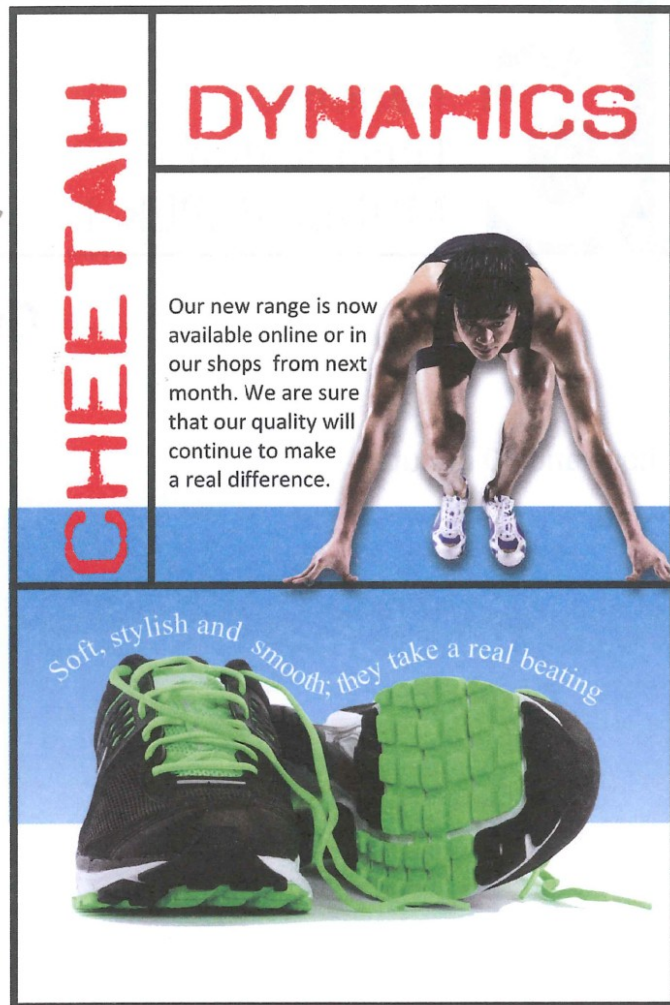


1. Cheetah Dynamics, a sports equipment company, is marketing a new range of sports shoes. The mini-ad they have produced will be used in sports magazines. The colours in the layout were chosen carefully. The red company name stands out well.



- (a) State why using the colour red helps the company name to stand out against the blue and white background. 1

Background colours are receding or contrasting and help the red advancing colour to stand out.

The designer wanted to create unity by making connections between different items in the layout.

- (b) State the DTP feature that allows the body text to follow the shape of the sprinter. 1

Text wrap; wrap text

When line is used in a layout it can have several functions.

- (c) Explain the function of the lines in this layout. 1

To separate items; to help create structure; to emphasise the company name

1. (continued)

- (d) State the name of the DTP feature that produced the waves in the slogan above the sports shoes. 1

Flow text; flow text along a path

- (e) State the name of the other DTP feature used on the wavy text. 1

Reverse

- (f) Explain how shaping the wavy text in this way improves the layout. 1

Creates contrast with the straight lines in the layout; creates a close connection between the product and the slogan; reflects the sentiment of the text: soft and smooth, suggests comfort or cushioning, suggests movement.

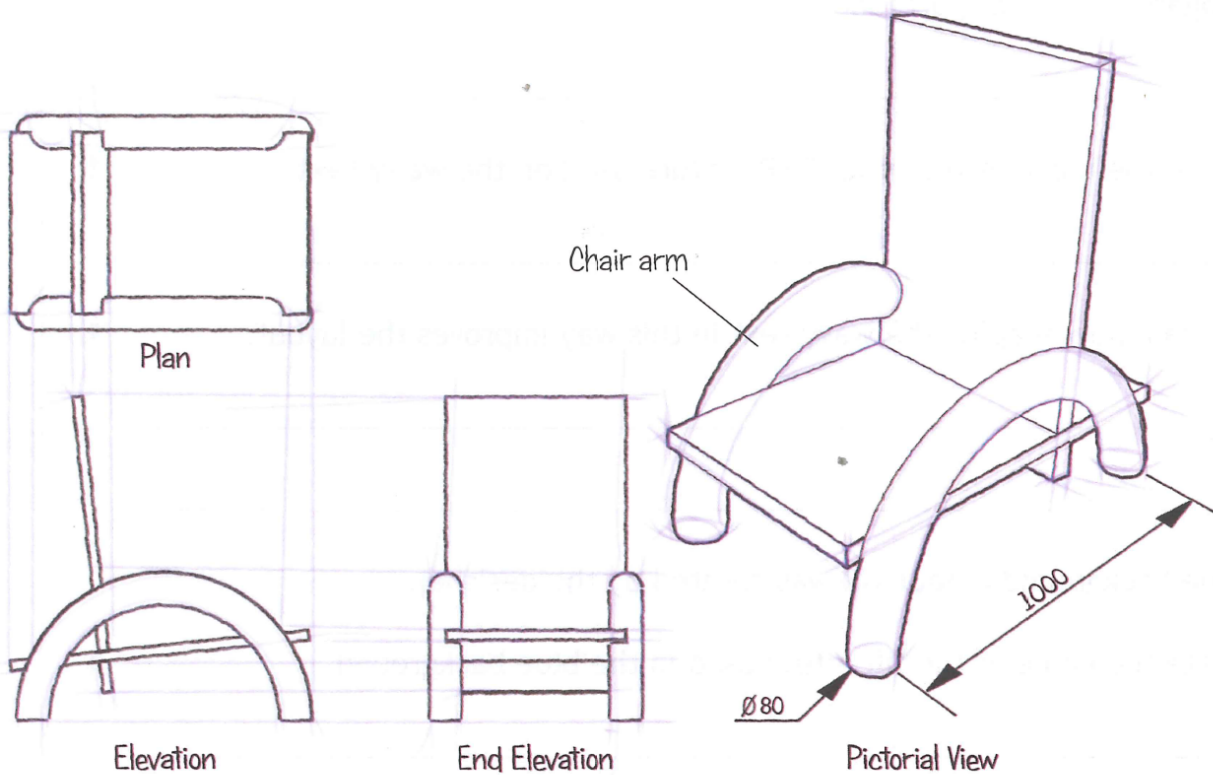
The blue background colour fill was created by the designer.

- (g) State the name of the fill effect used in the blue background. 1

Graded, gradient or gradation fill

Total marks 7

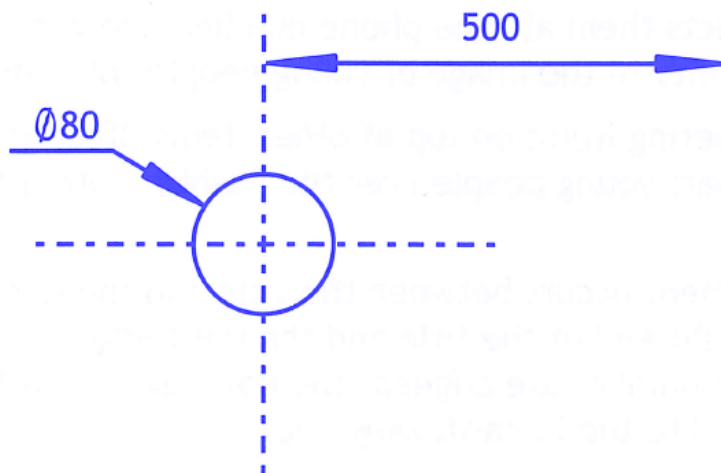
2. A furniture designer has created some preliminary sketches for a new chair. These sketches were given to a CAD technician who will make a 3D CAD model.



The CAD technician used the revolve command to model the arms of the chair.

- (a) Describe, using the correct dimensions and 3D CAD modelling terms, how you would use 3D CAD software to model one arm of the chair. Do not model the slots in the arm. You may use sketches to support your answer.

3



Draw a circle of DIA80mm (1 mark), 500mm away from a centre line. (1 mark)

Revolve the circular profile 180° round the centre line. (1 mark)

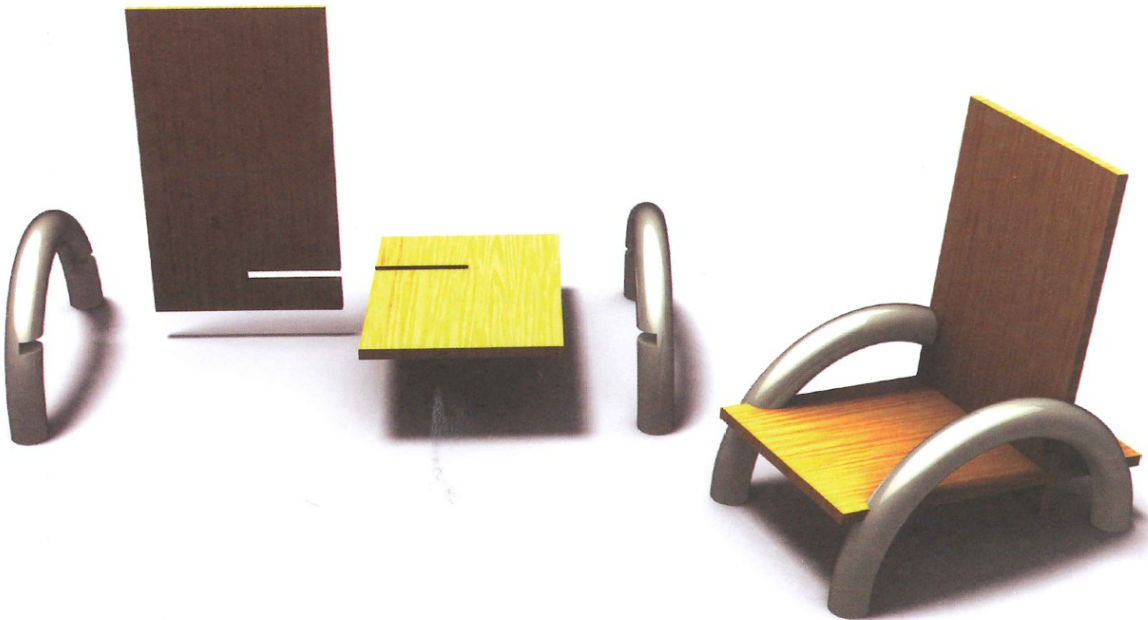


2. (continued)

The chair requires two arms – one for the left and one for the right. The CAD technician modelled the left-hand arm first.

- (b) Describe how the CAD technician can make an identical right-hand arm without starting a new model. 2

Select the flat face of a slot; draw a mirror line; select a plane. (1 mark for either of these) Use the mirror command to mirror the component. 2



The chair has four parts, made from three components:

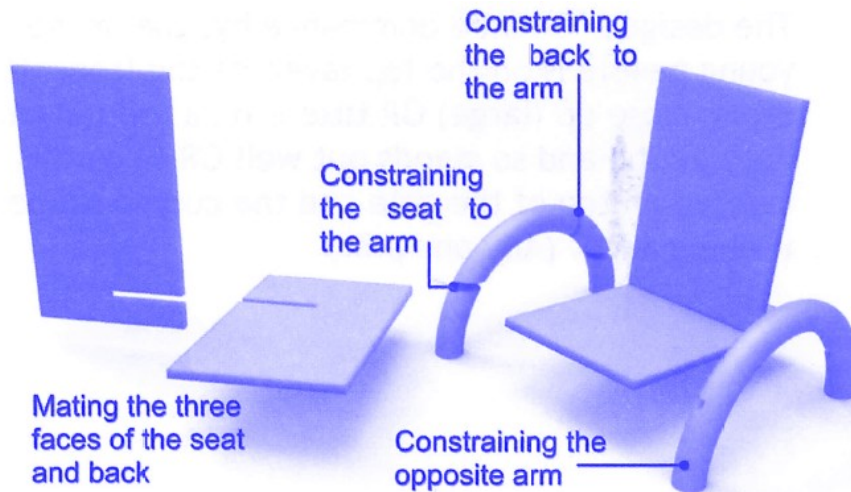
- the left-hand arm
- the right-hand arm
- the seat/back component (used twice).

(continued overleaf)

2. (continued)

- (c) Describe the CAD constraints used to make a CAD assembly of the four parts. Use sketches to illustrate your answer.

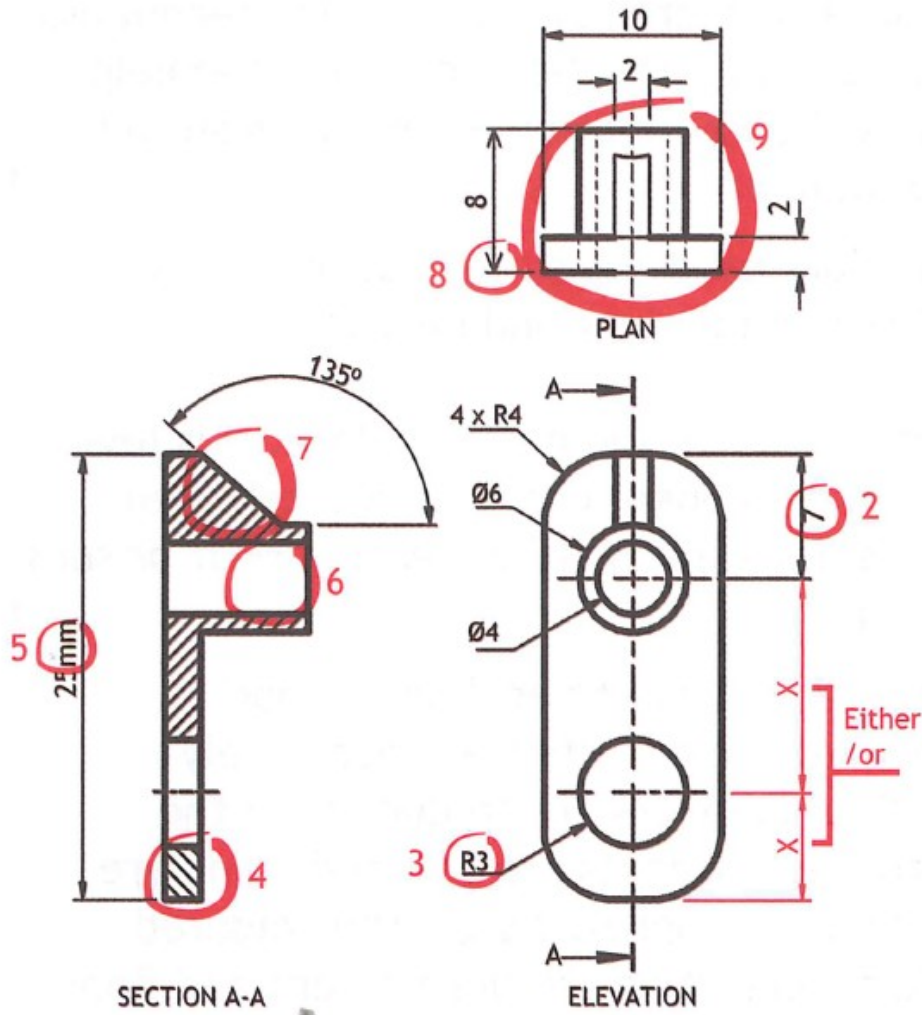
4



Assemble the chair seat and back requiring three mates. (1 mark) Mate the chair to leg/arm base. (1 mark) Mate the chair to leg/arm back. (1 mark) Constrain opposite arm using same technique. (1 mark)

4

3. (a) and (b)



Plastic Fixing Clip
All sizes in mm
Not to scale
Plastic location Clip

3. (continued)

- (b) Identify eight British Standards drawing errors or omissions on the orthographic production drawings on *Page seven*. Circle and number each error on the drawing and describe each error in the table below. An example has been given.

8

Table of British Standards errors and omissions in the fixing clip production drawing	
Your numbered error or omission	Description of error or omission
1	This should be a centre line, not a solid line.
2	The number is underneath the dimension line; it should be on top
3	This dimension should be a diameter, not a radius.
4	Cross-hatching is in the wrong direction; one component = one direction
5	Units should not be shown; they appear already in the title block.
6	Centre line is missing.
7	The web is section and should not be.
8	Open arrows on the dimension line; these should be closed.
9	The plan is upside-down.

The clip drawings were produced using 3D CAD modelling software. The plastic clip will be used inside a flatscreen TV which is being designed and assembled in Scotland.

All of the components are made in a factory in China before being shipped over to Scotland.

- (c) Describe two ways in which CAD models and drawing standards can make this international work easier.

CAD Models:

1

CAD models are electronic and can be quickly and easily sent to China via email attachments.

Drawing Standards:

1

Drawing standards are common around the world and can be understood by all users. Drawing standards help overcome language barriers.

3. (continued)

The company is always trying to improve component design. To help their designers they are transferring all of their drawings and design work from manual drawing boards to 3D CAD models.

(d) Explain two ways in which this change will benefit the designer.

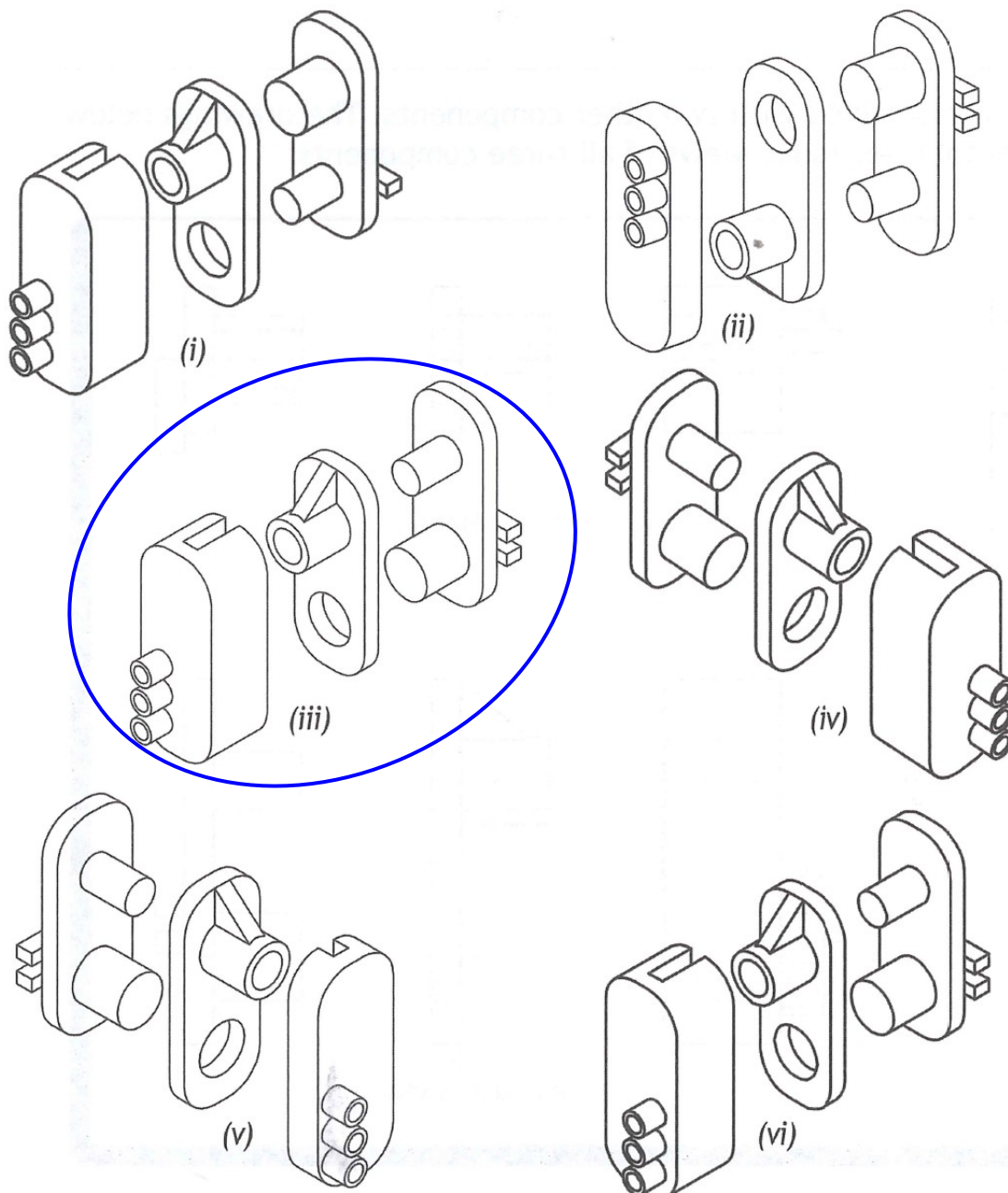
2

CAD models are easily modified to take account of changes to the design; CAD models can be tested before being manufactured; the CAD model can be used to produce a CNC prototype; CAD models can be rendered to produce a realistic image; CAD models can be tested in computer simulations; production drawings can be easily generated from CAD models.

3. (continued)

The exploded pictorial drawings below represent the clip assembly.
Five of them are incorrect and one is correct.

(e) Identify the exploded pictorial view that matches the clip assembly on the previous page.



Exploded pictorial view (iii) matches the clip assembly on the previous page.

4. A hospital has employed a graphic designer to improve the layout of signs and notices for patients.

The original sign and the improved sign are shown below.

<i>Department</i>	<i>Floor</i>
<i>Oncology</i>	<i>2</i>
<i>Radiology</i>	<i>1</i>
<i>Ward 3</i>	<i>5</i>
<i>Diagnostics</i>	<i>4</i>
<i>Paediatrics</i>	<i>3</i>
<i>Ward 2</i>	<i>5</i>
<i>X-Ray</i>	<i>4</i>
<i>Ward 1</i>	<i>2</i>

Original sign

Department	Floor
Radiology	1
Ward 1 Oncology	2
Paediatrics You are here	3
Diagnostics X-Ray	4
Ward 2 Ward 3	5

Improved sign

Colour was an important consideration when designing the improved sign.

- (a) Explain how the new colours improved the sign.

2

The pale blue colours used in the improved sign are suitable because they are associated with cleanliness and are calming in nature; the two tones used help the user follow the information across the sign. (Or any other suitable answer)

2

A survey of patients and visitors preferred the choice of typeface (font) in the improved sign.

- (b) Suggest a reason why the new typeface was preferred.

1

The new font is simpler and more modern. It is less formal, less old-fashioned, etc. It is not italicised.

Visitors felt that it was easier and quicker to understand the improved sign.

- (c) Identify two layout features, excluding typeface, that make the improved sign quicker to understand.

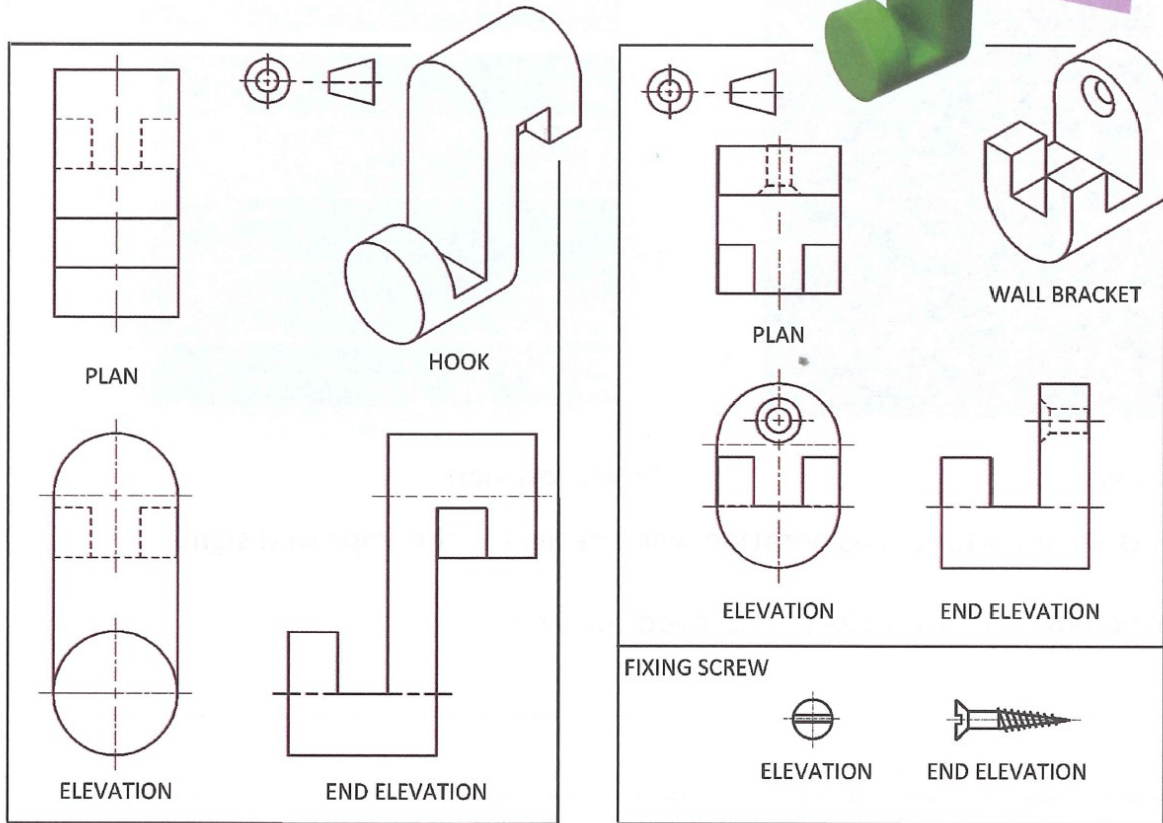
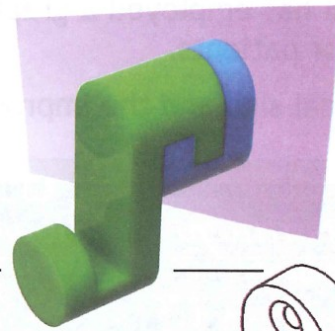
2

The line separating 'Department' and 'Floor' is removed; the department titles are accurately aligned; the floor numbers are 'reduced' on the improved sign; departments are grouped; 'You are here' is clear on the improved sign; the coloured banding makes connecting the department and floor easier. (Any two points, for one mark each)

2

5. A range of production drawings for a domestic wall hook are shown. The hook comprises two components, the hook and the wall bracket, plus a standard component fixing screw.

Study the drawings and answer the questions.



- (a) State which of the two isometric exploded views is **incorrectly** exploded.

Isometric exploded view A is incorrectly exploded.

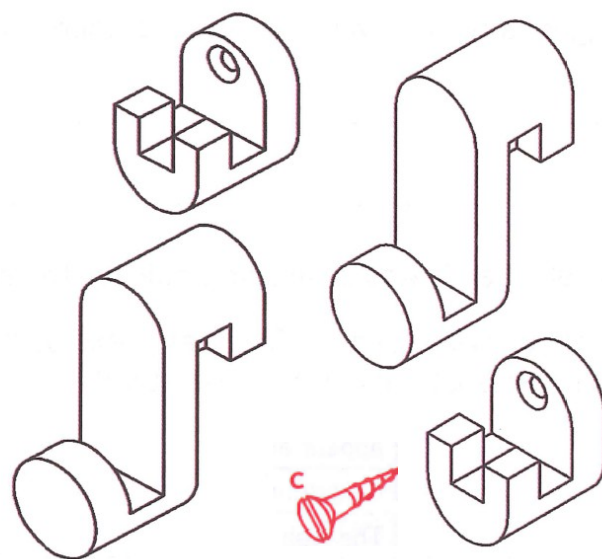
1

- (b) Explain why this view is **incorrectly** exploded.

The hook should be placed above the wall bracket as this is the way the physical parts will be assembled

1

The fixing screw is missing from the exploded views.



VIEW A

VIEW B

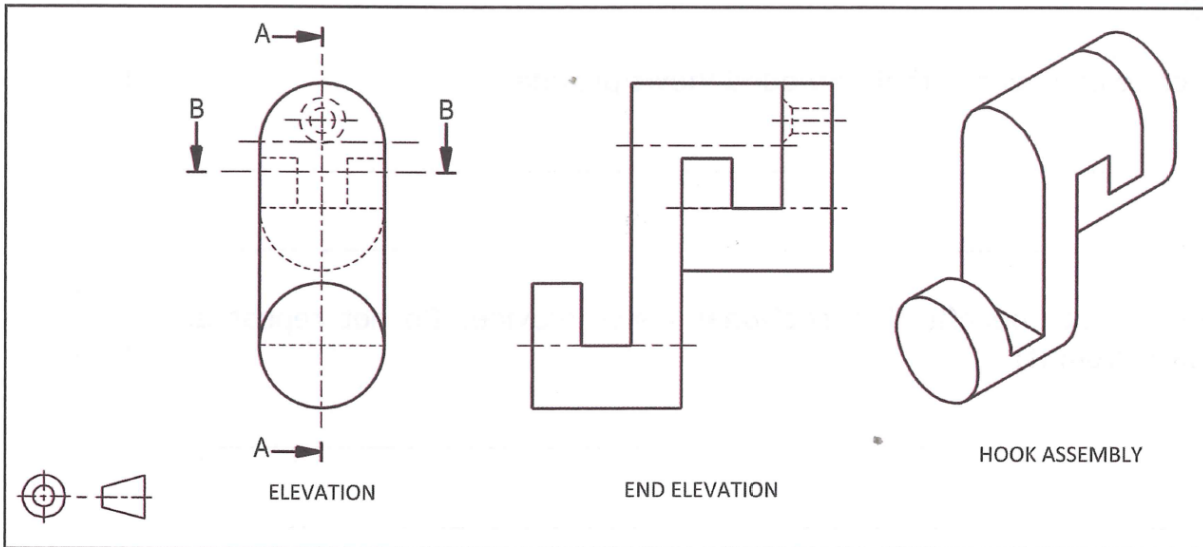
Isometric exploded views

- (c) Indicate the position and direction of the fixing screw on the correctly exploded isometric view.

1

5. (continued)

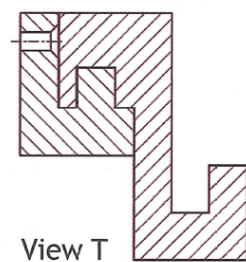
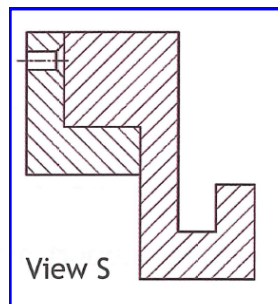
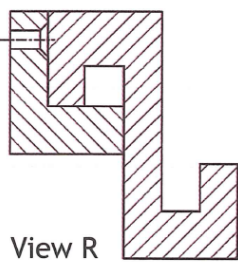
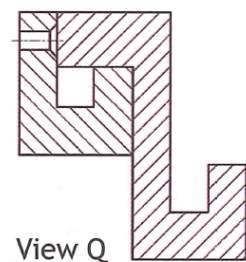
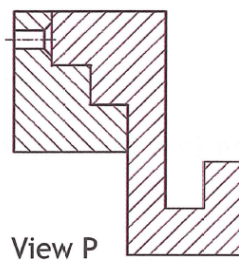
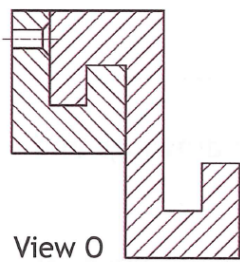
Wall hook assembly drawings



(d) Identify the sectional view below that matches section A-A above.

Section A-A is view S.

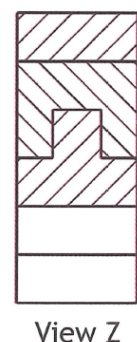
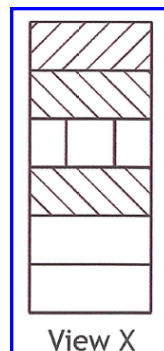
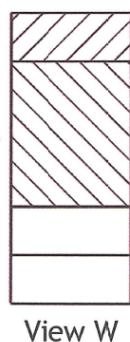
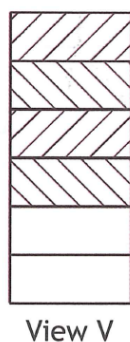
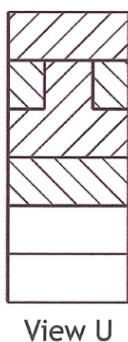
1



(e) Identify the sectional plan view below that matches section B-B above.

Section B-B is view Y.

1



5. (continued)

Exploded views and sectional views are commonly used in production drawings.

- (f) Describe one benefit that **exploded views** provide. 1

Exploded views show how the components in a product fit together; exploded views can help to show the assembler or consumer the best way to assemble a product. 1

- (g) Describe one benefit that **sectional views** provide. Do not repeat an answer from (f). 1

Sectional views give an understanding of how parts fit together; sectional views can show the features inside components and assemblies that cannot normally be seen. 1

In sectional drawings there are features that should not be sectioned or cross-hatched.

- (h) Name one common feature or component that should **not** be sectioned. 1

Webs; shafts; spindles; axles; nuts and bolts.

Production drawings can be shown in two main types: assembly drawings and component drawings.

- (i) Describe the difference between assembly drawings and component drawings. 1

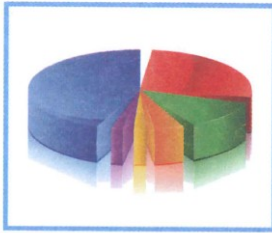
An assembly drawing is a drawing of a product that has more than one part and the parts are put together as they will be in the real product. Component drawings are drawings of individual parts. 1

Component drawings are dimensioned to support manufacture.

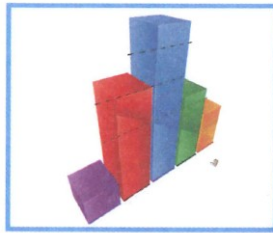
- (j) State why dimensions are added to component drawings and not to assembly drawings. 1

Component drawings are dimensioned prior to manufacture because each part is normally manufactured separately and assembled later. Dimensioning assembly drawings would be confusing because it may not be clear which component the dimensions apply to. 1

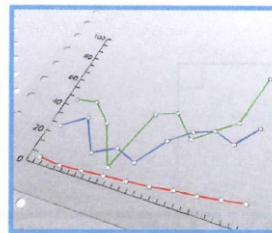
6. The four main types of information graphs and charts are shown below.



Pie chart



Bar graph



Line graph

Average Holiday Prices (in £)			
	Britain	Europe	America
Spring	1800	1600	2100
Summer	2200	2000	2400
Autumn	1700	1600	1900
Winter	1350	1300	1650

Table

Two different sets of statistics are shown below.

Each of the statistics can be made more visual by creating an information graph or chart to display the figures.

Statistics A

Annual ice cream sales

January	950 ltr
February	800 ltr
March	1250 ltr
April	3100 ltr
May	2750 ltr
June	4500 ltr
July	5600 ltr
August	6200 ltr
September	4210 ltr
October	1220 ltr
November	1000 ltr
December	1400 ltr

Statistics B

Road bike technical data

Model

Roadster	Wheel size 590cm	Frame size 147cm
	Gears 9	Weight 13kg
Flyer	Wheel size 602cm	Frame size 152cm
	Gears 12	Weight 12kg
Kingfisher	Wheel size 600cm	Frame size 155cm
	Gears 9	Weight 14kg
Draper	Wheel size 588cm	Frame size 148cm
	Gears 8	Weight 14kg
XRB	Wheel size 640cm	Frame size 160cm
	Gears 10	Weight 12kg
Speedster	Wheel size 580cm	Frame size 154cm
	Gears 9	Weight 15kg

(a) State the best type of information graphic to show the trends over the year in **Statistics A**. 1

Line Graph or Bar Graph

(b) Explain why this is the best type of graph or chart to display **Statistics A**. 1

Line Graph has a time base and shows flow or trend over a period of time

Bar Graph will give a comparison between sales in different months

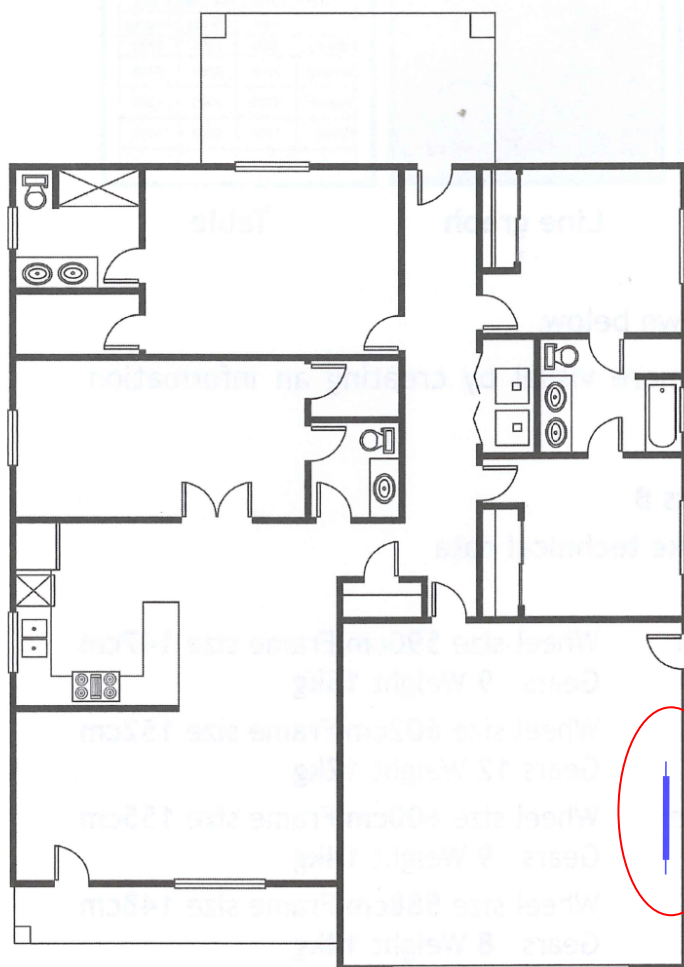
(c) State the best type of information graphic to display the data in **Statistics B**. 1

A Table

(d) Explain why this is the best type of graph or chart to display **Statistics B**. 1

The data is too complex to present using any of the other types of display

7. An architecture company makes use of preliminary, production and promotional graphics.



FLOOR PLAN v1.0	
HOUSE NAME:	THE ROCKWELL
SCALE:	
UNITS ARE IN M	
IF IN DOUBT, ASK!	
DRAWN BY:	CLARE HALLIDAY
APPROVED BY:	JOE MASON
DATE:	8 TH JULY

To enable the builder to start constructing the house, more information needs to be added to the floor plan.

(a) State three key items of information missing from the floor plan. 3

North arrow ; Scale of Drawing

Dimensions; Room Names

Ceiling Lights; Electrical Sockets; Wall Switches

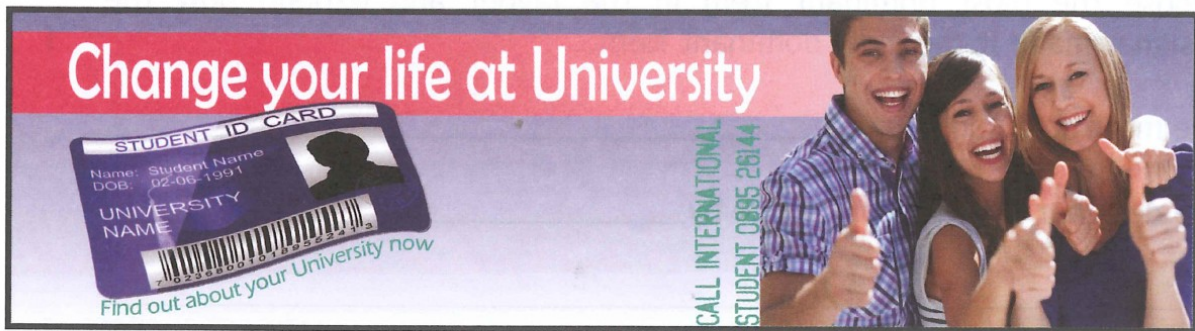
(b) Add the symbol for a radiator to any one of the rooms. 1



(Symbol added in a suitable position to any room.)

Total marks 4

8. A poster designed by a graphic artist to encourage young people to consider university courses is shown.



- (a) Describe how the graphic artist created unity in the layout. 1

Matching the green in two areas; Layering the Flashbar behind Young People, ID Card & Title which connects them all.

Placing the contact details in close proximity to the image also links them

- (b) Describe how the graphic artist created depth in the layout. 1

Depth is created by Layering items on top of one another; ID Card over Flashbar; Image of Young People over Flashbar

The graphic artist worked hard to design an organised layout. This was achieved by using alignment.

- (c) Describe where alignment occurs in the layout. 1

Alignment occurs between the Title and the ID Card;

The right edge of the Title & Phone Number are aligned

Text Flow is aligned to ID Card

The designer used colour to create contrast in the layout.

- (d) Describe one other way in which contrast has been created in this layout. 1

Layering items to create contrast - near & far; Use of Size - big & small - Text & People; Vertical & Horizontal elements; Straight & Curved features

The layout is to be used on the side of double-decker buses in towns around the country.

- (e) Explain why contrast is important in a promotional layout like this one. 1

Contrast can make the layout eye catching, used to attract attention.

8. (continued)

- (f) Choose the most dominant item in the layout and explain how the designer made it the most dominant item. 1

The most dominant item is Group of People; Title; ID Card

The designer created dominance by _____

Image of young people is on the top layer, they are in close up

Positioned as a Rule of Thirds focal point

Title is on a Red advancing background, making it stand out

ID Card is layered on top of the title & Curved shape gives it dominance 6