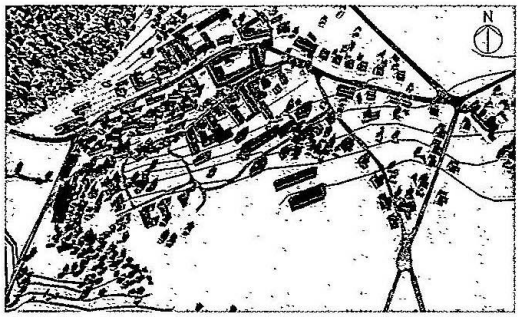
Candidate 1 evidence

SECTION 1 — 50 marks

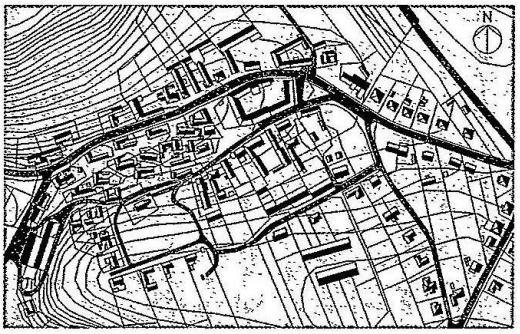
Attempt ALL questions

1. A planning proposal for a large housing development has been submitted by an architect to the local council.

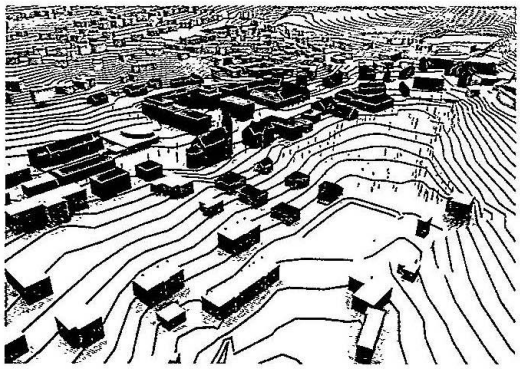
   A variety of graphics of the development are shown below.



Graphic 1



Graphic 2



Graphic 3

1. **(continued)**

(a) Describe, with reference to graphics 1–3, how these would be used by:

(i) the housing developer;

Graphic 1 helps show the developer how crowded the development will be and graphic 2 shows what kind of landscape they will be built on.

(ii) the house buyer.

Graphic 3 shows the buyer what the development will look like and gives them an idea of their surraundings.

Before planning can be granted a public consultation must take place for local residents. The company produced a range of graphic communications to showcase the housing development, these included:

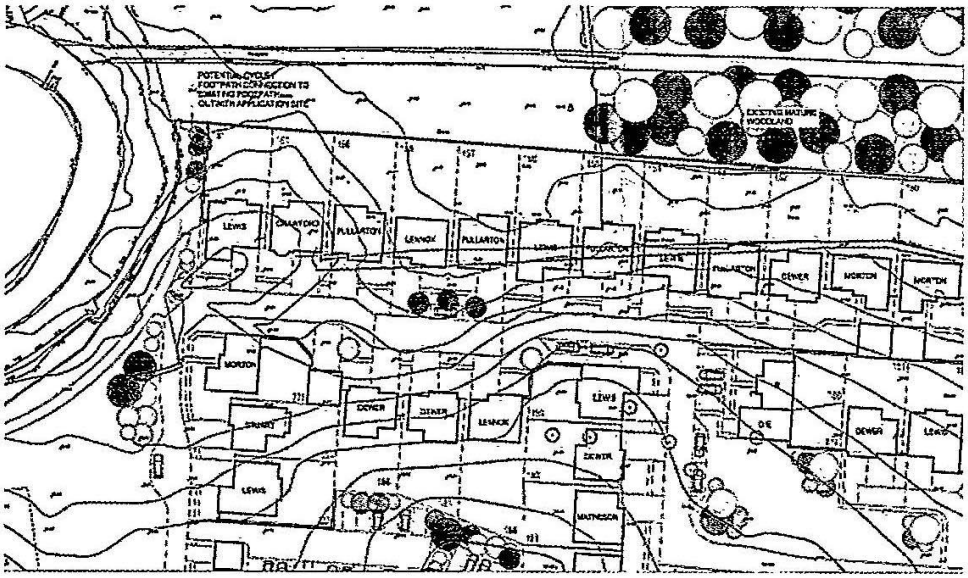
- 2D pictorial drawings
- 3D printed scale model of the development
- Animations.

(b) Describe **two** ways in which these graphic communications could help the housing company achieve a positive public image.

The animations could show what the community would be like and could show it as a happy and friendly place to live.

1. (continued)

A topographical survey was produced for the area. An example of this type of graphic is shown below.

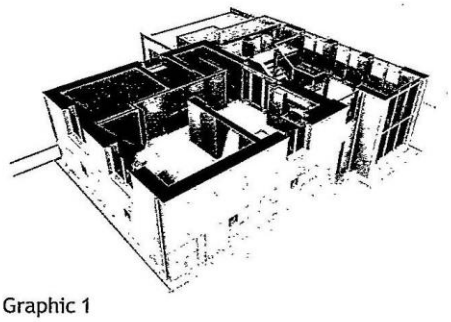


(c) Describe **two** reasons why this type of graphic is of value to the architect.

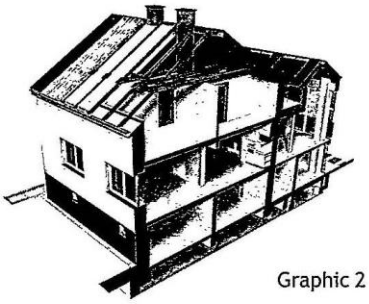
This would be of value to the architect as it shows the space and surroundings they would have to be aware of and it shows what kind of ground surface it will be built on.

1. **(continued)**

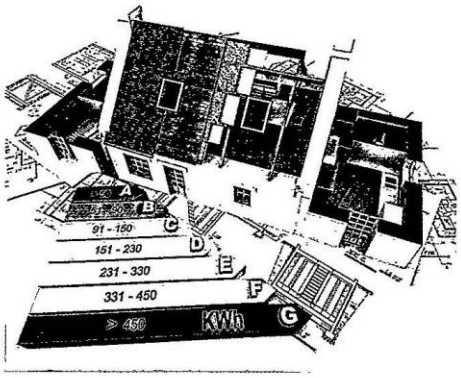
Various graphics of houses in the development are shown.



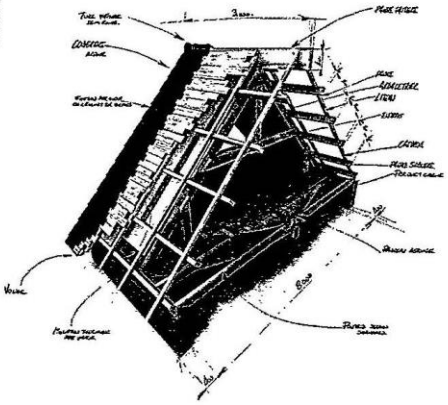
Graphic 1



Graphic 2



Graphic 3



Graphic 4

Graphic 5

1. **(continued)**

(d) Describe, with reference to the graphics 1 to 5, what information can be gained that would be relevant to:

(i) the construction trades;

the construction trades could gain information such as materials and dimensions from graphic 4 and graphic 3 shows them how it would be constructed.

(ii) the company sales team.

Graphic 1 allows them to show a client the kind of layout the houses would have and graphic 5 allows them to show an image that shows what a final house would look like.

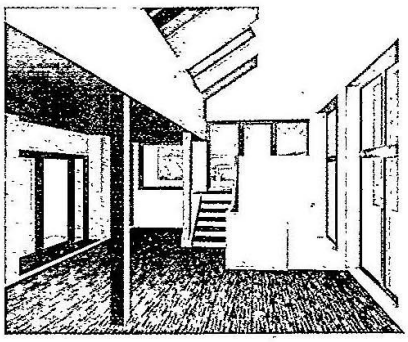
The housing market is very competitive. Promotion of new developments is a high priority for the company.

(e) Explain **two** ways in which internet based **graphic communications** could be beneficial to the housing company.

It could allow clients to do 'walk throughs' of the houses themselves through use of get animation. They could also ~~appe~~ advertisement on other different websites to draw in more customers

1. **(continued)**

A fly-through of the available house styles and a virtual tour of the housing development are available for the target market to view.



(f) State **two** advantages of using motion tweening in this style of graphic communication.

motion tweening would be good as it allows you to just pick a start point of the tour, then an end point and it will automatically create the scene's inbetween. Also its very quick+easy to use.

When the architect runs the fly-through a problem is encountered. When entering the building the animation plunges into darkness.

(g) Describe how the lighting in the animation could be changed to rectify this problem.

The architect could use 'applied lighting' and set up lights to illuminate the room how he wants.

1. (continued)

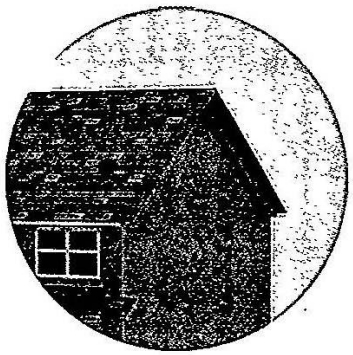
The company's Graphic Designer creates graphic representations of how the houses may look prior to construction.

(h) Explain the use of the different illustration techniques used on the promotional work for the graphics shown.

(i) Graphic 1

Technique 1

texture mapping is used to give the illusion of the brickwork by wrapping an image round the rooftop



Technique 2

bump mapping has been used to highlight each pixel differently on the wall and make the texture look realistic

(ii) Graphic 2

Technique 1

image based lighting is used to create the environment around the house

Technique 2

Specular lighting has been set to create the highlights and the shadows

2. A caravan manufacturer is releasing their new range of caravans in time for the spring season. A computer model is produced of the caravan shell prior to manufacture.

(a) Describe the process of converting a 3D computer model into a 3D printed model.

the 3D computer model's dimensions are taken and the points and coordinates of each edge are mapped out and the printer registers these and prints the shape by using those coordinates and constructing it.

(b) Explain, other than digital testing methods, a benefit of producing the 3D printed model for:

(i) the caravan designer;

it allows the designer to see what the final product would look like and if there is any changes they would like to make to the aesthetics of the design. Also whether any modifications need to be made concerning the dimensions and ergonomics of the caravan

(ii) the caravan manufacturer.

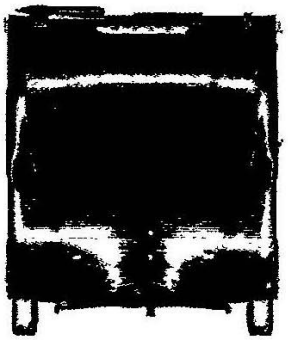
It gives the manufacturer an idea of how the caravan would be put together and if it would work well when finally made, allows them to see if there is a more efficient way it can be made

2. **(continued)**

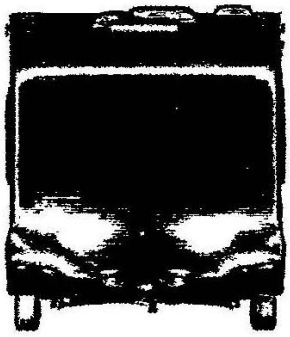
(c) State two digital testing methods that could have been applied to the 3D computer models.

Finite element Analysis - FEA and CFD

The results of the digital testing are shown below. The images show the forces that act upon the caravan while in transit. The red areas show the greatest drag forces.



New Caravan Model



Competitor Model

(d) Explain **two** advantages of this type of information to the target market.

It allows them to see would improvements have clearly been made to the new model. It allows them to see that the caravan is safe and suitable for use.

2. (continued)

Rendered 3D computer models of the caravan interior and exterior were included in the promotional material.

(e) Describe what information could be gathered from the rendered images which may be of interest to the target market.

It allows them to see the materials that would be used, it allows them to see what the overall design would look like, it allows them to see what sizes and space they would have

2. (continued)

Digital advertising is becoming an increasing part of promoting and selling products. The website designers intend to use VRML within the website to promote the new caravans internal **and** external details.

(f) Explain **two** advantages of using this format over other graphic media files. 2

It ~~is platform ind.~~ can be embedded into websites and has a small file size, and produces high quality animation:

(g) Describe how using a VRML format may increase interest for the product and create sales for the company. 1

Due to it allowing high quality animations to be stored and embedded easy with losing its high resolution customers would be more attracted to the product as it looks more professional and appealing.

3. A major publicity drive is being conducted by the Blood Transfusion Service to raise awareness of the importance of Giving Blood in Scotland. They plan to organise a range of 5K and 10K races across the country.

Graphic Designers have been tasked to design and produce a range of graphic communications to promote the event.

The event "Blood Run" logo has been produced as a vector graphic, to be used in the online and printed advertising.

(a) Describe **three** advantages of vector images compared to raster images.

- vector images have a smaller file size so they save storage.
- they have an infinite ~~=~~ zoom so any edge or curve will stay smooth
- ~~once so~~ the parameters of the logo can be modified at any point.

The colours used within the promotional work must incorporate the colours used in the existing Give Blood logo.

(b) Explain how the Graphic Designers can ensure an exact colour match is achieved.

the graphic designer can ensure this by finding the RGB colours then applying that same RGB colours to their new logo

3. (continued)

When the client viewed the pre-production print of the flyer, they were disappointed with the paper and quality of product.

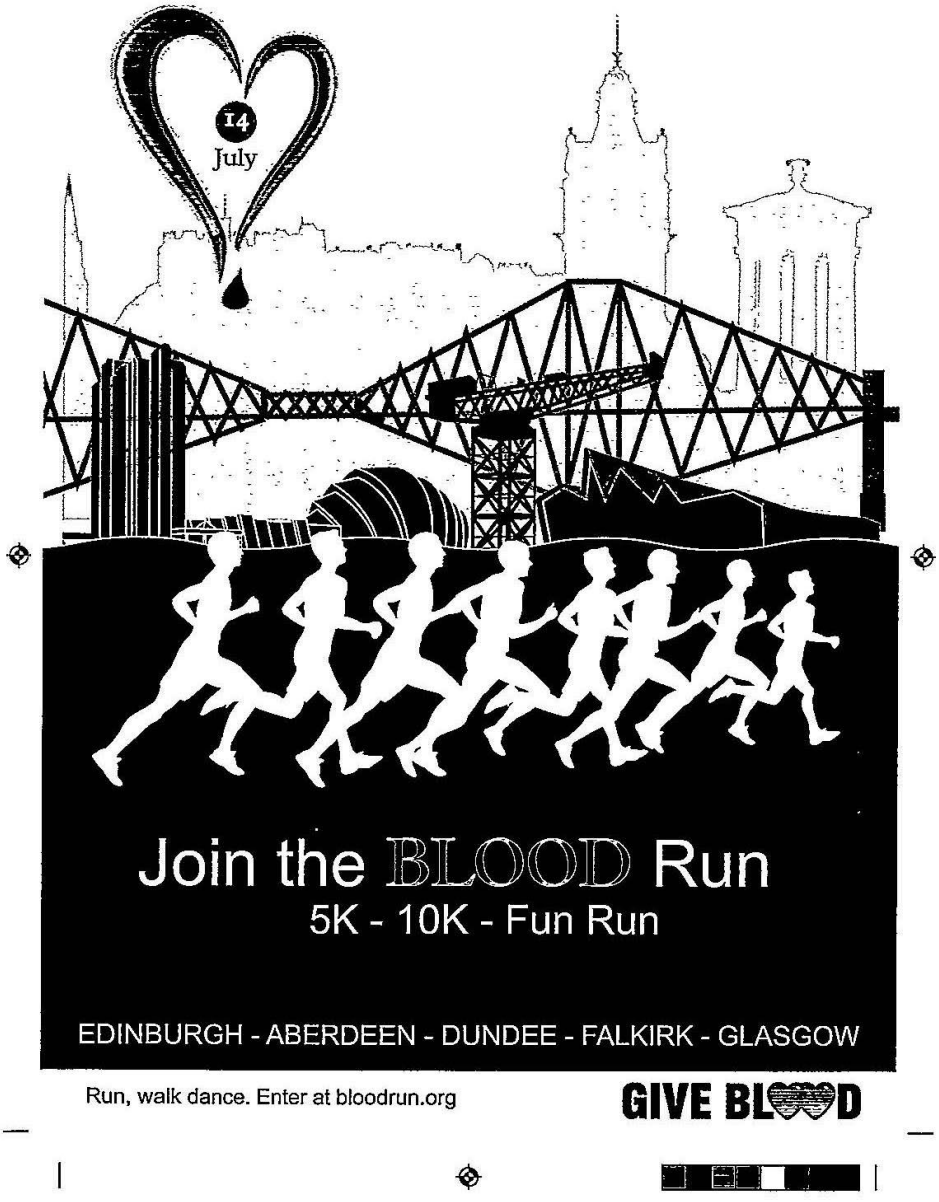
(c) Describe **two** changes that could be made to the paper to improve the quality before going to final print.

* they could use a higher quality paper with a bigger mass so it was thicker and they could ensure that the colour space on the computer matches to the colour space on the printer.

[Turn over

3. (continued)

The process Offset Lithography was used to produce promotional work for the event.

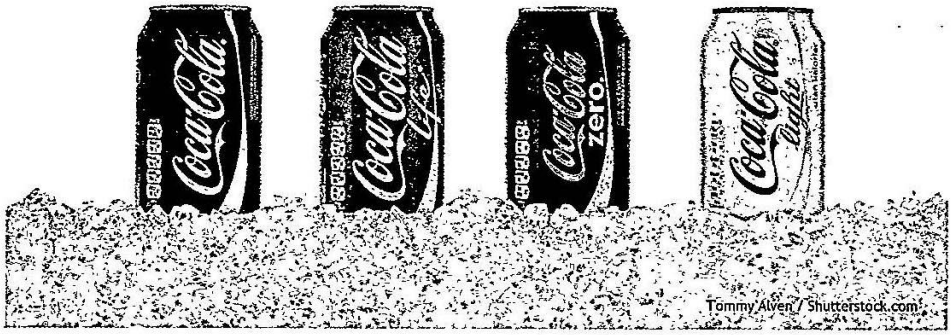


3. (continued)

(d) Describe how the process would be used to produce the flyer shown opposite.

It would create the different colours using different ~~processes~~ lots of different points that come together to make the different colours and shapes needed.

4. A selection of current soft drinks products are shown below.



The Coca Cola typeface and white wavy line are common features used in this product range.

(a) Describe the effect these common features have in maintaining a brand identity.

It means the target audience can instantly ~~reg~~ recognise the typeface and line and know its coca cola and also reinforces the ~~branding~~ brand in their head so that they see the coca cola branding wherever they think of drinks.

4. **(continued)**

Companies such as Coca Cola invest significant sums of money to ensure that their brands are protected.

(b) Explain, giving **three** reasons, why companies protect their intellectual property rights.

• So that they can't be associated with sub standard products trying to use the same designs.

• Also it means they can stay as a unique brand unlike any other as no other company has the same colour scheme / typeface.

[Turn over

4. **(continued)**

The company uses a variety of advertising to showcase their products.

(c) Explain, with reference to the graphics shown on the **Supplementary Sheet for use with Question 4 (c)**, how the company have considered target market, colour and social responsibilities.

Target market By using images that suggest fun and excitement appeals to the target market as it gives the idea that ~~coke~~ Coke brings fun and excitement - Also clearly having the logo instantly tells the audience what the advertising is for and reinforces brand identity

Colour colour has been used well especially in graphic 3 as the colour green gives the idea of health and eco friendly ness, the consistancy of the brand distinct red colour in graphic 1 & 2 again reinforces brand identity.

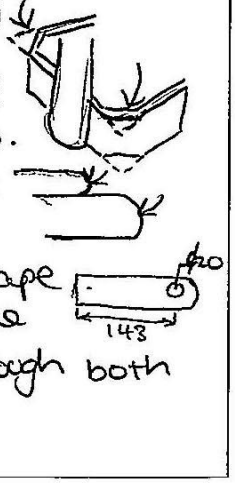
Social responsibilities In graphic 2 and 3, social responsibility has been considered as they are clearly showing that you can have the same taste etc but with both a healthier option and a 'green' option and this has been emphasised in both designs through the use of slogans and imagery.

5. A range of pictorial and orthographic views of a new design for a trailer jockey wheel assembly are shown on the **Supplementary Sheets for use with Question 5.**

(a) Describe the 3D CAD modelling techniques used to create component "A" **in the most efficient and economical way.** Make reference to the dimensions from the drawings in your answer.

You may use sketches within your answer.

draw a circle a diameter of 34 then extrude that down by 350. Then draw another circle M10 on the top surface of the cylinder then extrude that down, cutting into the shape, by 150. Then select the shell command and shell the bottom 200mm leaving a wall of 2mm. Then take a vertical workplane and have it cut through the centre of the cylinder 2mm from the bottom. Select that plane and create a 2D sketch. Draw a rectangle 76 by 40, this rectangle being 2mm away from the bottom of the cylinder. Then select the shape and extrude it by 5mm. Then draw two rectangles and the vertical edges of the shape 40 by 5. then extrude these out by 149. then chamfer these edges 24mm out from the centre of the rectangle at and angle of 135°. Then fillet the ends of the two rectangles with a R20. then select an edge and draw a circle with its centre being 143 in from the back of the shape with a ø of 20 then extrude the circle through till it cuts through both rectangle shape

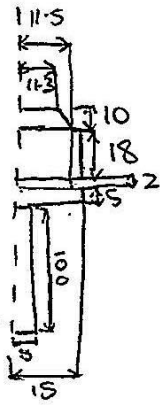


5. (continued)

(b) Describe the 3D CAD modelling techniques used to create component "B" **in the most efficient and economical way.** Make reference to the dimensions from the drawings in your answer.

You may use sketches within your answer.

~~draw the shape~~ draw a centre line down the page. Then draw the shape by drawing half a rectangle 5 by 100, then draw another 15 by 5. then draw another 2 by 11·5, then draw another 18 by 18. then draw a shape with a height of 10 width of 11·3. once this shape is drawn select the revolve tool to revolve it round the axis. then on the top of the shape draw a circle ~~radius~~ Ø15 then draw a line coming from the centre of this circle on a vertical work plane that is 125 in height and goes out at an angle 120° with a radius 25 then curves again at 120° with a radius of 25. Then use the command sweep to extrude the circle along the path drawn. Then draw a circle at the top of the new shape M10 and extrude it down by 10.



5. (continued)

(c) Describe **the most efficient and economical way** of creating component "C". Make reference to 3D CAD modelling techniques and to the dimensions from the drawings in your answer.

You may use sketches within your answer.

You would draw a circle Ø20 then with with the same centre points circles with Ø40, Ø80, Ø120, Ø190, Ø200, Ø220.

5. (continued)

(d) Describe the 3D CAD modelling constraints that would be used to assemble the hex-bolt to the handle.

select the bottom edge of the hex bolt that has a Ø10, then select the bottom edge of the handle that has been cut out with the Ø10 and use the command constrain. if the hex bolt hasn't fit in right select the centre point of the two circles Ø10 and use the constrain command again.