

# Year 8 Design Technology Rotations

## 1.3D Design

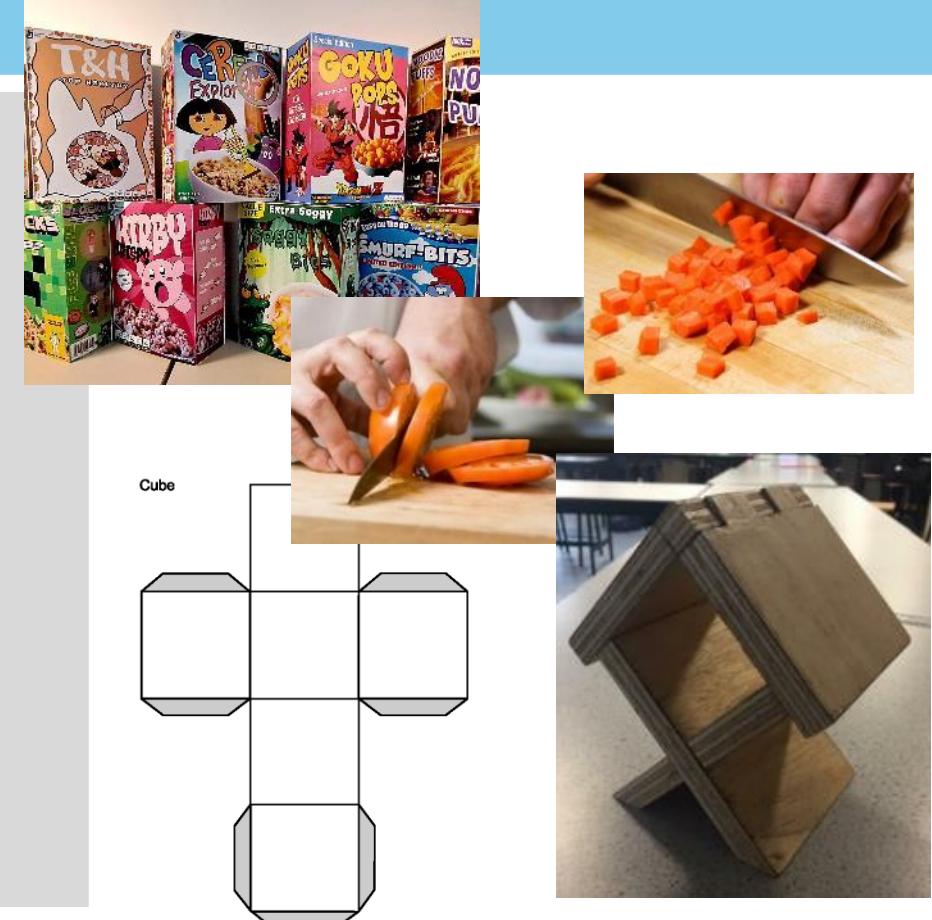
- [Journey of Knowledge](#)
- [Knowledge Organiser](#)

## 2. Resistant Materials

- [Journey of Knowledge](#)
- [Knowledge Organiser](#)

## 3. Food Technology

- [Journey of Knowledge](#)
- [Knowledge Organiser](#)



# Year 8 3D Design: Journey of Knowledge

## Context and Introduction to Unit

3D Design at Key Stage 3 is skills based and revolves around building students' knowledge of design and its impact locally and around the world. Students will build knowledge of design through design briefs, planning, drawing, 3D Modelling and real-world situations. Students will investigate the design cycle and revisit the importance of design briefs. Students will research into colour and its use in modern day branding. Students will create a cereal box net and then build.

## The bigger picture:

*Personal development opportunities.  
Career links.*

*structural engineer,  
joiner, H&S officer,  
draftsman.*

## CORE KNOWLEDGE

**Net:** A net is a designed 2D shape / pattern that can be folded into a 3D object. In most cases the net is then covered in a graphic packaging design

**Measurements:** In 3D design, measurements are crucial for creating accurate and proportional models. Key measurements include height, width, and depth, corresponding to the Z, X, and Y axes, respectively

**Analysis:** refers to the process of evaluating a 3D model to understand its characteristics, behavior, and performance under various conditions. This involves using specialized software to simulate real-world scenarios and assess factors like stress, strain, heat distribution, fluid flow, and more

**Consumer:** a person or entity that uses or acquires the final product, whether it's a physical object or a digital file, created through 3D design and printing processes, primarily for personal, social, family, or household purposes, and not for commercial or business activities

**Audience:** refers to the specific group of people the designer aims to reach with their 3D model or animation. Understanding the audience is crucial for tailoring the design choices to their needs, preferences, and technical capabilities.

**Design:** the process of creating a plan or specification for something to be built or made. It involves using creativity to solve problems and shape ideas into practical solutions

## SKILLS

Products made:

Mascot designed

Quote/Catchphrase designed

Cereal Box created.

## ABOVE AND BEYOND

- Visiting galleries and workshops
- Analysing product and researching into new inventions
- Finding products in every day life and linking it back to classroom work

## VOCABULARY

- Identify
- Research
- Specify
- Design
- Make
- Evaluate
- Manufactured
- Novelty
- Serif
- Sans Serif
- Design Brief
- Net
- Aesthetically pleasing

## Personal Development

Discussions regarding the relationships between user, client, designer and manufacturer.

Inclusive design promoted. Use of nature to inspire products.

## Literacy/Numeracy Focus

Nets,  
Measurements

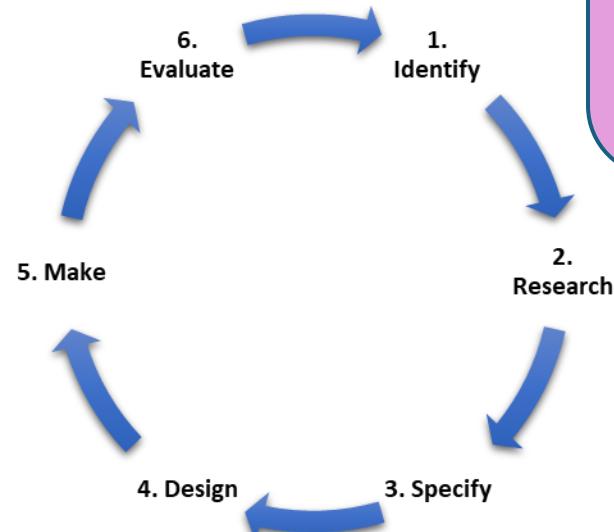
Analysis  
Discussion of key terminology:  
Client, customer, profile,

profession  
Consumer  
Audience

## WHERE NEXT?

Confident and safe use of hand tools with other materials.

KS4 material, design cycle and tools and equipment knowledge.  
KS3

The Design Cycle

- **Identify**- What is it that you need to create?
- **Research**- Gather information needed
- **Specify**- Get very specific on the direction your product will take
- **Design**- Create a design for your product
- **Make**- Physically make your product
- **Evaluate**- Reflect, what went well?

**Target Audience**

- Gender
- Relationship status
- Living arrangements
- Age bracket
- Their professions
- Their interests
- What they like, and what they dislike
- How will your product enrich their life
- How will they use your product

**Decorative****Functional**

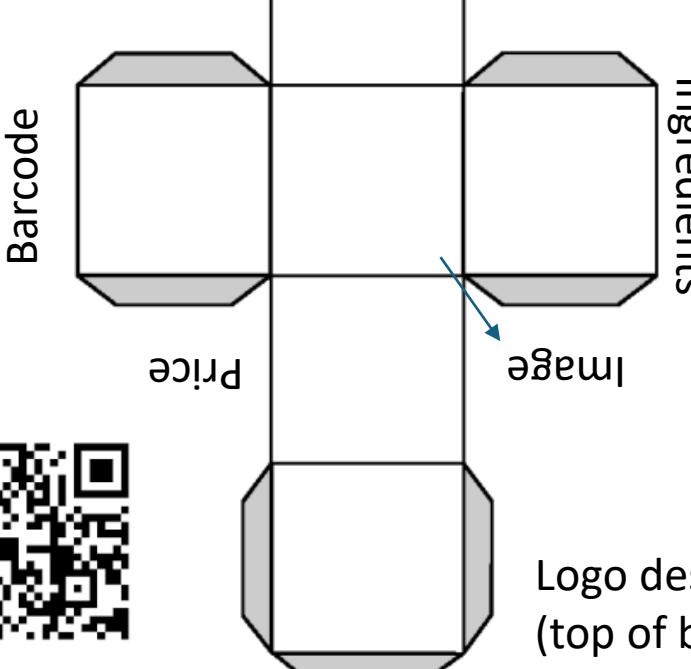
Sans Serif= no decorative ends



The 'net' of a shape (also called a geometry net) is a term used to describe what a 3D shape would look like if it was opened out and laid flat.

**Logo design**

Cube

**Logo design**  
(top of box/ lid)

**HILLSIDE HIGH SCHOOL**

**Word rich bank**

Identify  
Research  
Specify  
Design  
Make  
Evaluate  
**Manufactured**  
Novelty  
Serif  
Sans Serif  
Design Brief  
Net  
Aesthetically pleasing

**Design brief** is a set of instruction that will say what you are going to design and make.

**Novelty** means based on a theme, new and unusual.

**Aesthetically pleasing** means something looks good.

**Manufactured** means something that is made.

# Year 8 Resistant Materials : Journey of Knowledge

## Context and Introduction to Unit

Resistant Materials at Key Stage 3 is skills based and revolves around briefs based on local companies and industries. Each rotation students focus on a design brief, completing product analysis while developing designs for a final outcome/product. Students will understand the importance of Biomimicry in our society and develop understanding of market research. Students will be introduced to a variety of joints and the importance of measurements and conversions. Students will make a bug hotel using coping saws and nails.

## The bigger picture:

*Personal development opportunities.  
Career links.*

*Career link – CAD designer, structural engineer, joiner, H&S officer, draftsman.*

## CORE KNOWLEDGE

- Health & Safety: crucial for ensuring a safe learning environment during practical activities. This involves a combination of preventative measures, including risk assessments, proper use of equipment, and appropriate personal protective equipment (PPE), along with a strong emphasis on following safety rules and procedures
- Market Research: gathering information about potential customers and the market to inform the design and development of products, services, or systems. It helps designers understand user needs, preferences, and market trends, leading to more successful and relevant designs.
- Biomimicry: involves drawing inspiration from nature to create innovative and sustainable solutions in design and engineering. By observing and mimicking natural forms, processes, and systems, designers can develop novel products, processes, and even entire systems that are more efficient, effective, and environmentally friendly.
- Finger and Interlocking Joints: refers to a type of joint called a finger joint, also known as a comb joint or box joint. It's characterized by interlocking fingers or protrusions that create a strong and aesthetically pleasing connection between two pieces of wood. In the context of finger locking as a medical condition, it refers to trigger finger, where a finger or thumb gets stuck in a bent position and then suddenly pops straight.
- Iterative Design: a cyclic process where a design is repeatedly modeled, tested, and refined to achieve gradual improvements. This approach involves creating prototypes, evaluating their performance, and making changes based on the feedback received, ultimately leading to a more effective and user-friendly product.

## SKILLS

Understanding Biomimicry, Understanding product analysis, Measuring and converting, Accurately cutting, Use of coping saw and files.

Products made:

Finger Joints

Interlocking Joints

Bug House/Hotel

## ABOVE AND BEYOND

- Visiting galleries and workshops
- Analysing product and researching into new inventions
- Finding products in everyday life and linking it back to classroom work

## VOCABULARY

- Aesthetics
- Target Audience
- Creativity
- Market Research
- Biomimicry
- Specification
- Design Brief
- Joints

## Personal Development

Inclusive design promoted  
Understanding of Ecosystem and importance of

## Literacy and Numeracy Focus

Measurements

Conversion

Reading Comprehension

## WHERE NEXT?

Confident and safe use of hand tools with other materials.  
KS4 material, design cycle and tools and equipment knowledge.  
KS3

# TECHNOLOGY / RESISTANT MATERIALS

## Design & Technology Keywords



**ONE OFF PRODUCTION**  
In one-off production a single product is designed and made to a client's specification. Prototypes are classed as one-off's.



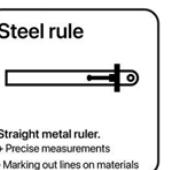
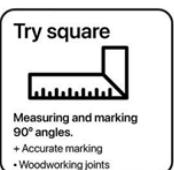
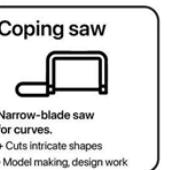
**MASS PRODUCTION**  
Mass production is the industrial scale manufacture of large quantities of products, usually on a production line. Like Ikea furniture.



**BATCH PRODUCTION**  
In batch production set quantities of a product are made to order. Materials are cost-effective and manufacturing costs are lower. Seasonal items are usually batch produced.



**CONTINUOUS PRODUCTION**  
Continuous production is the manufacture of an item 24/7 – 365. The system is usually completely automated using a production line. Due to the scale on which the items are manufactured, they are extremely cost effective.

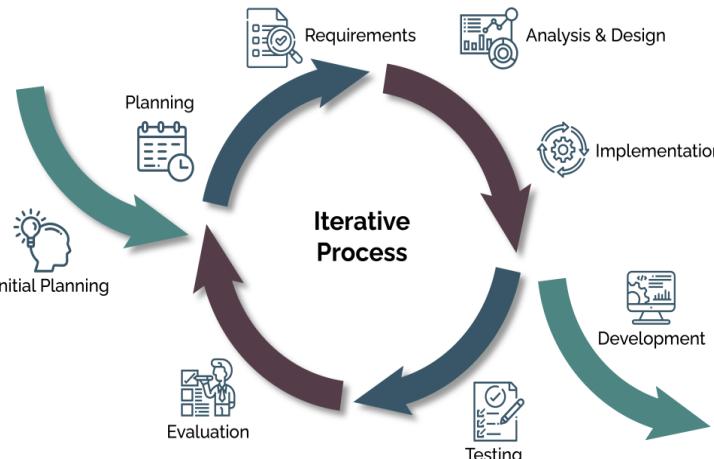


Biomimetic design is where nature inspires a designer / scientist / engineer, to design a product. Sometimes a designer / scientist will look at the way nature has solved a problem through evolution and then he / she will apply it to a design problem.



## Iterative design process

### Iterative Process Model



# TECHNOLOGY / RESISTANT MATERIALS

## ACCESS FM



How does the product look and feel? Is it attractive to look at and touch? Are the colours and style to your liking?



How much does it cost to buy, manufacture or purchase the product? Is it value for money? What is the cost of materials used to make the product?



Who is the product designed for? What is their demographic (gender, age etc)? Does it improve the life of the client? Is there a demand for the product?



Does the product have a positive or negative impact on the environment? Has the designer thought about the "six Rs"?



What are the dimensions of the product? Is it large, small, long, short, wide or narrow. Are the proportions appropriate? Have ergonomics been thought of?



Is the product safe to use? Could it cause harm to the user in any way? Does the product meet safety standards?



What purpose does the product have? What does it do? Does it achieve its purpose? Is it easy or difficult to use?



What materials is the product made from? Are these the best materials for the product? Have manufacturing processes been thought about?

### WOOD PLANE

Shaves the surface of the wood to reduce the thickness of material. Can be adjusted to take more or less material.



### CHISEL

Used to remove timber. Useful for creating joints or hollowing out areas.



### ABRADING

#### DISC SANDER

Mechanical machine which removes more material than hand methods.



### RASP

A 'file like' tool with rough teeth for fast removal of material. Different profiles available.



### SAND PAPER

Best for 'hard to reach areas. Different grades available. Good for surface preparation.

### Design Brief

A new study suggests insect populations have declined by 75% over the last three decades. Insects are really important for our wildlife and back garden habitats. They are essential for pollinating plants and for breaking down all leaves and woods.



National Trust

The National Trust have asked you to design a bug hotel using recycled wood and materials found in nature or at home. The project must be able to accommodate a number of different species of bug. The outcome will be a high quality product suitable for the back garden.

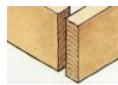


### Surface Treatments and Finishes

Name	Description	Name	Description
Oil	Soaks into timber. Protects and enhances appearance	Paint	Usually needs a Primer. Wide range of colours.
Bees Wax	Rubbed into wood. Enhances natural grain.	Wood Stain	Colours wood. Does not protect.
Varnish	Protects from moisture. Enhances appearance.	Distressing and Scorching	Gives a Worn/Vintage look. Popular in furnishings

### JOINING METHODS

#### BUTT JOINT

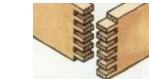


Two pieces stuck together using only wood glue. Low Strength.



LAP JOINT  
Glued. Aesthetically pleasing. Neat. Medium Strength.

#### COMB JOINT



Interlocking sections. Aesthetic and High Strength.



DOVETAIL JOINT  
Interlocking sections at angles. Aesthetic. Strongest joint.



ADT  
HILLSIDE HIGH SCHOOL

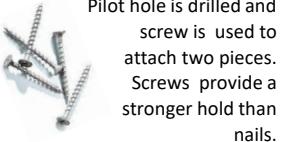
### FIXINGS

#### NAILS



Nails are hammered in place at angles to stop them loosening.

#### SCREWS



Pilot hole is drilled and screw is used to attach two pieces. Screws provide a stronger hold than nails.

### ADHESIVES

#### WOOD GLUE (PVA)

Wood glue absorbs into the surface of the 2 joining pieces and dries to form a solid bond.

#### HOT GLUE



Hot Glue is not very strong. Commonly used for modelling or smaller tasks.



### Year 8

Design Technology  
Bug Hotel

# Year 8 Food Technology: Journey of Knowledge

## **Context and Introduction to Unit**

In this unit, pupils will learn what food technology is and when it is relevant in society. Teachers will gauge prior knowledge pupils have within the subject. They will be given an introduction to health and safety guidance to the kitchen and the importance of good hygiene. Pupils will learn about nutrition and Food types and their properties. They will learn about manufacturing food and special diets. They will also learn a number of cooking/baking methods and apply these to producing a range of food products.

## **The bigger picture:**

*Personal development opportunities.  
Career links.*

Nutritional therapist, food technologist, quality manager, catering, chef, food vender, business owner.

## **CORE KNOWLEDGE**

Health and safety- rules, risk assessment, hazards and precautions, hygiene  
Bacteria, causes, prevention, cooking temperatures for raw meat 75oC.

Nutrition

Micro/macro nutrients

Food types/properties and functions of ingredients/Edible casings

Recipe adaptations

Sensory Evaluation

Manufacturing food and quality control

Eatwell Guide

Production methods

Storing/cooking food safely

## **SKILLS**

Safe and compliant use of the kitchen oven/grill/hob

Use of basic kitchen equipment

Cleaning and effectively removing bacteria

Combining ingredients

Weighing and measuring

Methods such as; all in one, creaming, rubbing, kneading, boiling, blending

Chopping skills

recipe adaptations

Sensory evaluations

## **Food Products**

Sausage rolls, shortcrust pastry, jam parcels, fajitas, muffins

## **ABOVE AND BEYOND**

Independently working through methods  
Recipe adaptations for special diets  
Investigating own design ideas.

### Acceleration tasks

- Cooking at home, developing skills in chopping, mixing and measuring at home
- Continuing with personal hygiene and healthy eating.
- Analysing tastes of food items outside of school.

## **VOCABULARY**

Ingredients, combine, method, hygiene, nutrition, properties, manufacturing, diets, bacteria, micro, macro, creaming, rubbing, chopping, kneading, adaptations, evaluation, sensory, blend, mix, separate, combine, seasonal, balanced, evaluation, quality control, edible, casing, snack foods, eatwell guide.

## **Personal Development**

### Rse

Food miles, packing and its impact on the environment.

Symbols on packaging, reading food labels. Cultural influences on food products.

## **Literacy Focus**

Word rich meanings of tier 3 terms

## **Numeracy Focus**

Measuring in ml, grams, weighing out, portion sizes, dividing.

## **WHERE NEXT:**

Year 9 – Multicultural foods

# Y8 Food Knowledge Organiser

## Cooking Methods

Cooking techniques commonly used in cooking and food preparation

### Baking

The oldest cooking method. Bakery products include bread, rolls, cookies, pies, pastries, and muffins



### Grilling

Grilling involves heat applied to the surface of food, commonly from above, below or from the side



Unlike grilling, barbecued foods are cooked at low temperatures over long cooking time



### Roasting

Roasting uses dry heat where hot air covers the food, cooking it evenly on all sides



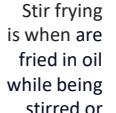
### Poaching

Poaching involves heating food in a liquid, such as water, milk, stock or wine



### Stir-frying

Stir frying is when are fried in oil while being stirred or tossed in a wok.



## Chopping Skills

Learning how to hold a knife and cut ingredients safely is a fundamental cooking skill

### Slice

Slicing means to cut across the grain into thin, uniform pieces



### Mince

Mincing is the finest level of chopping



### Bias Slice

A bias slice lets you create a long, tapered slice



### Dice

Dicing when the item is cut into small blocks or dice.



### Career Links

If you have a passion for food and would like to be in a service industry, there are various careers you can pursue to fulfil your aspirations



- Caterer
- Chef
- Pastry Chef
- Baker
- Cake Decorator
- Food Scientist
- Food Blogger
- Recipe Tester
- Factory Worker
- Personal Trainer
- Health Teacher
- Restaurant Owner
- Food Stylist
- Recipe Tester
- Cookbook Writer



## Portions for children

Children should also eat 5 different types of fruit or veg each day, but a portion depends on their size and age. As a rough guide, 1 portion of fruit or veg for a child is the amount they can fit in the palm of their hand.

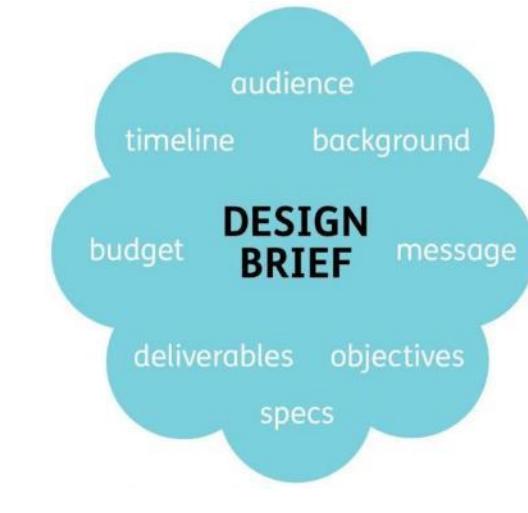


### Hi 5!

A total of 5 portions of fruit and veg combined is the minimum number of servings to aim for. You do not need to eat 5 portions of fruit and 5 portions of veg to get your 5 A Day – although the more the better!

### What is a design brief?

A design brief is a document that defines the core details of your upcoming design project, including its goals, scope, and strategy.



## Use of Oven, Hob and Grill



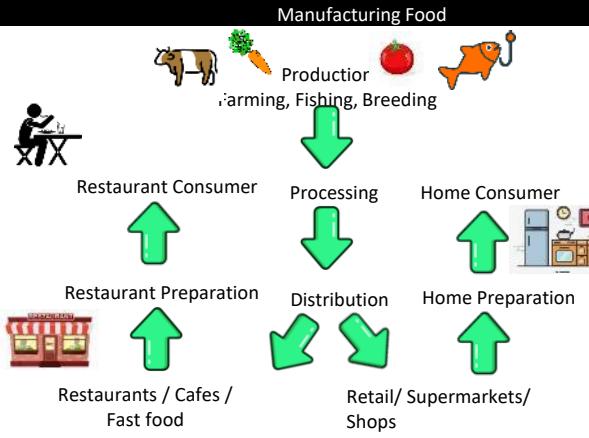
### Controls

The hob is perfect for boiling, frying, sautéing, poaching, and more. To the front of the hob you'll find the controls. Depending on the type of hob you have these might be dials or touch controls.

Ovens are used as kitchen appliances for roasting and heating. Foods normally cooked in this manner include meat, casseroles and baked goods such as bread, cake and other desserts. In modern times, the oven is used to cook and heat food in many households around the globe.



The grill function is best suited for cooking different cuts of meat such as steak, chops, sausages and fish, or for making toasted sandwiches and other quick-cooking foods.



# Y8 Food Knowledge Organiser

Measurements in the Kitchen

## How Many Teaspoons are in a Tablespoon?

3 TEASPOONS = 1 TABLESPOON

6 TEASPOONS = 2 TABLESPOONS

9 TEASPOONS = 3 TABLESPOONS

Know your Label

Checking the nutrition label is a good way to compare products, make healthier choices and eat a balanced diet.

**Know your Calories.** Use calorie information when comparing products

**Know your portions.** Check the pack for the portion size

Each serving (150g) contains

Energy 1046kJ 250kcal	Fat 3.0g LOW	Saturates 1.3g LOW	Sugars 34g HIGH	Salt 0.9g MED
13%	4%	7%	38%	15%

of an adult's reference intake

**Know your daily allowance.** An average man needs 2,500kcal and an average woman needs 2000kcal but this depends on age, weight, height and your fitness

**Know your colours.** The red, amber and green colours show at a glance whether a product is high, medium or low for fat, saturates, sugars or salt.

## SIX ESSENTIAL NUTRIENTS

Carbs	Protein	Fats	Water	Vitamins	Minerals

Macronutrients      Micronutrients

Health and Safety in the

Risks in a kitchen	Hazards in a kitchen
	Fires
Cuts	Gas, open flames
Burns	Knives / sharp objects
Scalds	Ovens / heat
Slips	Boiling water / steam
Trips and falls	Spillages
	Objects on the floor

Weighing and Measuring

Equipment	Uses	Picture
Digital scales	Weighing ingredients usually in grams (g) and kilograms (kg).	
Measuring jug	Measuring liquids. The side of the jug is usually marked with millilitres (ml)	
Measuring cups	Some American recipes use cups for dried ingredients such as flour and sugar.	
Measuring spoons	Measure an accurate teaspoon or tablespoon. 1 tsn = 5ml. 1tbsp = 15ml	
	<b>Tolerance</b> – The amount of variation allowed within a recipe $\pm 5\text{g}$ without it affecting the taste, texture and appearance.	

**ADT**  
HILLSIDE HIGH SCHOOL.

HILLSIDE HIGH SCHOOL

Special Diets

A special diet is one that cannot be selected freely from the main choices available. This could be due to an allergy, intolerance or other medical need; or because they are following a religious or cultural diet; or a vegetarian or vegan diet.

**BROCCOLI CONTAINS MORE PROTEIN THAN STEAK!**