Consumer Studies

CLASS TEXT & STUDY GUIDE

Maralyn Burger, Elmarie Augustyn, Anneke du Plessis & Ronel Henning

GRADE

11

CAPS

3-in-1



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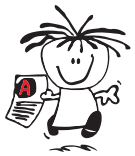
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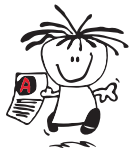
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THIS CLASS TEXT & STUDY GUIDE INCLUDES

1. Notes per Topic
2. Questions per Topic
3. Detailed Answers

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CONTENTS

What is Consumer Studies? ..... *i*

Assessment in Grade 11 ..... *i*

TOPIC 1: The Consumer **1 – 37**

Unit 1 Income and expenditure of South African families 1
Unit 2 The household budget 6
Unit 3 Banking and payment methods 9
Unit 4 Use of technology for payments 14
Unit 5 Consumer protection policies and practices 16
Unit 6 The Credit Bureau 20
Unit 7 Consumer organisations 23
Unit 8 Channels for consumer complaints 25
Questions 27
Memo 33

TOPIC 2: Food and Nutrition **38 – 92**

Unit 1 Nutrition 38
Unit 2 Nutritional needs of different consumer groups 47
Unit 3 Individual energy needs 56
Unit 4 Food fortification 60
Unit 5 Food contamination 62
Questions 65
Memo 81



TOPIC 3: Design Elements and Principles **93 – 121**

Unit 1 Colour theory 93
Unit 2 Design elements and principles 96
Unit 3 Application of design elements and principles 101
Questions 112
Memo 119

TOPIC 4: Fibres and Fabrics **122 – 136**

Unit 1 Fabric construction techniques 122
Unit 2 Fabric properties 126
Unit 3 Fabric finishes 128
Questions 130
Memo 134

TOPIC 5: Housing and Interior **137 – 157**

Unit 1 Space planning 137
Unit 2 Choice of furniture 146
Unit 3 Evaluation criteria when purchasing furniture 152
Questions 153
Memo 156

TOPIC 6: Entrepreneurship **158 – 179**

Unit 1 The identification and formulation of a business idea and choice of a suitable product 159
Unit 2 Concept testing and needs identification 162
Unit 3 Marketing 165
Unit 4 Production 171
Questions 175
Memo 177

2 FOOD AND NUTRITION

UNIT 1

NUTRITION 38

UNIT 2

NUTRITIONAL NEEDS OF DIFFERENT CONSUMER GROUPS 47

UNIT 3

INDIVIDUAL ENERGY NEEDS 56

UNIT 4

FOOD FORTIFICATION 60

UNIT 5

FOOD CONTAMINATION 62

QUESTIONS 65

MEMO 81

UNIT 1 NUTRITION

All the nutrients the human body needs are available in the food ingested. A variety of foods must therefore be ingested to meet all the body's nutritional requirements.

Nutrients are essential for:

- tissue building, growth and repair
- energy supply
- protection against diseases

Nutrients are classified according to the amounts the body needs:

- **Macronutrients** are required in the body in large quantities, e.g. proteins, carbohydrates and lipids (fats and oils).
- **Micronutrients** are required in the body in small(er) quantities, e.g. minerals and vitamins.



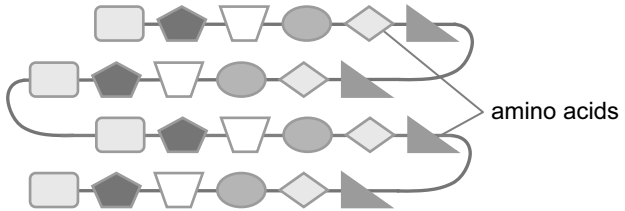
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MACRONUTRIENTS

Proteins

- Amino acids are the building blocks of all proteins.
- There are only **20** different amino acids in the human body from which thousands of different proteins are built.
- Since the body can produce some amino acids while others not, they are divided into two groups, i.e.:

Essential amino acids	9 amino acids that cannot be produced by the body and therefore must be ingested daily as part of the diet.
Non-essential amino acids	Amino acids that can be produced by the body.



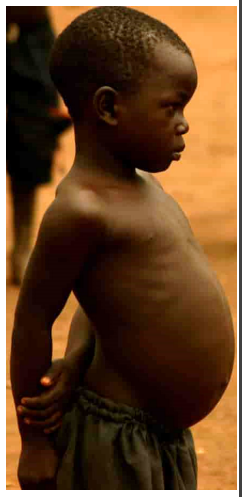
Protein chain

Classification of proteins

Proteins are classified according to their amino acid content as complete or incomplete proteins.

Complete proteins	Incomplete proteins
◦ contain all 9 essential amino acids	◦ have little/lack essential amino acids
◦ high biological value – can thus ensure the growth and repair of body cells	◦ low biological value – cannot support growth
◦ sources: all food of animal origin as well as soybeans	◦ sources: legumes, seeds and nuts

Functions	Sources	Result of deficiency	Result of excess
◦ Building, growth, repair and maintenance of body tissues ◦ Forms part of body tissue, as well as vital compounds such as antibodies, enzymes and certain hormones ◦ Helps to regulate the fluid balance in the body ◦ Provides energy if there is a shortage of carbohydrates/ fats, e.g. during excessive exercise/ uninterrupted fasting/famine ◦ 1 g of protein provides 17 kJ of energy	Animal sources: ◦ meat ◦ poultry ◦ fish ◦ eggs ◦ milk and ◦ dairy products Plant sources: ◦ seeds and nuts ◦ legumes such as dried beans, butter beans, dried peas, chickpeas, lentils and soybeans	◦ Stunted growth in children ◦ Oedema develops due to a fluid imbalance in the body ◦ Kwashiorkor	◦ Obesity ◦ Kidney problems ◦ Heart disease



Kwashiorkor

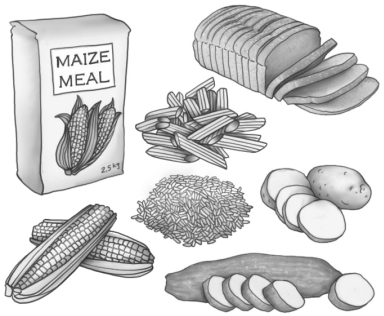




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Carbohydrates

- Carbohydrates are mainly derived from plants and include sugar, starch and cellulose (fibre).
- During the digestive process, sugar and starch are broken down into glucose, which is the body's main energy source. Glucose is the basic building block of all carbohydrates.
- The body cannot digest and break down cellulose/fibre to glucose.



Classification of carbohydrates

Carbohydrates are classified according to the number of sugars they consist of.

Monosaccharides	Disaccharides	Polysaccharides
Single sugars – simple sugars that are the building blocks of all carbohydrates	**Double sugars** – 2 monosaccharides bound together	**Complex carbohydrates** – consist of long monosaccharide chains
Glucose – basic building block of all carbohydrates **Fructose** – found in fruits and honey **Galactose** – found in milk 	**Sucrose** = glucose + fructose (cane sugar) **Maltose** = glucose + glucose (malt sugar) **Lactose** = glucose + galactose (milk sugar) 	**Starch** – form in which glucose is stored in plants **Cellulose/fibre** – the insoluble carbohydrate that plant cell walls consist of **Glycogen** – form in which excess glucose is stored in the human body **Dextrin** – forms when dry heat is applied to starch 

Functions	Sources	Result of deficiency	Result of excess
Sugar › Consists of carbohydrates that provide energy › 1 g of carbohydrates provides 17 kJ of energy	› soft drinks, syrup, sweets, chocolate, fruit, honey and jam	› Lack of energy	› Obesity › Tooth decay
Starch › Consists of carbohydrates that provide energy › 1 g of carbohydrates provides 17 kJ of energy	› bread, cereals, rice, oats, pasta, potatoes, sweet potatoes and bananas	› Lack of energy	› Obesity – excess glycogen can be converted into fat
Cellulose/fibre › Lowers blood cholesterol levels › Controls blood glucose levels › Prevents constipation › Prevents colon cancer › Creates a feeling of satiety	› peels and seeds of fruits and vegetables, legumes, whole grain products and brown rice	› Constipation › Colon cancer	› Abdominal discomfort and bloating › Inadequate mineral absorption (calcium, magnesium, iron and zinc)



NOTE

Soluble fibre *dissolves in water and forms a gel, e.g. oats, legumes and apples. It lowers sugar and cholesterol levels in the body.*
Insoluble fibre *does not dissolve in water, e.g. whole wheat flour, fruits and vegetables. It prevents constipation.*



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Lipids (fats and oils)



- Fats are solids and oils are liquids at room temperature.
- A lipid molecule is called a triglyceride.
- A lipid molecule consists of one glycerol molecule and three fatty acid molecules.
- A fatty acid consists of hydrogen attached to a carbon atom chain.

Classification of fatty acids



There are 3 different types of fatty acids, i.e.:

- saturated fatty acids
- monounsaturated fatty acids
- polyunsaturated fatty acids



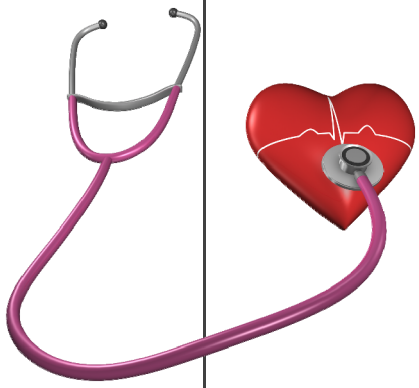
NOTE

Unsaturated fatty acids *mostly come from vegetable oils.*

Saturated fatty acids	Monounsaturated fatty acids	Polyunsaturated fatty acids
Solid	Liquid	Liquid
▸ all animal sources (except fish) ▸ coconut oil ▸ palm kernel oil	▸ olive oil ▸ canola oil ▸ pecan nuts ▸ almonds ▸ avocados ▸ peanuts	▸ sunflower oil ▸ corn oil ▸ fish oil ▸ oily fish (e.g. tuna, salmon, sardines)
Increases blood cholesterol levels and therefore leads to coronary heart disease	Vegetable oils tend to lower blood cholesterol levels.	



Functions	Sources	Result of deficiency	Result of excess
▸ 1 g of fat provides 38 kJ of energy ▸ Insulator in cold weather – it forms a layer of fat under the skin ▸ Protect organs ▸ Transport fat-soluble vit. A, D, E and K ▸ Needed for cell building ▸ Contain omega-3 fatty acids that improve growth and brain development	Animal fats: ▸ meat ▸ poultry ▸ fish ▸ eggs ▸ full-cream milk and dairy products Vegetable lipids: ▸ oils and margarine ▸ mayonnaise ▸ salad dressings	▸ Lack of energy ▸ Stunted growth in children ▸ Malnutrition in adults	▸ Overweight or obese ▸ Increase blood cholesterol levels and lead to heart disease ▸ Certain cancers



Trans fatty acids are harmful fats that are formed when:

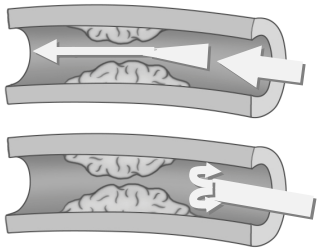
- oil is heated repeatedly or
- vegetable oils are turned into margarine during the hydrogenation process

Trans fats can cause cardiovascular heart disease and cancer. Trans fats are found in hard margarine, cookies, pies, cakes and potato chips. Fast food cooked in oil, e.g. potato chips, also contain trans fats because the oil gets heated repeatedly.



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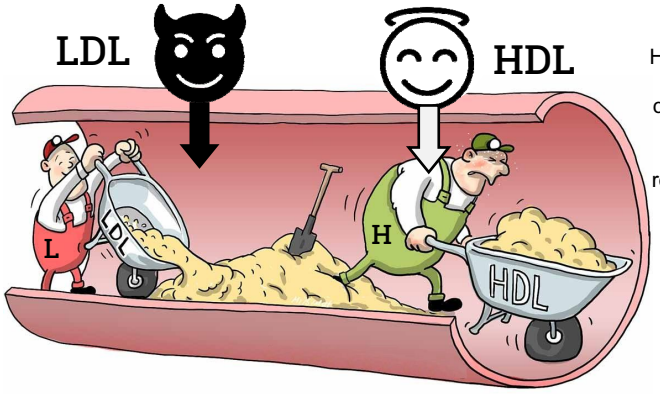
Cholesterol is a waxy, fatty substance that can be found naturally in blood and body cells. It is also found in all animal foods. A diet high in trans and saturated fats can cause bad cholesterol to gradually build up in the inner walls of arteries. This can lead to cardiovascular heart disease.



Saturated fats contain **bad cholesterol (LDL cholesterol)** that builds up in the blood vessels over the years. The waxy layer that forms in the blood vessels is called plaque. When blood vessels that carry oxygen-rich blood to the heart become clogged, the heart does not get enough oxygen which can lead to a heart attack.

Unsaturated fats contain **good cholesterol (HDL cholesterol)** which lowers the bad cholesterol in the blood by reducing the plaque build-up in the blood vessels.

LDL cholesterol builds up in the blood vessels and constricts/ clogs them



HDL cholesterol absorbs bad cholesterol and takes it to the liver, which removes it from the body

Water

- Although water does not provide energy and does not build or repair body tissues, it is classified as a nutrient as it is essential for life.
- The water balance in the body is constantly monitored to ensure that the body does not lose or ingest too much or too little water.
- The human body consists of 55% – 60% water.

Functions	Sources	Result of deficiency	Result of excess
▸ Main component of blood plasma ▸ Needed for all chemical reactions in the body ▸ Solvent for mineral salts, gases (e.g. oxygen and carbon dioxide), nutrients, vitamins and waste products ▸ Vehicle for digestive juices and digested nutrients as well as waste products excreted in urine and faeces ▸ Lubricant to facilitate the chewing and swallowing process and prevents friction in joints and eyeballs ▸ Regulates body temperature through sweat that evaporates from the skin surface and cools the body	▸ fruit juices ▸ cooldrink ▸ soup ▸ tea ▸ coffee ▸ milk ▸ clean water	▸ Dehydration leading to: - light-headedness - headache - nausea - heart failure ▸ Constipation ▸ Concentrated urine	▸ Electrolyte depletion because calcium, magnesium, potassium and sodium are washed out of the body ▸ Kidney strain





NOTE

The body cannot survive if it loses more than 20% to 22% of water.

SUMMARY

Energy supply from macronutrients

- 1 gram of protein provides 17 kJ of energy
- 1 gram of carbohydrates provides 17 kJ of energy
- 1 gram of fat provides 38 kJ of energy
- Water provides no energy

kJ = kilojoule

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MICRONUTRIENTS (minerals and vitamins)

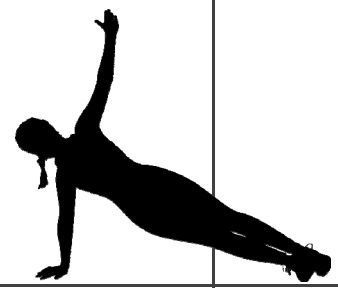
Minerals and vitamins are found in relatively small quantities in food. They do not provide energy but are very important for good health.

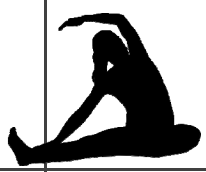
Minerals perform different functions in the human body.

Macrominerals	Microminerals (trace minerals)
Needed in the body in large quantities.	Needed in the body in small quantities.
Examples include: calcium, phosphorus, magnesium, sodium and potassium	Examples include: iodine, iron, fluoride, zinc and manganese

Macrominerals

	Functions	Sources	Result of deficiency	Result of excess
Calcium	▸ Builds strong bones and teeth ▸ Regulates blood pressure ▸ Regulates heart muscle function	▸ milk ▸ dairy products ▸ sardines with edible bones ▸ dark leafy green vegetables ▸ soybeans	▸ Rickets (bone curvature) in children ▸ Weak skeleton and tooth formation ▸ Osteoporosis in adults	▸ Poor renal function
Phosphorus	▸ Helps with the formation of strong bones and teeth	▸ dairy products ▸ meat and poultry ▸ fish ▸ eggs ▸ nuts ▸ legumes ▸ cereals	▸ Rickets (bone curvature) in children ▸ Impedes tooth formation ▸ Osteoporosis	▸ None
Magnesium	▸ Essential for all reactions in cells ▸ Required for normal muscle and nerve function ▸ Regulates blood pressure ▸ Converts food into energy	▸ dark leafy green vegetables ▸ legumes ▸ nuts and seeds ▸ milk and dairy products ▸ whole grain foods ▸ oily fish such as salmon and tuna ▸ bananas	▸ Muscle cramps	▸ None
Sodium	▸ Regulates fluid balance in cells ▸ Helps with muscle movement and the flow of nerve impulses	▸ table salt (sodium chloride) ▸ processed foods, e.g. take-away meals	▸ Muscle cramps	▸ High blood pressure
Potassium	▸ Blood pressure control ▸ Controls the fluid balance in the body ▸ Controls pH balance in body ▸ Helps with heart and renal function ▸ Important for muscle contraction	▸ fruit ▸ vegetables ▸ milk ▸ meat ▸ poultry ▸ cereal ▸ legumes ▸ salmon	▸ High blood pressure	▸ None



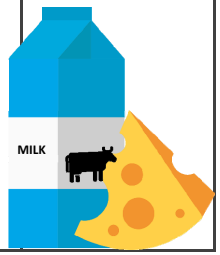




NOTE

Bananas, potatoes, beetroot and tomatoes are good sources of potassium.





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3 DESIGN ELEMENTS AND PRINCIPLES

UNIT 1

COLOUR THEORY **93**

UNIT 2

DESIGN ELEMENTS AND PRINCIPLES **96**

UNIT 3

APPLICATION OF DESIGN ELEMENTS AND PRINCIPLES **101**

QUESTIONS **112**

MEMO **119**



UNIT 1 COLOUR THEORY

Colour is one of the most important design elements. An object itself has no colour. However, when the white rays of light from the sun fall on an object, the surface reflects certain colours (wavelengths) and absorbs other colours. Only the colours that are reflected to the eye are observed.

COLOUR TERMINOLOGY

Colour name – each specific colour is given a name to describe it, e.g. blue/red.

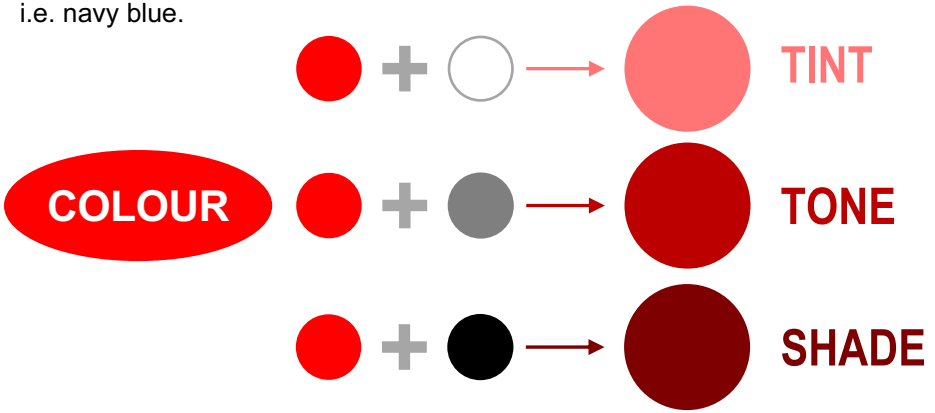
Colour intensity – this refers to how bright or dull a colour is.

Colour value – it refers to how light or dark a colour is.

Colour tint – this is achieved by adding white to a colour, which makes it lighter, e.g. when white is added to blue you get a lighter tint, i.e. sky blue.

Colour tone – this is obtained by adding grey to a colour, which makes it duller than the original colour, e.g. when grey is added to blue a flatter tone, i.e. pigeon blue, is achieved.

Colour shade – this is achieved by adding black to a colour, which makes the colour darker, e.g. when black is added to blue you will get a darker shade, i.e. navy blue.



The colour red with examples of a tint, tone and shade

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COLOUR QUALITIES

Colour name

This is the word used to describe the colour, e.g. yellow.

Colour intensity

It refers to how bright or dull a colour is. A colour is at its brightest when the pure colour is used and no black, white or grey is added.

Colour value

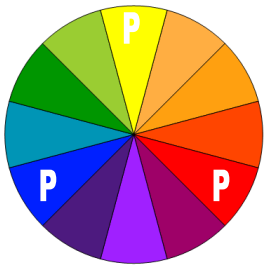
It refers to how light or dark a colour is. The value of a colour can be changed by:

- adding white to get a lighter tint
- adding grey to give a duller tone
- adding black to get a darker shade

CLASSIFICATION OF COLOUR

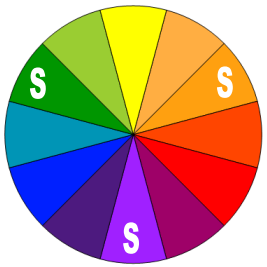
There are twelve main colour shades that are divided into three groups, i.e.:

Primary colours



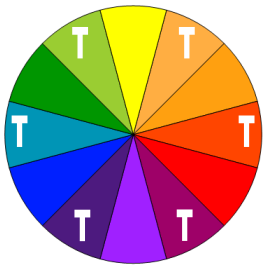
Primary colours, i.e. **blue**, **yellow** and **red** cannot be created by mixing other colours.

Secondary colours



Secondary colours, i.e. **purple**, **green** and **orange** are formed when equal amounts of two primary colours are mixed.

Tertiary colours



Tertiary colours, i.e. **red-purple**, **blue-purple, blue-green, yellow-green, yellow-orange** and **red-orange** are formed when a primary colour is mixed with a secondary colour.

Neutral colours: black, white and grey.

COLOUR PROPERTIES

Colour can create different illusions and cause a person to experience various emotions.

Warmness or coolness

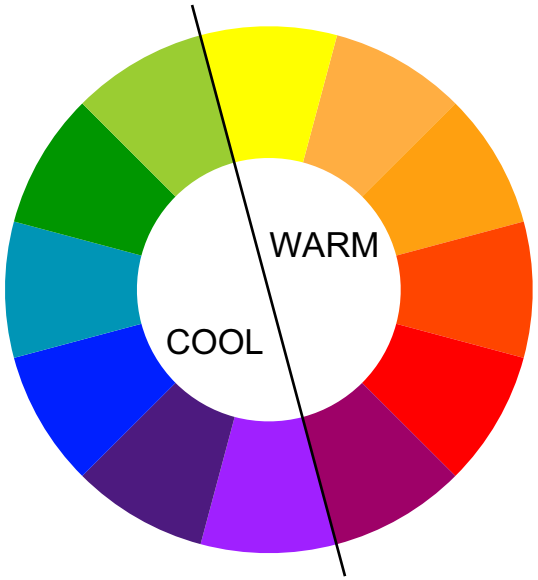
- The warm colours (red, orange, yellow) appear on the right side of the colour wheel, and the cool colours (green, blue, and purple) on the left.
- In a cold room, warm colours (e.g. orange) can be used to make it look warmer.
- In a warm room, cool colours (e.g. blue) can be used to make it look cooler.

Distance

- Warm colours are described as advancing colours, because they create an illusion of moving forward, e.g. a red tomato between green lettuce immediately attracts attention.
- Cool colours are described as receding colours and make objects appear smaller, less important and further away.

Size/optical illusion

- Light colours make objects appear larger.
- Bright colours attract attention and make objects appear larger and closer.
- Dark colours, e.g. black, create an illusion of slenderness.



Emotional effects

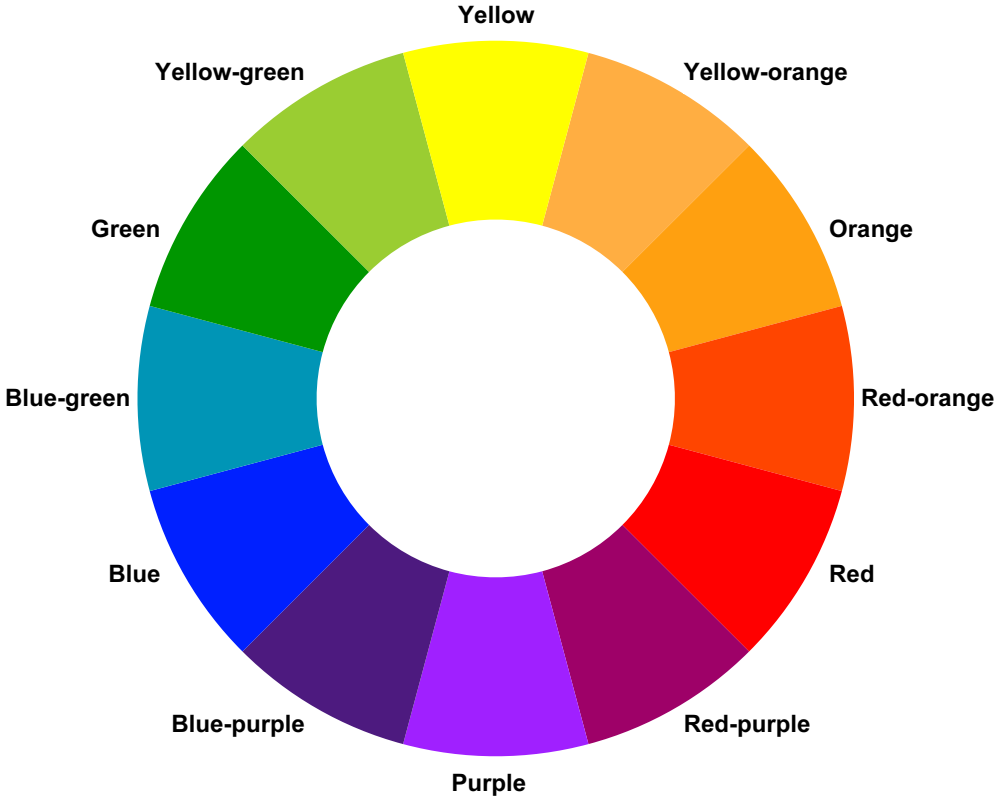
- Warm colours make people feel excited, cheerful and energetic.
- Cool colours have a calm, serene effect.

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THE COLOUR WHEEL

There are different colour wheels, but we use the Prang system colour wheel.

- The colour wheel consists of a circle with 12 different colours in a specific order.
- The warm colours (red, orange and yellow) are always on the right side of the colour wheel and the cool colours (green, blue and purple) on the left.
- Colours that sit next to each another on the colour wheel usually match well and are pleasing to the eye.
- Colours on opposite sides of the colour wheel are complementary colours and form a sharp contrast when used together.



COLOUR COMBINATIONS/HARMONIES

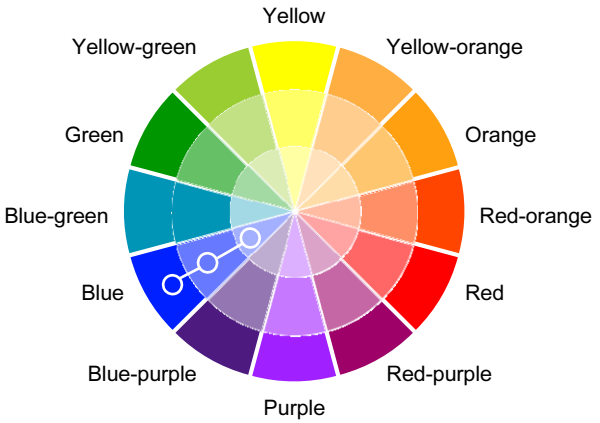
The colour wheel can be used to create different colour combinations.

Colour combinations are formed when two or more colours are used together in a design. Colour combinations can be classified as follows:

Related colour combinations

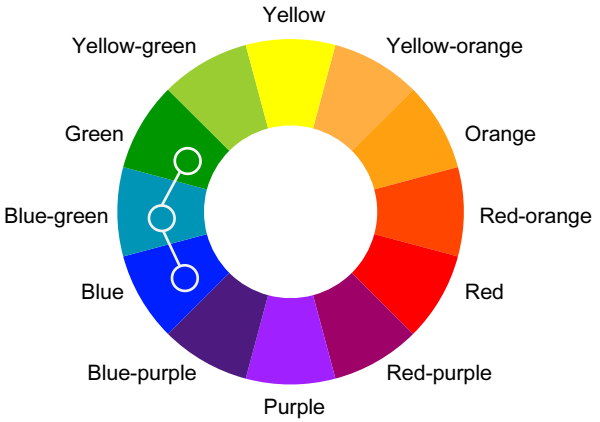
These colour combinations use colours that sit close to each other on the colour wheel.

Monochromatic colour combination



This colour combination is achieved when only **one** colour's different **tints** and **shades** are combined, e.g. sky blue, navy blue, dark blue.

Analogous colour combination



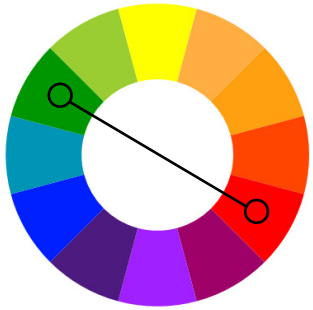
This colour combination is achieved when combining **two** or **three** colours sitting **next to each other** on the colour wheel, e.g. blue, blue-green and green.

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Contrasting colour combinations

These colour combinations are formed when using colours that sit opposite each other on the colour wheel. To form a successful contrasting colour combination, it is best to use colours with different values and intensities, i.e. shades, tones and tints.

Complementary colour combination



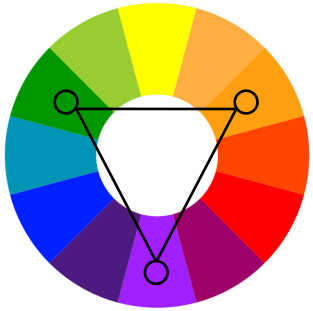
This is formed when **one** colour on the colour wheel is combined with its **opposite** colour (its **complement**), e.g. red and green.

Double complementary colour combination



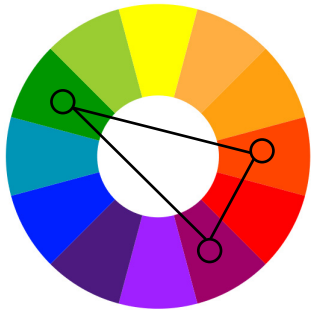
This is obtained when **two** colours that sit directly **next to each other** on the colour wheel are combined with their **complements**.

Triadic colour combination



This is obtained when combining **three** colours, each at the **corner** of an equilateral triangle placed on the colour wheel.

Split complementary colour combination



This is formed when **one** colour is combined with the **two** colours on **either side** of its **complement**.

UNIT 2 DESIGN ELEMENTS AND PRINCIPLES

- Design elements and principles are always used with any design.
- Design elements are the 'building blocks' of any design.
- Design principles are guidelines for combining design elements in such a way that ensures a good design.

DESIGN ELEMENTS	DESIGN PRINCIPLES
1. Line	1. Proportion and scale
2. Shape	2. Balance
3. Form	3. Rhythm
4. Space	4. Harmony
5. Texture	5. Emphasis
6. Colour	

DESIGN ELEMENTS

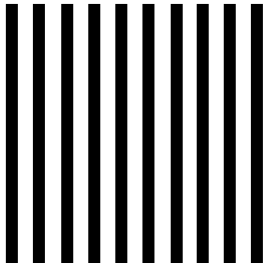
Line

- A line is the basic element of design and is described as the connection of two points.
- Different illusions can be created by using lines in clever ways. Lines can create optical illusions by pulling the eye away from something, or toward something.
- There are four types of lines that can be used in a design. However, it is very important that only one of the lines in a design dominates.
- The different types of lines include: vertical, horizontal, diagonal and curved lines.



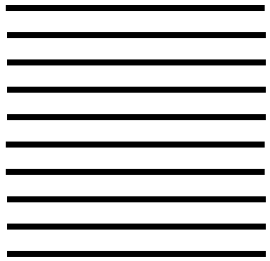
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Vertical lines



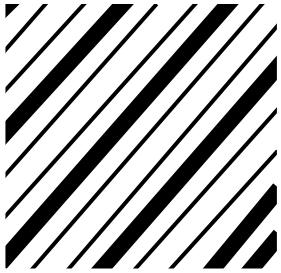
- vertical lines direct the eye up and down
- it creates an illusion of length or height
- it gives height, elegance and stability to a room
- it creates a formal feeling
- examples include: pillars, long windows and doors, vertical blinds and upright furniture

Horizontal lines



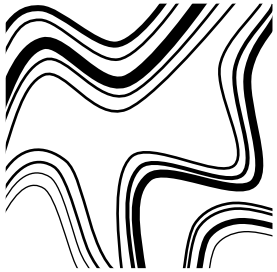
- horizontal lines direct the eye from left to right
- it creates an illusion of breadth or width
- it provides a peaceful atmosphere and stability in a room
- it creates a relaxed, informal, calm feeling
- examples include: low bookshelves, low couches, low ceilings and paintings hanging at the same height

Diagonal lines



- diagonal lines create the illusion of width or length depending on the slope
- it keeps the eye moving and therefore indicates activity
- too many diagonal lines in a design can be exhausting and have an unbalanced effect
- examples include: stairs, sloping ceilings and gables

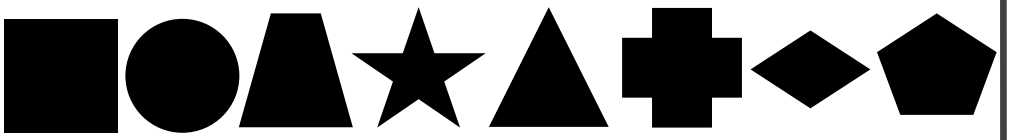
Curved/rounded lines



- curved lines make designs appear round and continuous
- it slows movement of the eyes and creates a softer, more graceful appearance
- it creates a sense of security and fun
- examples include: draped/pleated curtains, arched entrances, and furniture with round finishes

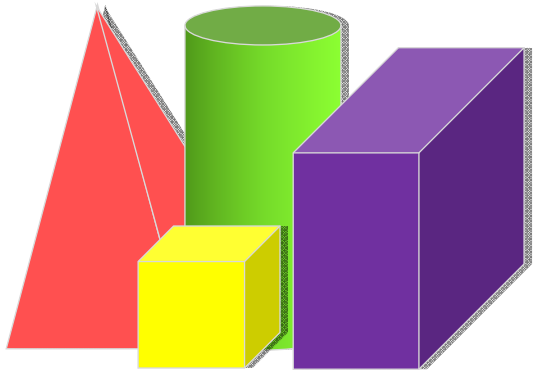
Shape

- Shape refers to the outline of an object (silhouette).
- Shapes can be flat or 2-dimensional, e.g. squares, rectangles, circles, ovals and triangles.



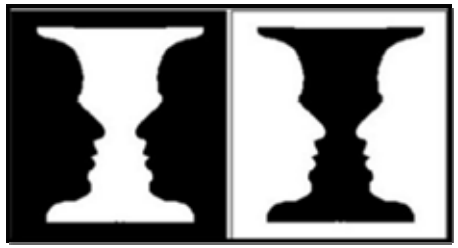
Form

- The form of a solid object is 3-dimensional and has height, width and depth, e.g. a cube, cylinder and pyramid.
- The form of an object must suit its function.
- Too many different forms in a room create a confusing effect.



Space

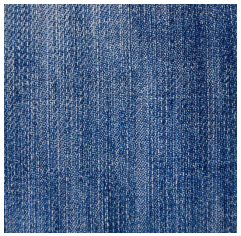
- Space refers to the background area between objects or space that is not filled by shapes; it can be seen 2- or 3-dimensionally.
- The forms and the background must be in the right proportion.
- Objects must have enough space to perform their function.
- A feeling of additional space can be created in small areas by using mirrors.

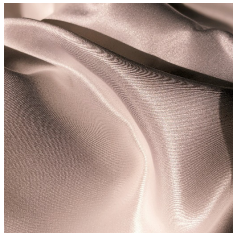


- This is a very important part of successful design, because too little space between shapes and lines, has a cramped look.

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Texture

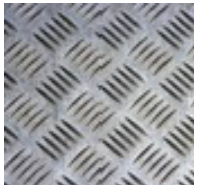


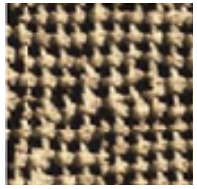


- Texture refers to the properties of an object's surface; what the surface looks like or how it feels when you touch it.
- Texture makes the design visually striking.
- In a design, one texture should dominate and other textures can be added to make it interesting.
- Texture can be imitated by producing materials or objects with textures that resemble those of nature, e.g. artificial fur.
- Smooth textures can appear sophisticated, formal and sometimes clinical. Rough textures give a more casual look.
- Texture is affected by light. Smooth textures reflect light and are eye-catching. Rough textures absorb light and make objects less striking.
- There are two types of textures, i.e.:

Tactile texture

- It describes how the surface of an object feels, e.g. hard, soft, smooth or rough.





Visual texture

- It describes what the surface of an object looks like.

Sometimes the texture of an object looks different from what it feels like in reality. Colour and design can be used to make smooth surfaces look textured.





A tile can be made to look like marble, fur or wood, but when you touch it, it feels smooth.

Colour *Covered already – see Notes in the Unit 1.*

DESIGN PRINCIPLES

Design principles are guidelines for combining design elements in a way that ensures a good design.

Proportion

- Proportion refers to the size of the parts an object consists of in relation to other parts of the **same object.**
- The different parts of a design must therefore be in proportion to each other as well as to the whole.
- When an area is divided, the ratio between the parts must look good.
- The following guidelines can be used to assess proportion:
  - *equal area distribution is less satisfactory than uneven distribution*



An example of good proportion in a room

Good proportion



Poor proportion



Equal parts are boring



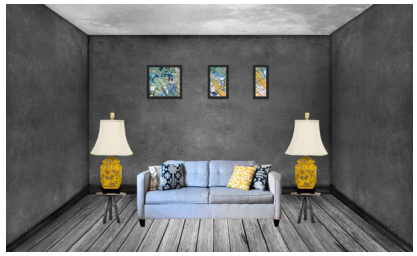
When distribution is too uneven, the design is poor

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Scale

- Scale is the size of one object relative to **another object** in a design. Objects used together must be in proportion to one another.
- In a small living room, smaller furniture should be used, and in a large room, large furniture should be used.
- A very small object looks even smaller when placed next to a very large object.

Poor use of scale



Good use of scale

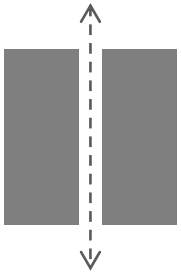


Balance

- Balance is obtained by grouping objects around a central point/line.
- With good design, objects' weight, or visual weight, balances each other out.
- There are three types of balance: formal, informal and radial balance.

Formal/symmetrical balance

- formal balance is obtained when the two sides on either side of an imaginary line are identical

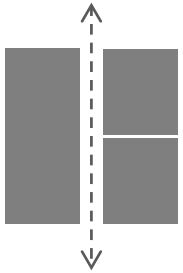






Informal/asymmetrical balance

- informal balance is obtained when the two halves on either side of an imaginary line are not the same, but carry the same visual weight
- two small objects can balance one large object
- a small, bright object can balance a large object in a neutral colour

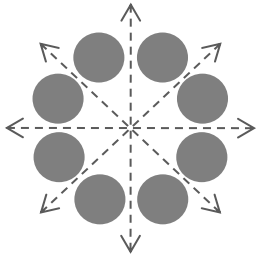






Radial balance

- radial balance is obtained when objects are arranged around a central point
- the lines radiate from a central point like the spokes of a bicycle wheel







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