

Graphic Communication

vector monster



name

class or teacher

introduction

Graphic Design is an exciting career option, with many opportunities to show creativity.

In this unit of work you will learn specifically about one aspect of Graphic Design - creating 'vector graphics'. This is an important skill for graphic designers and also a fun way of creating visual assets for layouts.

In this unit of work you will learn about vector graphics, including some of the terminology and techniques associated.

Your teacher will also show you specific software that you will use. You can also check video tutorials at DesignClass.co.uk.

learning objectives

In this unit you will learn the following topics:

- ☐ What is a vector graphic
- ☐ How to edit a vector graphic
- ☐ How to use layers
- ☐ Basic Colour Theory
- ☐ Colour Editing techniques
- ☐ Typography
- ☐ Paper formats

You will be assessed in the following ways:

- ☐ Answers in this workbook
- ☐ Unit Exam
- ☐ Concept sketches and layouts
- ☐ Final graphic design item.

Each item will be graded by your teacher.

Different software can be used for creating vector graphics. This is different from photo-editing software. Research different vector editing software by searching online.

question

State the name of four vector graphics applications.

Two should be freeware and two paid-for. Which do you use in school?

[4 MARKS]

Vector graphic software can share graphics using special 'vector graphics file formats'.

question

State the name of two file formats used for sharing vector graphics.

[2 MARKS]

what is graphic design?

Graphic design is the term used to describe a huge range of professions that create and edit graphics for different purposes. Graphic designers are in high demand throughout the world. Anywhere you see some form of graphic - from a poster or packaging, to a YouTube video or website, a graphic designer has been involved.

Graphic Designers start by building a portfolio of work they have created and you will do this in Graphic Communication.

Don't worry if you don't like one 'form' of graphic design, as there are many different types and approaches. Graphic Design is about creating visuals that have memorable impact.



screen graphics

Screen graphics are clearly important. From mobile devices, to TV, cinema and even VR.

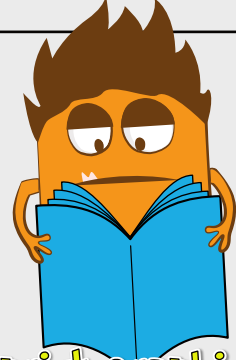
Graphic design for screens involve the opportunity to consider animation, video and special-effects. Vector graphics are used in screen graphics as they can work on any screen size without loss of 'resolution'.



packaging graphics

Packaging may seem a tad boring, until you consider that anything you purchase is usually in some form of wrapping or packet.

Packaging has several functions, one of which is to help 'sell' a product by making it visually appealing. Vectors can be used as 'cut lines' for manufacturing packaging.



print graphics

Magazines, leaflets, posters, and newspapers are all examples of print graphics.

Whilst magazines and newspapers are declining in popularity, they are still an important business employing lots of graphic designers. Vector graphics are used for logos, infographics and lots of other assets.

task

Research three different graphic design agencies in your area.
Create a mood-board showing the work of the agency you prefer.

question

Describe two other functions of packaging apart from promoting a product.

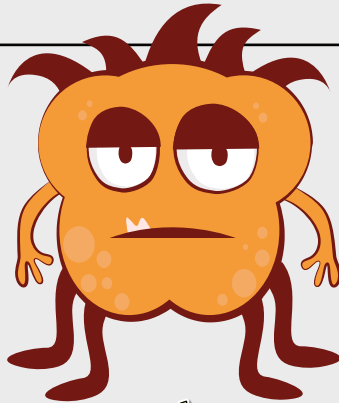
[2 MARKS]

what is a vector graphic?

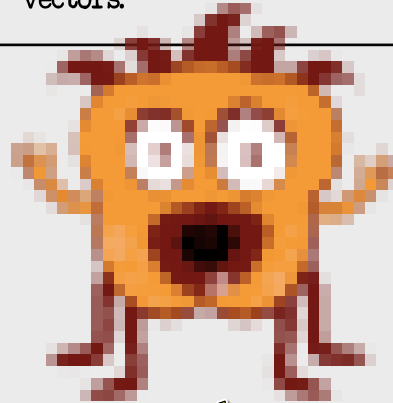
Vector graphics are special as they are not 'drawn' from individual pixels, but by following mathematical rules on a grid. This means the image can be scaled to any size without losing quality (pixelation). Vector graphics can also be used to control machines like laser cutters, as the tool can 'follow' the lines.

Vector graphics cannot be used to make photographs, as they cannot 'colour in' each pixel. However, vector graphics can have colour-fills applied and a range of other effects such as transparency.

Photo-editing software deals with photographs. Vector graphic software for vectors.



vector



raster

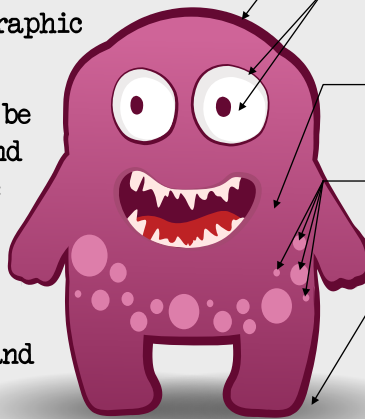
Vector graphics will always appear crisp, regardless of size. This is because it is not based on pixels being drawn. A vector can be easily edited without any 'paint' tools. Instead, Nodes are used to alter the shape and angle of each line.

analysis of a vector

All vector graphic software have a range of tools available for graphic designers.

Graphic designers should be familiar with various tools and processes. Experienced graphic designers can look at a graphic and understand various techniques used to create it.

Have a look at this monster and label the techniques used.



question

Explain two reasons why graphic designers use vectors to create logos and trade marks?

[2 MARKS]

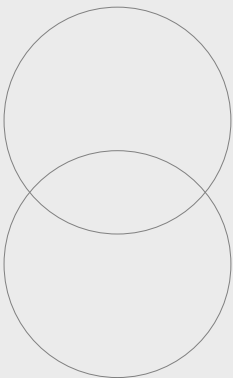
boolean functions

Boolean is a branch of mathematics involving 'logic'; the rule that things are either true or false. You can learn a lot more about Boolean in mathematics and engineering science, but in graphic communication we can use 'Boolean operations' to help create new graphics from overlapping shapes.

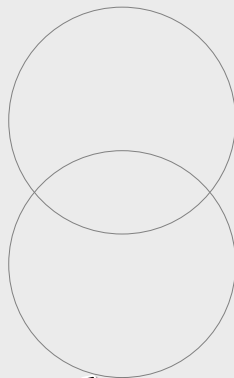
There are four main operations.

- *Adding*, where the overlapping shapes become one shape.
- *Subtracting* one shape from another.
- *Intersect*, where only the parts that overlap are left behind.
- *Exclude*, where the parts that overlap are deleted.

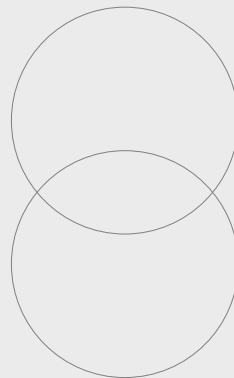
Four overlapping shapes are shown below. Sketch what the final shape will look like once the Boolean operation has been applied. You may want to check using vector graphic software.



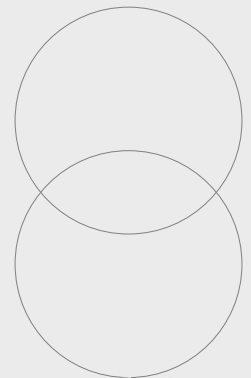
add



subtract



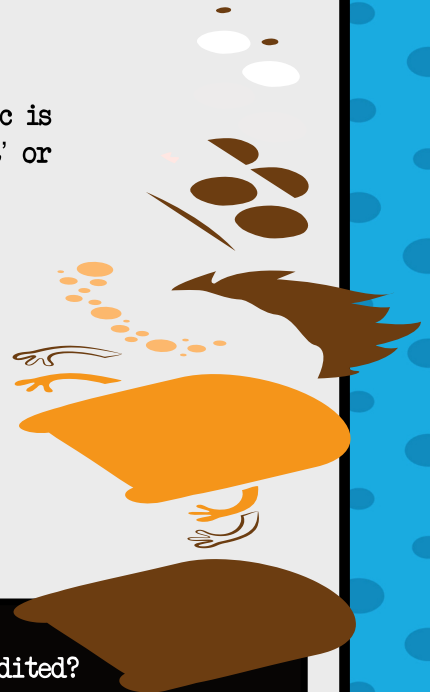
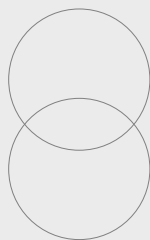
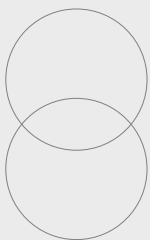
intersect



exclude

using layers

Vector graphics make use of 'layers'; the simple idea that one graphic is on-top or behind another. Vector shapes can be 'brought to the front' or 'sent to the back'. Sketch what this would look like below.



question

Layers can also be 'locked' so they cannot be edited.

Explain why it can be useful to 'lock' layers so they cannot be edited?

[2 MARKS]

colour theory

Colour is an important aspect in nearly all forms of design, not just graphic communication.

There is a lot of 'psychology' (the study of how brains work), when working with colours. Colours can be divided into different formats. The most common being 'primary', 'secondary' and 'tertiary' colours.

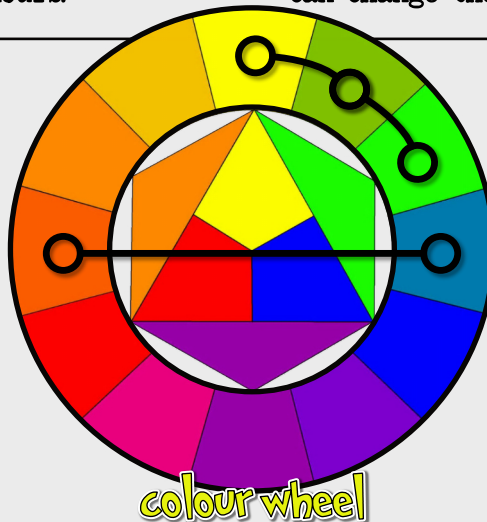
Colours can be altered in different ways, usually by mixing other colours together, or adding white, grey or black.

There are a lot of different technical words used to describe colours, some of which are shown below. Using colour in graphic design requires a deep understanding of how colour can change the mood of a layout.

complimentary

Describe the term
'complimentary colours'

[2 MARKS]



analogous

Describe the term
'analogous colours'

[2 MARKS]

A 'colour wheel' is one way of presenting a range of colours. There are different colour wheel formats depending on what you are doing. A 'RYB' (red, yellow, blue) colour wheel is shown above. Colours are separated from primary colours in the centre, to tertiary colours at the outer edge.

Colours can be shown in different ways.

(1) Colour can be gradiated from white to the base hue.

gradiated fill

(2) Shown as tints (white added) or shades (black or grey added)

Complete the boxes below.

tint

hue

shade

question

Screen devices do not use the 'RYB' colour wheel, but instead use 'RGB'
Explain the term 'RGB' and why screens use this colour palette instead.

[2 MARKS]

colour techniques

Vector graphic software have a range of tools for creating and editing vectors. Whilst different software may have unique features, all vector graphic software has some basic functions that are essential for creating even basic designs.

How colours are created and edited are a large part of the vector graphic software.

Colours that you design on screen may look significantly different on another type of screen or even more wildly different when printed.

Understanding colour and how it should be used comes with practice and study.

Six common terms used in vector graphic software are shown below.

Research each term using your vector graphic software and describe what each term means.

transparency & opacity

Describe the term transparency/opacity.

[2 MARKS]

advancing

Describe the term 'advancing'.

[2 MARKS]

stroke

Describe the term 'stroke'.

[X MARKS]

colour transition

Describe the term 'colour transition'.

[2 MARKS]

colour matching

Describe the term 'colour matching'.

[2 MARKS]

receding

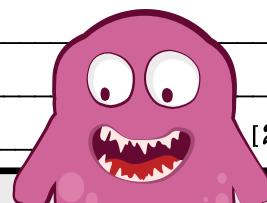
Describe the term 'receding'.

[2 MARKS]

question

Printers do not use 'RYB' or 'RGB' colour wheels, but instead use 'CMYK'. Explain the term 'CMYK' and why printers use it.

[2 MARKS]



typography

Typography is the term used to describe the style writing is in.

Each character in a typeface is called a 'glyph'. A group of glyphs are called a 'font'. (For instance, the typeface 'Arial' has different fonts (Arial, **Arial Round**, **Arial Black**). Typeface is the 'family', fonts are the specific edition of that family.

The choice of typeface is crucial for graphic designers as it can dramatically impact the look, feel and tone of a layout.

Like colours, typography has a lot of specific terms and language to learn.

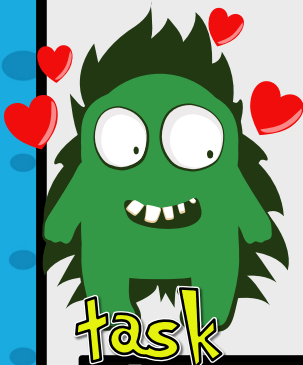
All typefaces and fonts are 'vector graphics'.

A quick brown fox jumps over the lazy dog

The above phrase is commonly used when showing a typeface, as it uses every letter in the alphabet at least once. It was once thought to be the shortest sentence with every letter used until Shashi Tharoor came up with "Pack my box with five dozen liquor jugs"!

A sentence that uses all the letters in the alphabet is called a 'Pangram'.

Typefaces can impact the mood or feeling of the words written. Consider the example below...



*We'll
always
be together*

WE'LL
ALWAYS
BE TOGETHER



Typography uses specific language to describe different features.
Label the text below with terms that can be used to describe it.

Sample
Text

question

Explain why all typefaces are vector graphics rather than raster.

[2 MARKS]

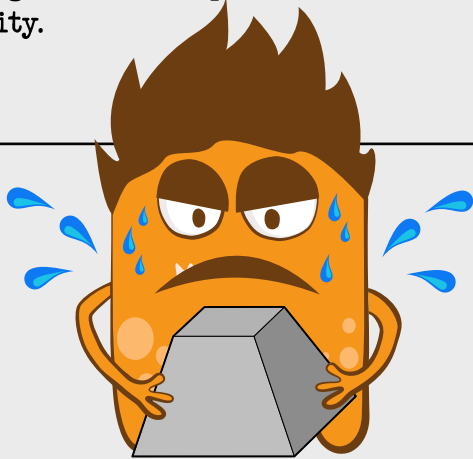
paper formats

Whilst screen graphics are a rapidly growing market, print graphics are not dead!

Getting graphics printed can be fun, but fraught with difficulty, especially when trying to create professional commercial quality.

Understanding how graphics are printed is important and there are some basic things you should understand before designing something for print.

You will learn more about printing technologies in graphic communication.



paper weight

Paper and cardboard are the most common materials to print upon. This is called your 'stock' material. One of the most important features is its thickness. This is measured as a weight. Typically, this is in grams-per-square-meter, or 'GSM', of the stock.

Typical school paper is thin 80gsm stuff.



paper size

Paper obviously comes in various sizes or 'formats'.

The most common in the UK is the 'A' format (A5, A4, A3, A2, A1, A0). The individual pages of this book are A4, whilst it is printed on A3 paper, front and back (4, A4 pages per sheet of A3 paper)

question

The 'orientation' of paper is important. These are called 'landscape' and 'portrait'. Explain the terms 'landscape' and 'portrait'. Use sketches to support your answer.

[2 MARKS]

question

Some printers can use 'duplex' technology. Explain the term 'duplex' in relation to printing.

[2 MARKS]

design briefs

Any design project - from industrial engineer and product design, to architecture and graphic design - begins with a 'Design Brief'.

A Design Brief is a short statement that explains a problem or situation that needs a solution.

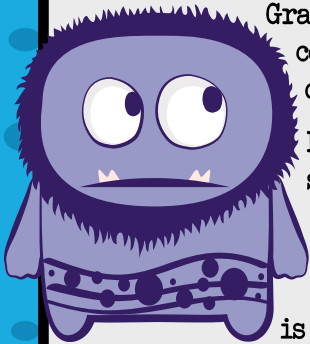
Once a designer or engineer receives a Design Brief, this brief is analysed and the problem broken into small parts that are researched.

After conducting research, the designer or engineer will make a series of rules that a good design must follow: a specification.

task

Your teacher will provide you with a 'Design Brief' that will form part of your assessment. You will need to conduct research, form a specification and create a solution. This will be graded.

topics to research



Graphic designers must conduct research like any other designer or engineer.

However, there are some simple key questions that can be asked with almost every project. Having answers to these questions is essential if you are to create a good graphic design.

These are some good questions to get answers to:

- ☐ Who is the target audience?
- ☐ What is the purpose of the graphic?
- ☐ Will the graphic be printed?
- ☐ Will the graphic be on screens?
- ☐ Are there logos that must be used?
- ☐ Are there colours that must be used?
- ☐ How much text is in the graphic?
- ☐ What is the budget for the project?

question

Printing costs can be significant.

Research how much it would cost to print 500 A5 duplex colour glossy leaflets.

[2 MARKS]

question

Logos and colour-schemes are protected by the 'Copyright, Designs and Patents Act 1988'.

Explain why graphic designers must know about copyright before creating any work

[2 MARKS]

ideation

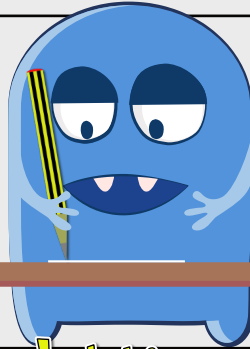
Often the hardest part of being a graphic designer is actually coming up with a good idea. Learning to use software is easy. Know what you want to make is tough.

There are lots of different idea-generation techniques that your teacher will show you. Find those that work best for your sense of style.

One of the worst things you can do is just sitting at the computer, clicking, hoping an idea will 'pop out'. It won't. George Lois - a famous graphic designer, calls computers "mindless speed machines". He is right. It is best to sit at paper and quickly generate lots of very rough sketches and experiment until you hit your 'Big Idea'™.

sketch

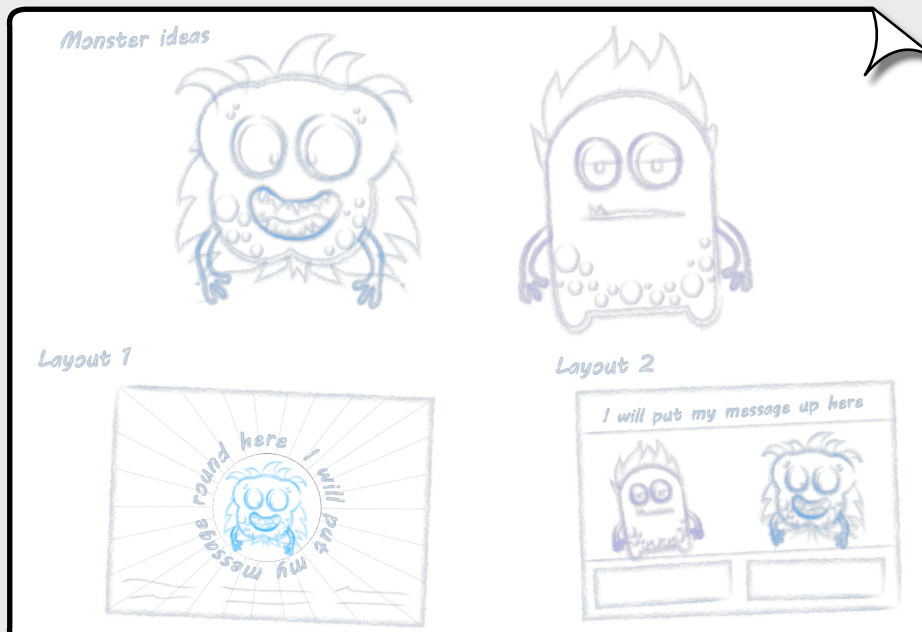
Learning to sketch - and being comfortable sharing your sketches - is perhaps the biggest battle. Sketch layout ideas, called 'thumbnails', quickly. Don't spend time on too much detail.



annotate

What you can't show via sketch, such as the exact typeface, you should note as 'annotation' - essentially notes surrounding your idea. This will help you remember what you were thinking and share your idea with others.

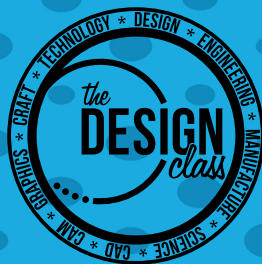
be a sketching monster



question

'Morphological Analysis' is one technique for helping generate new ideas. Research and Explain 'Morphological Analysis'. Extra credit for creating an example.

[4 MARKS]



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