Graphic Communication

Higher - How To Pass Evening

Higher- Units

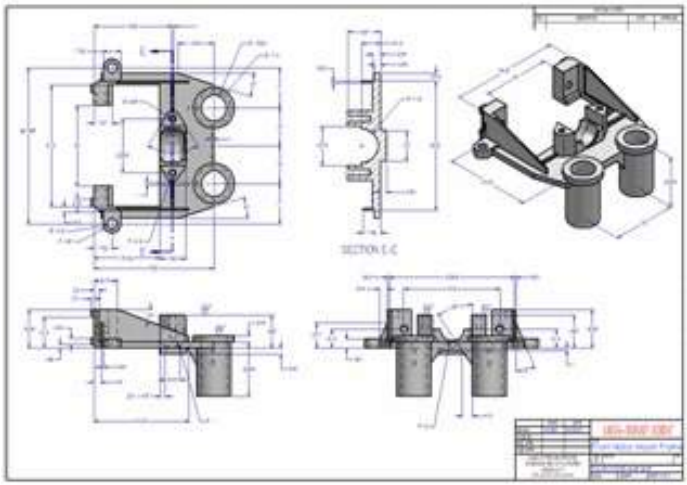
Units	Time Allocation*
2D Graphic Communication	60hours
3D and Pictorial Graphic Communication	60hours
Assignment (50marks)	8Hours
Final Exam (90marks)	2hours 30mins

* All work must be completed within this allocated time.

Higher- Learning Outcomes

2D Graphic Communication

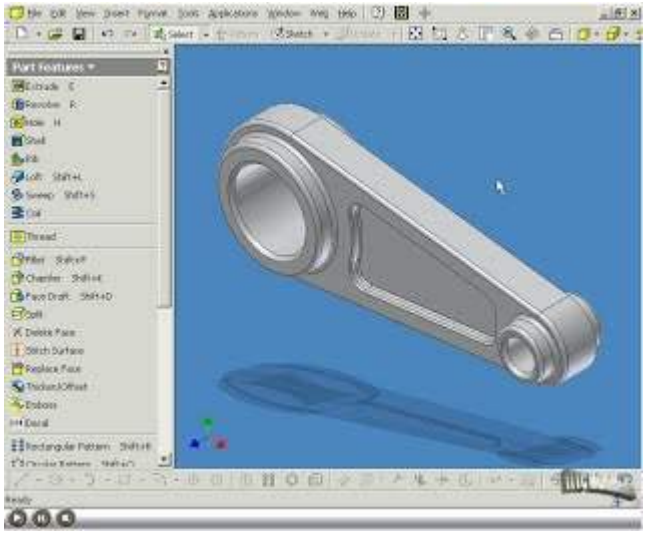
- Produce and interpret 2D orthographic sketches and drawings
- Produce 2D computer-aided designed production drawings
- Produce preliminary 2D designs and illustrations for a multi-page promotional document
- Create a multi-page 2D promotional publication and a project set of promotional publications



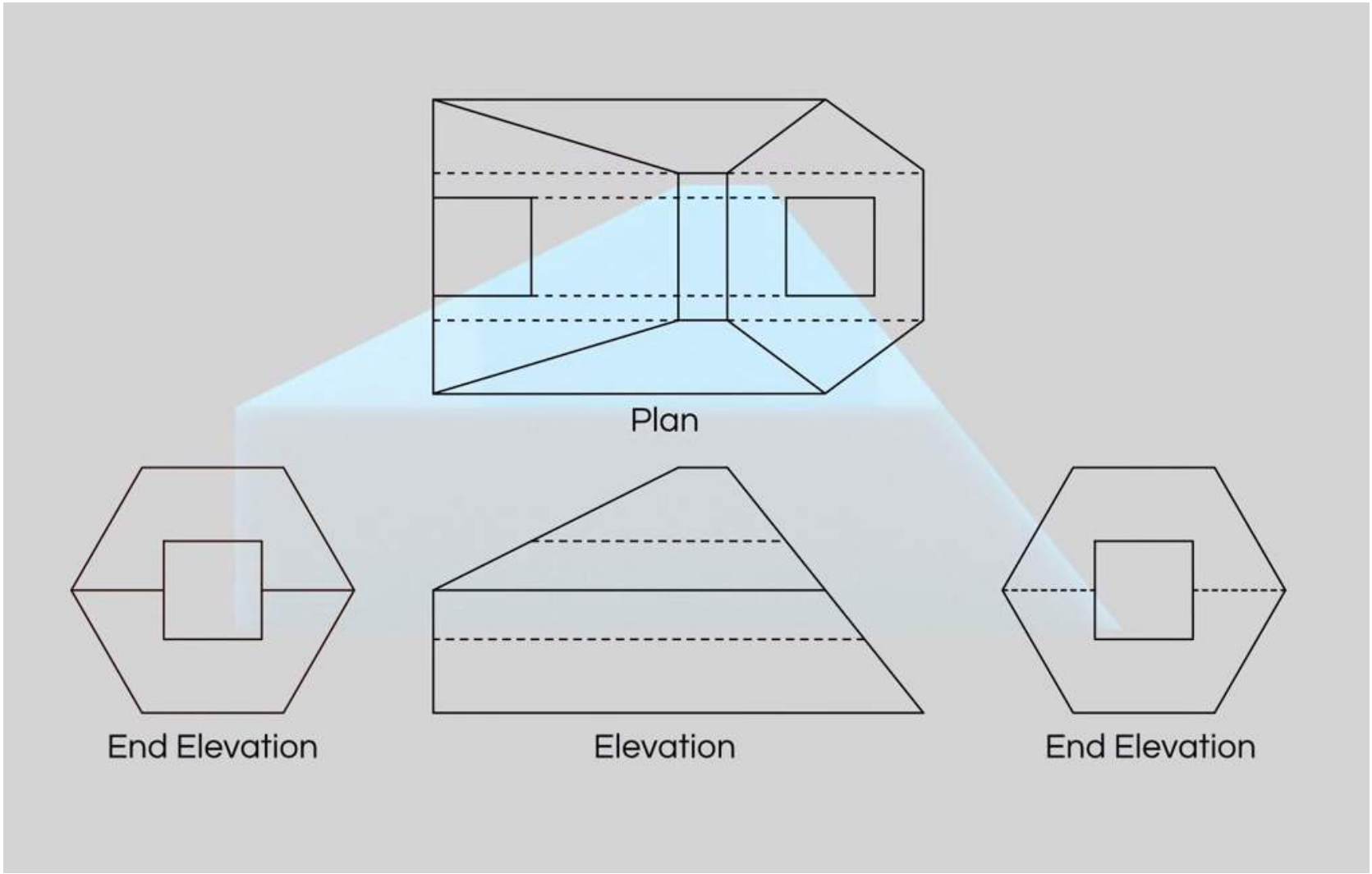
Higher – Learning Outcomes

3D and Pictorial Graphic Communication

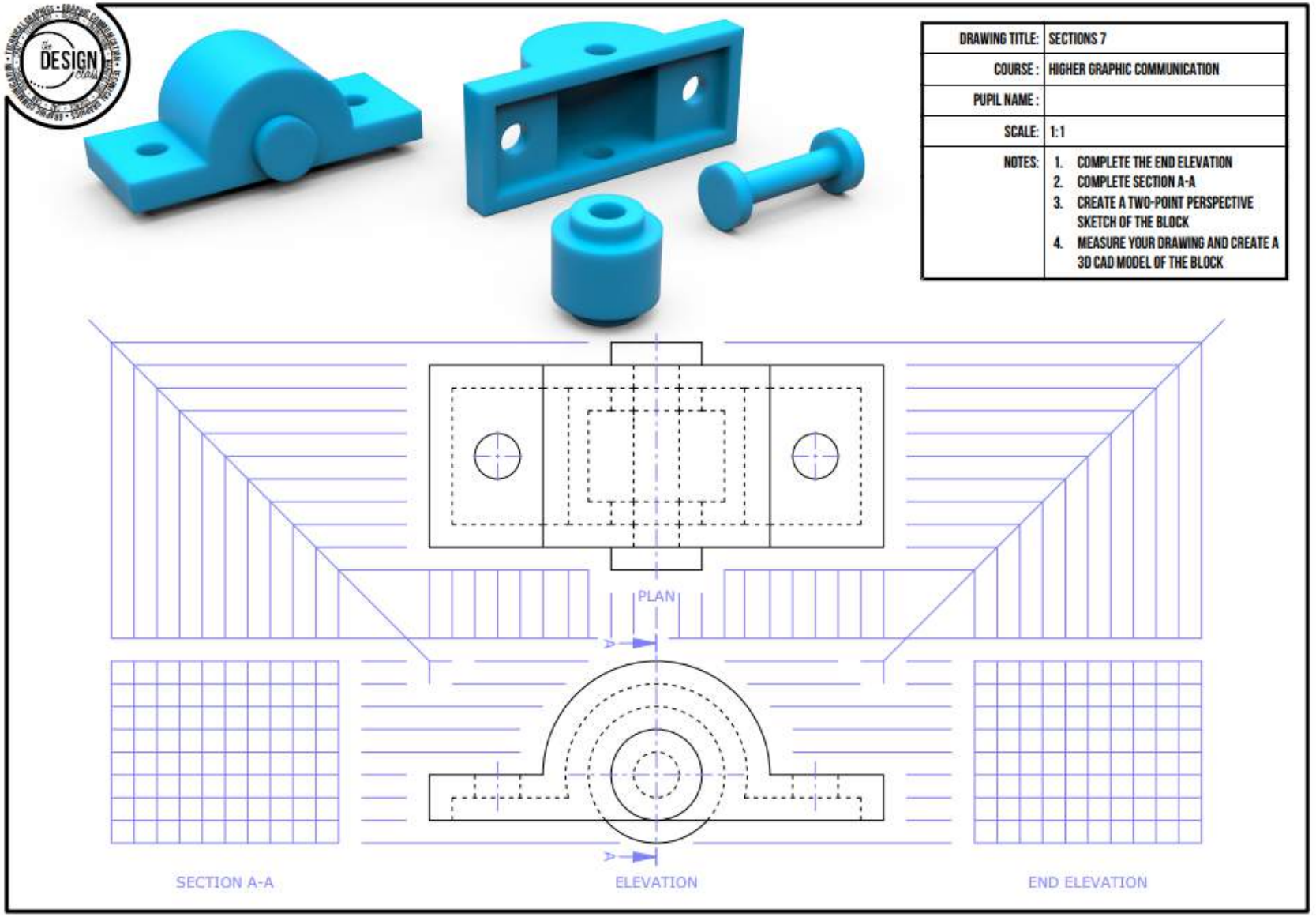
- Produce and interpret pictorial sketches and drawings
- Produce 3D computer-aided designed models and associated production drawings
- Produce pictorial and 3D illustrations of everyday objects
- Plan and produce promotional publications incorporating pictorial and/or 3D models



Coursework Orthographic Drawing



Coursework


DESIGN class
DRAWING TITLE: SECTIONS 7
COURSE : HIGHER GRAPHIC COMMUNICATION
PUPIL NAME :
SCALE: 1:1
NOTES:
1. COMPLETE THE END ELEVATION
2. COMPLETE SECTION A-A
3. CREATE A TWO-POINT PERSPECTIVE SKETCH OF THE BLOCK
4. MEASURE YOUR DRAWING AND CREATE A 3D CAD MODEL OF THE BLOCK
PLAN
SECTION A-A
ELEVATION
END ELEVATION

Coursework

DESIGNED BY: A Anderson

SCALE 1:1

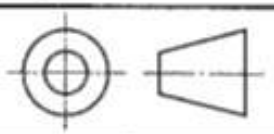
TOLERANCE +/- 0.25mm

ALL SIZES IN mm

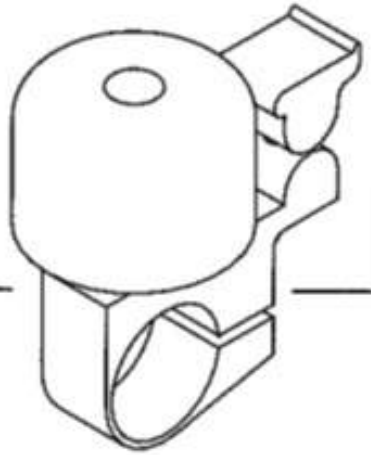
COMPLETION DATE: 25.11.14

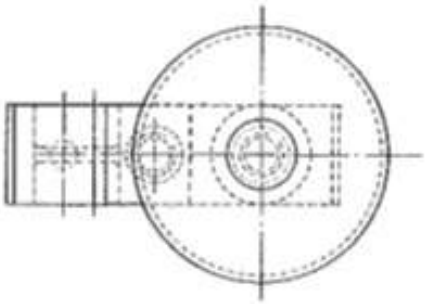
CLIENT: HERO CYCLES

Drawn by A. Grant

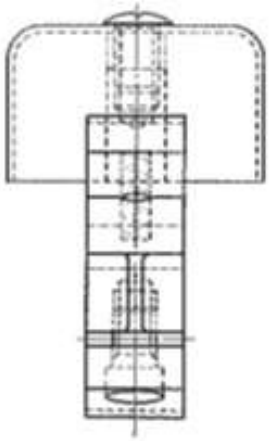


Liberty bell

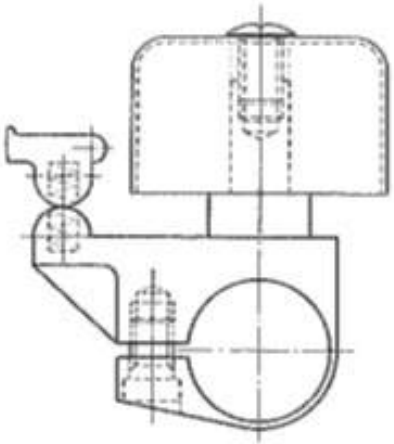




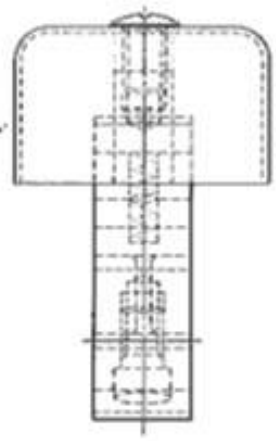
PLAN



END ELEVATION

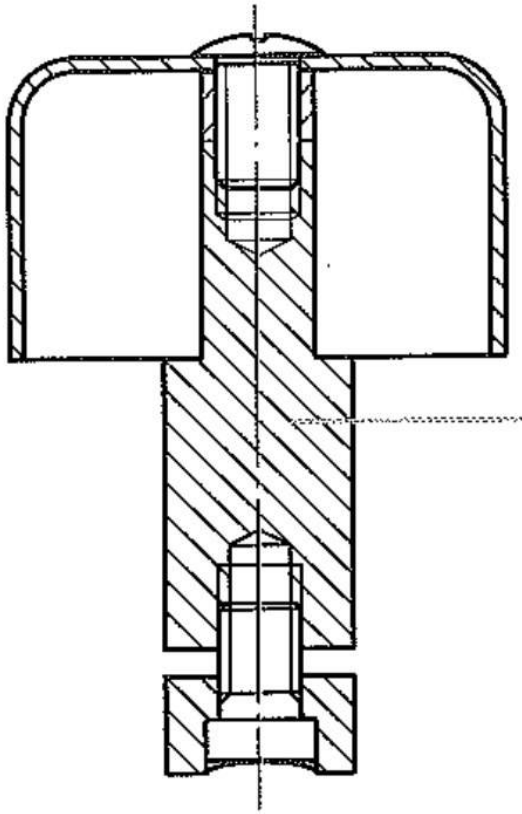


ELEVATION



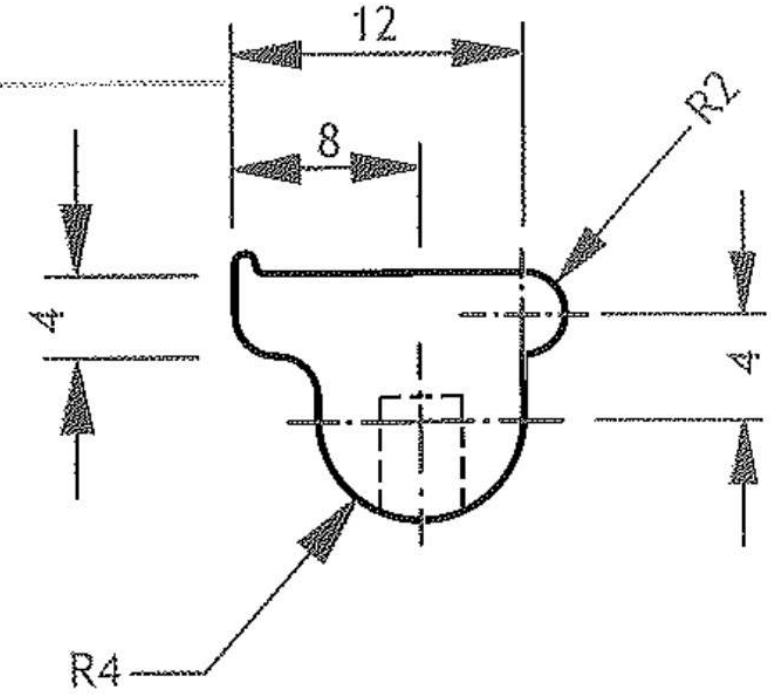
END ELEVATION

Coursework



Continuous thin line

Application: Dimension, projection and leader line cross-hatching, short centre lines, outlines of revolved sections



Coursework

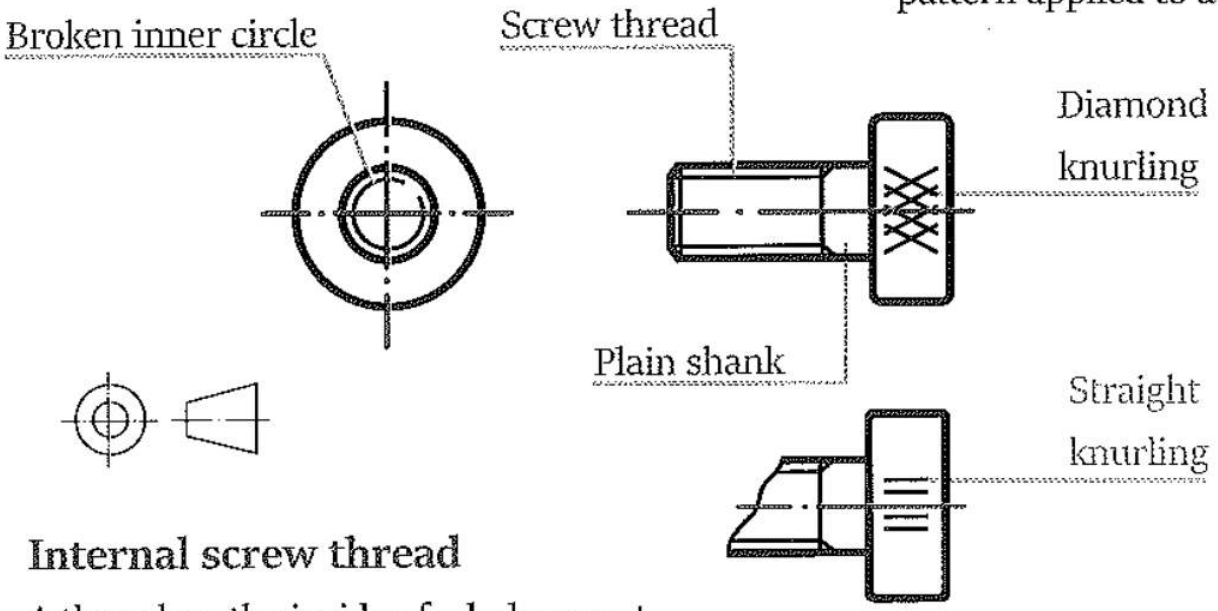
LINE TYPES & SCREW THREADS

Screw threads

Screw threads are shown as conventions that have been simplified by using double lines instead of a helical thread. These are common features in production drawings used to show both internal and external threads. Screws and bolts are common standard components and it is likely that you will incorporate them into your course work and find them in questions in the exam paper.

External screw thread

A thread on the outside of a screw or bolt.



Internal screw thread

A thread on the inside of a hole or nut.

Knurling

These symbols represent a textured pattern applied to a cylindrical component

Coursework

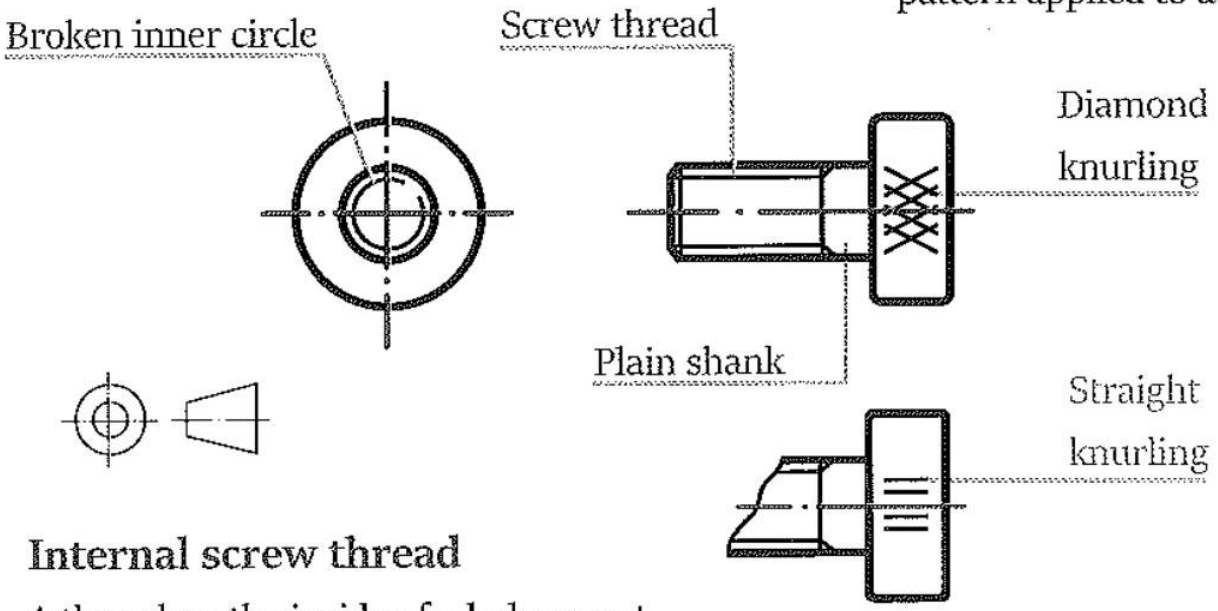
LINE TYPES & SCREW THREADS

Screw threads

Screw threads are shown as conventions that have been simplified by using double lines instead of a helical thread. These are common features in production drawings used to show both internal and external threads. Screws and bolts are common standard components and it is likely that you will incorporate them into your course work and find them in questions in the exam paper.

External screw thread

A thread on the outside of a screw or bolt.



Internal screw thread

A thread on the inside of a hole or nut.

Knurling

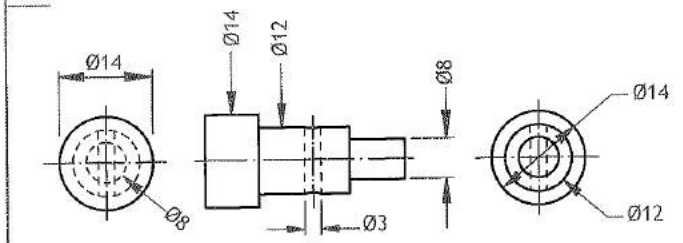
These symbols represent a textured pattern applied to a cylindrical component

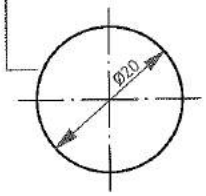
Coursework

DIMENSIONING ORTHOGRAPHIC COMPONENT DRAWINGS

Dimensioning circles and cylinders

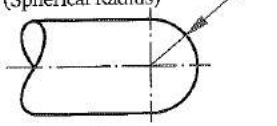
There are several ways to apply dimensions to a feature.
Choose the method that is clearest and neatest. Options for dimensioning circles, holes and cylindrical features are shown.





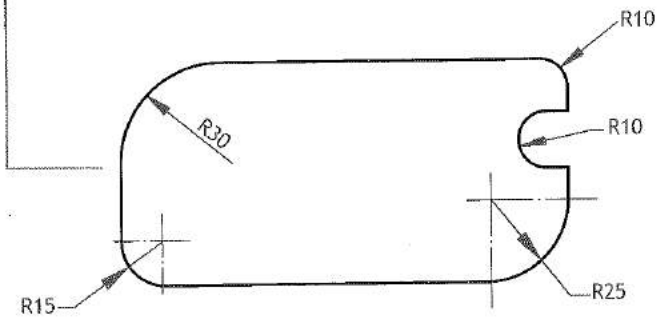
Dimensioning a spherical feature

Using the prefix SR (Spherical Radius)



Dimensioning radii

There are also several ways to dimension a radius. It is not always feasible to show the centre of a radius. Options are shown below.

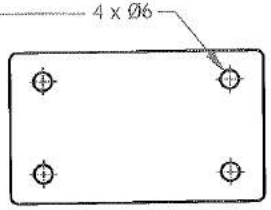


Dimensioning special features

Special features such as screw threads, spheres, counter bores, countersunk holes, chamfers and arrayed holes require different treatment. A note is often used to clarify the dimension.

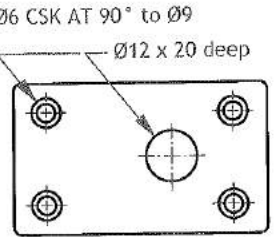
Dimensioning holes

Arrays of holes can be dimensioned as a group.



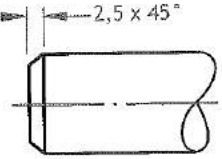
Countersunk holes

CSK is the abbreviation for countersunk.
The depth of a blind hole may be shown as a note on the dimension. Countersinks are used to recess screw heads below or flush with a surface.



Chamfer

The length and angle of the chamfer should be shown in the note. Notice the use of a comma to separate the whole number from the decimal point. Using a decimal point is also acceptable.

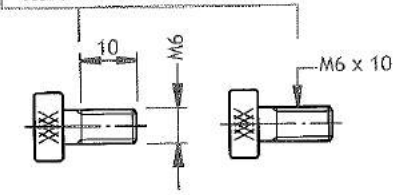


Dimensioning screw threads

A metric thread is denoted by the symbol M.
The number represents the external diameter of the thread.

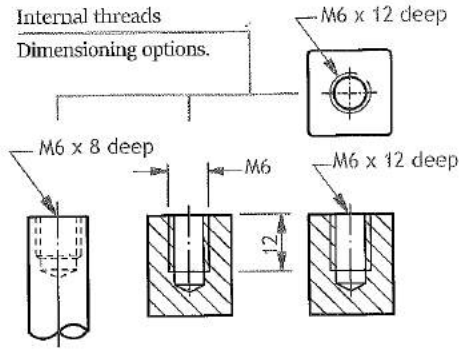
External threads

Dimensioning options: The size and length of the thread should be shown. The second option combines both.



Internal threads

Dimensioning options.



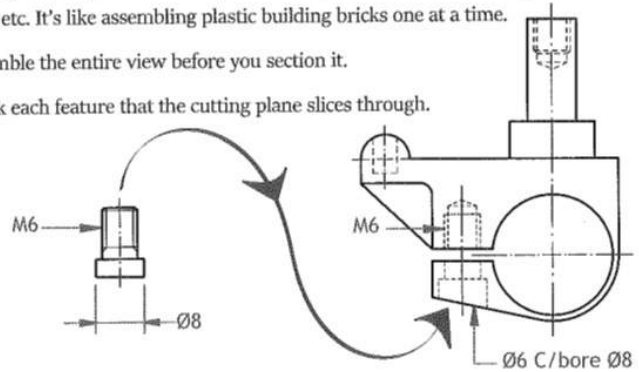
Coursework

ASSEMBLIES, SECTIONS AND EXPLODED VIEWS - WORKED EXAMPLES AND EXAM PREP

Pictorial assemblies and component drawings of a bell for a bicycle are shown on this page and the next. You task is to draw, to a scale of 2:1, a sectional elevation 'A-A' of the assembled bicycle bell. The worked example, three pages over, will take you through the process but before you start you should read through the advice below and study the next two pages.

Before you begin it is important to have a method. Following these key points will enable you to draw or interpret any sectioned assembly.

1. Study the detail drawings carefully. This includes exploded or pictorial assembly views. These views give the best information about how an assembly should be put together.
2. Look for dimensioning clues about how components fit together.
   If there is a Ø6mm hole in a component, work out what fits inside the hole?
   Look for a Ø6mm screw, bolt, axle or spindle to fit inside it.
3. Start by drawing the main component first, then add a second component and a third etc. It's like assembling plastic building bricks one at a time.
4. Assemble the entire view before you section it.
5. Check each feature that the cutting plane slices through.



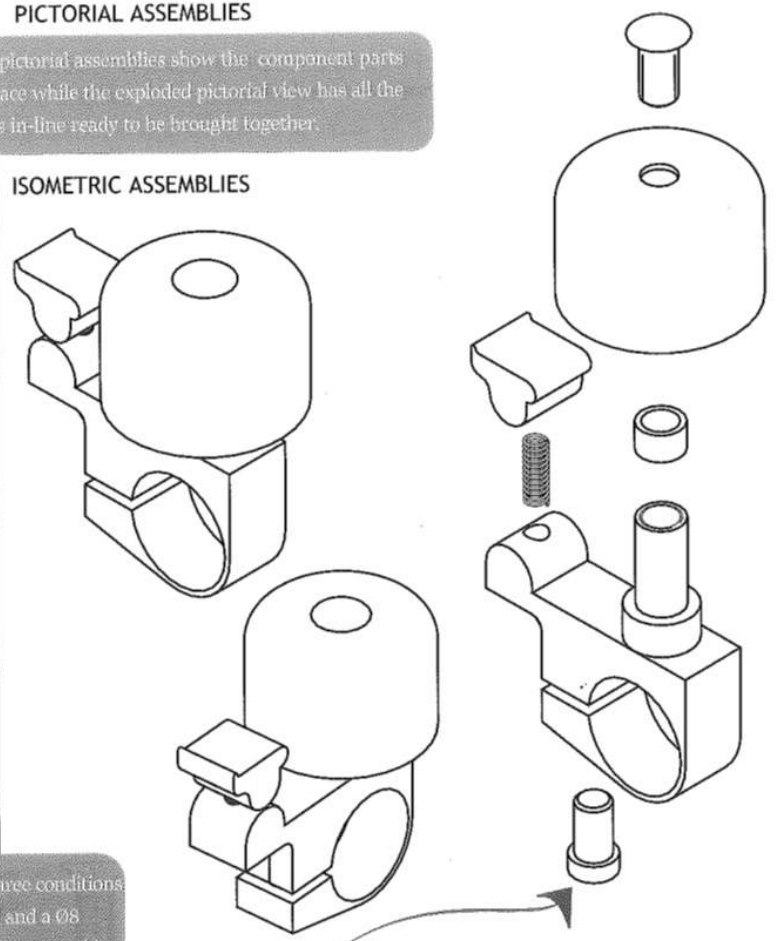
The hole in the bottom of the handle bar clamp has three important pieces of information; the diameter is 6mm, the internal thread is M6 and the size of the counter bore is Ø8

The only screw thread that matches all three conditions is the clamping screw with an M6 thread and a Ø8 head. It is logical that these two components assemble together. The exploded view confirms this.

PICTORIAL ASSEMBLIES

The pictorial assemblies show the component parts in place while the exploded pictorial view has all the parts in-line ready to be brought together.

ISOMETRIC ASSEMBLIES

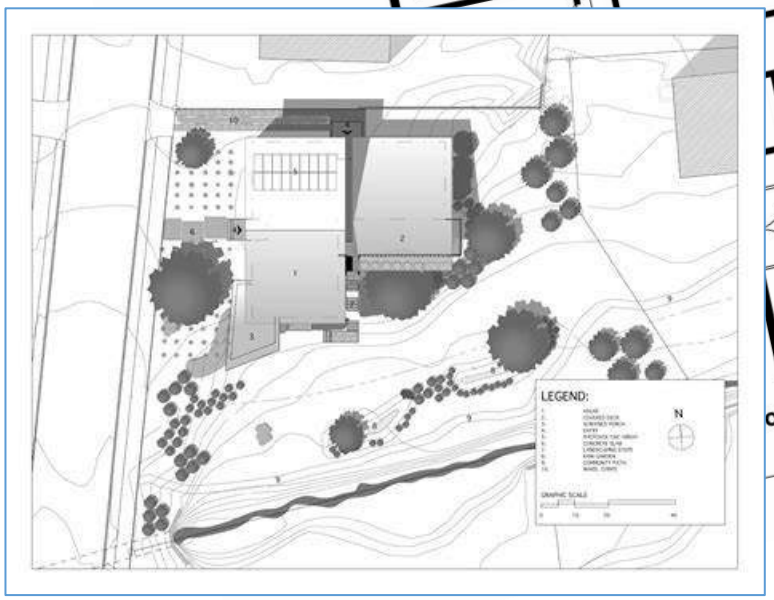


PICTORIAL EXPLODED ASSEMBLY

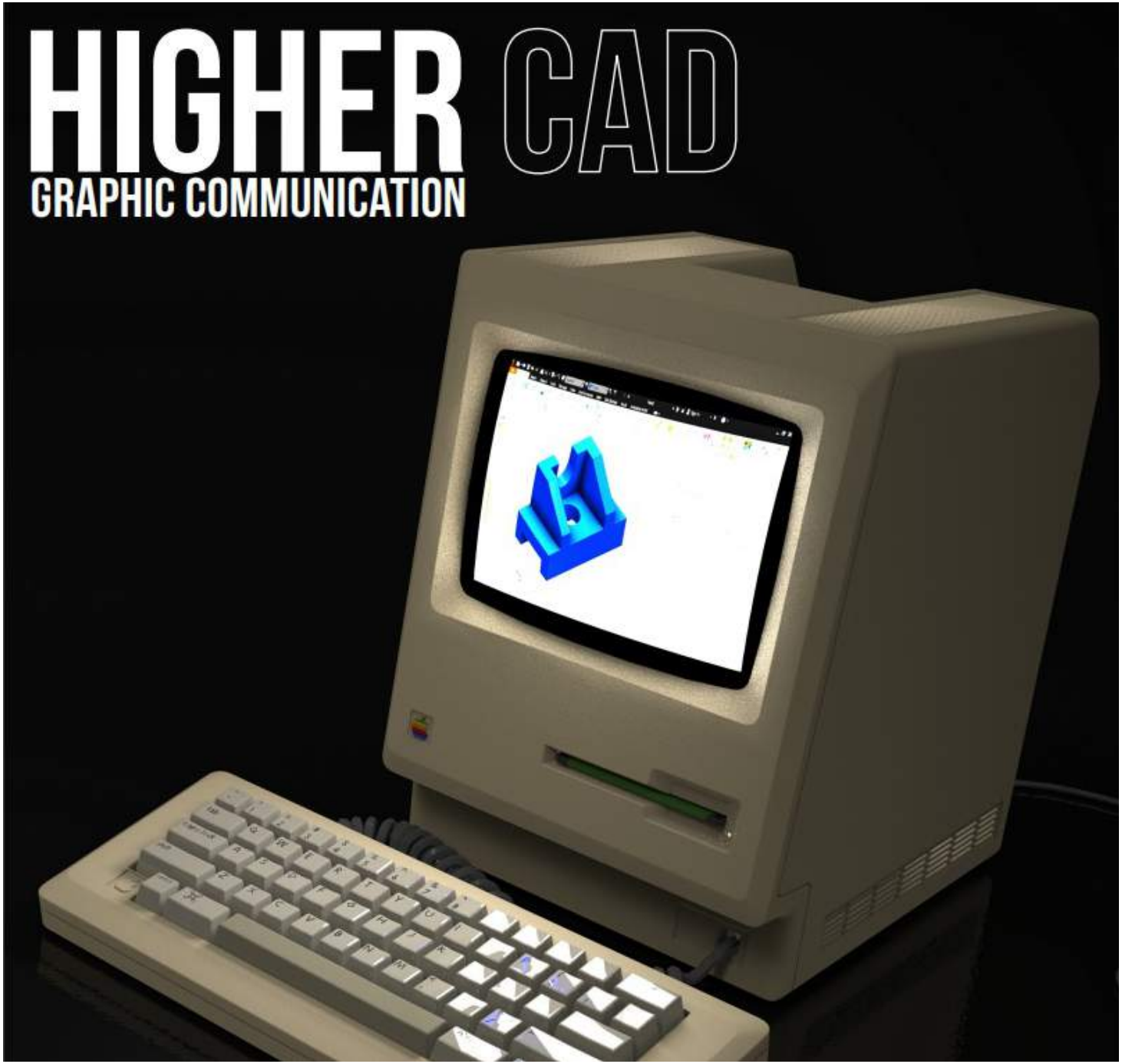
Coursework Drawing Terminology

AC, AF	Across corners, Across flats
ASSY	Assembly
BS	British (Drawing) Standards
CBORE	Counter bore
CHAM	Chamfer
℄	Centre line
CRS	Centres
CSK	Countersunk
CYL	Cylindrical
45°	Degree symbol
DIA	Diameter (in a note)
Ø	Diameter symbol
DRG No	Drawing Number
EQUI SP	Equally spaced
EXT	External
FIG	Figure
HEX	Hexagon
I/D	Inside diameter
INT	Internal
LH	Left hand
LG	Long
M	Metric screw thread
MAX	Maximum
MIN	Minimum
mm	Millimetres
MTL	Material
No.	Number
NTS	Not to scale
O/D	Outside diameter
PCD	Pitch circle diameter
R	Radius
RD HD	Round headed screw
RH	Right Hand
SCR	Screw
SFACE	Spotface
SPH	Spherical
SR	Spherical radius
SØ	Spherical diameter
SQ	Square (in a note)
□	Square
STD	Standard
	Surface finish required
THD	Screw thread
THK	Thick (thickness)

Coursework Building Drawings



Coursework CAD



Coursework CAD CAM

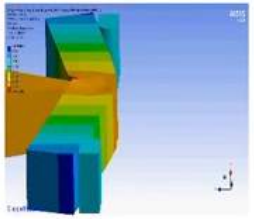
CAD software has many discrete functions.

These can be divided into five items:

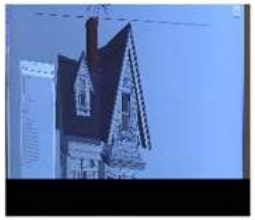
Manually manufacture items

Manufacturing through CNC

Assembly drawings



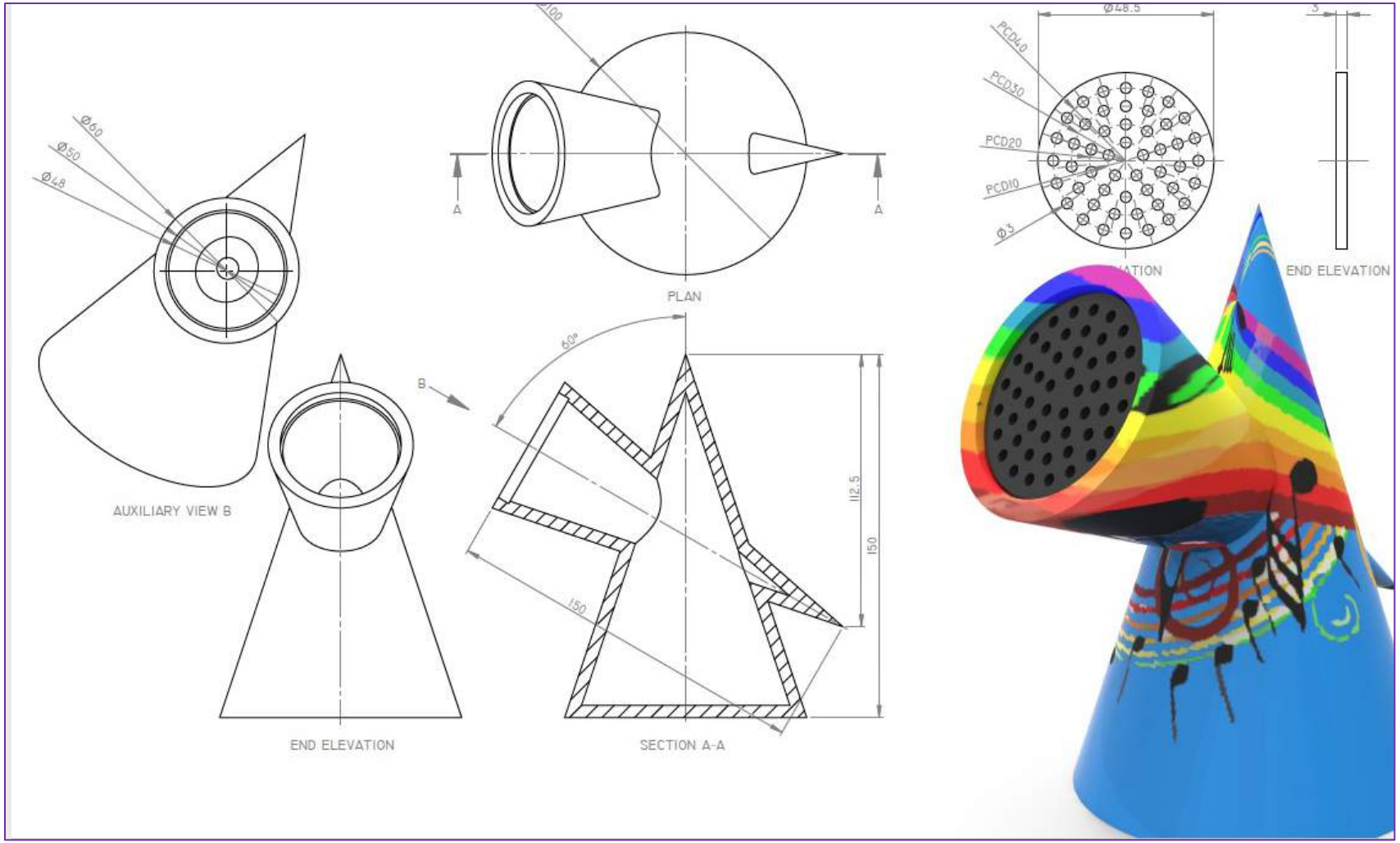
Simulation



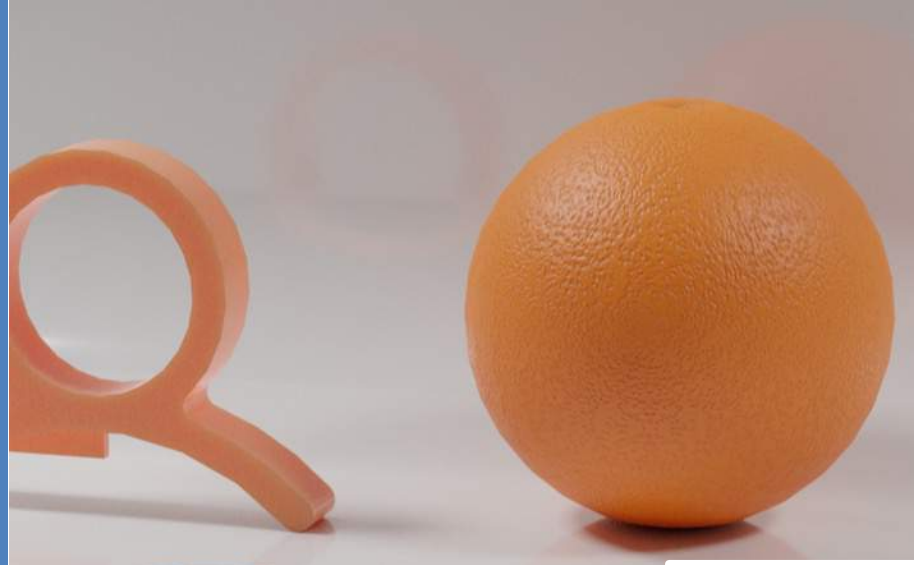
Rendering

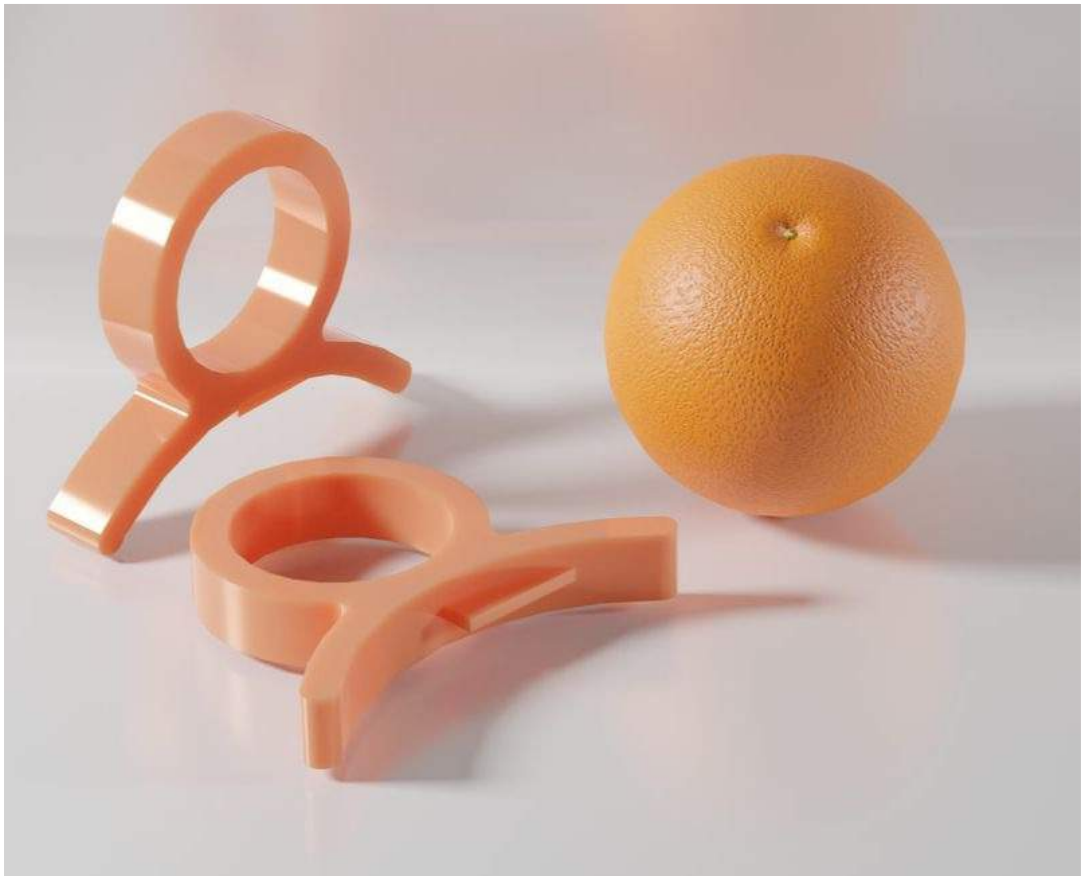
Coursework 3D Modelling

Coursework CAD Drawings



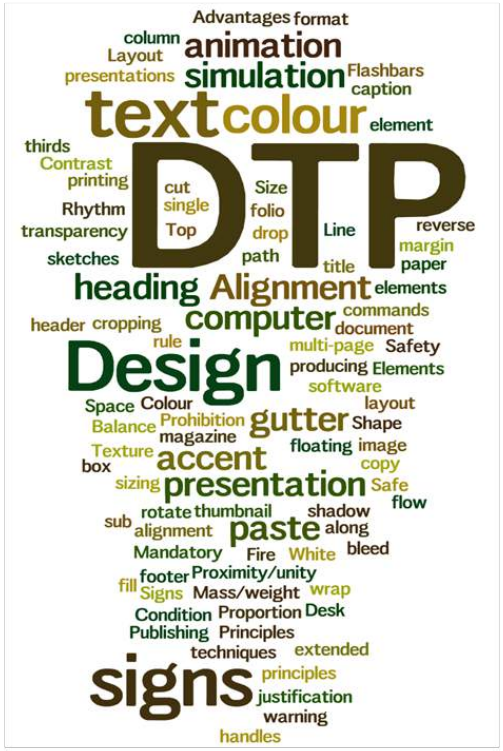
Coursework CAD Illustration





Coursework Graphic Design

Graphic Communication



Desktop Publishing

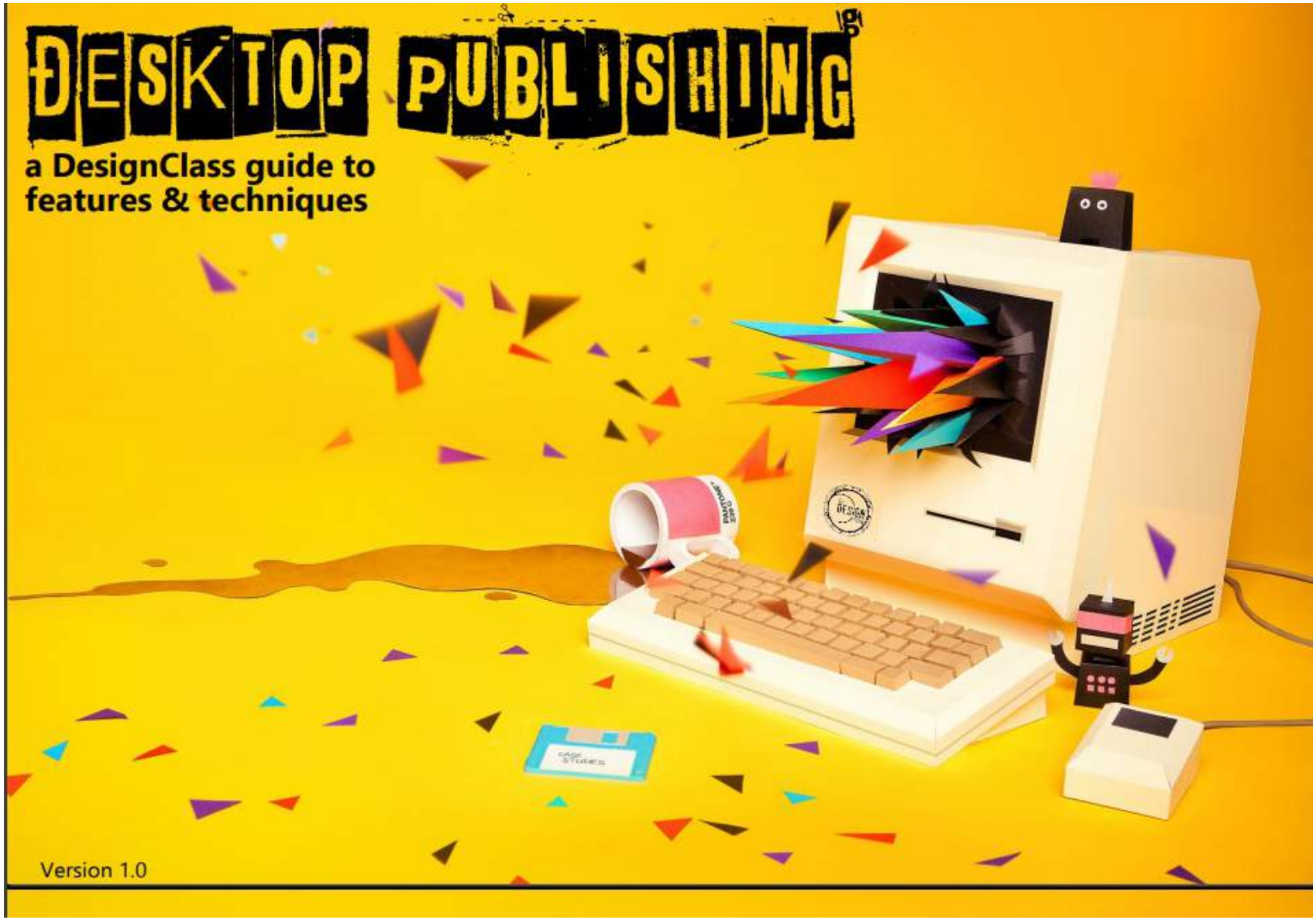
- Terminology
- Principles
- Elements

Name _____ Class _____

Dumfries High School

Coursework Graphic Design

Coursework Graphic Design



Coursework Graphic Design

Typeface:	Angellia
Size:	60PT
Justification:	Left
Kerning:	Auto
Tracking:	70%
Text CMYK:	Rich Black

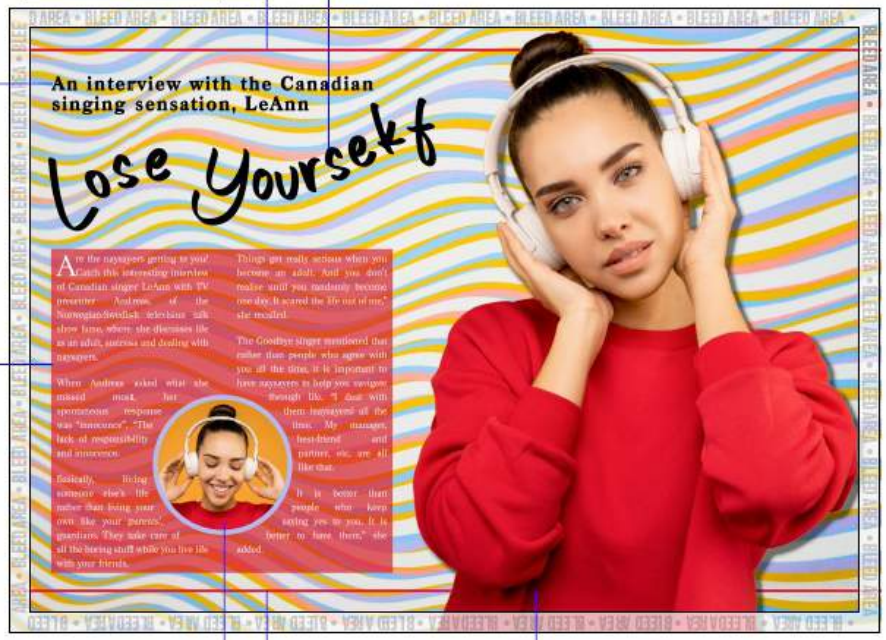
Flow text along path applied visually to the background image.

Stroke:	2.5PT
Stroke CMYK:	0,100,84,0
Position X:	5mm
Position Y:	10mm

Typeface:	Casper Heavy
Size:	20PT
Justification:	Left
Leading:	20PT
Kerning:	Auto
Tracking:	0%
Paragraph:	0PT
Insets:	2mm
Text CMYK:	Rich Black
Position X:	10mm
Position Y:	19mm

Typeface:	Casper SF
Size:	10PT
Justification:	Full-Left
Leading:	14PT
Kerning:	Auto
Tracking:	0%
Paragraph:	12PT
Gutter:	10mm
Insets:	2mm
Text CMYK:	0,0,0,0
Frame CMYK:	7,100,95,1
Opcity:	−80%
Position X:	10mm
Position Y:	80mm
Width:	120mm
Height:	114mm
DropCap:	2 lines

Width:	47.5mm
Height:	47.5mm
Stroke:	5PT
Stroke CMYK:	27,24,0,0
Position X:	46.2mm
Position Y:	132mm
Wrap Offset:	3mm



Stroke:	2.5PT
Stroke CMYK:	0,100,84,0
Position X:	5mm
Position Y:	200mm

Drop Shadow	
Opacity:	50%
Radius:	40px
Offset:	40px
Intensity:	50%
Angle:	315°
Colour CMYK:	Rich Black

LAYOUT TITLE:	MUSIC MAGAZINE ARTICLE
COURSE OR LEVEL:	GRAPHIC COMMUNICATION
CHALLENGE VERSION :	V1_1120
INTENDED FORMAT:	A4 POSTER
COLOUR PALETTE:	IMAGE DEPENDENT
TYPEFACES:	CASPER HEAVY SF CASPER SF ANGELLIA
IMAGE ASSETS:	PEXELS-DOM-J-310452.JPG PEXELS-SOUND-ON-3766767.JPG PEXELS-SOUND-ON-3766772.JPG
STOCK SIZE:	0A4
BLEED SIZE:	5MM
MARGIN SIZE:	10MM
GUTTER SIZE:	10MM
NOTES:	ALL TEXT ORIGINAL
THUMBNAIL:	WHERE TECHNICAL DATA IS MISSING, IMPROVISE TO MAKE THE LAYOUT AS CLOSE TO THE ORIGINAL AS POSSIBLE.

Coursework Graphic Design

Layout 1

1. **Describe** four ways the designer has created depth within the layout. **4**

Graphic designers often make use of 'stock images'.

2. **Describe** the term 'stock images' and any potential issues with using them. **2**

Coursework Graphic Design

physical printing

INK JET

The most common format of printer to be found in homes, schools or offices. They are popular because they are easy to use, reliable and the printers are inexpensive.
However, printer ink is expensive, so they are only suited for short print runs or text based documents such as letters or essays.

pros + cons

- printers are inexpensive to buy
- photographic quality
- can print on different paper types
- quick for short print runs
- ink cartridges are horrendously expensive
- liquid ink can take time to dry and can smudge
- only print on limited paper sizes, typically A5 to A3

COLOUR LASER

Laser printers are very quick and the 'cost-per-print' is actually very low. Laser printers work by 'fusing' coloured toner dust to the paper. Toner is expensive, but you get a lot of prints. However, when parts such the 'drum' and 'fuser' start to go, costs soon mount up...

pros + cons

- printers are fairly inexpensive to buy
- good quality, but not photographic
- very quick for short and medium print runs
- can only print on normal, non-gloss paper
- toner is expensive
- the expensive 'fuser' and 'drum' also need replaced
- only print on limited paper sizes, typically A5 to A3

SCREEN PRINTING

Screen printing is actually a very old fashioned method of printing graphics. It works by ink being squeezed through a 'mask' onto the material below. It is slow, but great for making t-shirts, posters and other novelty items.

pros + cons

- low cost print for mid-volume runs
- bright, vibrant colours
- can print on different materials - from paper to fabric
- a slow and sometimes messy process
- expensive to set up equipment
- liquid ink can take time to dry and can smudge
- cannot print photographs or high resolution graphics

WIDE FORMAT BANNER

Wide format printers are similar to inkjet except they use solvent based inks - bad for the environment, but vibrant and good for high coverage. Wide format printers can make huge posters or 'vehicle wraps'

pros + cons

- can print in huge sizes
- photographic quality, including spot-colours
- can print on different paper types
- quick for short print runs of posters or displays
- printers can also cut contours of graphics
- liquid ink can take time to dry and can smudge
- solvent inks are very, very expensive

OFFSET LITHOGRAPHY

Offset Lithography is fantastic for quick, high volume printing such as leaflets, books and magazines. Offset Litho can also print metallic colours and 'duplex' paper to print on both sides. However, they are expensive to setup!

pros + cons

- low cost for high volume print runs
- photographic quality, including spot-colours
- can print on different paper types and sizes
- quick for large print runs
- time consuming to set up
- specialist training required
- expensive initial set-up costs

Higher– Assignment & Exam

Assignment 50marks (Feb till Mid March)

- 8 Hours in total, sat under exam conditions.
- Assessed externally by the SQA.
- Brief set by SQA.
- Pupils analyse the brief, and then respond to the tasks asked of them.

Exam 90 marks (May 2024)

- Knowledge/ Theory – based exam paper (no technical drawing).

Higher Assignment -

3 sections:

- Production Graphics

  (Computer 3D Modelling and Drawings)

- Promotional Graphics (DTP and Illustration)

- Manual Graphics (sketching and rendering)

Graphic Communication brief

A new tabletop study lamp is being proposed by the company NRG. NRG is hoping to attract students and young professionals to purchase their new study lamp. Initial market research has identified that people are looking for a lamp that is inexpensive and brightly coloured.

As part of the graphic proposal, NRG has asked you to create:

- production drawings to manufacture the table lamp
- a 3D promotional display item, with relevant desktop published graphics for display at point of sale:

— you have a company logo, font and colours, and some copy text for this purpose

— you cannot alter the company name, logo, font, and logo colours

- a simple, realistic, illustrated scene of the proposed lamp and promotional display item

You have data sheets to guide you through the assignment.

Task 1: table lamp

A graphic artist has prepared a series of sketches to aid the manufacture of the table lamp.

Using the preliminary sketches and information shown on data sheets 1, 2, 3, 4 and 5, model the lamp components using 3D CAD software.

From these models, produce production drawings based on the lamp shown.

You may use top-down modelling or bottom-up modelling in your work.

1a Produce a sectional elevation, a plan and an end elevation of the base (part 1) and the shade (part 3).

Your drawings must be complete with hidden detail, appropriate dimensions for manufacture, annotations and to a suitable scale. **(6 marks)**

1b Produce a sectional elevation and an end elevation of the assembled lamp, to a suitable scale. Include a nut, washer, and machine screws in these views.

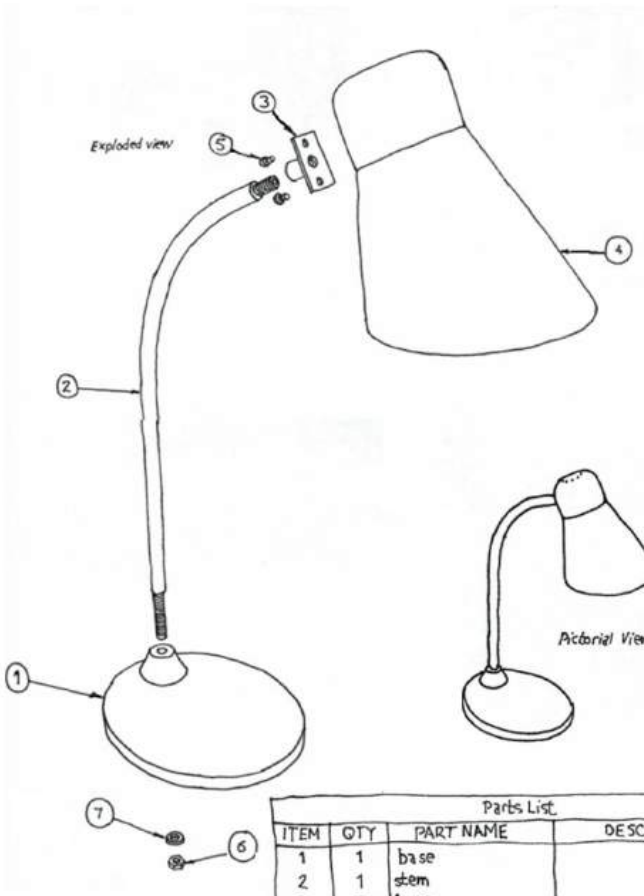
Your drawings should include detail views to show assembly:

- at the base of the lamp — how parts 1, 2 and 3 fit together
- at the lampshade — how parts 2, 3 and 4 fit together **(8 marks)**

1c Produce an exploded isometric view of the assembled lamp. Include the nut, washer, and machine screws in this view. **(3 marks)**

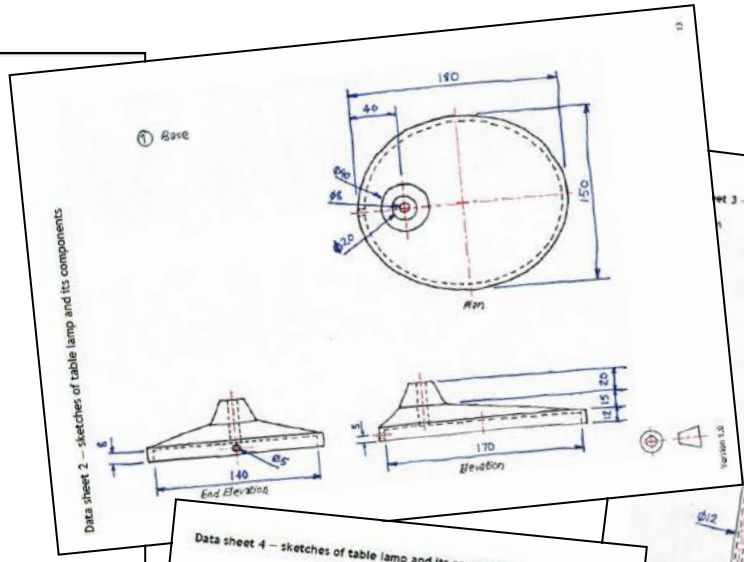
1d Include correct British Standard conventions and line types on all of your drawings. **(3 marks)**

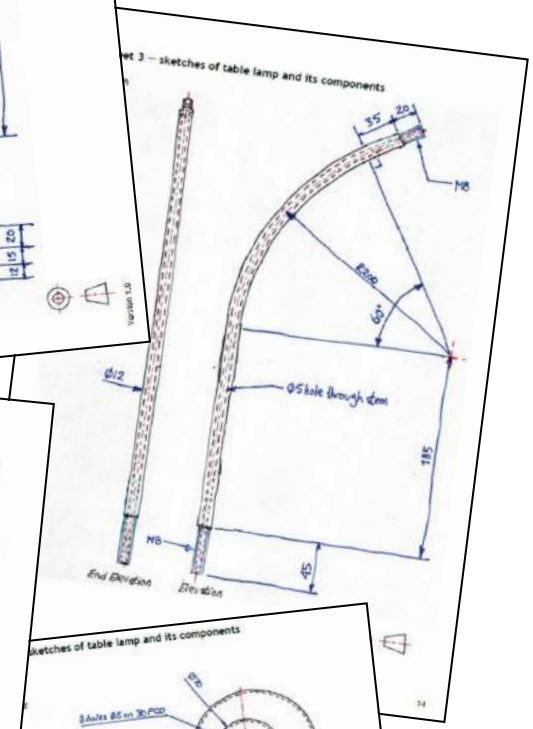
Data sheet 1 – sketches of table lamp and its components

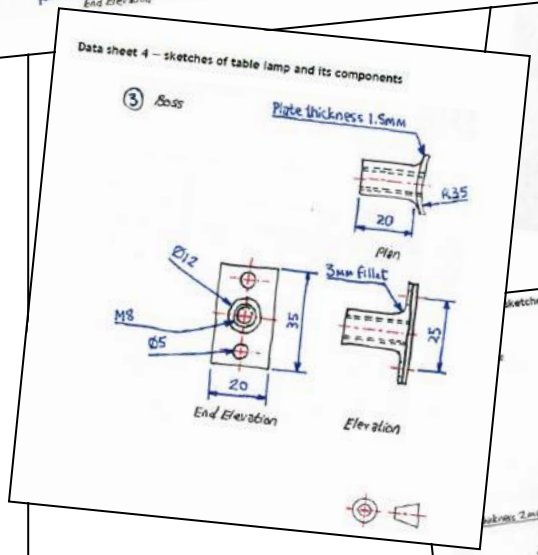


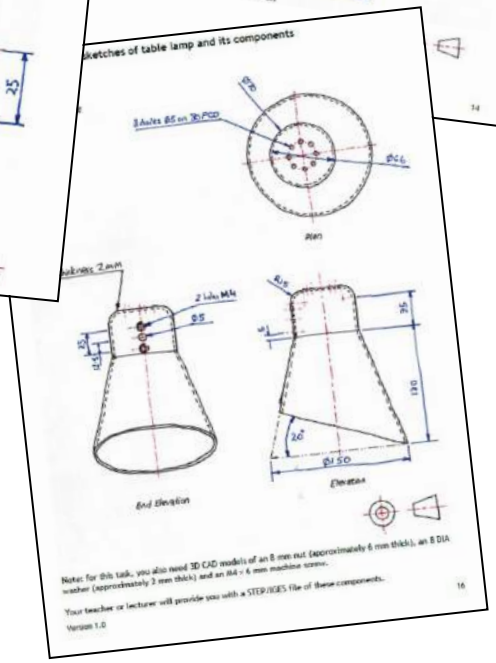
Parts List

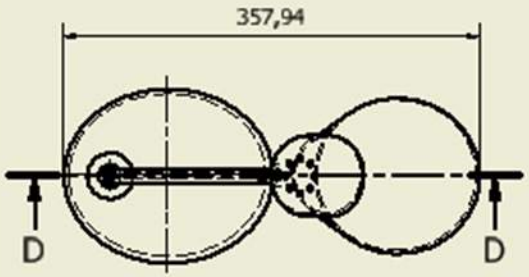
ITEM	QTY	PART NAME	DESCRIPTION
1	1	base	
2	1	stem	
3	1	boss	
4	1	shade	
5	2	M4 machine screw	M4 x 6mm machine screw
6	1	lock nut	M8 lock nut, 6mm thick
7	1	washer	Ø 8 washer, 2mm thick



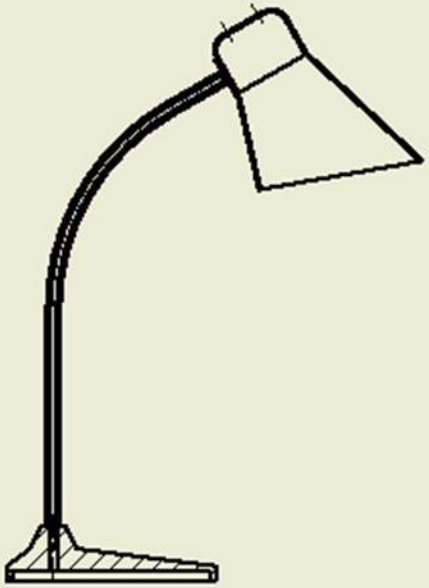




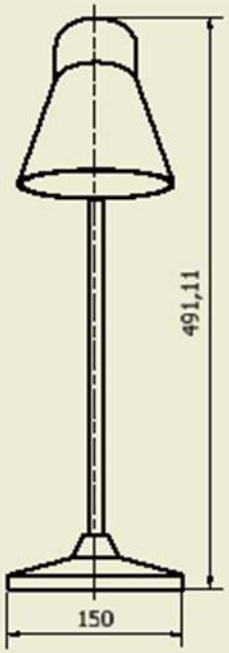




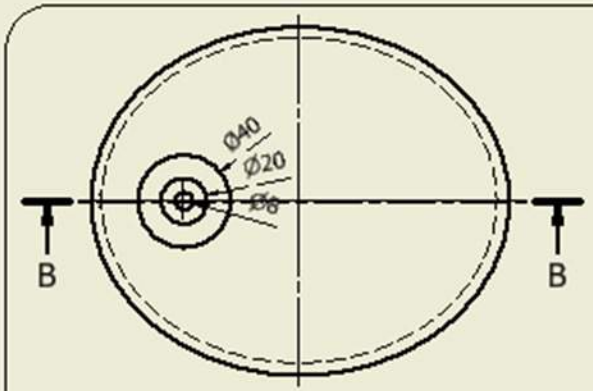
Plan



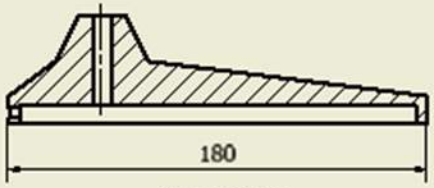
SECTION DD



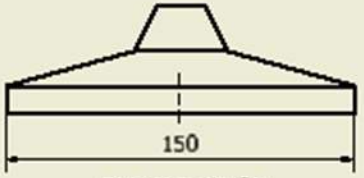
END ELEVATION



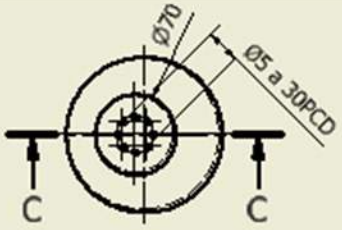
Plan



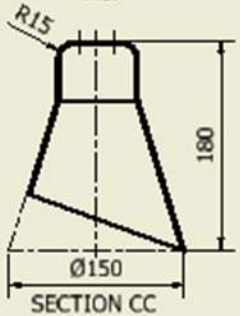
SECTION BB



END ELEVATION



Plan



SECTION CC

END ELEVATION

Task 2: table lamp and promotional display item

NRG is hoping to attract students and young professionals to purchase their new study lamp. Initial market research has identified that people are looking for a lamp that is:

- brightly coloured
- has memorable branding and a positive product identity

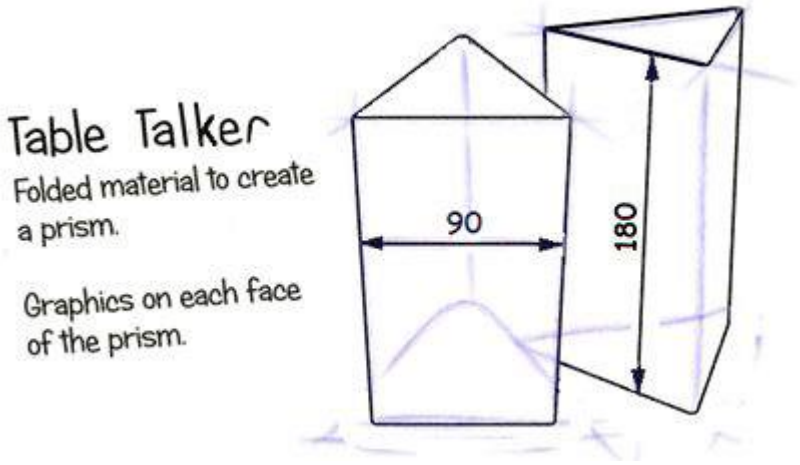
Produce preliminary and promotional graphics for the lamp, using the information on data sheets 6, 7 and 8, and the following instructions.

2a Using the assembled table lamp you created in task 1, produce and print off a 3D CAD rendered pictorial illustration of your lamp.
Your lamp must:

- be complete with appropriate colours, materials, highlights, shadows, reflections and textures
- have the logo from data sheet 6 attached to at least one component part **(4 marks)**

2b Produce two preliminary layouts/thumbnails of a trifold table talker, using data sheets 6, 7 and 8.
Your layouts/thumbnails must include:

- the design principles of rhythm and emphasis
- the assembled lamp from task 1
- the company name, logo, colours and copy
- at least one image from data sheet 7

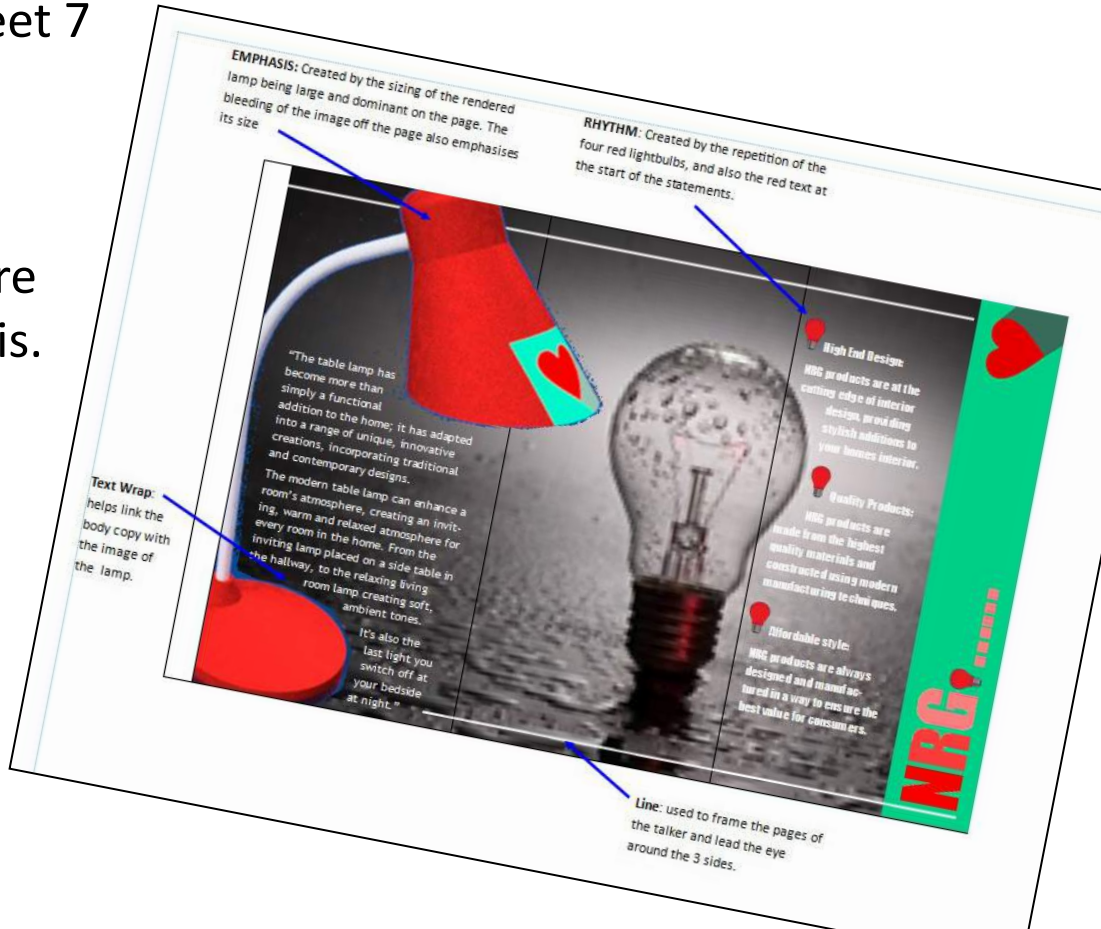


You must label, annotate and justify where you have used rhythm and emphasis in your layouts/thumbnails.
You can add any other graphic items you wish, however you must create them within the 8 hours of this assignment.
You can use the images on data sheet 7 as they are, or you can edit them to suit your design. **(7 marks)**

2c Produce and print off a full-size version of your trifold table talker chosen from your preliminary layouts/thumbnails.
This must be complete with the assembled lamp, company name, logo, copy text and your chosen image(s).
You must use:

- the design features given on data sheet 6 — company name, font style, logo, colour scheme and copy text
- at least one image from data sheet 7
- your lamp
- the sizes shown on data sheet 8

Label your printout to identify where you have used rhythm and emphasis.
(10 marks)



Task 3: table lamp scene

3a Sketch a 2-point perspective view of a simple scene.

- Your view should include two walls and a flat surface, a counter or a tabletop that displays and includes your assembled table lamp and the trifold table talker. **(3 marks)**

3b Using the table lamp you created in task 2a and the trifold table talker you created in task 2c, produce a promotional 3D CAD rendered pictorial illustration of your simple scene.

Your illustration should include:

- the lamp and table talker placed in a suitable simple scene, based on your sketches from task 3a
- two walls and a flat surface, a counter or a tabletop with appropriate materials attached to them
- appropriate colours, materials, highlights, shadows and textures

(6 marks)

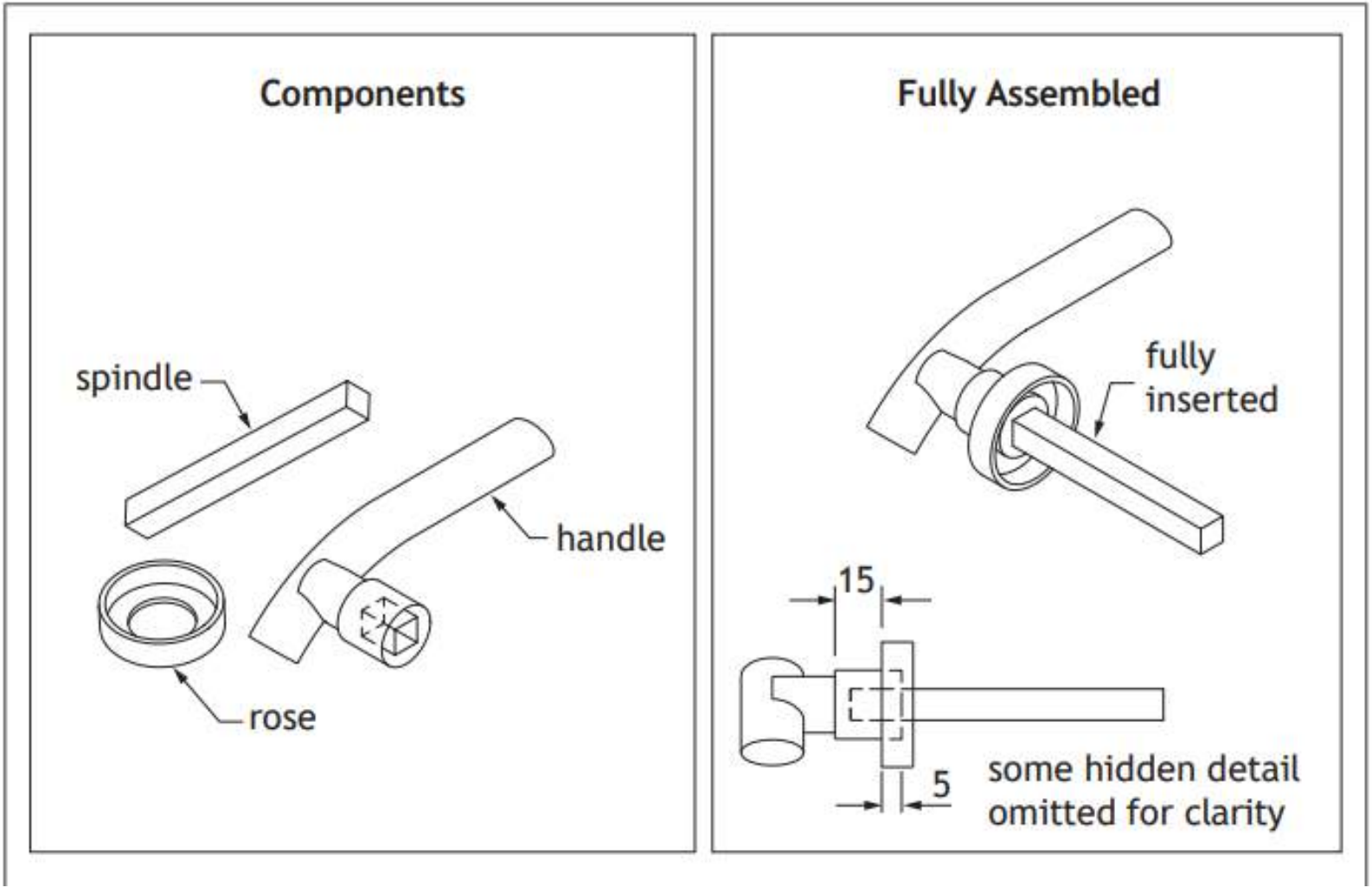
Prelim Jan

- The prelim covers most of the Theory of the course.
- Pupils will be given a study checklist of all topic areas and knowledge they should know and can be asked about in the exam.

1. 3D CAD modelling software was used to create the sub-assembly of the door handle shown below.

(a) (i) Describe, using 3D CAD terms, how to constrain the three door handle components.

You may annotate the drawings and use sketches to support your answer. **4**



(ii) Explain the term sub-assembly. 1

The CAD technician used top-down modelling to model the sub-assembly components.

(iii) Describe **two** advantages to the CAD technician of using top-down modelling. 2

(b) You must use the drawing provided on the **supplementary sheet for use with question 1 (b)** to answer this question.

(i) State the name of sectional view X, shown on the elevation. 1

(ii) Explain the purpose of a detail view. 1

(iii) Describe, giving **two** reasons, the purpose of an exploded isometric view. 2

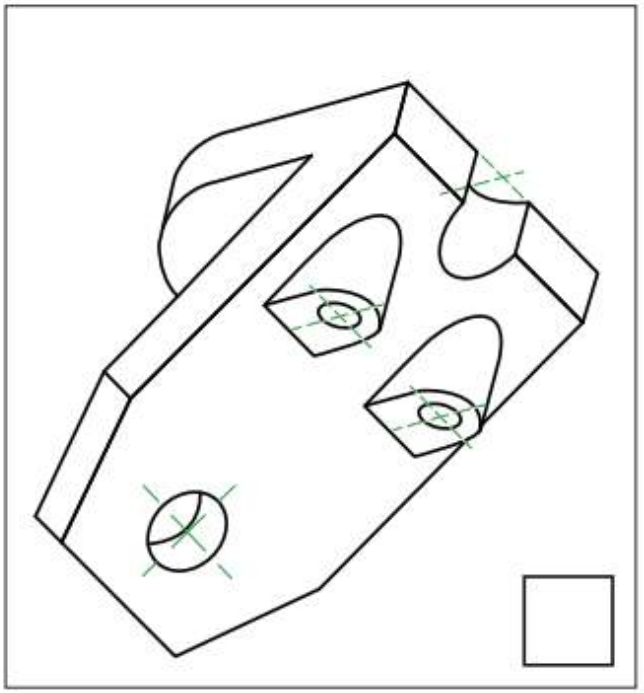
3. A designer created a rendered 3D CAD illustration and electronic sketches of a concept delivery vehicle shown below.

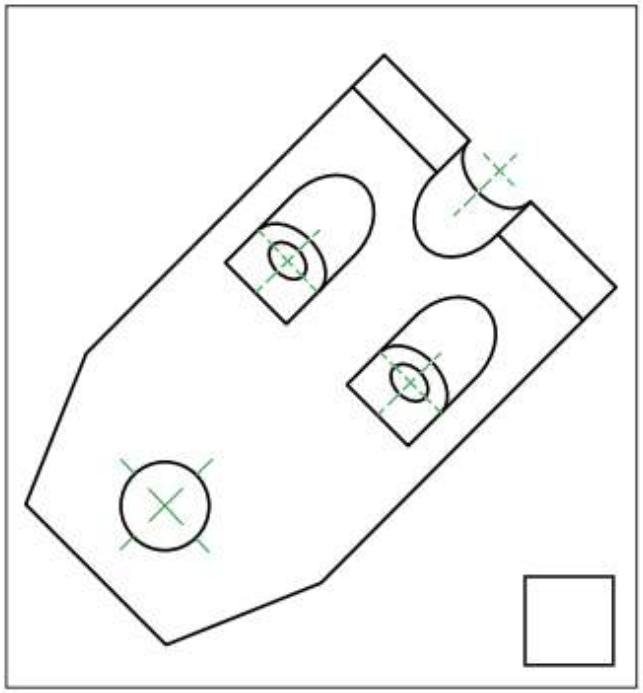
(a) Describe **two** advantages to the designer of using digital sketching instead of manual sketching. **2**

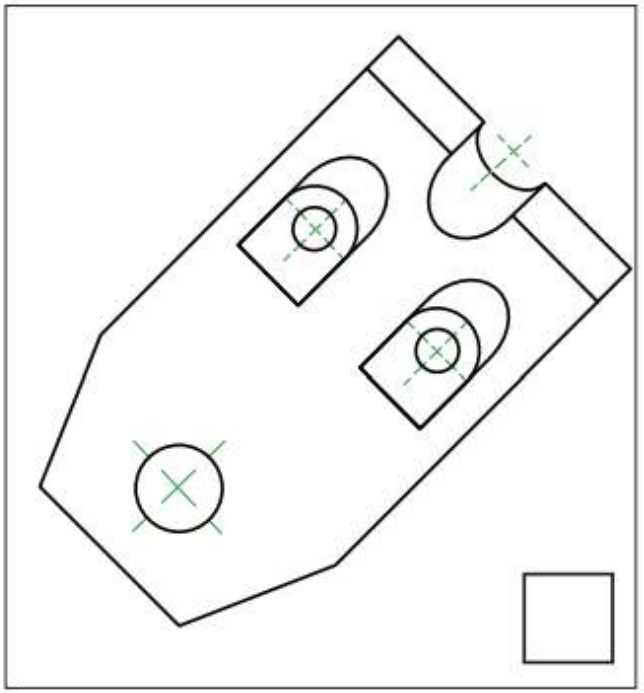
(b) Describe **three** benefits of using rendered 3D CAD illustrations to show design concepts to a client. **3**

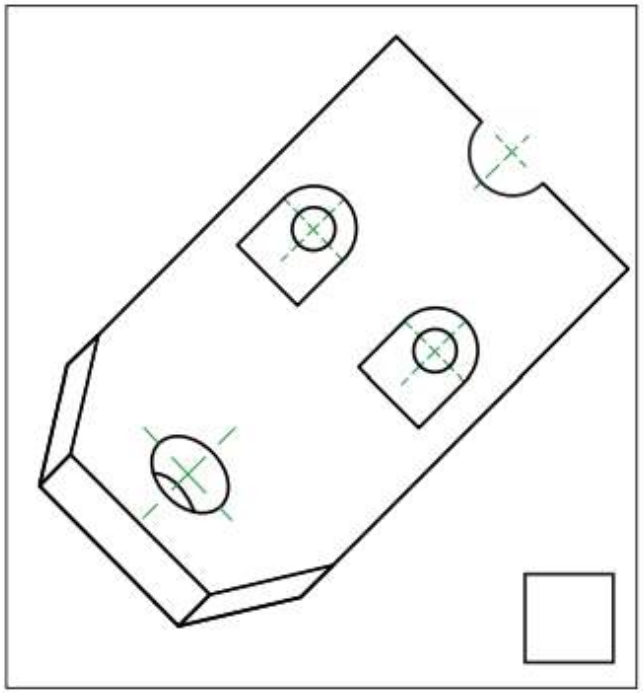
4. (contin

The ort









What you as parents/guardians can do to help…… a summary!

- Ensure any homework/revision is done using the checklist in their folder.
- Read pupils notes and ask them questions about the various terms/words/topics.
- Get pupils to make flash cards of topics and information. Then test them on the flash cards.
- Whenever you see a graphic in a magazine or newspaper etc., ask your child to explain what the various bits that make it up are and what their job is or how and why the designer used them.
- Regularly discuss what they have done in class and ask them questions about it.
- **www.designclass.co.uk**