

# Advanced Higher Exam Notes

Graphic Communication is a practical subject—most of the marks you shall achieve are within your coursework projects—and it is best to think of the work done during this time when answering the KI questions in the Final Exam.

- This set of notes will provide a useful, concise aid for you. It does not include all the design elements as these can be a bit vague, but the ones included (line, shape and colour) will be enough for the exam. There are more principles here, which are perhaps easier to talk about.
- DTP tools and page layout are included here; you shall be familiar with these from Higher, and they are an easy way to gain marks.
- The main Inventor techniques you used are included; think about how you used them in your project. Edits—fillets, shell, chamfer are not here due to space constraints but these should be straightforward for you to describe in the exam.
- I have included some of the lighting and illustration techniques as you may be asked these.
- You shall be asked about printing methods—4 or 5 marks—and the best way to remember these is by looking at YouTube videos. I have put a selection of techniques on that page which may be looked at there.

## Exam tips

### KI section:

- This is approximately 50% of the marks available. Try as much as possible to think about what you did during your coursework.
- Remember the 3 Elements and the principles mentioned in these notes. When analysing the magazine, write as much as you can and if it asks for IMPACT, remember to describe this.
- 3D modelling question: think how you built your own model. When asked to describe how the model in the question paper is constructed, try to imagine you are doing it on the computer. **REMEMBER TO USE SKETCHES TO SUPPORT YOUR ANSWER.**

### DA Section:

- Take your time, and attempt the one you feel most confident with first. It shall probably be the measured perspective one.
- You shall have more time with this than at Higher, so make sure you have as much in as possible.

**DO THE KI PAST PAPERS - THIS IS THE BEST PREPARATION!!**

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# Design Elements: Line

The use of **line** can be an important and effective technique to enhance a page. They can be used to **connect** parts of the layout, create **emphasis** on certain items and **separate** parts of the design from others.



This layout is quite **disconnected**—the text and the product are unrelated to each other and the different colours of the background appear separate from the hairdryer.



The use of the two sets of lines brings repetition to the display, and links the product on the right hand side with the text on the left. The lines also link both coloured parts of the layout together.



By simply applying two thin lines, the viewer's eye is led along the page from the product name to the slogan at the bottom right. The vertical line passes behind the product, so linking it to the slogan and the light blue element of the layout. This also brings depth to the display.



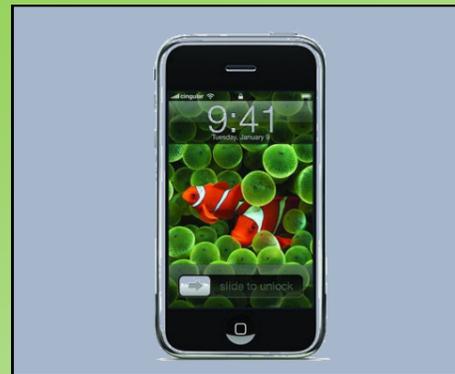
The wavy lines in this layout make it feel less formal and more vibrant than the other two layouts. An impression of movement is created here and again the reader's eye is taken to the slogan at the bottom.

## Design Elements:

# Shape

As most layouts take the form of squares and rectangles, it is effective to use different shapes within the design. The use of circles for example, are useful for bringing contrast to a layout and creating visual interest. This is especially true if the product being advertised has straight edges, in this case a mobile phone.

## ZombiePhone



The latest model in store Now! Order to ensure you get yours!

This layout is very straight and rectangular in structure. All the graphic items are in boxes, and the shapes of the product are also rectangular.

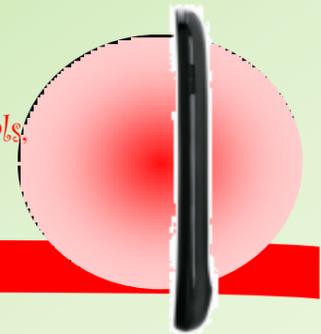
The red lines further add to this feel, and the display is not very eye-catching or exciting.

It lacks visual impact.

## ZombiePhone



The best hairdryer on the market. Used by professionals, and now available to YOU!



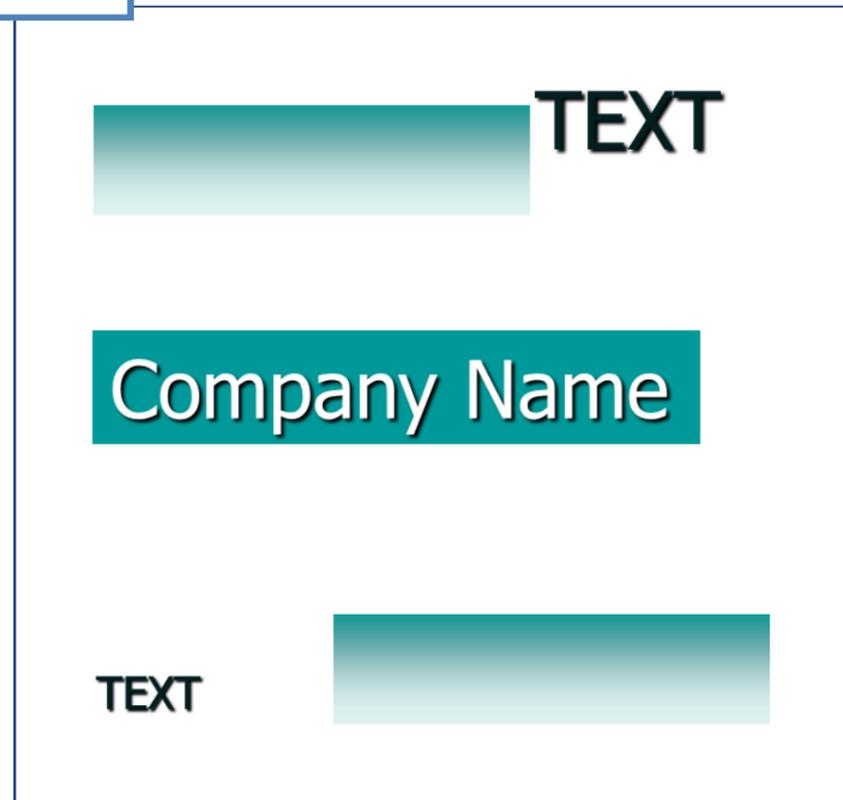
This layout has is more vibrant and eye-catching as circles have been applied to it. The circles contrast well with the rectangular outlines of the phones and make them stand out more.

The straight red lines have been replaced with wavy lines and this gives a feeling of movement and contrast to it.

A change of font for the slogan further adds to the contrast in shape—it is less 'straight' than before and harmonises well with the circular shapes now adopted.

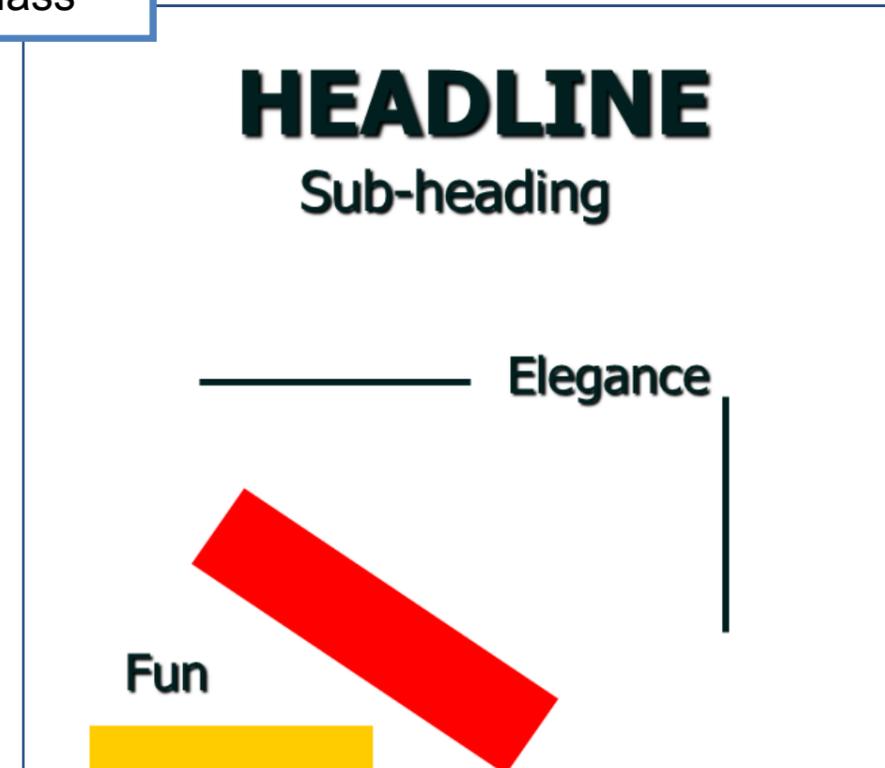
# Design Elements:

## Value



This deals with the use of colour tones in a layout. Darker tones have a higher **value** and setting them against light tones makes a graphic display more dramatic.

## Mass



All items in a layout have a **mass**. A bold heading has a greater **mass** than a small sub-heading. Lines and colour fills add mass but thin lines bring a formal elegance, while heavy blocks of colour can show

## Texture



Texture can be considered in two ways: **Physical texture** is provided by the smoothness or coarseness of the paper.

**Visual texture** is the pattern in images such as the pattern of tree bark in a photograph.

# Design Elements: Colour

The use of colour can have a dramatic effect on the impact of graphic layouts. Colour **combinations** should be considered, and not just colours in isolation. Colours working together are what makes a difference. If colour combinations are effectively applied, they can:

- Give visual impact to the layout
- Suggest a mood
- Unify a layout
- Make a product stand out
- Connect the product with a target market

You should be familiar with colour theory, which is covered elsewhere in your notes.

This colour scheme predominately uses **tones** of the same colour—blue.

This unifies the display and contrasts well with the red of the product—so creating visual impact.

The red of the product is used in the two items of text—this now becomes the **accent colour**. This unifies the display and also creates brand awareness as it is the same as that of the hairdryer.



The application of colour combinations does not work effectively here—too many colours are used. The colours are in conflict with each other, and make the layout confusing to read. It is also difficult to read the slogan at the bottom.



This colour scheme only uses the colours of the hairdryer product. This means no 'extra' colours are used and they work well together to create a harmonious feel.

The light grey of the flashbars is effective in giving depth to the layout and makes the product stand out.

It is easier to see the slogan at the bottom now a single colour gradient has been applied to it.

## White space

White space does not need to be white; it refers to a blank area or empty space on a page.

There are three main reasons for including white space in a layout:

- It calms a layout and makes a busy layout less busy.
- It can make an item in or near the white space stand out more—it gives that item **emphasis**.

It can allow the reader's eyes to rest. This is advantageous if the layout is busy.

# Design Principles: Balance

It is quite straightforward to understand and apply the principle of balance in a layout.

Most layouts are based on a rectangular shape. If the advertised product is placed in the centre, there are two areas to fill—each either side of the graphic.

Layout [1] has been balanced **symmetrically**—if you divided it in half vertically, each side would be essentially the same.



This **symmetrical** layout is quite difficult to follow, and text items are spread over the page. This can make it difficult to read the text and there is little 'flow' to reading the layout.

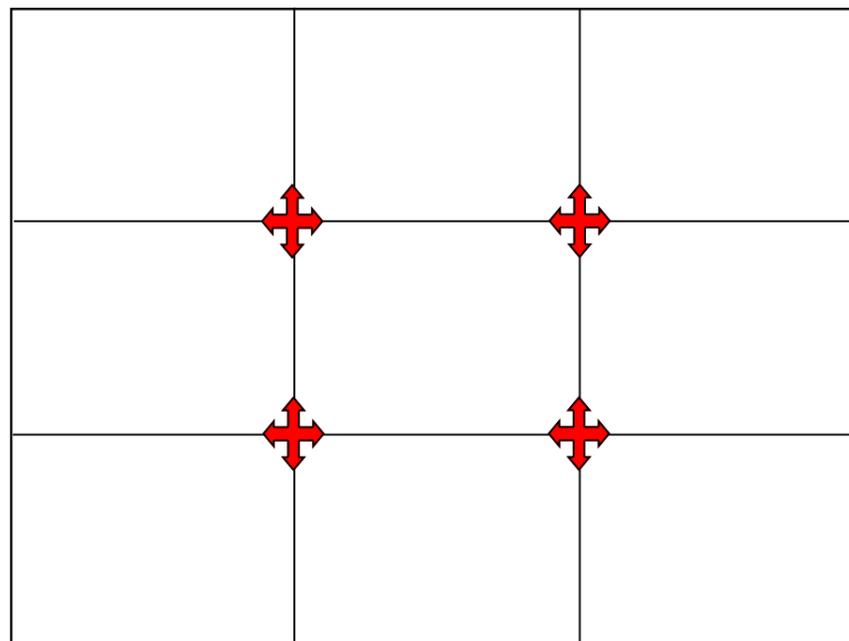


This **asymmetrical** layout is more eye-catching. As the text is positioned to the left and the graphic to the right, the layout 'flows' better.

## The Rule of Thirds

If a space is divided into 9 equal rectangles, the four lines dividing the space provide **focal points**. If objects are and text are placed here or close to these lines, a more visually effective layout can be produced.

The points where the lines cross are called **impact points**, and these are key areas to place important features.



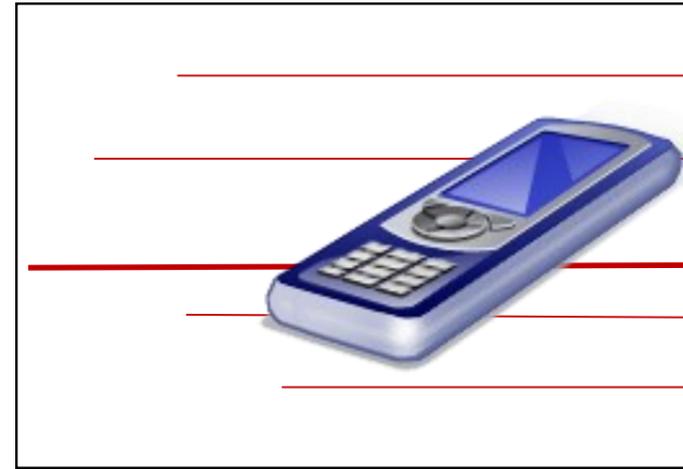
Some small alterations have been made here to further improve the layout. The text is grouped more together than before, the product has been enlarged and a shadow effect has been applied. The 'HeatWave' text has been reduced slightly in size and also moved to the left.

# Design Principles: Unity, repetition and harmony

As layouts usually consist of different graphic items and text, it is important to connect these different elements together within the layout so that they appear linked and together.



Unity is achieved here by overlapping the image onto the text. This makes a physical connection between the image and the text.



The same effect is achieved here by positioning the image over the lines



The repetition of the thicker blue lines with black outlines creates unity here. The use of a similar colour to the graphic is also a unifying feature.



By overlapping the image onto all three areas of the layout, unity is achieved. Again, a harmonious colour is effective in contributing to this effect and the flashbar connects the text to the image.



The three circles are filled with a similar colour to the graphic. The repetition of these circles creates a unifying effect to the layout.



By wrapping the text around the image, the layout is unified and connected.



Colour, repetition and positioning of graphic are used here to effect to create a unified layout.

# Design Principles: Alignment

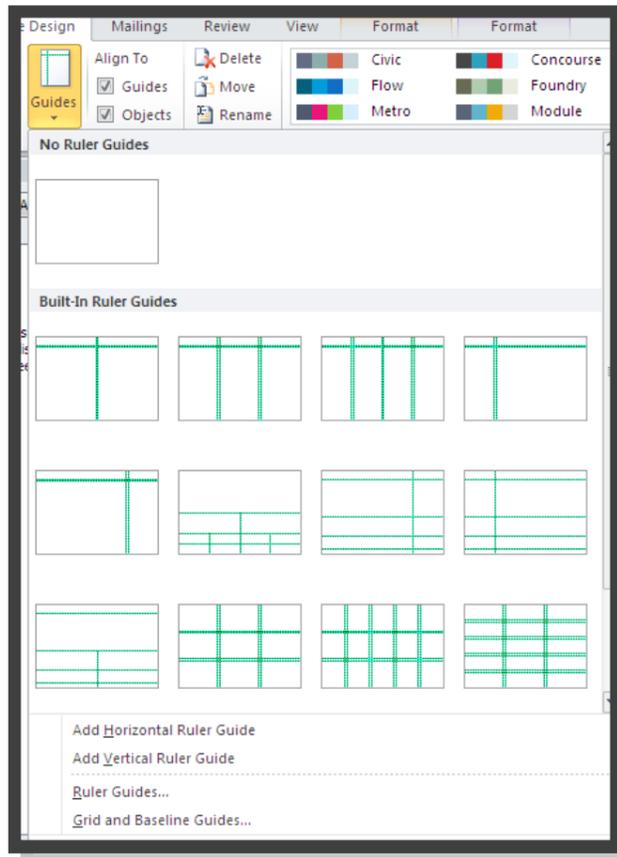
Alignment is an effective method to improve the structure of a layout. Good alignment makes a page easy to follow and organised and helps make it neat and sharp.



This layout [1] is poorly aligned. The impression given is one of disorganisation, and it appears messy and ill-structured. The image and various items of text are almost scattered around the layout, and it becomes difficult to take in the information.



Once guidelines are added to the display [2], one can see how poorly aligned the graphic items and text are. The guidelines illustrate where alignment can be achieved with edges of items.



This screenshot from Publisher shows how using a layout guide and the 'Snap' tool can effectively and easily enable alignment to be achieved in the display. Such a guide has been applied to the layout in [3]. One can see how the edge of each item and text is aligned with another.



This layout [4] has the guidelines removed and demonstrates how effective good alignment is to a display. Compare it with the original layout [1] and note how it is more structured and organised.

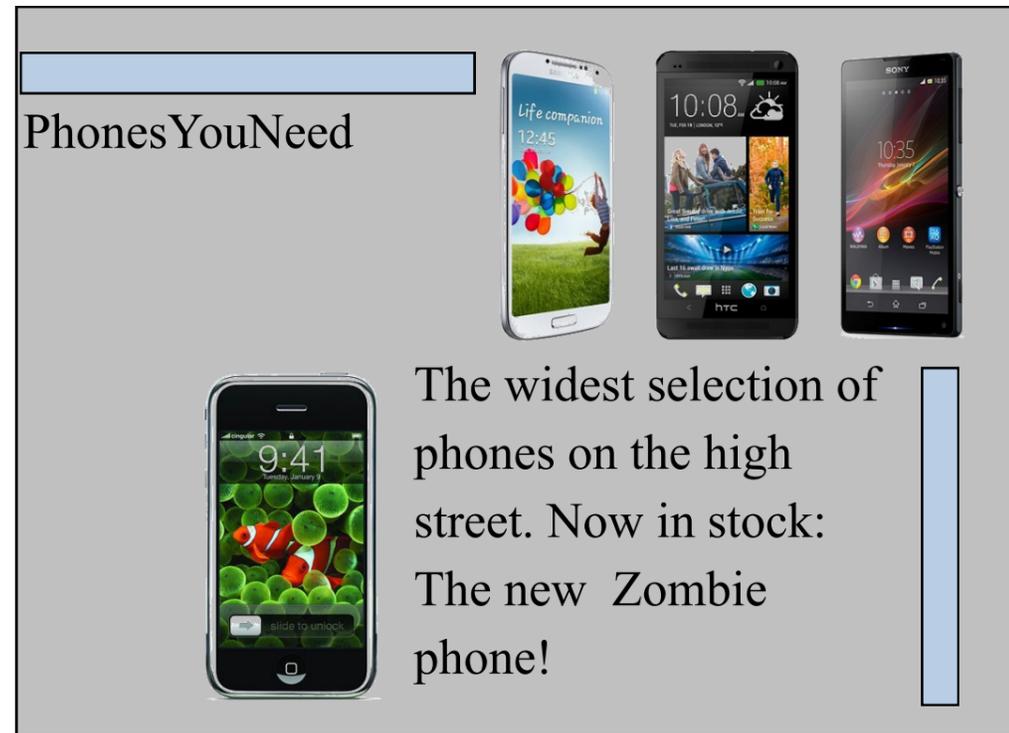
## Design Principles:

# Contrast

The purpose of a designed page is to grab the reader's attention—this is especially true in promotional graphics where the layout is competing against other adverts and products.

An effective way to achieve this is through the use of **contrast**—especially by comparing opposites.

Opposites can be between colours, horizontal and vertical lines and between shapes—such as circles and squares.



This promotional layout provides no occasions of contrast. The black text is almost lost against the grey background. The page is aligned well, but the straight shapes of the phones and the coloured shapes give the page a very grid-like feel and nothing in particular stands out.

This layout is different however. The display has a much more vibrant feel to it; the red wavy lines contrast strongly with the rectangular shapes of the phones, and by increasing the size of the main image and tilting it the phone grabs the reader's attention. By applying a gradient fill to the flashbar the red text of the company's name stands out more. The use of a circular background for the product information contrasts with the straight lines of the product and flashbar and grabs the reader's attention.



# Design Principles: Emphasis and dominance

As graphic layouts are often looked at hurriedly by a reader, it is important to attract their attention quickly. If a page has no focal point or is generally bland, the reader shall ignore it and move on.

As a layout may contain several items of text and graphics, a strong **focal point** must be provided to centre the display around. This is normally the graphic or photograph on the page.

**Dominance** is when one item of the layout stands out more than the others.

**Emphasis** occurs when one item is made more eye-catching.

These are the three rules of order to dominance in a layout:

1. The main graphic or image should dominate the layout.
2. The title, heading or product should be next.
3. Less important items should be grouped and positioned effectively to support this order.

This layout has no item achieving overall dominance; as it is advertising the 'Boost' drink then the bottle should be the main item the viewer notices.

In this case, the bottle is 'swamped' by the other features in the display—the slogan and the athlete are perhaps the most noticeable features. The font size of the 'Boost' is almost the same as that of the slogan.



Some simple changes have been applied here to make the product become the dominant feature and emphasise the product name:

- The bottle has been enlarged and put off—centre. This immediately attracts the reader's attention.
- The athlete has been reduced in size, and relocated to the top left corner. She still contributes to the layout, but does not take over.
- The crowd silhouette has been faded slightly and put more behind the bottle—this is acting as a flashbar so giving the layout more depth and pushing the product forward.
- 'Boost' has been underlined to emphasise the product name more effectively
- The line at the bottom gives further dominance to the bottle and leads the eye to the slogan—which has been reduced in size.
- A gradient fill has been applied to the background. This has the effect of making the items in the layout stand out more and not be overcome by the starkness of the original solid background.



# Page structure and layout

## Bleed

This main image bleeds off the printing area and through the margin. This creates an informal feel to the page.

## Colour fill

Contrast and harmony can be achieved by formatting the text box appropriately. These two text boxes use a blue/ grey fill which harmonises with the main picture, but contrasts with reds used in the headers.

## Column rule

This column rule gives this page a more formal look, and separates these two sections.

## Reverse

The body text colour is black. The text of the subheading has been reversed, and the box filled with a darker colour. This creates contrast and gives the page interest.

## Header

This is called a **running header**, and appears on every section of the magazine.

SPECIAL FEATURE



Declaring war on the 'dull' music scene....

# KASABIAN

## Headline

The headline introduces the article. In this case, the bold fonts create emphasis, and the reverse text on the blue/ grey fill gives it visual impact.

## Drop capital

This larger first letter signifies the start of the article. The use of reverse also attracts interest.

**K**asabian burst on to the British music scene in 2004 with the release of their eponymous debut album. Disgusted with the clean living 'non' antics of the current groups of the time—Coldplay, Keane, etc.—they vowed to bring back some of the excitement and glamour that had been sorely missing. They have since gone from

## Margin

Margin—the space at the side and bottom of the page where there is no text or graphic.

Page 6

Festivalseason.com

## Column

Columns are used to restrict the length of the lines of text, making them easier to read. They also produce a visual structure to the page.

## Gutter

This separates columns, and helps to de-clutter the page.

## Text wrap

As it suggests, the text wraps around the image.

## Cropped image

This is an image with the background removed. It creates a more interesting shape.

## Excitement...what it is all about

The song "Vlad the Impaler" was released as a free download for a period of 4 days, as a preview for the album. The promo video for "Vlad the Impaler" stars Noel Fielding of *The Mighty Boosh*. The album's first official single was the track "Fire", which was released on 1 June 2009, and the song "Where Did All the Love Go?" was released as the second official single. The third single "Underdog" was used in the movie *Takers* (2010).

On 14 June 2009, *West Ryder Pauper Lunatic Asylum* reached number one in the UK top 40 charts, spending two weeks there. *West Ryder Pauper Lunatic Asylum* was shortlisted for the 2009 Mercury Prize, and was named 'Best Album' at the 2009 Q Awards. The band won "Best Group" at the 2010 Brit Awards. At the 2010 Q Awards the band won the "Best Act In The World Today".

The song "Fire" was used as the Barclays Premier League theme song for

## Lead singer Tom explains the Kasabian philosophy

### Where do you prefer to perform?

Scotland—the crowds are always up for it and go mental.

### Why do you hate some other bands' boring attitudes?

All rock bands have a responsibility to live the life of a rock star—who wants to hear about Chris Martin's vegan diet or the Fratellis going to bed early? People want an escape from the grinding routine of life, and we'll give them that.



Lead singer Tom

### Favourite festival?

T in



## Heading

This introduces a separate section of the article.

## Tilt

This image is tilted, which catches the reader's attention. It creates a modern feel, which will appeal to the youthful target market.

## Caption

Gives information about the image.

## Sub-headings

These break up the large section of body text. The use of the accent colour produces a visual rhythm.

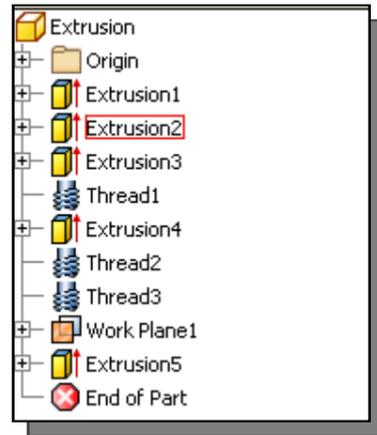
## Page number (folio)

Festivalseason.com

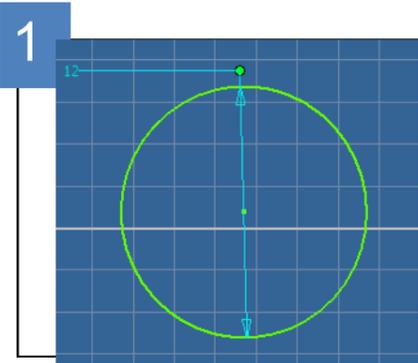
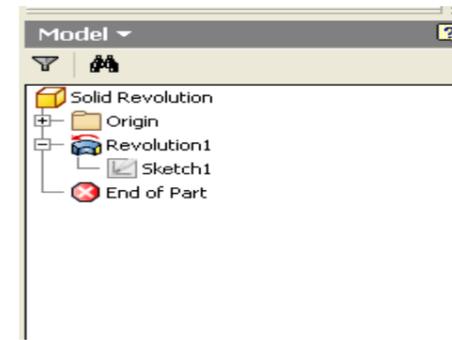
Page 7

# 3D Modelling Techniques

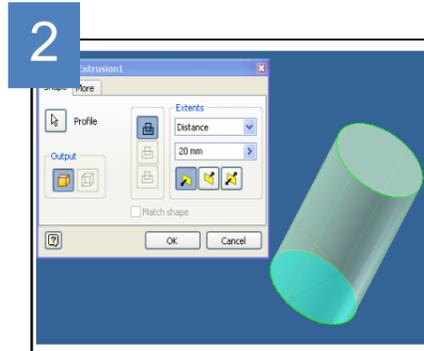
## Extrusion



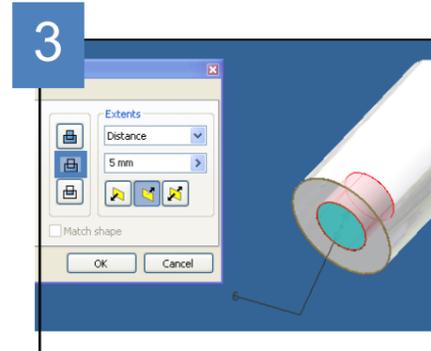
## Solid Revolve



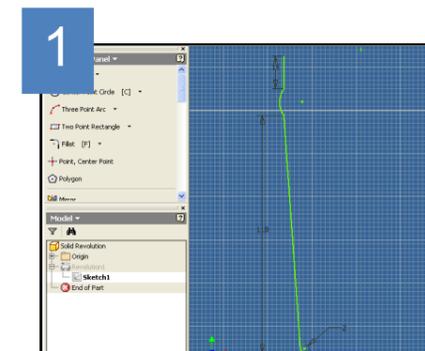
1 SKETCH a circle, and use GENERAL DIMENSION it to make its **diameter 12**.



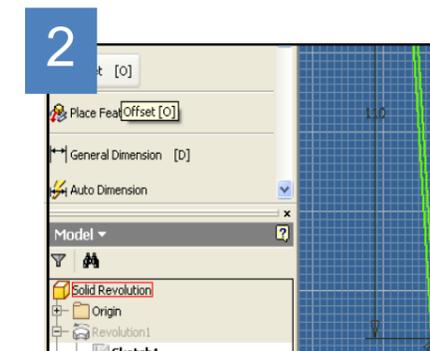
2 EXTRUDE the circle to make a cylinder of **height 20**.



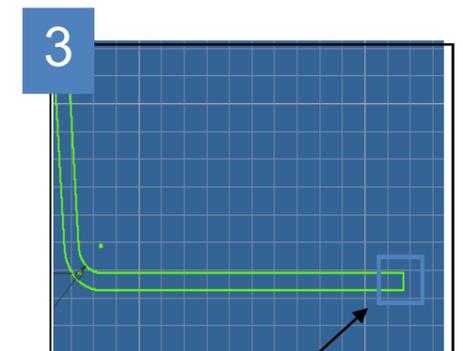
3 SKETCH a circle on one end of the cylinder and give it **diameter 6**. EXTRUDE this by using the 'CUT' option to make a hole **5 deep**.



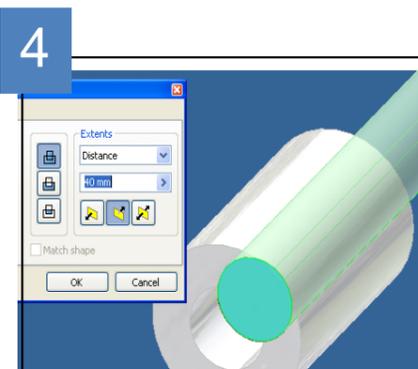
1 SKETCH the above shape, and try to keep the dimensions roughly the same, although it doesn't matter if



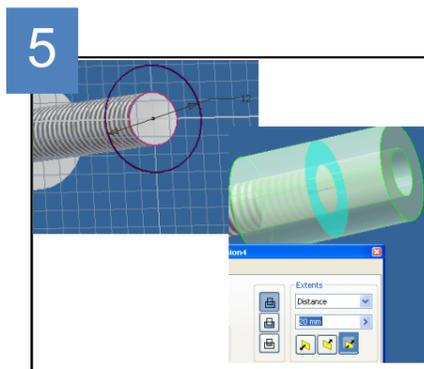
2 **TIP:** Use the **OFFSET** function to produce an exact copy of it.



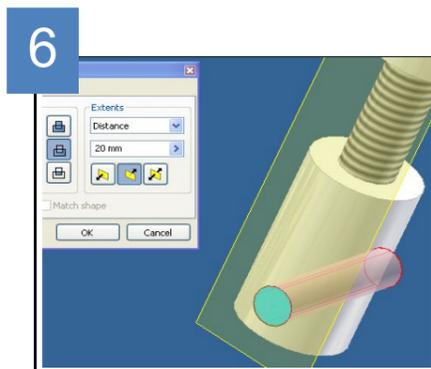
3 Make sure the two profiles are joined together by a line, like this:



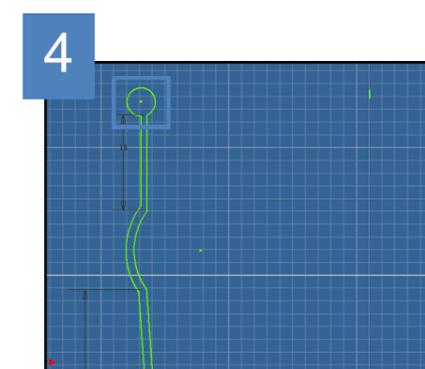
4 SKETCH another circle of **diameter 6** on the bottom of this hole, and EXTRUDE it to make a cylinder of **height 40**. Use the THREAD tool on the cylinder.



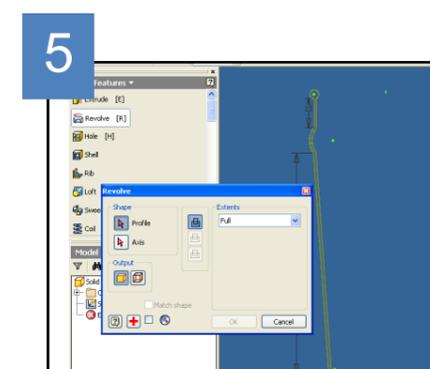
5 i) SKETCH another circle of **diameter 12** on the top of this cylinder.  
ii) EXTRUDE this BOTH DIRECTIONS to a distance of **20**.



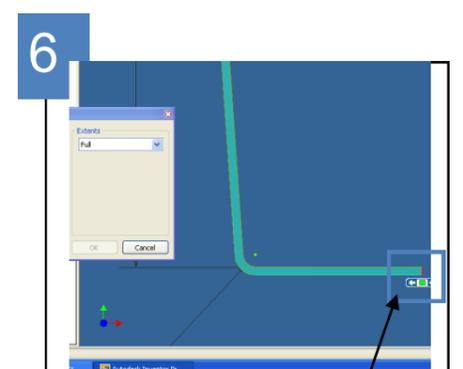
6 Your teacher shall show you how to apply a workplane. SKETCH a circle **diameter 4** on this plane, and extrude a hole all the way through.



4 Also join them together at the top. In this case, a curve/ circle has been applied to give the finished model a rim.



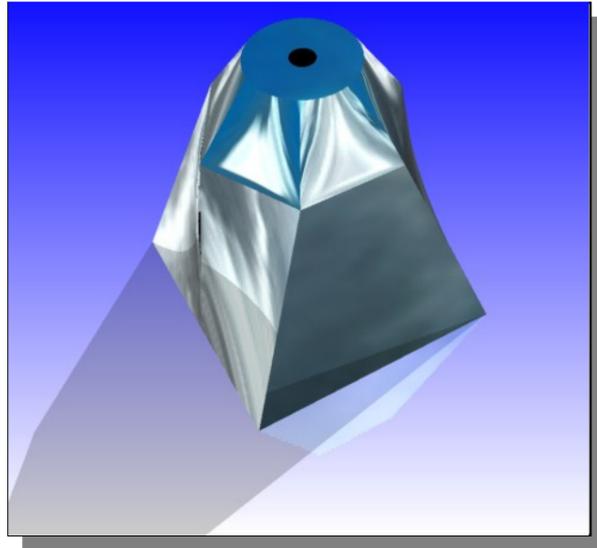
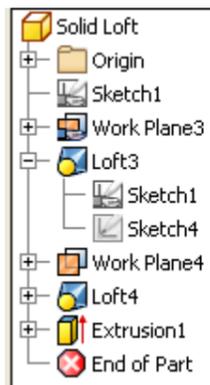
5 Select the REVOLVE function, and make sure the settings are as above.



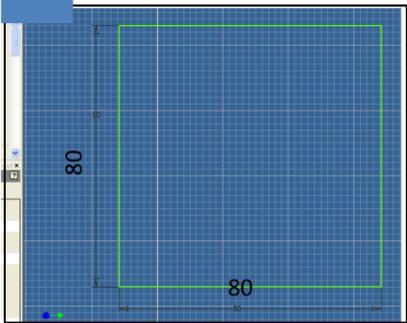
6 Select the PROFILE as above, and the AXIS as shown. This shall complete the technique, if you have produced the profile correct-

# 3D Modelling Techniques

## Loft

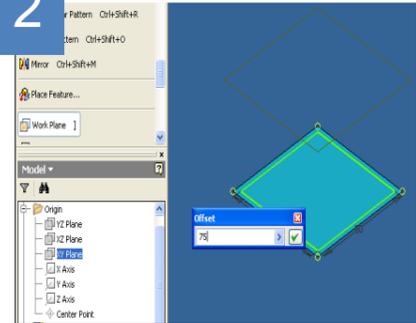


1



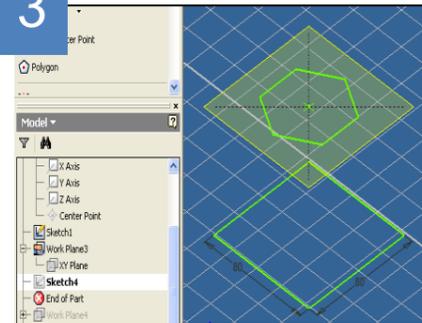
SKETCH the above shape, and try to keep the dimensions roughly the same, although it doesn't matter if

2



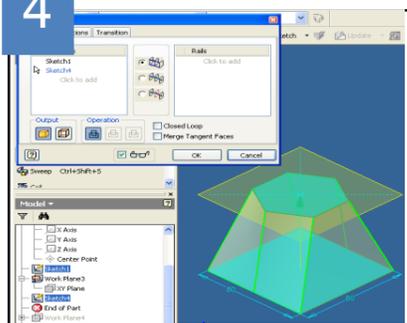
Select the **WORKPLANE** feature, and the **XY workplane** in the model window. Offset the workplane by **75**. You may need some assistance

3



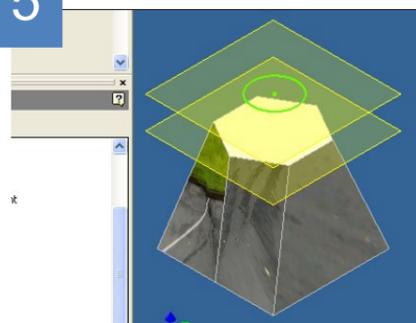
Using the **POLYGON** tool, SKETCH a hexagon as shown. Don't worry too much about the dimensions, just

4



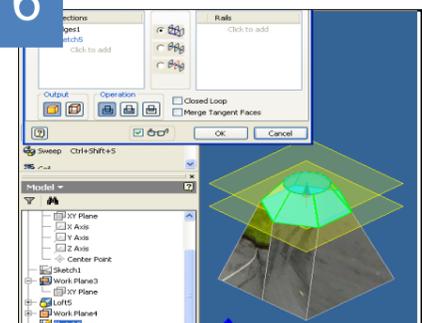
Using the **LOFT** feature, select the square, then the hexagon in turn. this is how it should appear.

5



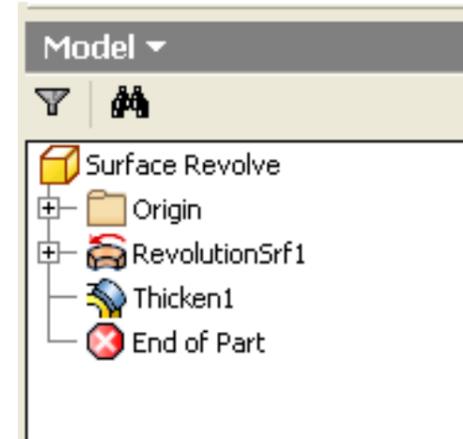
Select **WORKPLANE**, and drag one from the plane containing the hexagon. **Offset** this by **22**.

6

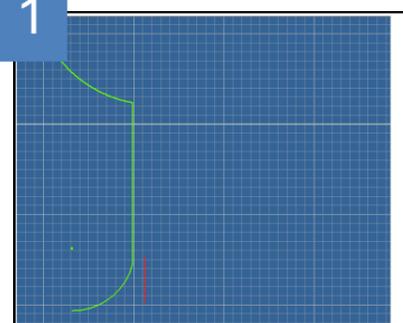


**LOFT** the hexagon to the circle. You can sketch a circle on the top, and extrude a hole down into the model.

## Surface Revolve



1



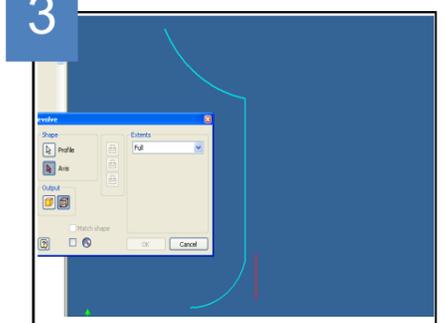
SKETCH the above shape but don't worry if it doesn't look quite the same. Don't worry about dimensioning it. Add a vertical line—in red above. This

2



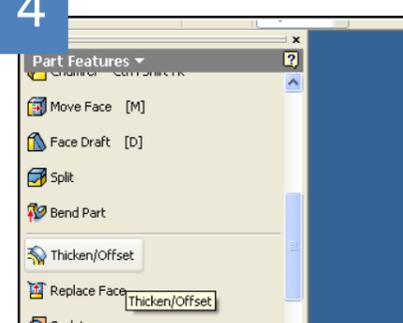
Select the **REVOLVE** function, but this time make sure **SURFACE** is chosen.

3



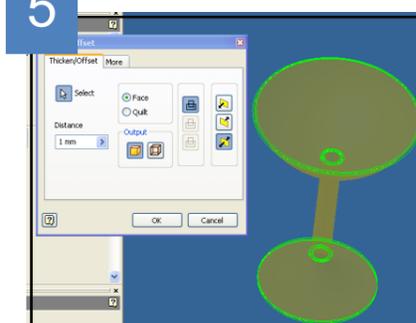
Select the **PROFILE** as shown (blue) and the **AXIS** (red).

4



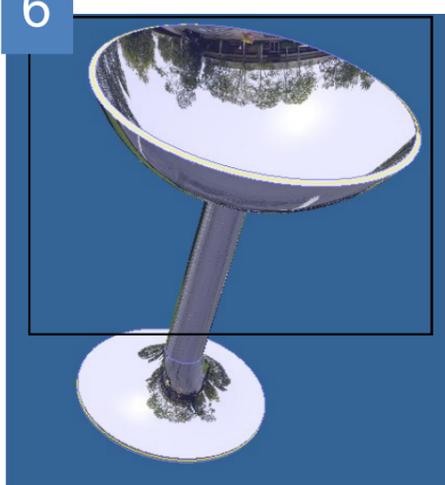
Select the **THICKEN/ OFFSET** function

5



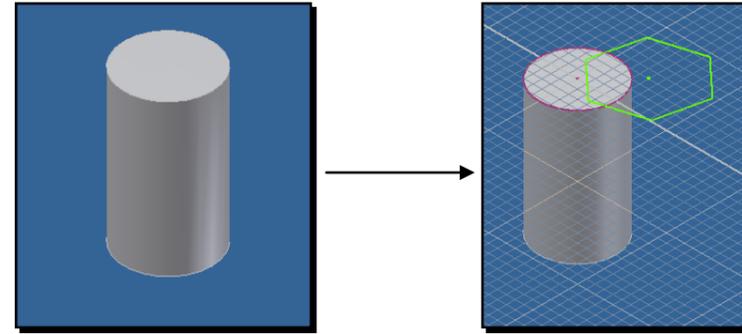
Make sure the settings are as above, and select all the faces of the model.

6

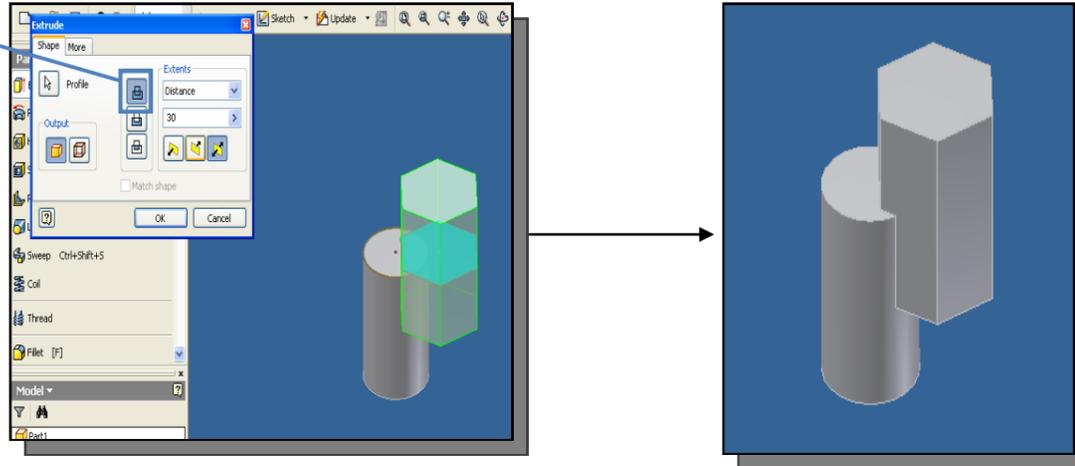


# 3D Modelling - Boolean terms

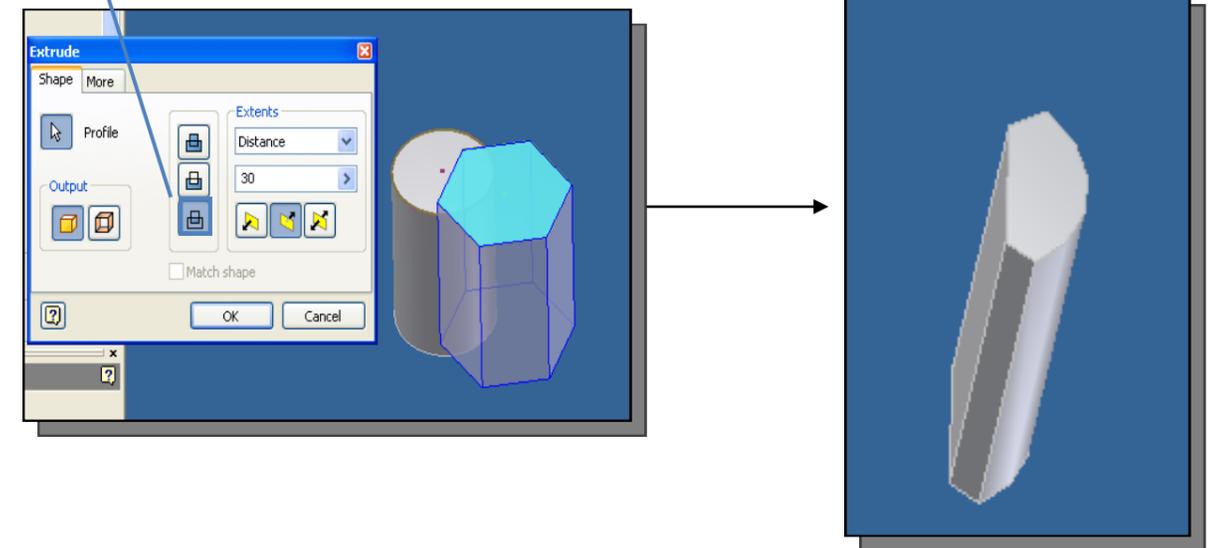
The main Inventor commands you require have been covered on the previous 2 pages. Not all schools shall use Inventor for their 3D Modelling, however and more generic terms may be mentioned in a question. The following three techniques are based on a solid cylinder with a hexagon drawn on top of it and various options within the 'Extrude' feature have been carried out as shown. These 'generic' terms are identified next to each one in the coloured text box:



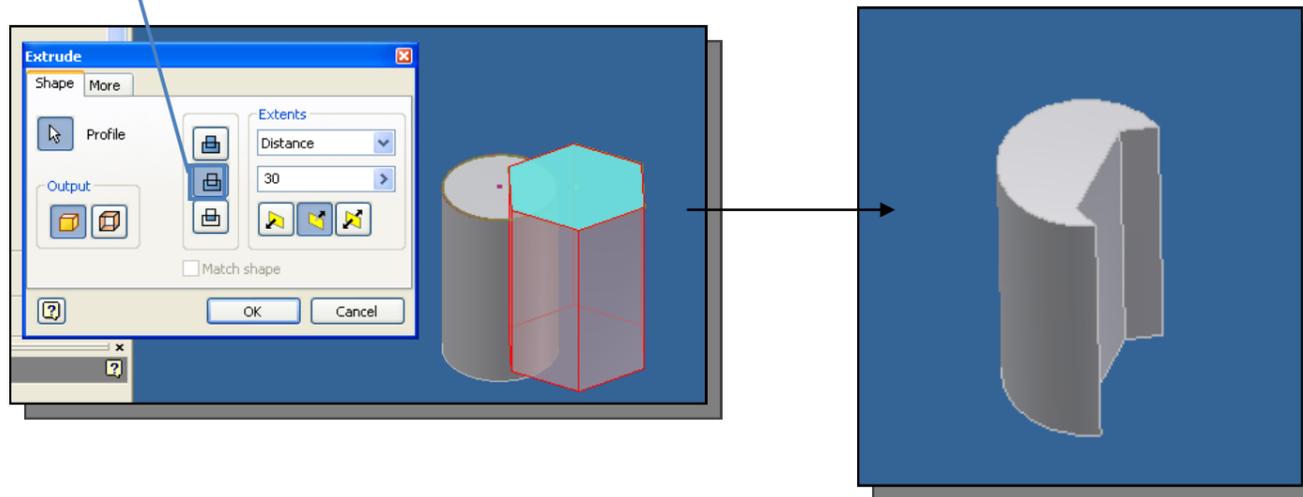
Union



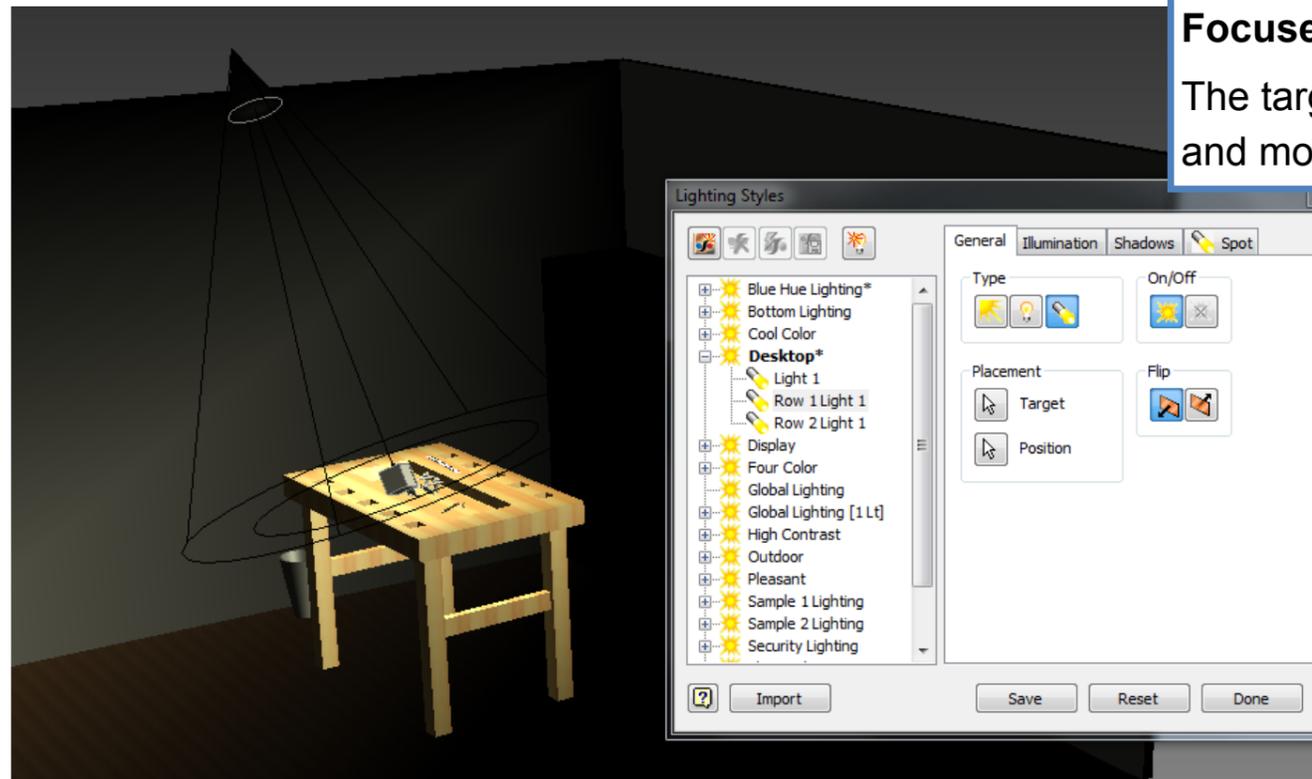
Intersection



Subtraction



# 3D modelling - lighting and illustration terms



## Focused or Spot lights

The target and position of each bulb can be changed and moved around the scene. Extra lights may be add-

## Ambient

Light that provides a constant illumination to every surface in a model is ambient light; it comes from no particular source and has no direction.

## Ambient

Using the Intensity Slider, set a light intensity appropriate to the type of light and the conditions you're trying to simulate. (A value of zero turns a light off).

High intensity – bright light

Low intensity – dim light

## Single or Distant lights

All the objects in the setting are illuminated to the same intensity—think of being outside under the sun.

## Point lights

A single point gives out light in all directions from where it is situated.

**\*\* A more in-depth explanation is given in the past paper from 2010**

# Printing Processes

As mentioned at the beginning of these notes, the best way to be familiar with these is an internet search; YouTube has excellent material on these. The ones you need to know are:

- **Flexography**
- **Lithography**
- **Screen printing**

**The following terms are used in the printing industry:**

## **Crop Marks**

**Crop marks refer to the printing marks at the corners of a document to indicate where the page is to be trimmed.**

## **Pantone ©**

**Pantone © is a colour matching system – standardised colour reproduction. By standardising the colours, different manufacturers in different locations can all refer to the Pantone © system to make sure colours match without direct contact with each other.**

## **CMYK**

**When the final proof has been agreed, the designer will make up “Colour Separations”. These split the image up into constituent colours for four colour printing. There will be one separation for Cyan, Magenta, Yellow and Key (Black).**

# Vector graphics v. Bitmap/ Raster graphics

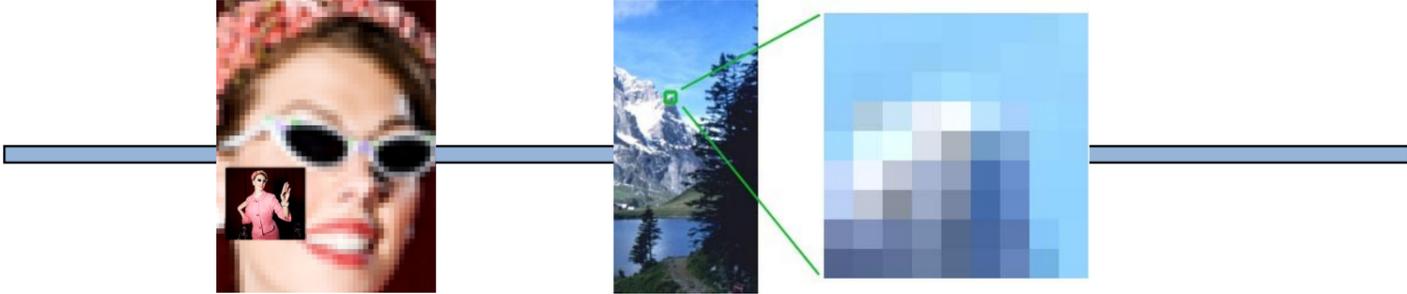
**Vector**

Made up of individual scalable objects, which are defined by mathematical equations, which allows them to render at the highest quality. Objects may consist of lines, curves and shapes with editable attributes such as colour, fill and outline. An object can be modified by shaping and transforming using nodes and handles.



**Bitmap**

Also known as raster images. Made up of pixels in a grid. Each pixel contains specific colour information. A pixel is minutely small, a single image may be composed of thousands of individual pixels. These pixels are only clearly and individually visible when the image is magnified



**Two** advantages a Vector image has in comparison to a Bitmap image. Vector images can be scaled, skewed, stretched without losing their quality. A Vector image can also be manipulated without losing its quality. The same can not be said of Bitmap, which, when scaled will lose its original map of bits.



Vector image:

- Scalable.
- Has no background.
- Resolution independent.
- Unsuitable for photo realistic images.

Bitmap image:

- Restricted to rectangle.
- Quality is reduced when resized.
- Made up of pixels in a grid.

