

Year 7 Graphic Products—Specialist Materials and Processes

Properties and Definitions of Paper and Boards

Property	Definition	Found in
virgin	A paper or board product which has been made from tree pulp without the addition of any recycled or alternative fibres. All true white paper products are virgin.	printer paper, envelopes, books etc.
recycled	A paper or board product which has been made using some or all waste material, usually from paper mills. Colour tends to be grey (from the print on the paper used) or dved darker colours.	paper towels, toilet roll tubes, greetings cards, newspapers
compliant	Bends, twists, tears and folds easily and without tools.	thinner paper and board products.

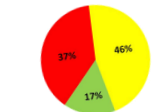
Virgin Products

Corrugated Card: Thick, lightweight and strong, this laminate board is used widely in transit packaging. Normally only printed on one side and unbleached.

Used in transit packaging/warehouse storage.



Photo courtesy of Creativity103 (Bridle.com) - granted under creative commons license - attribution

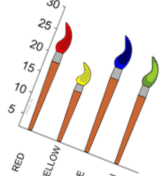


Chart

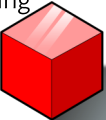


Word Art

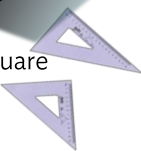
Pictograph



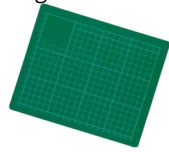
Rendering



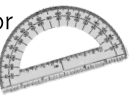
Set Square



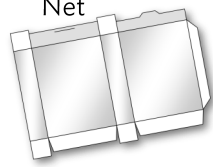
Cutting Matt



Protractor



Net

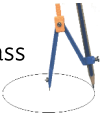


Template



Packaging

Compass



Drawing Board



Typography



Logo



Symbol



Serif



Safety Ruler



Craft Knife



Glue Gun



Wasting

Most paper and board can be cut and shaped easily with basic equipment.

Craft Knife and Safety Rule

Advantages:

No set-up time, good for one-offs

Disadvantages:

Finish relies on the skill-levels of the maker. Not suitable for repeat-production.



Photo courtesy of Alice Corbin (Bridle.com) - granted under creative commons license - attribution

Addition

Prototype modelling uses a wide range of addition or joining techniques, but often leaves a low-quality finish.

Permanent addition methods suitable for high quality finish include:

Double-Sided Tape

Advantages:

Instant, permanent, strong bond. Invisible.

Disadvantages:

Cannot be undone. Fiddly.



Photo courtesy of LEO Bullo (Bridle.com) - granted under creative commons license - attribution

Deforming and Reforming

Paper and thin board are compliant materials and will bend and fold easily in one direction. Stiffer or thicker board requires the use of specific techniques.

Paper Fasteners Scoring and Folding

For most prototype package and models, scoring and folding is the best method. This can be done by hand but also using CAD/CAM by carefully designating the lines to be scored a colour which controls a lighter, scoring pressure on the cutting head of the machine.

With research and skill, sophisticated three-dimensional shapes can be created by scoring and folding nets or developments.

Die Cutter

Creates unique shapes and packaging by cutting unto card and paper using a shape die press



Drawing Techniques

Plan View

Orthographic Projection (2D)

Front View

End View

Isometric (3D)

Year 7 D&T Core Knowledge Organiser

Design Influences

Product Analysis

You can understand a great deal about how a designer has worked by fully analysing one of their products. This will not only tell you about the design decisions that they have made, but it will help you to understand the fashion and trends at the time the product was created.

When you look at the key design features (e.g. colours and form) of products such as upright vacuum cleaners, similarities with contemporary products can be identified. Nearly 30% of all new cars sold in the UK in 2017 were grey or silver, making these metallic tones a safe bet for domestic machines such as vacuums and washing machines.



Aesthetics Is there a theme? Describe the shape, colour, texture...

Consumer Who is the product aimed at? How can you tell?

Cost Does the product look cheap/expensive to make?

Value for money?

Environment Environmentally friendly – re-usable/recyclable?

Is the product very Sustainable?

Safety Is the product safe to use. Any loose parts or sharp edges?

Size Is it an appropriate size for the job or the intended person?

Function How well would it do its job? Why do you think this?

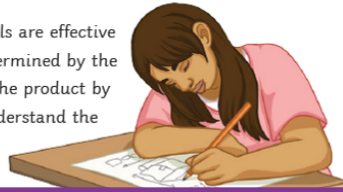
How do the separate parts help the overall function?

Materials What materials or processes have been used?



Materials, Components and Processes

Through product analysis, a designer can determine which materials are effective or necessary for a particular need. The function of a product is determined by the components used and a designer can evaluate the performance of the product by looking at these. Through careful consideration, it is possible to understand the manufacturing processes used to create parts of a product and to assemble it.



Design Specification

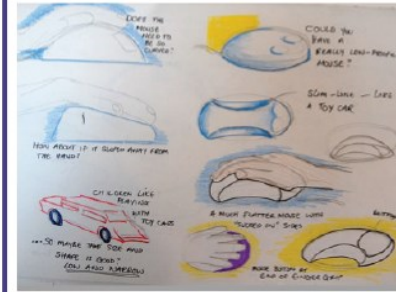
After writing the Design Brief and carrying out some Investigation and Research it is time to write our Design Specification for designing and making our product. This is a list of criteria (or targets) to be met. This could include functionality, features, shape, size etc. Each point should be justified to explain your reasoning

Aspect	Specification	Justification
Function	My desk organizer must have at least 5 storage spaces.	This is important as it suggests how my product can be spacious enough.
Function	My desk organizer has to have space for paper/notebooks of a4 format (29.7cm)	This confirms that my product is big enough to fit the usual paper size.
Aesthetics	One side of my product must have a triangular pattern carved out.	This way the product looks nicer and is more attractive to the target audience.
Aesthetics	My product has to have a rectangular shape as all spaces will be squared or rectangular. Also, a rectangular shape will make it look neat and organized.	Not only does this contribute to the appearance of the product but also to its ergonomic aspects.
Aesthetics	My desk organizer must be blue.	This colour is available and it is also appropriate for both girls and boys.
Function	My product has to have spaces that are deep enough so stationary cannot fall out.	This is very important to make the product more convenient.

Example of a Design Specification

Design Thinking and Communication

Clear 2D and 3D Sketches with Notes

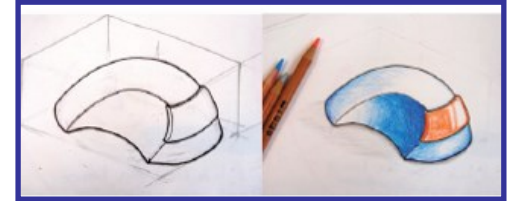


A designer can use a range of techniques to make their initial sketching clear:

- use of colour behind the sketch;
- bold outlining of sketches;
- sketching in different colours;
- annotation;
- crating of 3D sketches (see below).

Annotation

When annotating your own designs, use well reasoned sentences to full explain your choices. Make sure you always consider your Design Specification points when thinking of your different ideas.



Health and Safety

When moving on to practical work for your projects, the rules associated with a classroom in D&T are vital to keep you and others safe. You need to be able to recall these rules and understand their importance. Based on different locations or activities, you should be able to identify risks and consider precautions to eliminate these risks. The use of PPE (Personal Protective Equipment) is one important way of staying safe in any practical room. This may include the use of aprons, goggles, ear defenders or gloves for example.



Maths in D&T

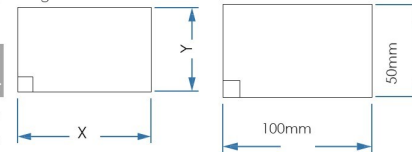
Working out area in shapes - RECTANGLES.

A rectangle has four sides, with the opposite sides being the same length and parallel. Each of the four internal angles are right angles, 90 degrees.

FORMULA

AREA = X multiplied by Y
AREA = LENGTH x HEIGHT

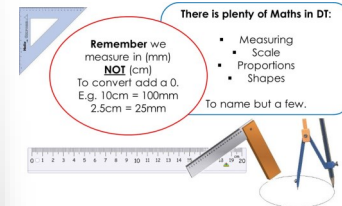
The formula is always in mm²



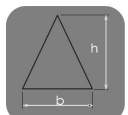
AREA = X multiplied by Y
AREA = 100mm x 50mm
AREA = 5000mm²

Working out area in shapes - TRIANGLE.

A triangle can be regarded as a polygon with three sides. The area of a triangle is calculated by multiplying half the value of the base by its height.



AREA = 1/2 X BASE X HEIGHT
AREA = $\frac{40 \times 50}{2}$
AREA = $\frac{2000}{2}$
AREA = 1000mm²



AREA = 1/2 X Base X Height

Why do I need Maths in Food Preparation? What is the importance of measuring and weighing?

Success in food preparation depends on the correct amount of ingredients in the recipe. The only way to get the correct amount is by weighing or measuring each ingredient.

1 GRAM 0.001 KILOGRAM



Design Brief

This is your opening statement of what you plan to do and what type of light you will be designing and making.

First write an outline of the type of light you have chosen and why?

1. WHO – Who will use the product?
Think about the potential customer
2. WHERE – Where will the product be used?
Think about the location (indoors, outside, on a wall, etc)
3. WHY – Why is the product needed?
Think about what problem the product is solving?
4. WHAT – What precisely does the product have to do?
Go into great detail for this question
5. WHEN – When will the product be used?
Think about if there are particular times the product will be used

Template for writing a Design Brief