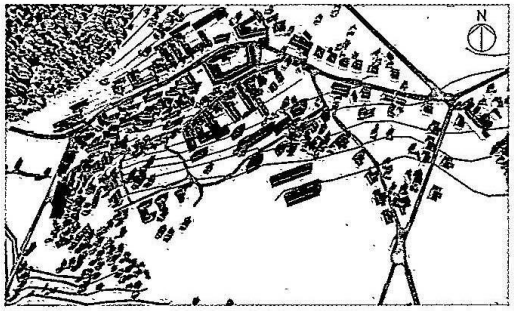
# Candidate 5 evidence

**SECTION 1 — 50 marks**

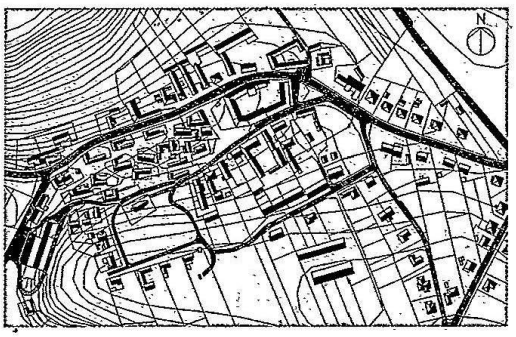
**Attempt ALL questions**

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

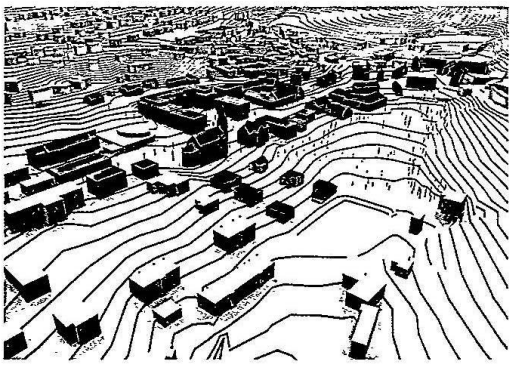
   A variety of graphics of the development are shown below.




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;

1 - Look at surrounding things ie forest - Implications
2 - Would help with positioning of house and contours
3 - Are able to see hills + the 3D positions for space

(ii) the house buyer.

Graphic 2 allows the buyer to see the amount of land they would have as it shows house boundaries and Graphic 3 lets them see size and surrounding areas more realistically

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:

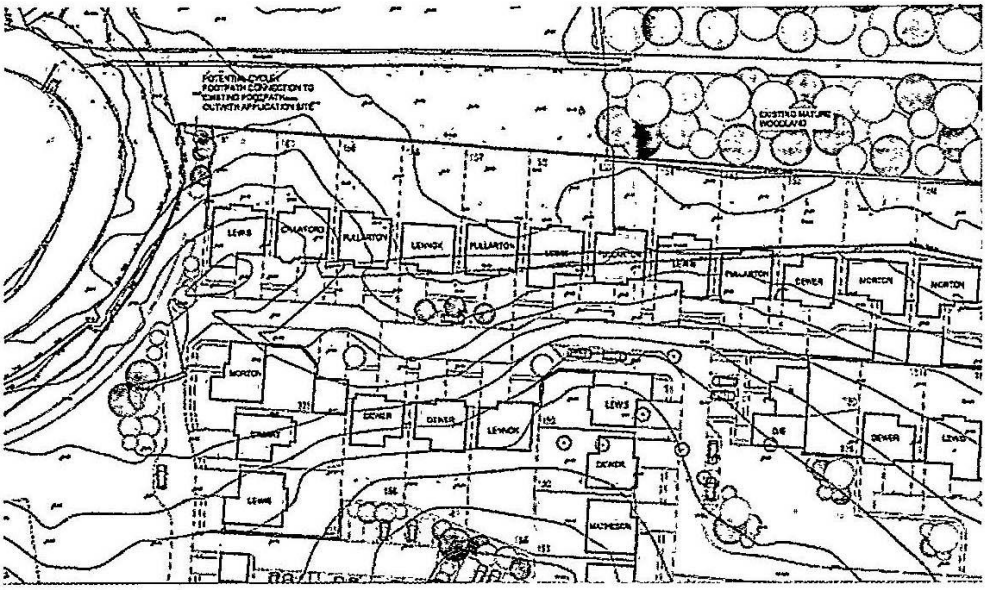
- 2D pictorial drawings
- 3D printed scale model of the development
- Animations.

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

By showing the communications the public are able to see the layout and have a visual representation of what they their area will look like.

1. **(continued)**

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

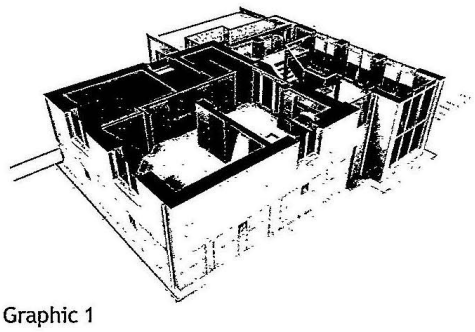


(c) Describe **two** reasons why this type of graphic is of value to the architect.

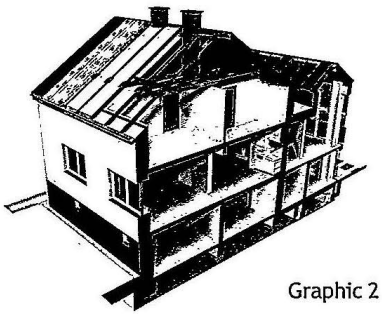
- The architect can see the contour of the land and hills
- Can also see the surrounding areas such as the woodland area

1. **(continued)**

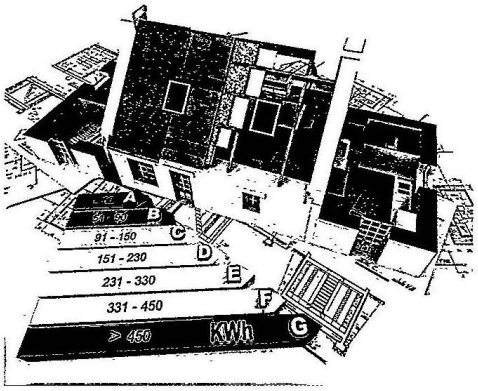
Various graphics of houses in the development are shown.



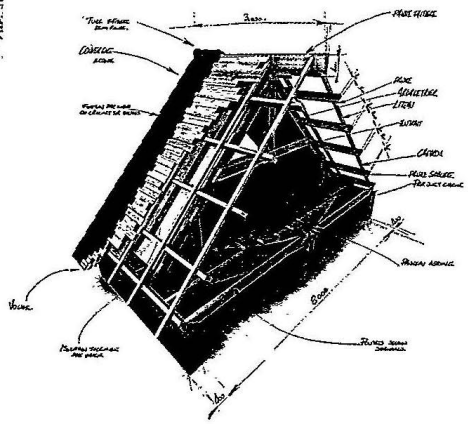
Graphic 1



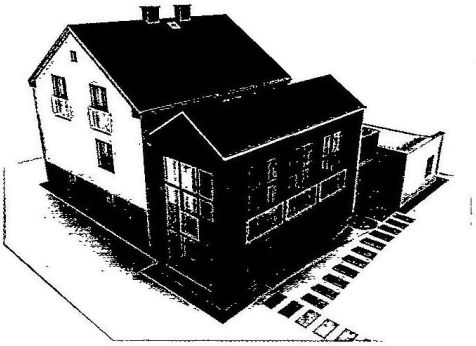
Graphic 2




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;

Graphic 2 is relevant as the intersections of the buildings are visible which would be useful in determining beams. Also 4 as sizes are given, as well as materials, joints etc.

(ii) the company sales team.

Graphic 3 shows the final design and how everything fits + works together, obviously useful in sales. Also graphic 1 shows one of the floor levels, useful in selling to buyers who wish to see the inside design.

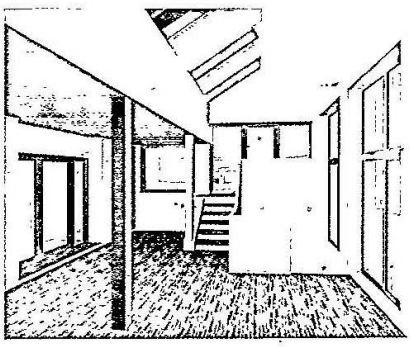
The housing market is very competitive. Promotion of new developments is a high priority for the company.

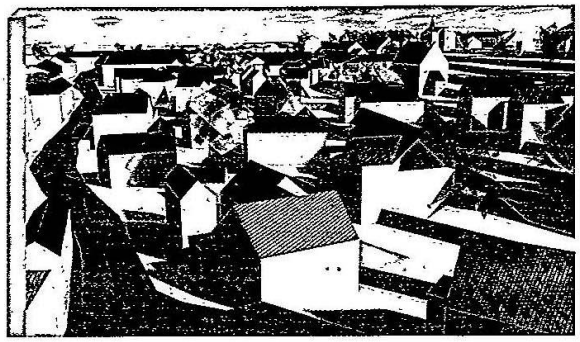
(e) Explain **two** ways in which internet based **graphic communications** could be beneficial to the housing company.

- It would be easy to upload, re-model and design. Easy to keep up-to-date
- Also more widely accessible to people everywhere rather than being situated in a single area.

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.

- It is not time consuming as only the first and last frame are used
- It is realistic

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.

By using ambient lighting, a light which is non-directional and would light everything equally.

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.

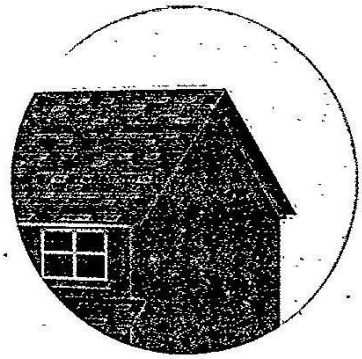
(i) Graphic 1

Technique 1

Bump Mapping is used to give the house the look of texture when the model in fact has none.

Technique 2

Ambient lighting, all areas of the house are lit.



(ii) Graphic 2

Technique 1

IBL - Image Based Lighting. Simulates light from sun etc and shadows

Technique 2

House is put in false surroundings to make it more realistic and more appealing for buyers

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.

- Making sure everything is compatible
- Checking file formats
-

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

(i) the caravan designer;

For a designer they can see the overall style and a scaled model. They can see the placement of items

(ii) the caravan manufacturer.

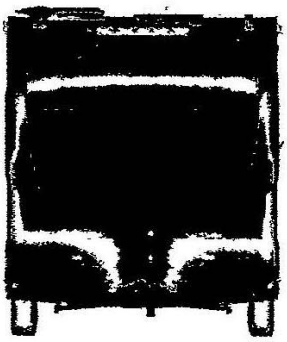
For a manufacturer it allows them to see how everything fits together and how the final outcome should be.

**2. (continued)**

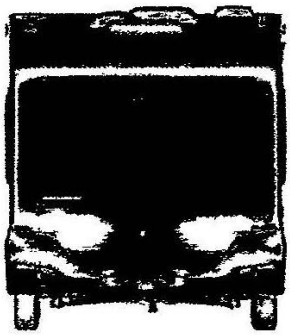
(c) State two digital testing methods that could have been applied to the 3D computer models.

- Finite Element Analysis
- Computer Fluid Dynamics

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.

- They are able to see where the 'problem' areas would be
- They can also see the strengths of the models and how it would handle certain stresses.

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. 4

- It allows them to see a realistic final view of the caravan
- They can see the layout of the caravan.
- They can see the placement of items
- It lets them try to see theirselves living there.

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.

- It gives a much more realistic look to the details
- It allows for more space and more detailed to be covered

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

- By seeing something realistic buyers are going to be much more interested and willing to buy

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.

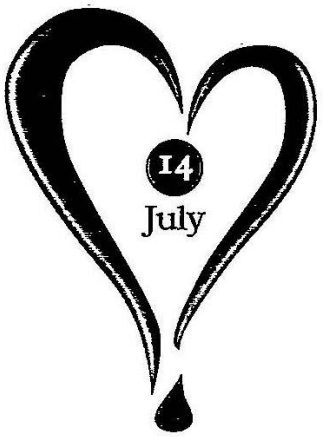
(a) Describe three advantages of vector images compared to raster images.

- Raster images consume more space and data as each pixel has information.
- Raster images are only available in rectangular shapes
- Vector images are a lot easier to edit.

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.

By using the same colouring system ie RGB or CMYK.



3. **(continued)**

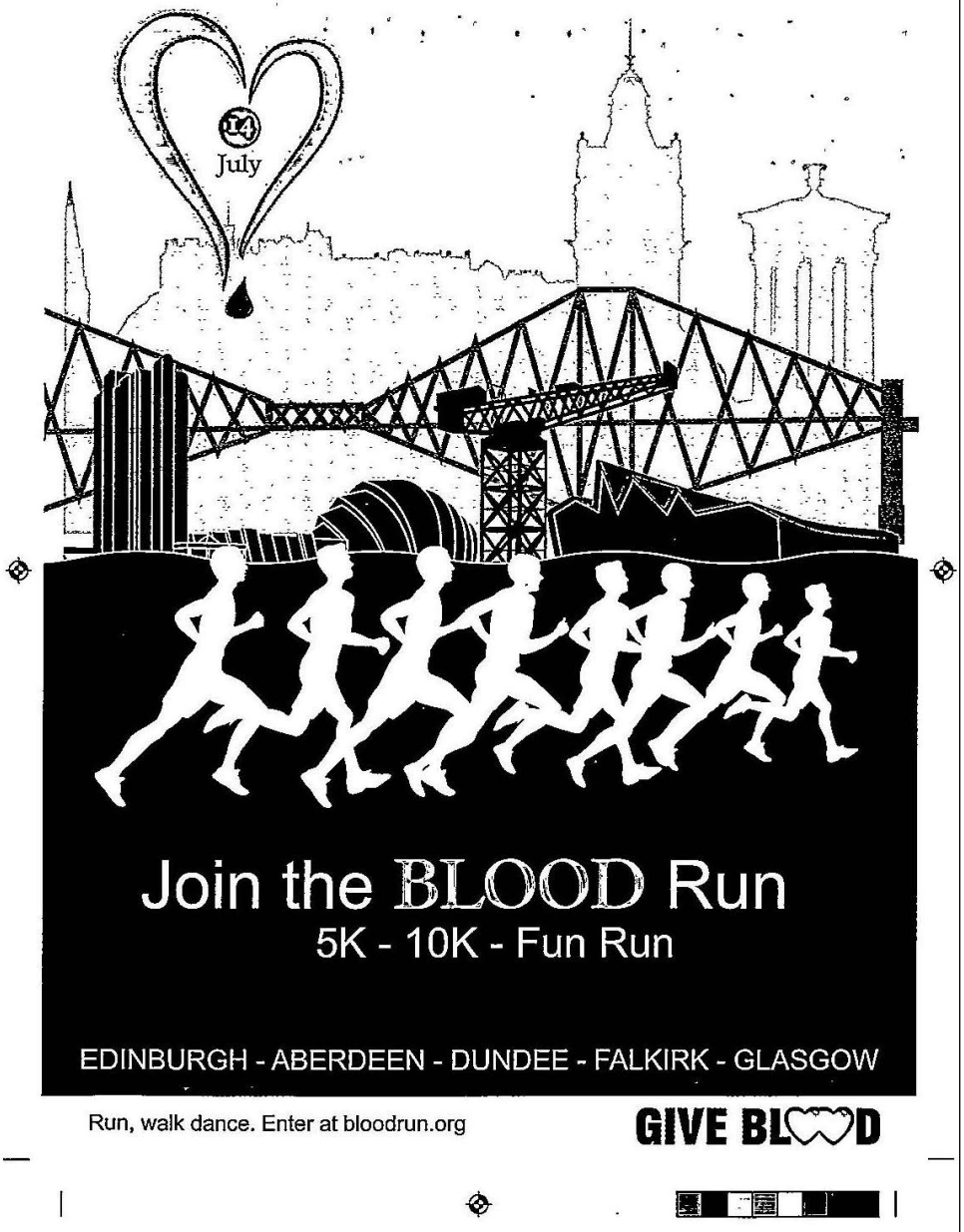
When the client viewed the pre-production print of the flyer, they were disappointed with the paper and quality of product.

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

- A change could be the paper itself, ie going from newspaper to calendered paper.
- A different material completely

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.

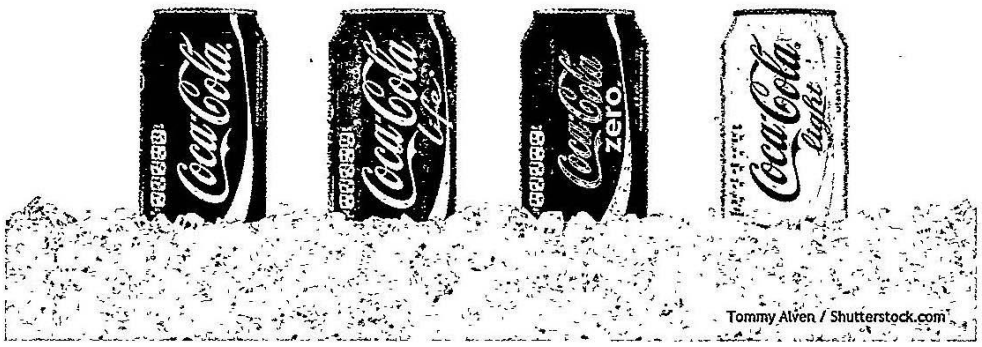
- CMYK was used for colour to make all the colours as authentic as possible
- Crop marks are put in place to show where the image would be cut
- Register mark is in place in order for the printer to recognise it and know where to print

SECTION 2 — 30 marks

Attempt ALL questions

M

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.

The sans serif font is unformal and inviting and by keeping these common features the identity is recognisable and widely known.

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 they are not associated with anything negative
- So that they aren't copied
- And so they're identity is recognised and controlled.

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 Graphic 1 is a very exciting design and attracts the TM by involving silhouettes of the TM and using exciting typeface. Graphic 2 uses images that would excite the TM such as motorbikes and 'big cats'.

Colour Graphic 3's main colour is green which is related to nature, Coca Cola has very cleverly filled the page with green to influence buyers. Graphic 1 has very simple colours but sticks to using mainly red - the colour it is most widely associated with.

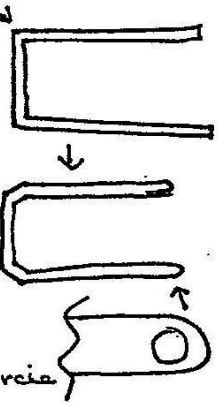
Social responsibilities Through the images on Graphic 2, coca cola is promoting and showing that life is still exciting without sugar - they are promoting a healthy lifestyle. Graphic 3 by using greens, and the earth coca cola again is promoting health and are therefore promoting positive things and are inkeeping with their social responsibilities.

**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.

- Create sketch and draw
- Extrude up 40m, fillet ends – R20, chamfer corners
- Create sketch and draw circle Ø20, cut all the way through
- Use a plane and create sketch * and * with circle Ø34 ~~Extrude~~ Loft up 350mm
- Shell from bottom 200mm up
- Create sketch on ~~bottom~~ top of ~~circle~~ cylinder of circle M10 and cut extrude 150mm down.

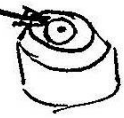


**5. (continued)**

(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.

- Create circle M10 extrude up 100mm
- Create ~~sketch~~ circle Ø30 extrude up 5mm
- Create circle Ø23 extrude up 2mm
- Create circle Ø30 extrude up 18mm
- Create ~~sk~~ circle Ø30 then use a plane of 10mm up and create a Ø23 circle and loft.
- Then create circle Ø15 and draw a line using straight line tool and arc (R25)

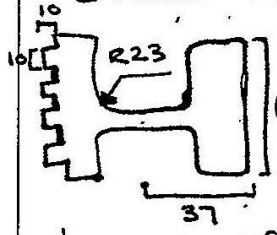


- Sweep along a path
- Create sketch, draw circle M10, cut extrude 10mm.

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.




- Draw half of the shape using tools such as chamfer at a R23
- Length of 110.
- Revolve by 360°
- Create sketch in centre of ⌀20
- Extrude cut all the way through

5. (continued)

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

- Would be assembled in the assembly, the hex-bolt would have to be flushed to the bottom of the handle