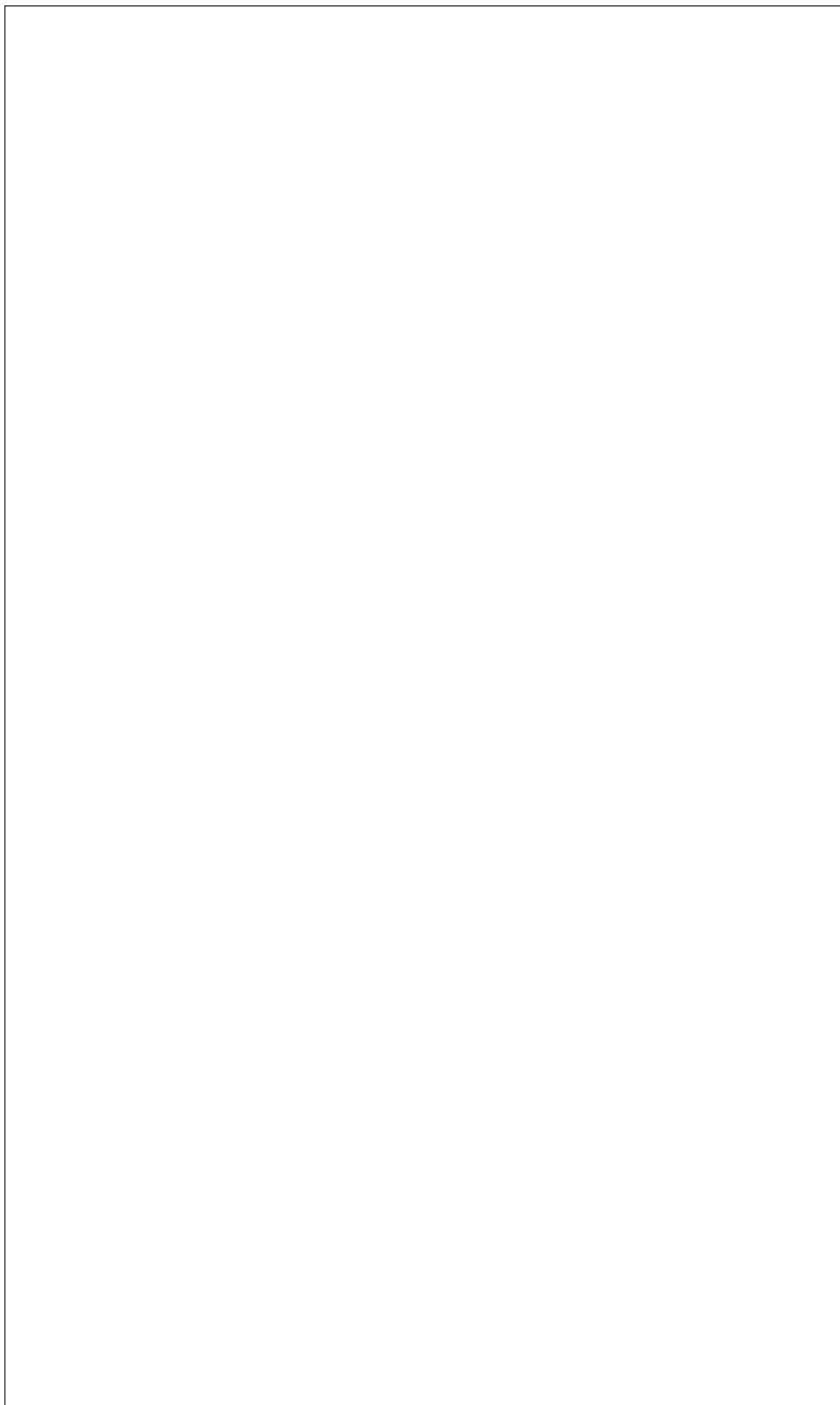
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4. (continued)

- (a) Describe, with reference to correct dimensions and 3D CAD modelling terms, how you would use 3D CAD software to model the wheel.

You may use sketches to support your answer.

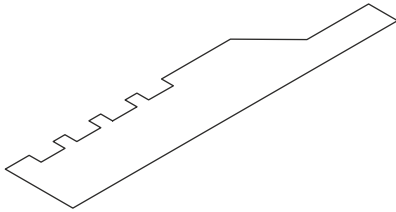
3



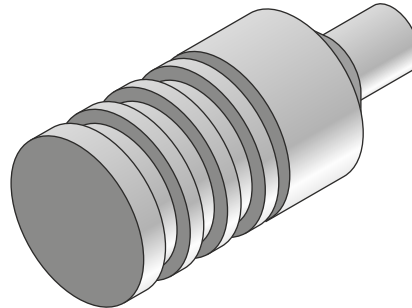
* X735750117*

3. Two stages in the production of a 3D CAD model of a headphone connector are shown below.

Stage 1

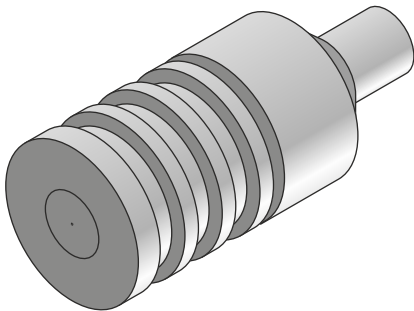


Before

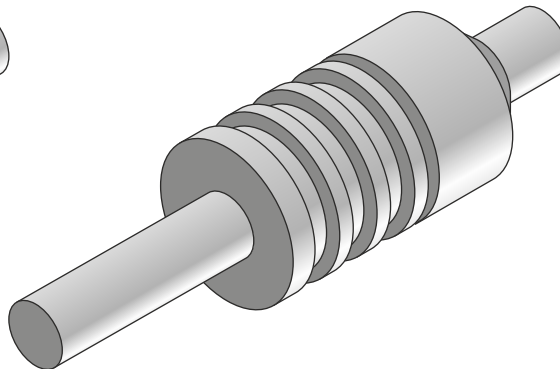


After

Stage 2



Before



After

- (a) State the name of the 3D modelling feature which has been used in Stage 1.

1

- (b) State the name of the 3D modelling feature which has been used in Stage 2.

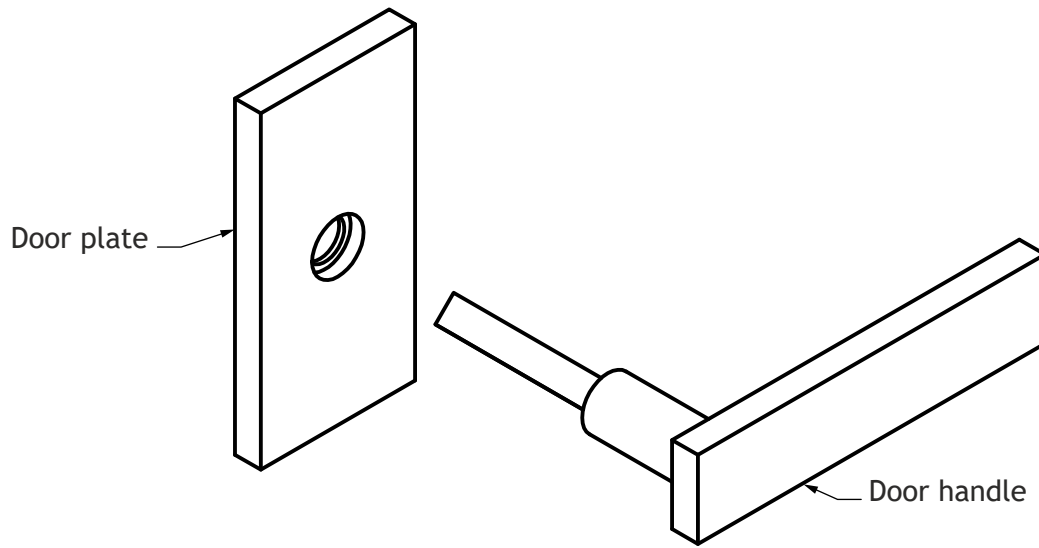
1

Total marks 2

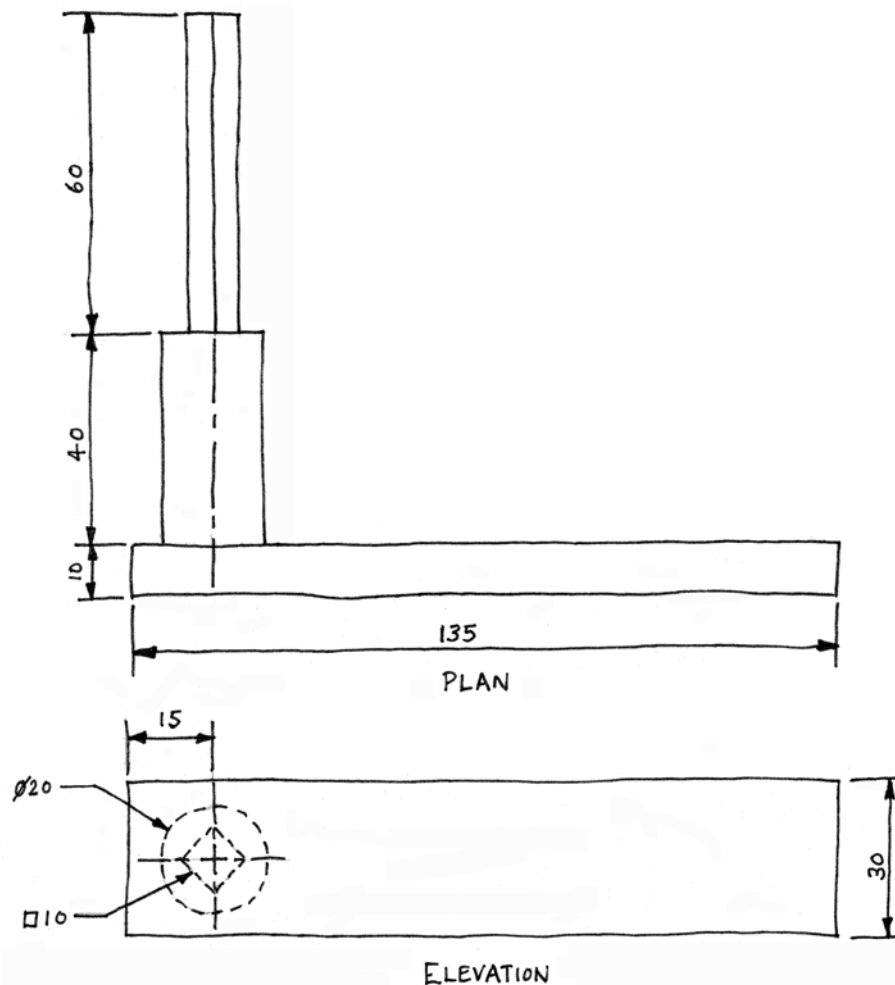
MARKS

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7. A door handle and door plate were designed using 3D modelling software. An exploded isometric view of the door handle and door plate is shown below.



A preliminary orthographic sketch of the door handle (not to scale) is shown below.



* X735750114 *

7. (continued)

A $\varnothing 20$ circle is sketched before the extrude command is used to create step 1.

- (a) State the length of the extrusion used in step 1.

Step 1



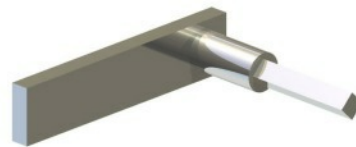
1

- (b) Describe, with reference to correct dimensions and 3D CAD modelling terms, how you would complete step 2 and step 3.

Step 2



Step 3

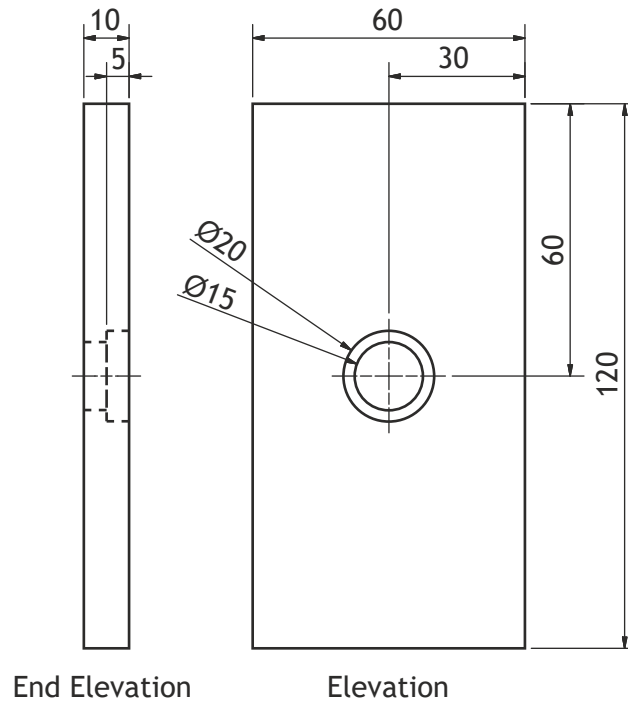


You may use sketches to support your answer.

4

7. (continued)

The door plate is needed to secure the handle to the door. The production orthographic drawing (not to scale) for the door plate is shown below.



(c) Describe, with reference to correct dimensions and 3D CAD modelling terms, how you would create the door plate.

You may use sketches to support your answer.

3

7. (continued)

In order to manufacture the door plate, the back of the plate is hollowed out as shown below.



- (d) State the name of the 3D modelling technique used to hollow the door plate. 1

- (e) State **three** advantages of computer aided drawing over manual drawing methods. 3

Advantage 1 _____

Advantage 2 _____

Advantage 3 _____

When producing the door plate the CAD command 'zoom' is used.

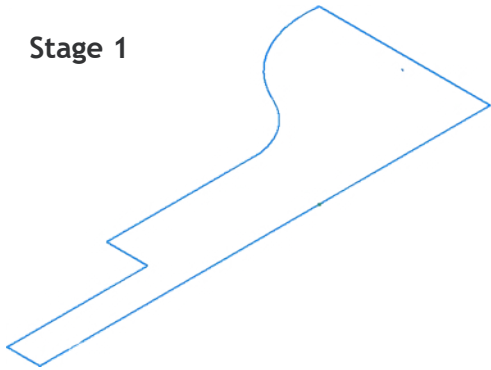
- (f) State one way in which the 'zoom' command would be useful. 1

Total marks 13

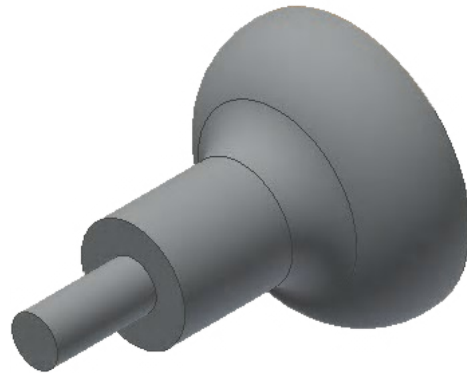
[Turn over for Question 8 on *Page eighteen*]

3. Two stages in the production of a 3D CAD model of a ball and cup game are shown below.

Stage 1



Before



After

Stage 2



Before



After

(a) State the name of the 3D modelling feature which has been used in Stage 1. 1

(b) State the name of the 3D modelling feature which has been used in Stage 2. 1

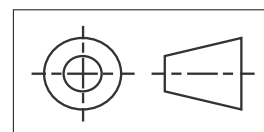
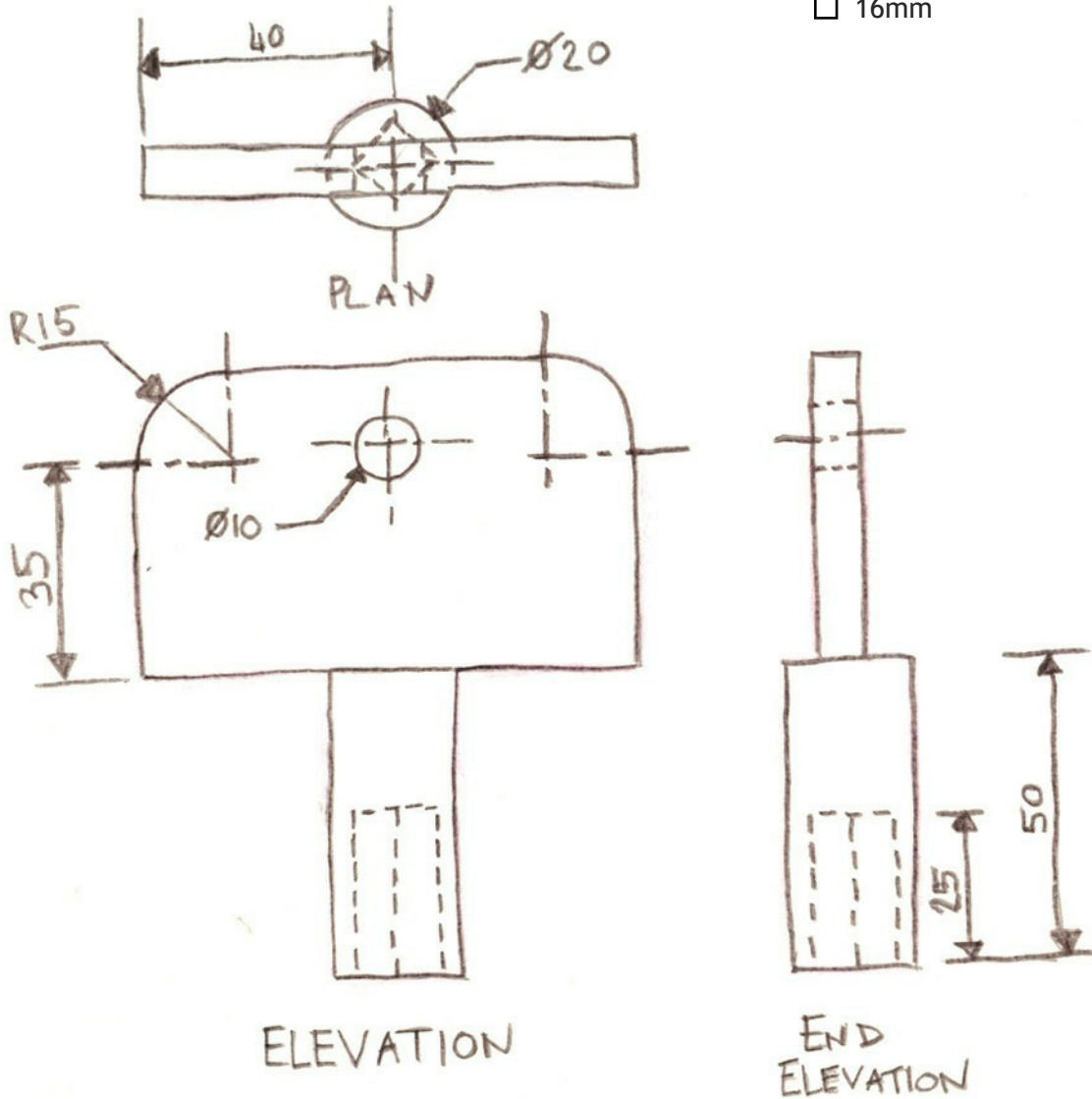
(c) The file for the cup and ball game was stored in a CAD Library, Describe what is meant by a CAD Library 1

Total marks 3

8. A radiator key was designed using 3D modelling software.

A preliminary orthographic sketch of the radiator key (not to scale) is shown below.

Square Section:
□ 16mm



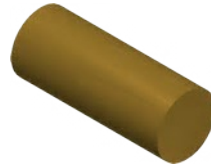
All sizes in mm.

8. (continued)

A $\varnothing 20$ circle is sketched before the extrude command is used to create step 1.

- (a) State the length of the extrusion used in step 1.

Step 1



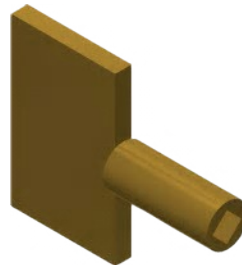
1

- (b) Describe, with reference to correct dimensions and 3D CAD modelling terms, how you would complete step 2 and step 3.

Step 2



Step 3



You may use sketches to support your answer.

4



MARKS

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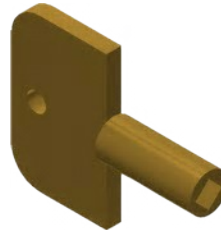
8. (continued)

(c) Describe, with reference to correct dimensions and 3D CAD modelling terms, how you would complete step 4 and step 5.

Step 4



Step 5

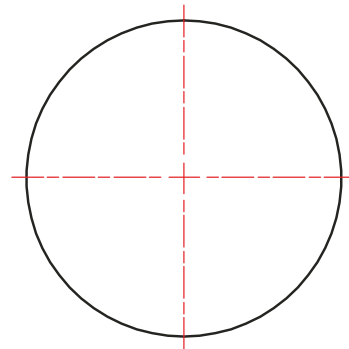
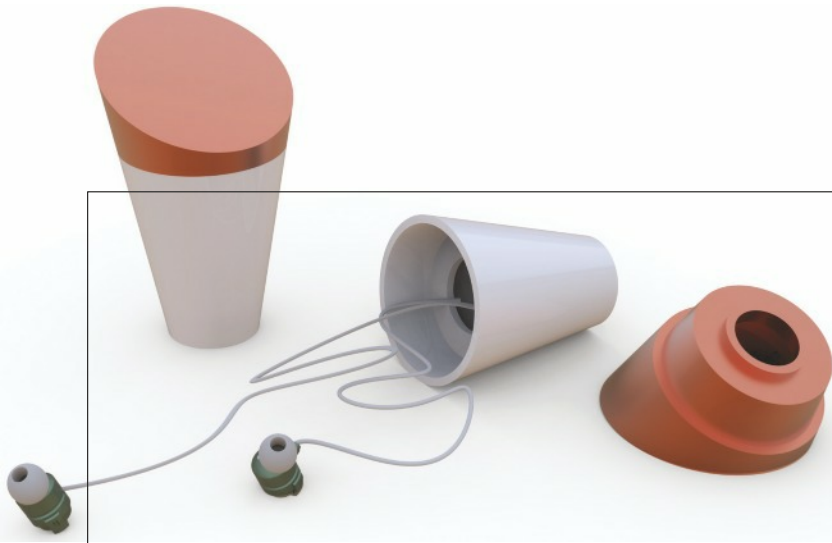


You may use sketches to support your answer.

4

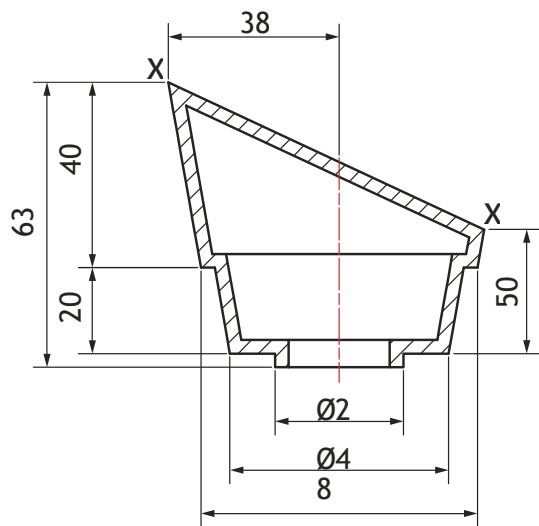


3. "Cone" is a portable container for storing earphones and other cable accessories.

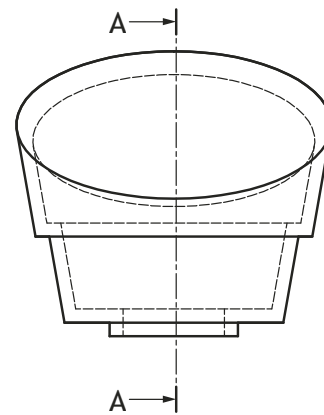


PLA

Supplementary Sheet for use with Questions 3 (a) and (b)



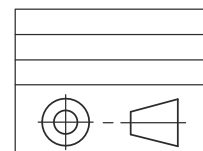
SECTIONAL END ELEVATION



ELEVAT

NOTE:
WALL THICKNESS

* X7 3 5 7 5 0 1 1 2 *



3. (continued)

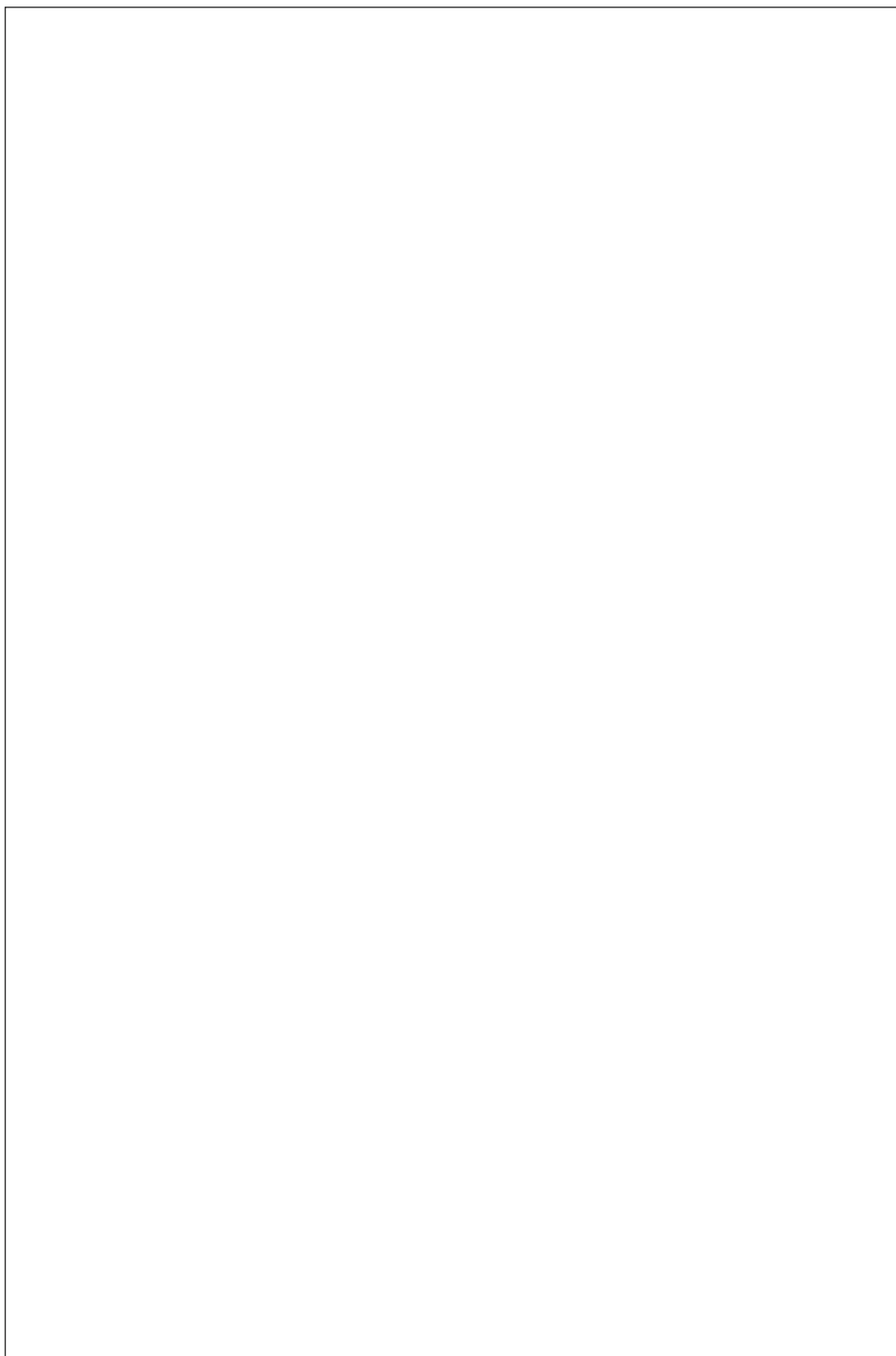
The lid was modelled using 3D CAD modelling software.

- (a) Describe, with reference to correct dimensions and 3D CAD modelling techniques, how the lid can be produced.

6

You must use the drawing provided in the Supplementary Sheets for use with question 3(a).

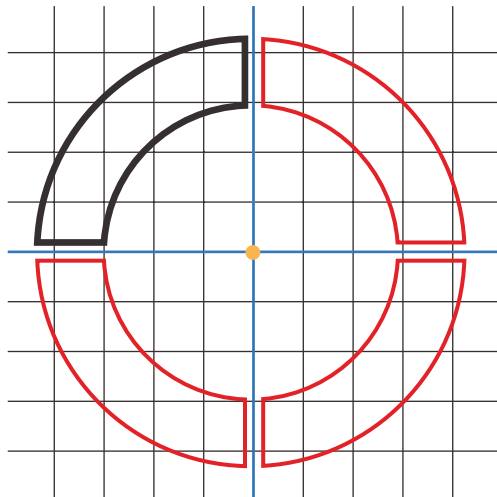
You may use sketches to support your answer.



3. (continued)

The designer added details to the sloping surface of the lid. The detail consisted of four identical shapes positioned around the centre and raised from the surface.

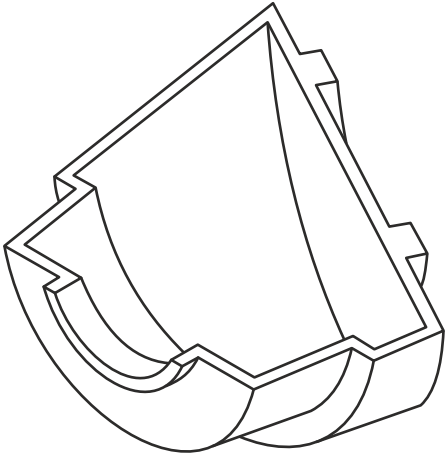
The initial sketch of one of these shapes is shown in **bold black**.



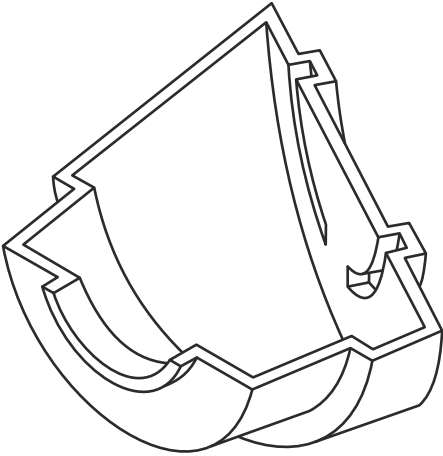
(c) Describe, with reference to 2D CAD editing commands, how the CAD technician has repeated the shape without having to redraw each shape again. 2

3. (continued)

The CAD technician extruded the detail on the sloping surface of the lid but



Before



After

(d) Explain how the model could be updated to include the additional shell details.

2

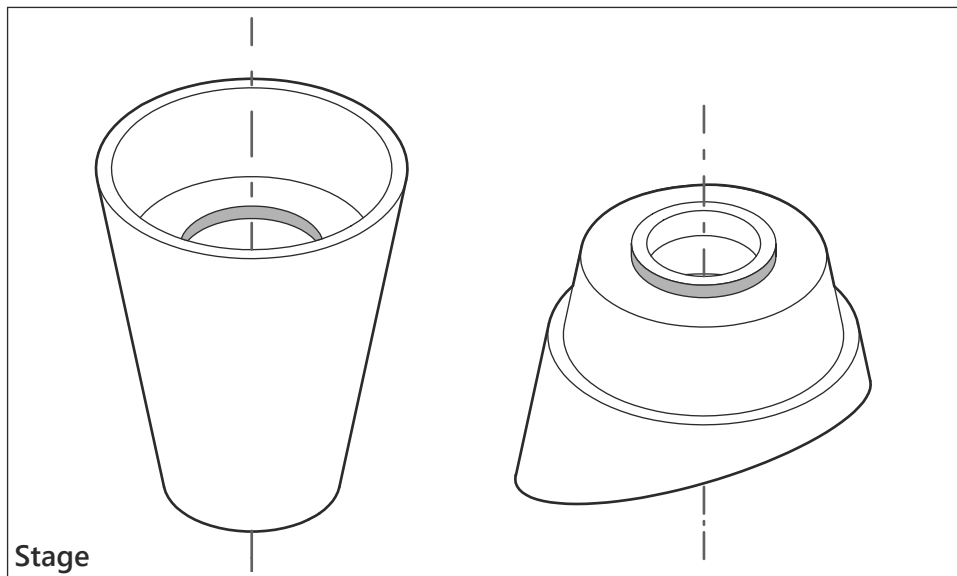
3. (continued)

The lid and main body of “Cone” were assembled using 3D CAD modelling software.

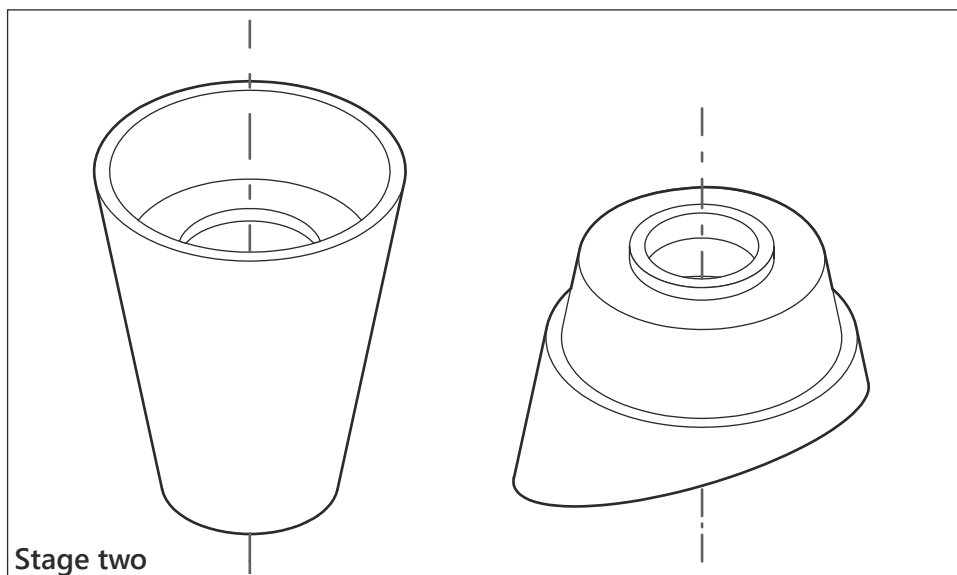
(e) Indicate by shading the relevant surfaces and state using 3D CAD terms how you would insert the lid into the body.

3

Stage one has been shaded for you.



Constraint used

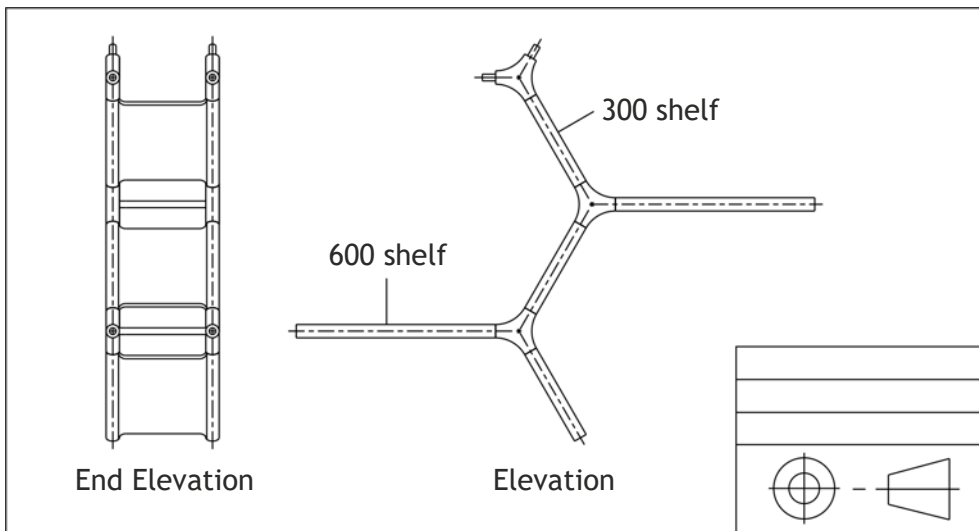


Constraint used

BSI/Pictorial Views Dimensioning

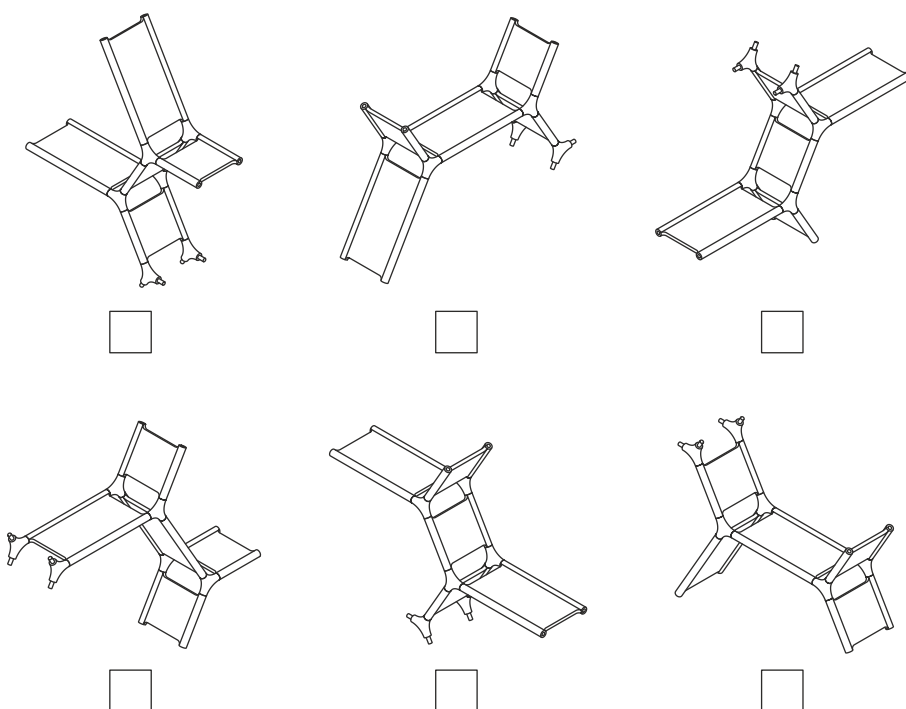
2. (continued)

Orthographic assembly drawings of an arrangement of the shelving system are shown below.



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

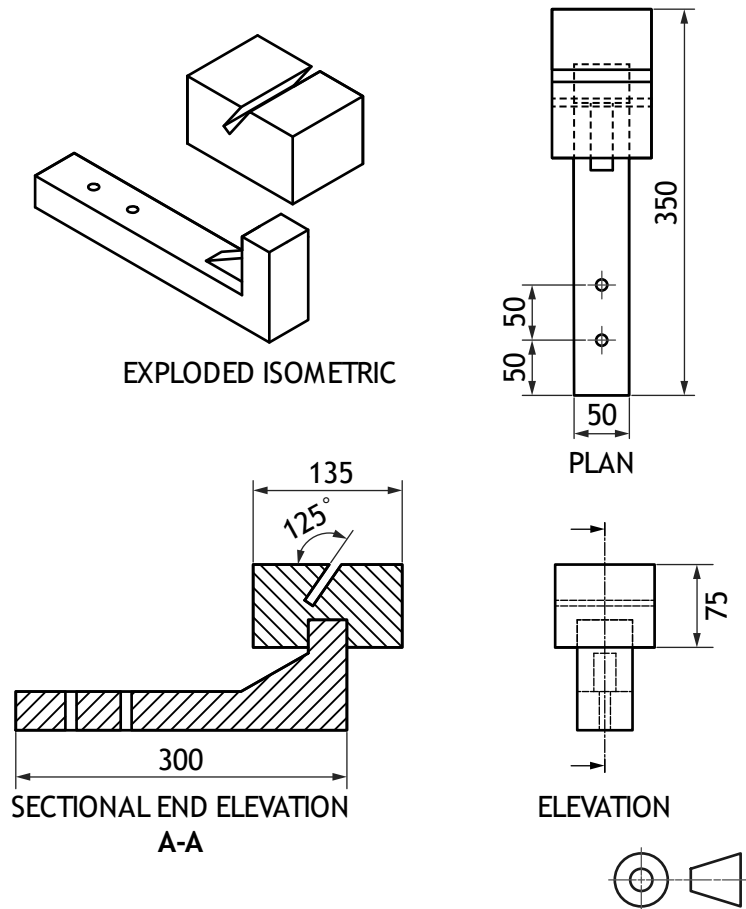
2



* X735750110*

4. (continued)

An exploded isometric and the working drawing of the bracket used to hold the skateboards to the display board are shown below.



The CAD technician recognised **five** pieces of information in the working drawing that did not adhere to British Standard conventions.

(e) State the **five** errors found in the drawing.

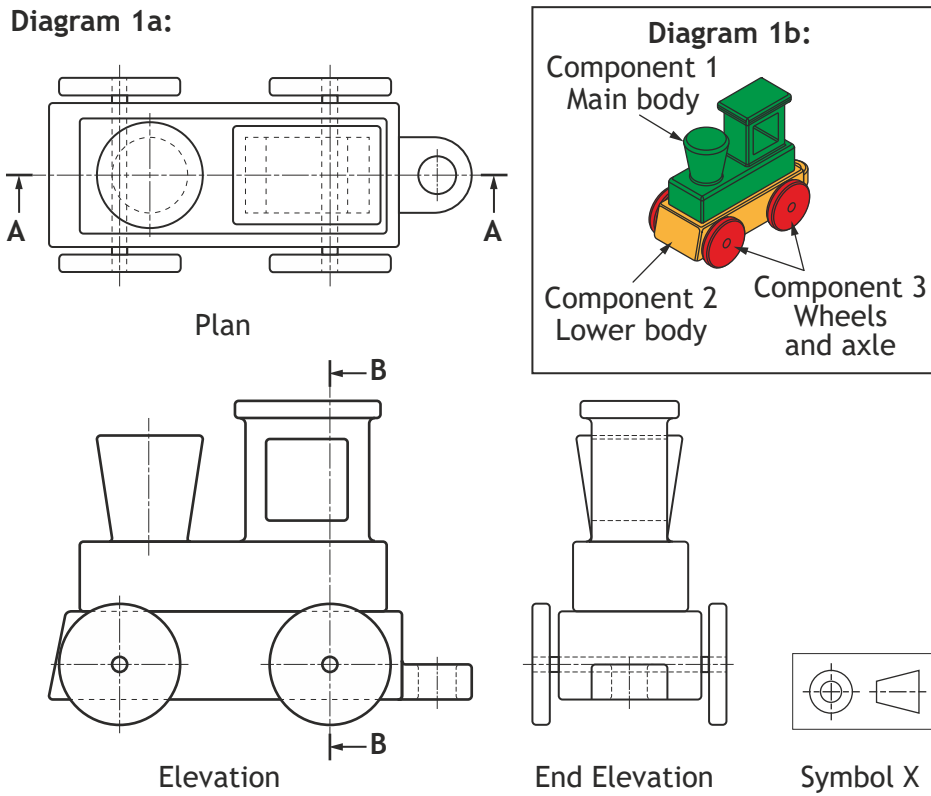
You may annotate the drawing to support your answer.

5

[END OF QUESTION PAPER]

* X735750121 *

6. A variety of views of a child's wooden toy train are shown below.



(a) State the name of the type of drawing shown in Diagram 1a. 1

(b) State the name of Symbol X in Diagram 1a. 1

(c) Describe the purpose of Symbol X. 1

6. (continued)

MARKS
DO NOT WRITE IN THIS MARGIN

Four potential Sectional Elevations of the toy train views are shown below.

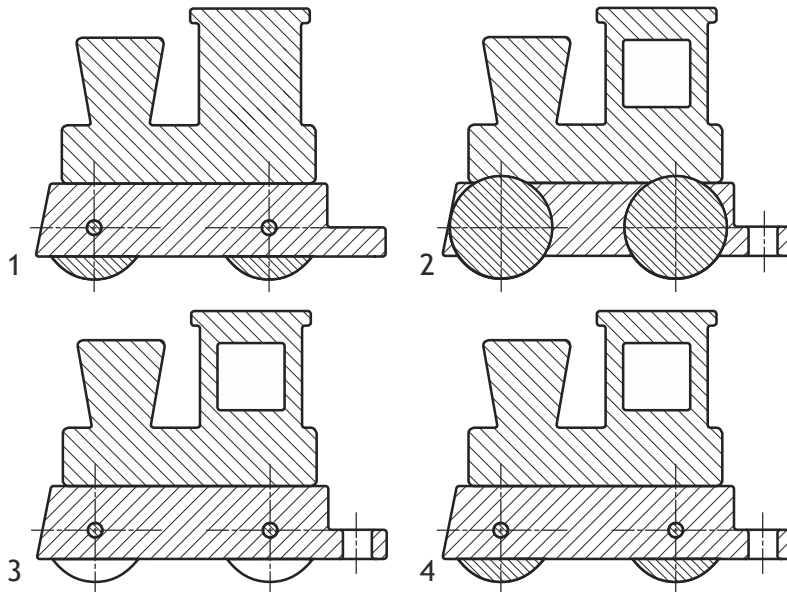


Diagram 2: Sectional Elevations on A–A

- (d) State, with reference to Diagram 1a and Diagram 2, the correct Sectional Elevation on A–A.

1

Four potential Sectional End Elevations of the toy train views are shown below

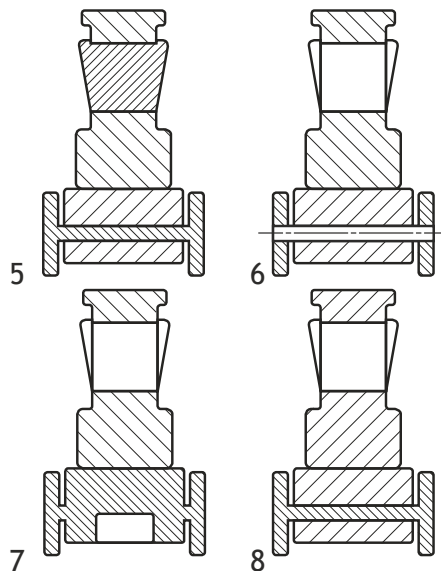


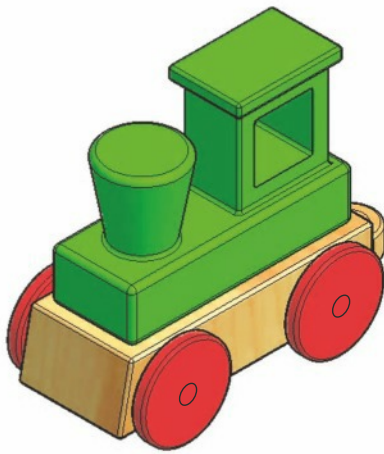
Diagram 3: Sectional End Elevations on B–B

- (e) State, with reference to Diagram 1a and Diagram 3, the correct Sectional End Elevation on B–B.

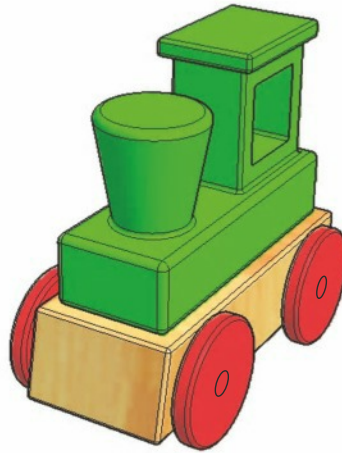
1

6. (continued)

Two pictorial views of the toy train are shown below.



View 1



View 2

(f) State the name of the pictorial view shown at:

(i) View 1

1

(ii) View 2

1

(g) State the name of another **two** types of pictorial views which would be suitable to show the train.

2

Pictorial type 1

Pictorial type 2

6. (continued)

A partial End Elevation complete with relevant dimensions (Diagram 4a) of the toy train is shown below. An End Elevation of the train track is shown (Diagram 4b).

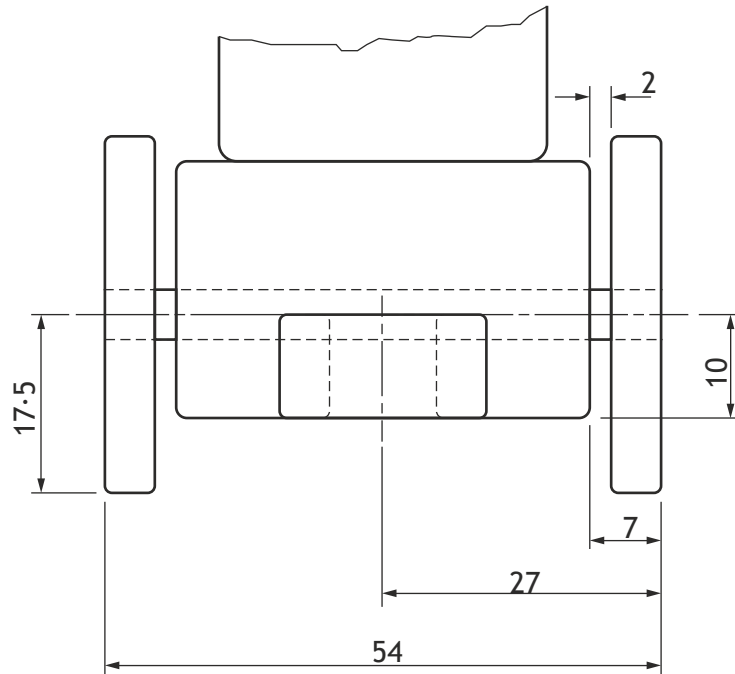
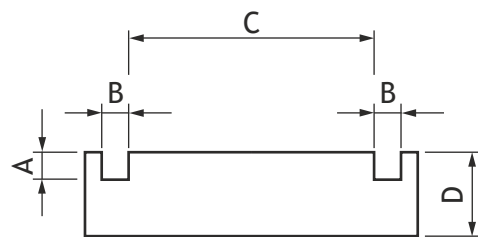


Diagram 4a: Dimensioned Partial End Elevation of the toy train



Track End Elevation

Diagram 4b: End Elevation of train track

(h) State, with reference to Diagram 4a and 4b, a dimension for:

- (i) A _____ 1
- (ii) B _____ 1
- (iii) C _____ 1
- (iv) D _____ 1

6. A variety of views of a child's toy truck are shown below.

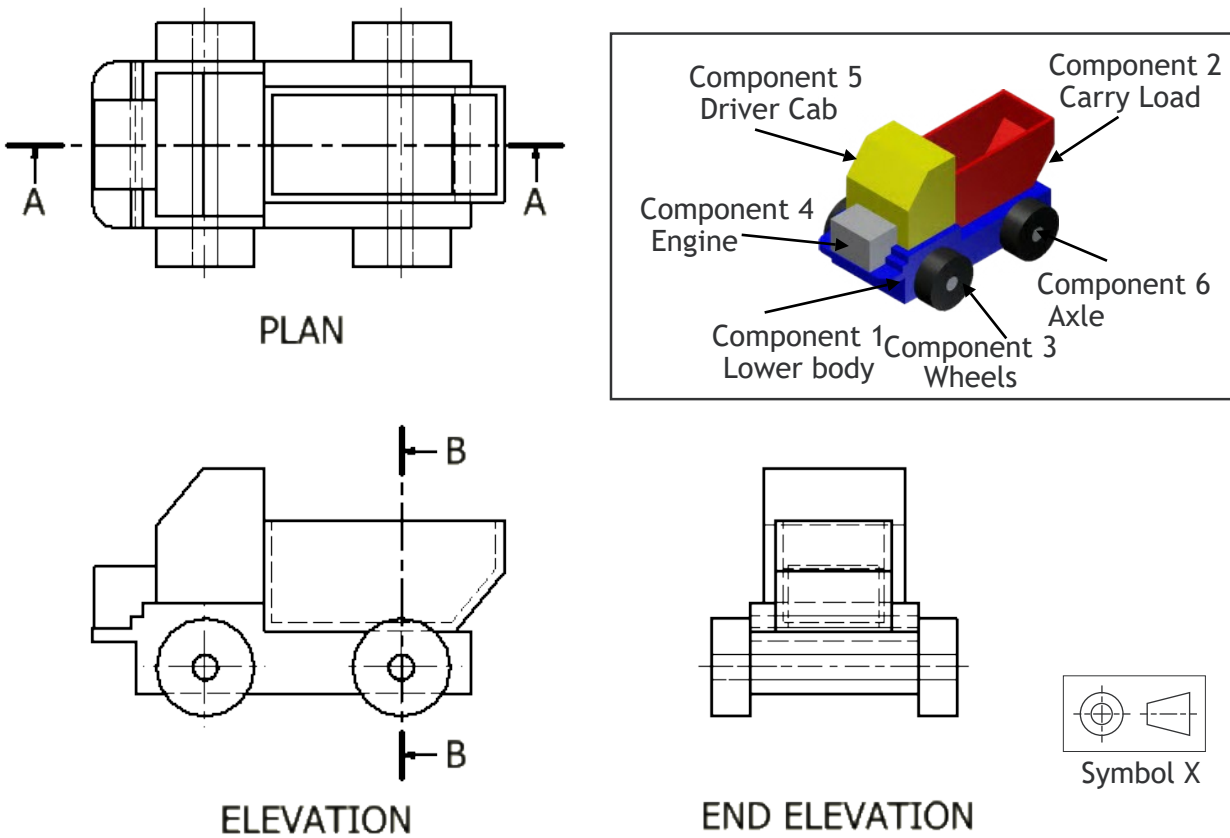


Diagram 1a

- (a) State the name of the type of drawing shown in Diagram 1a. 1

- (b) State the name of Symbol X in Diagram 1a. 1

- (c) Describe the purpose of Symbol X. 1

6. (continued)

MARKS
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WRITE IN
THIS
MARGIN

Four potential Sectional Elevations of the toy truck views are shown below.

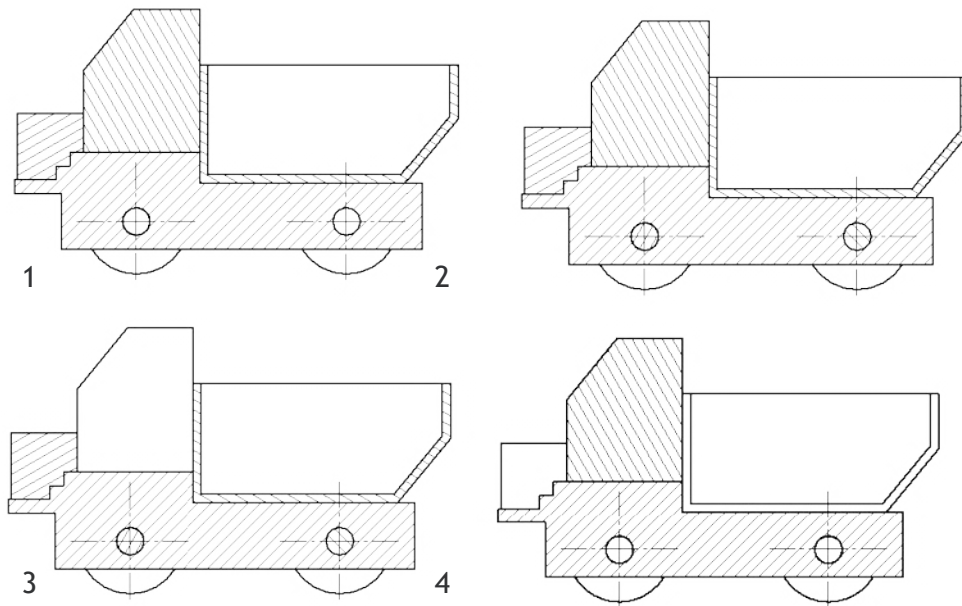


Diagram 2: Sectional Elevations on A–A

- (d) State, with reference to Diagram 1a and Diagram 2, the correct Sectional Elevation on A–A. 1

Four potential Sectional End Elevations of the toy truck views are shown Below.

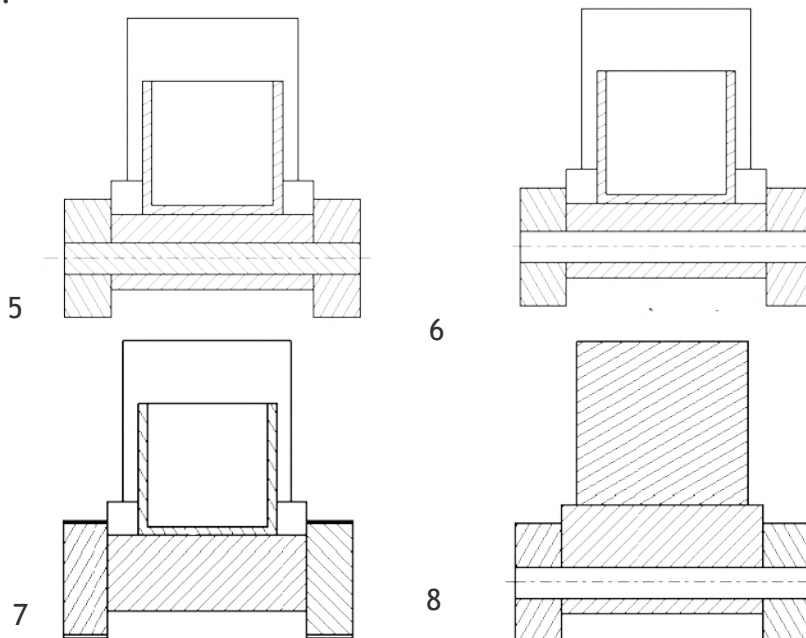


Diagram 3: Sectional End Elevations on B–B

- (e) State, with reference to Diagram 1a and Diagram 3, the correct Sectional End Elevation on B–B. 1

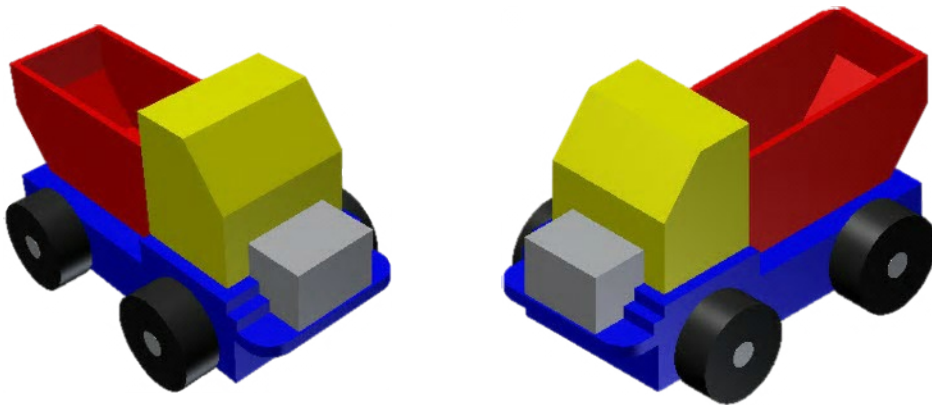
* X735750109 *

6. (continued)

(f) State one reason the CAD technician might use a sectional view.

1

Two pictorial views of the toy truck are shown below.



View 1

View 2

(g) State the name of the pictorial view shown at:

(i) View 1

1

(ii) View 2

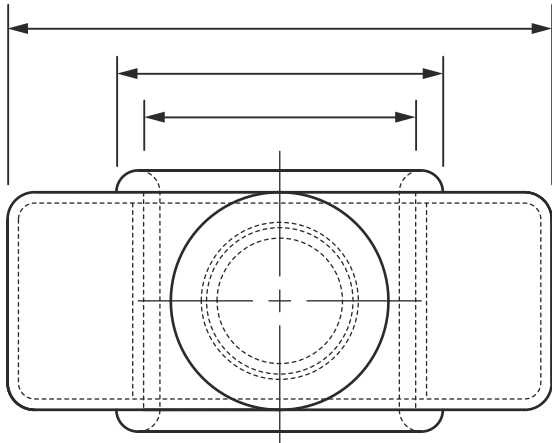
1

(h) State the name of another **two** types of pictorial views which would be suitable to show the truck.

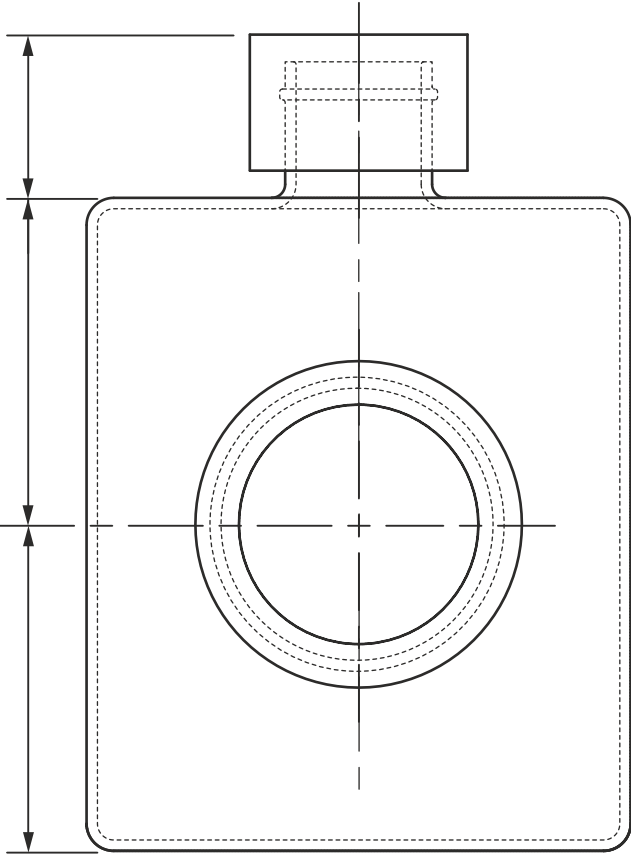
2

Pictorial type 1

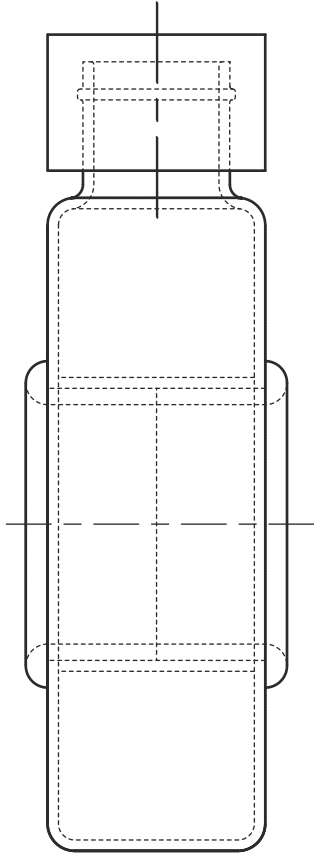
Pictorial type 2



PLAN

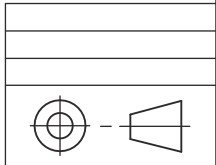


ELEVATION



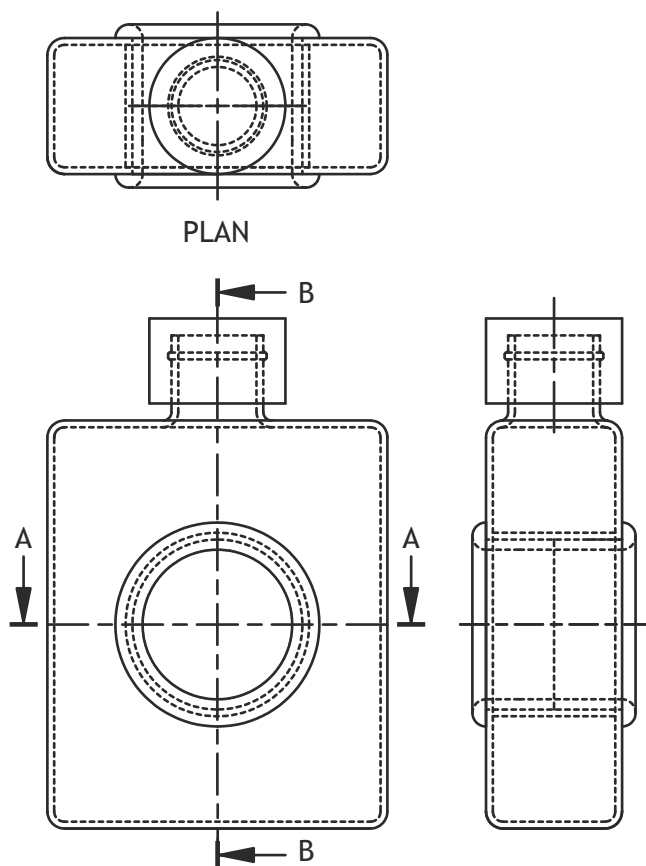
END ELEVATION

Not to scale



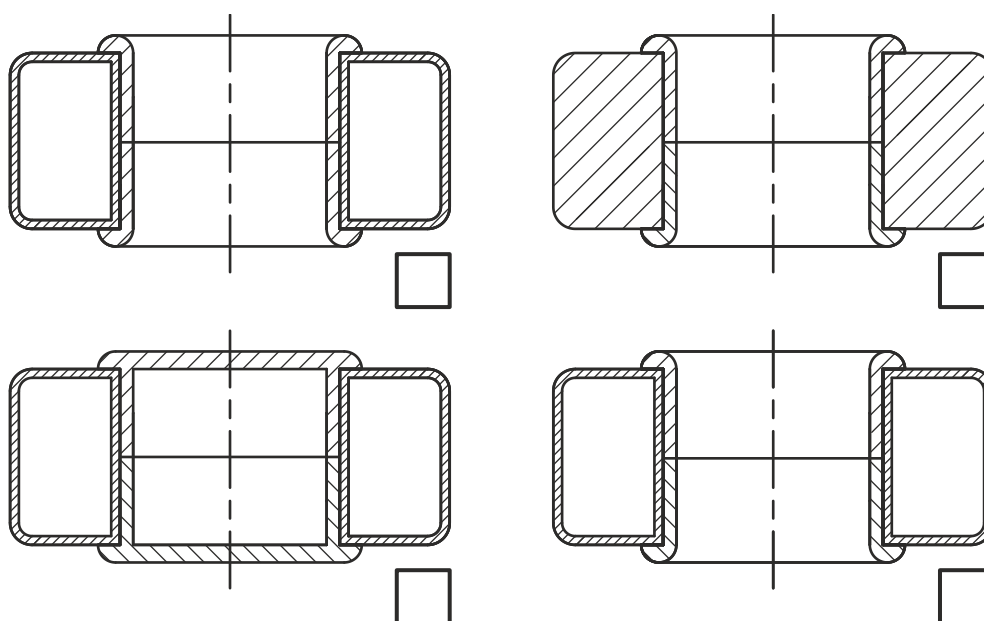
2. (continued)

Orthographic Sectional views were produced to aid manufacture.



(f) Indicate the correct sectional plan A-A, indicated in the drawing above, by ticking a box below.

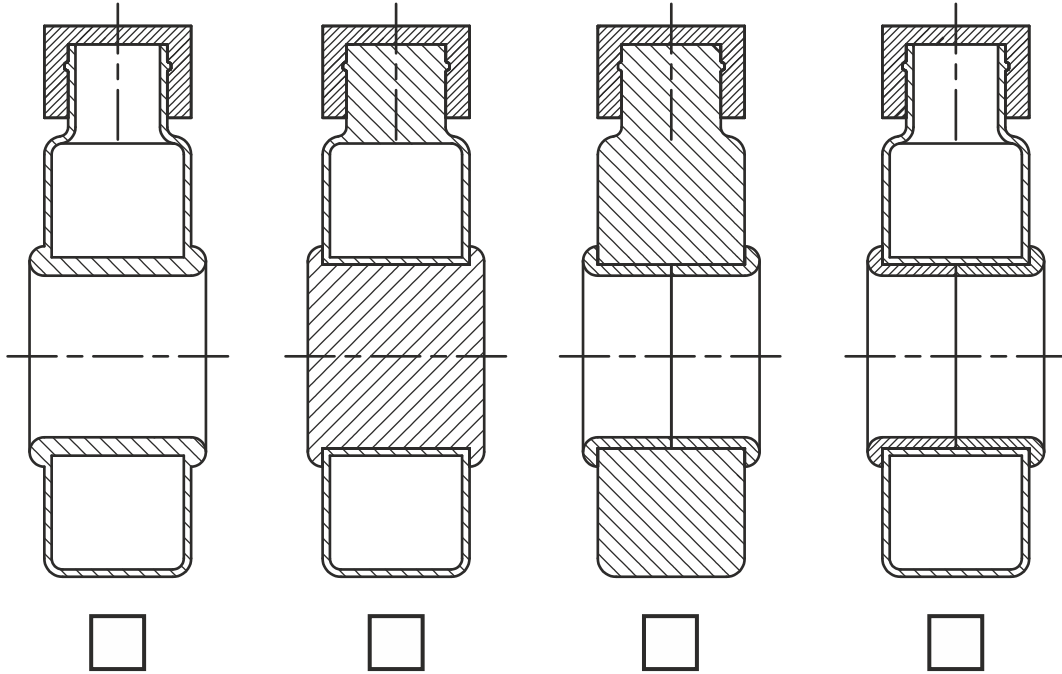
1



2. (continued)

(g) Indicate the correct sectional end elevation B-B, indicated in the drawing

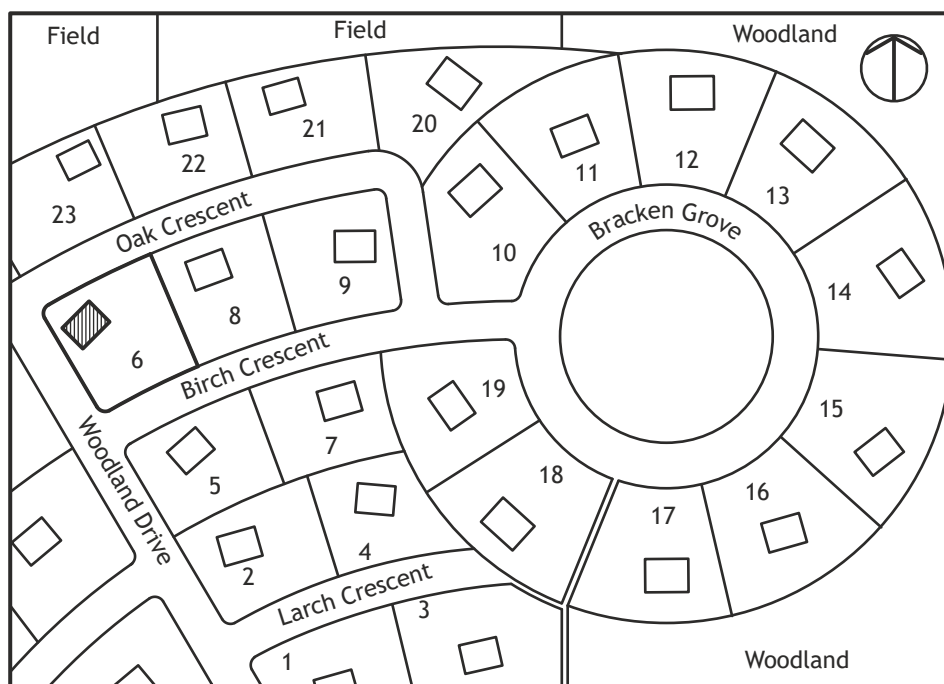
1



[Turn over

4. (continued)

A plan of the holiday park was drawn up as part of the construction



(c) (i) State the name of the plan type

1

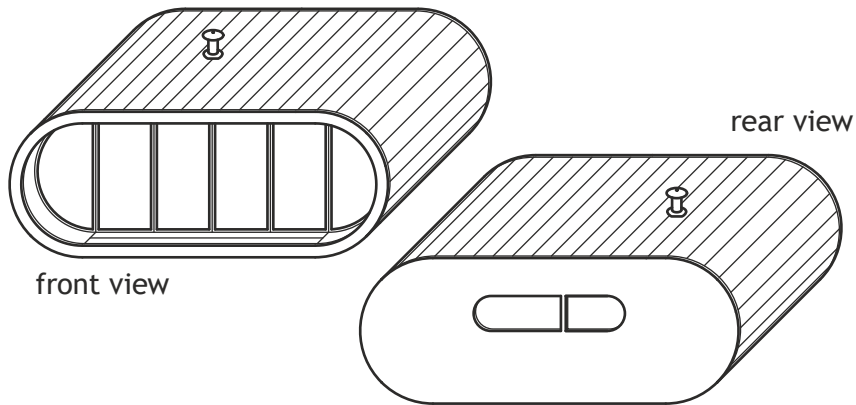
(ii) State a scale that is commonly used for this plan

1

[Turn over

4. (continued)

The CAD technician produced pictorial line drawings of the front and rear of the lodge.

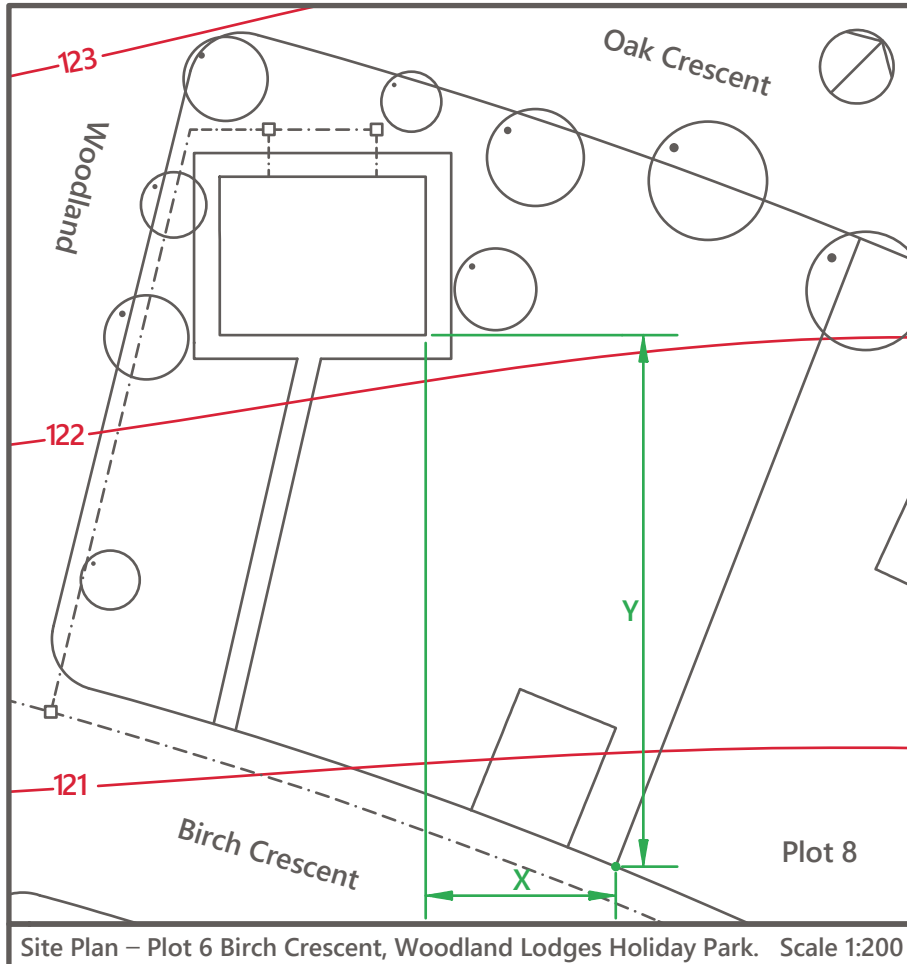


- (d) (i) State the type of pictorial line drawings shown 1

- (ii) Explain why this type of view would be used. 1

4. (continued)

The CAD technician produced a site plan as part of the construction project and wishes to calculate the position of the lodge in relation to the



(e) Calculate, using the scale shown, the following distances.

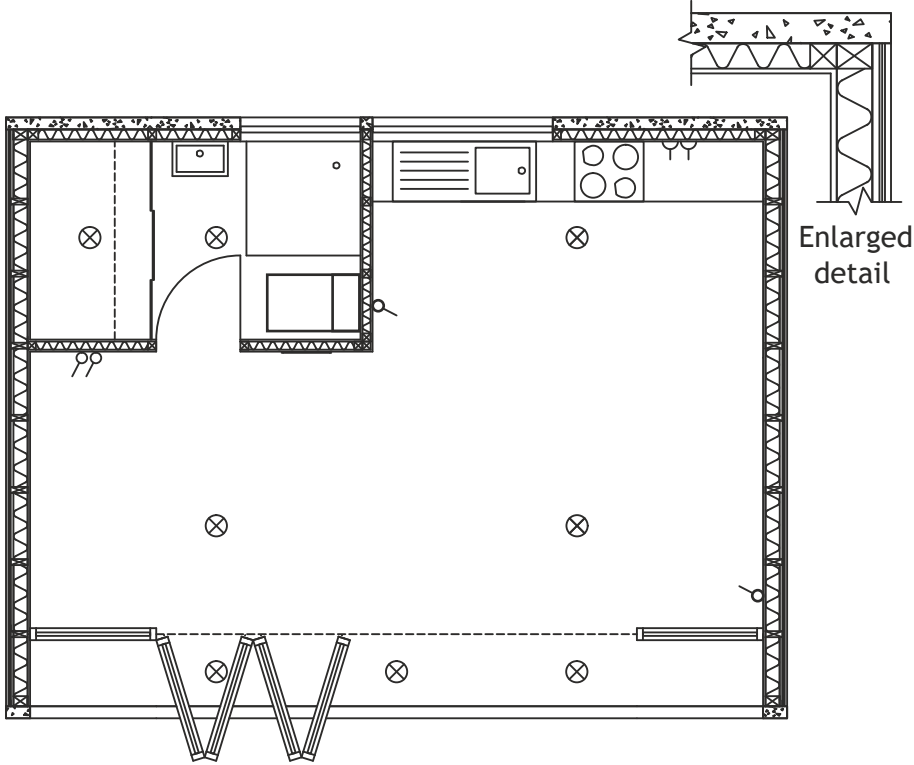
(i) Distance X _____ Metres 1

(ii) Distance Y _____ Metres 1

(f) State the name of the features drawn in red on the site plan. 1



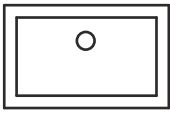

4. (continued)

The CAD technician produced a floor plan and enlarged detail of the lodge.



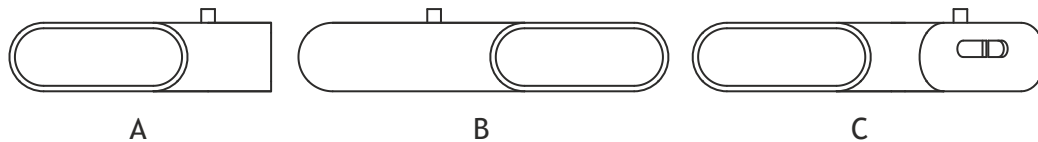
(h) State the names of the building drawing symbols shown below.

4

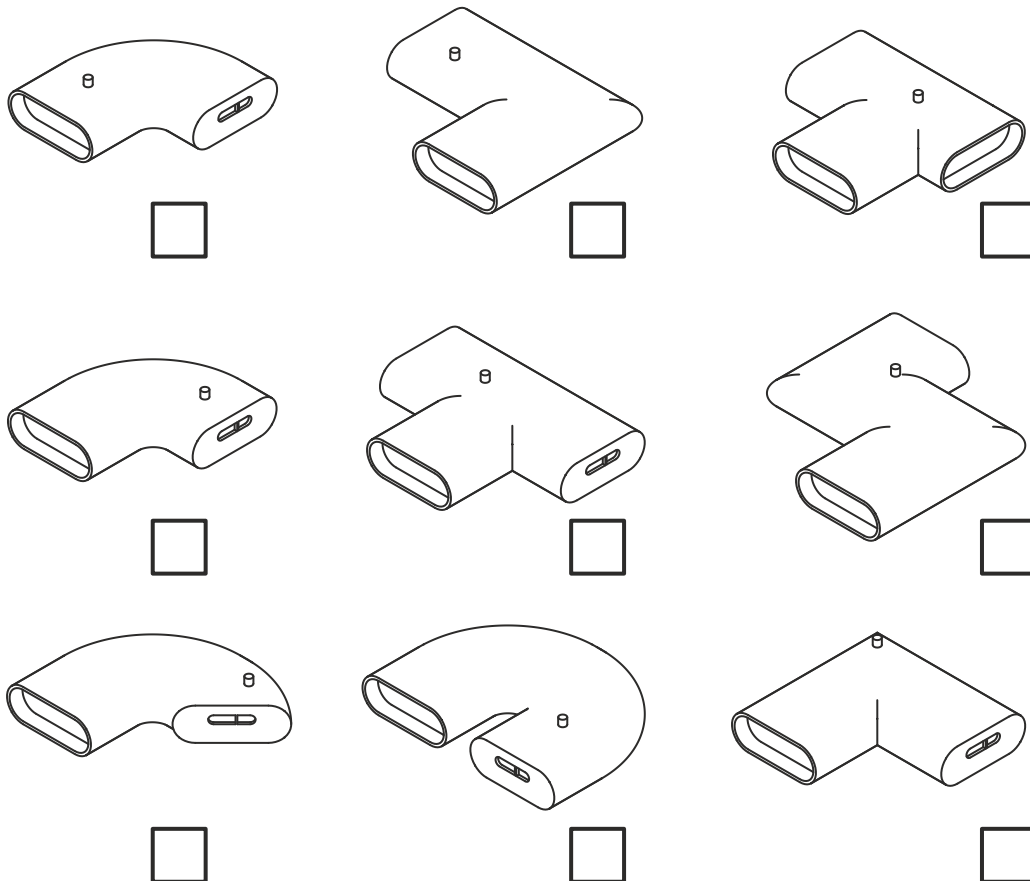
	_____		_____
	_____		_____

4. (continued)

In addition to their standard lodge, “Terra”, offer a premium range of lodges.
 These use modular components that allow the owners to create their own unique layout.



- (i) Identify the correct pictorial view for each of the elevations above by marking A, B or C in the appropriate box below. You should select only one pictorial for each of the elevations. 3



[END OF QUESTION PAPER]

DTP ELEMENTS AND PRINCIPLES

4. (continued)

Equilibrium employed a graphic designer to produce point of sale displays for retail outlets. The point of sale includes a scaled up version of the skateboard used as a stand, holding four skateboards with graphics applied to it.



The designer produced two different ideas for use on the point of sale unit, shown on the supplementary sheet for Question 4.

Supplementary Sheet for use with Question 4.



Idea 1



Idea 2

4. (continued)

Equilibrium requested the graphic designer produce ideas that make use of alignment.

- (b) Describe how the graphic designer has used the design principle of **alignment** in **both** of the ideas shown on the **supplementary sheet for Question 4**.

4

Idea 1

Idea 2

- (c) Describe how the graphic designer has used the following design principles in idea 1.

- (i) Contrast

1

- (ii) Unity

1

[Turn over

2. An advertising company has produced a promotional graphic to be used at a sports stadium. The graphic will be placed on the advertising boards around the pitch.

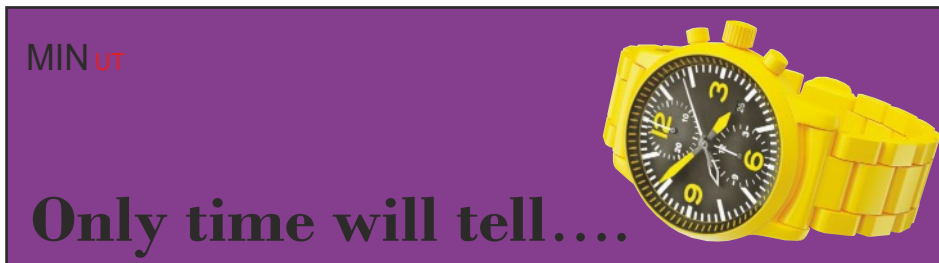
The initial layout is shown below.



Layout 1

- (a) State **one** instance where **harmony** has been used in **layout 1**. 1

The graphic artist has decided to change the background colour to violet as shown below.



Layout 2

- (b) (i) Explain a reason for changing the background colour to violet. 1

- (ii) State whether violet is an advancing or receding colour. 1

- (iii) Describe the effect the violet background colour has on the watch. 1

* X7 3 5 7 5 0 1 0 3 *

2. (continued)

The graphic artist wants to change the shade of violet used for the background colour as shown below.



Layout 3

(c) Explain how to create a **shade** of violet. 1

(d) Describe **two** examples of **unity** in **layout 3**. 2

Method 1 _____

Method 2 _____

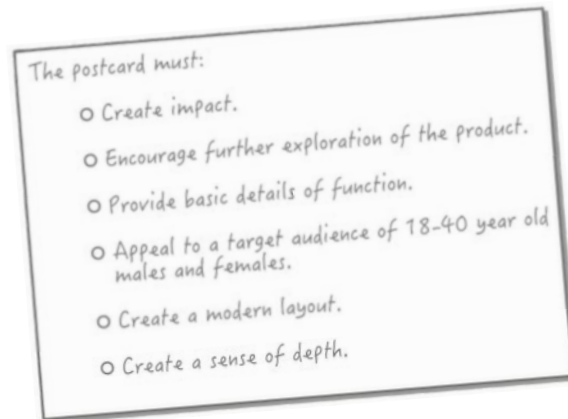
(e) Describe how the desktop publishing technique '**bleed**' has been used in **layout 3**. 1

(f) Describe how the desktop publishing technique '**reverse**' has been used in **layout 3**. 1

3. (continued)

FORM UK have decided to launch the new chair at a number of international furniture trade shows. During the shows, promotional materials for the new chair will be distributed.

The designer was tasked with producing a postcard which met the following design specification:



The final design is shown below.



Front of postcard

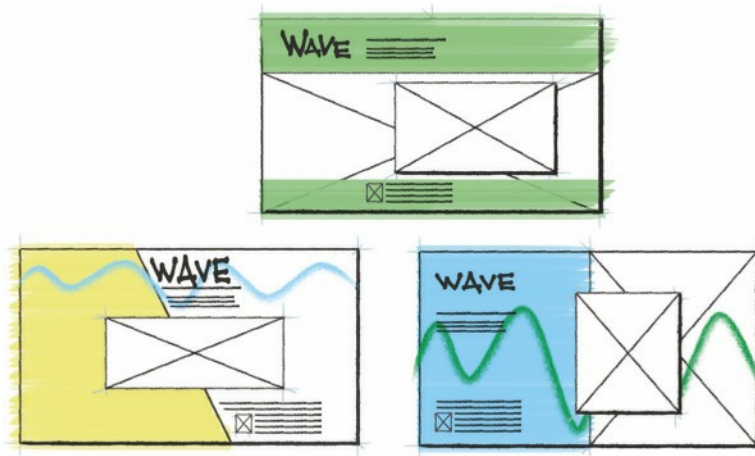
Back of postcard

FORM UK are happy that the above postcard meets all of the specification points.

(c) Describe how the postcard has met the specification points.

4

1. A company, WAVE, are promoting a new wireless speaker using a webpage. A graphic designer has produced a series of thumbnails for the design of the webpage.

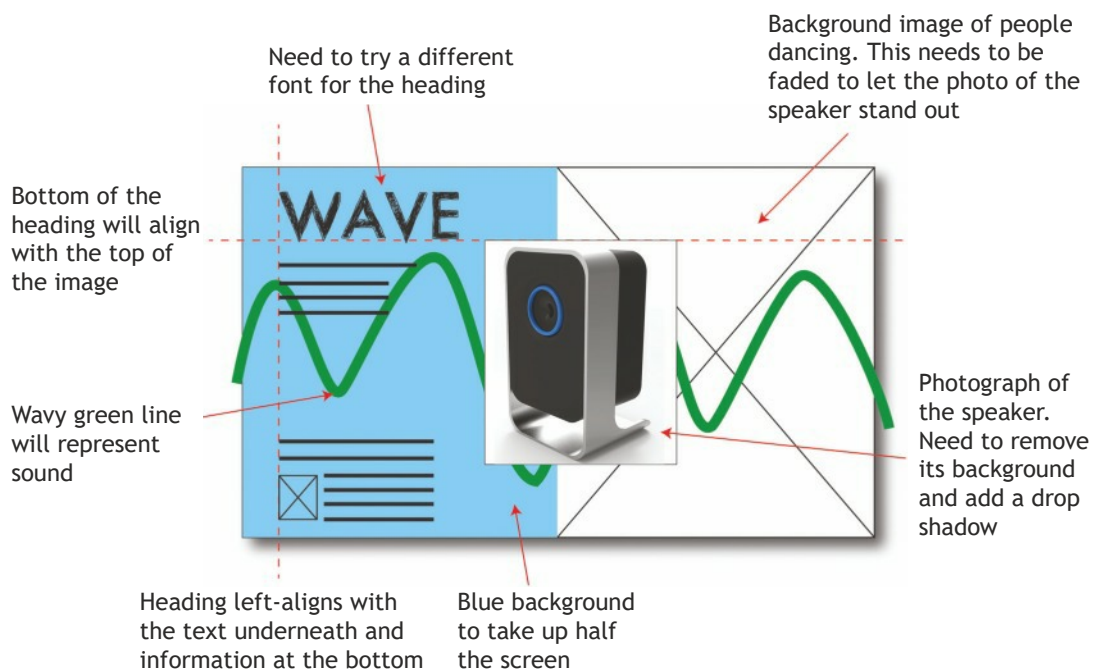


- (a) State two reasons why thumbnail sketches would be produced during the preliminary stages.

2

1. (continued)

The graphic designer selected one of the thumbnails and decided to use DTP software to develop the initial idea. The thumbnail is shown below with the



The graphic designer used the above thumbnail annotations to develop the design using DTP software.

(b) Explain three advantages to the graphic designer of using DTP software to produce a graphic layout.

3

[Turn over

1. (continued)

The final design for the webpage is shown below.



(c) Describe the effect to the webpage of using the green

2

(d) Explain how the graphic designer has used the following design elements and principles to create visual impact in the final design.

(i) Depth

2

1. (d) (continued)

(ii) Dominance

2

(iii) Alignment

2

(e) Transparency has been applied to the image of the people dancing in the webpage.

Describe why the graphic designer has used the desktop publishing technique “transparency” on this image.

1

(f) Describe how the desktop publishing technique “bleed” has been used in the webpage design.

1

The company, WAVE, originally planned on using posters to promote their product.

(g) Describe the positive impact to the environment of using a webpage rather than printed posters to promote the product.

2

4. Terra Leisure group have designed a range of eco lodges as part of their new holiday park accommodation. The graphic designer produced a flyer detailing the range. The final design is shown below.



Graphics for a construction project fall into 3 main types:
Preliminary,
Production and Promotional.

1

- (ii) Describe the purpose of this type of graphic.

1

A 3D rendered illustration of the lodge was required for the flyer. Terra Leisure had this illustration produced by a CAD technician in another country.

2

Space For Additional Answers

* X7 3 5 7 5 0 1 1 8 *

Space For Additional Answers

* X7 3 5 7 5 0 1 1 8 *