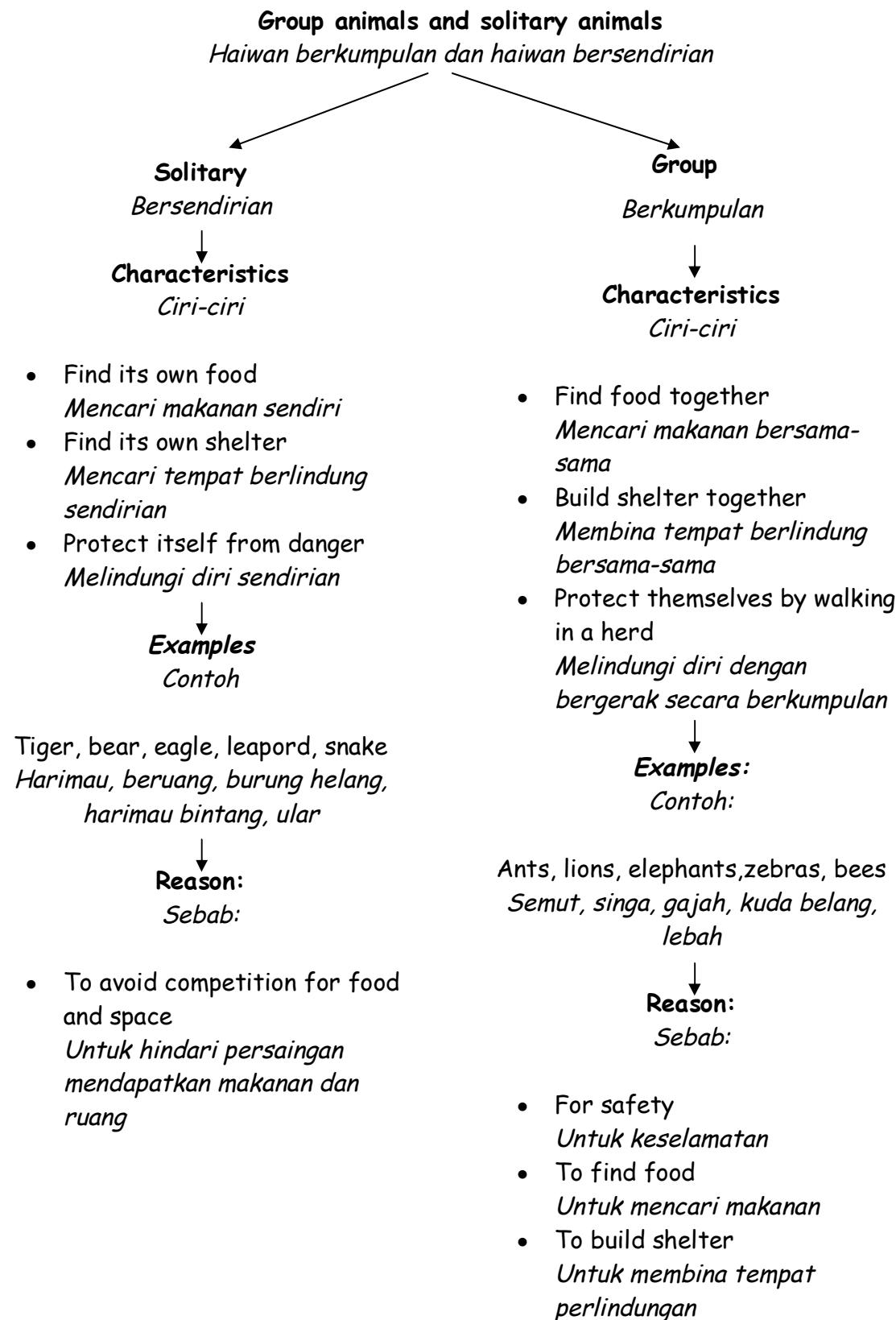


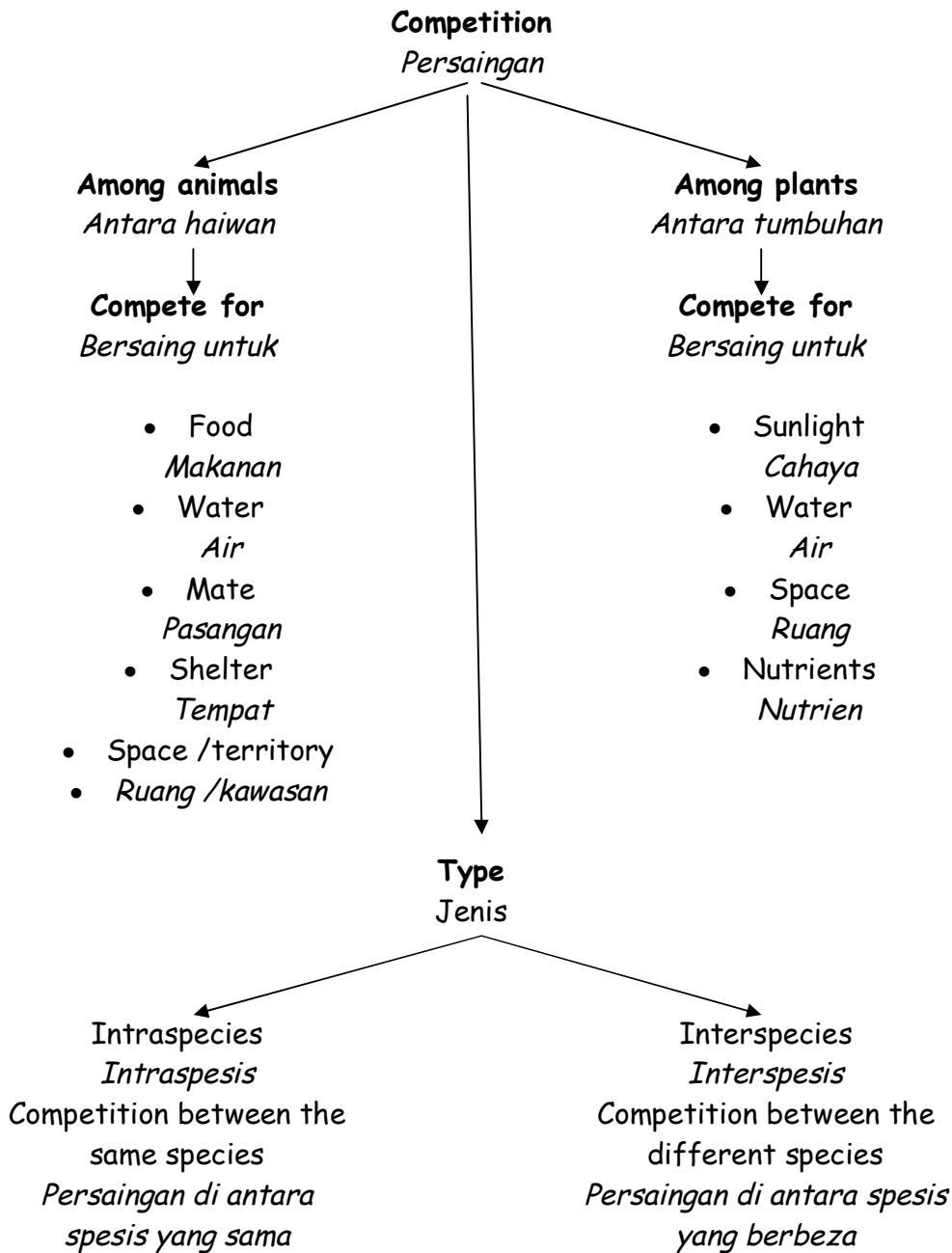
Interaction among living things

Interaksi antara benda hidup



Interaction among living things

Interaksi antara benda hidup



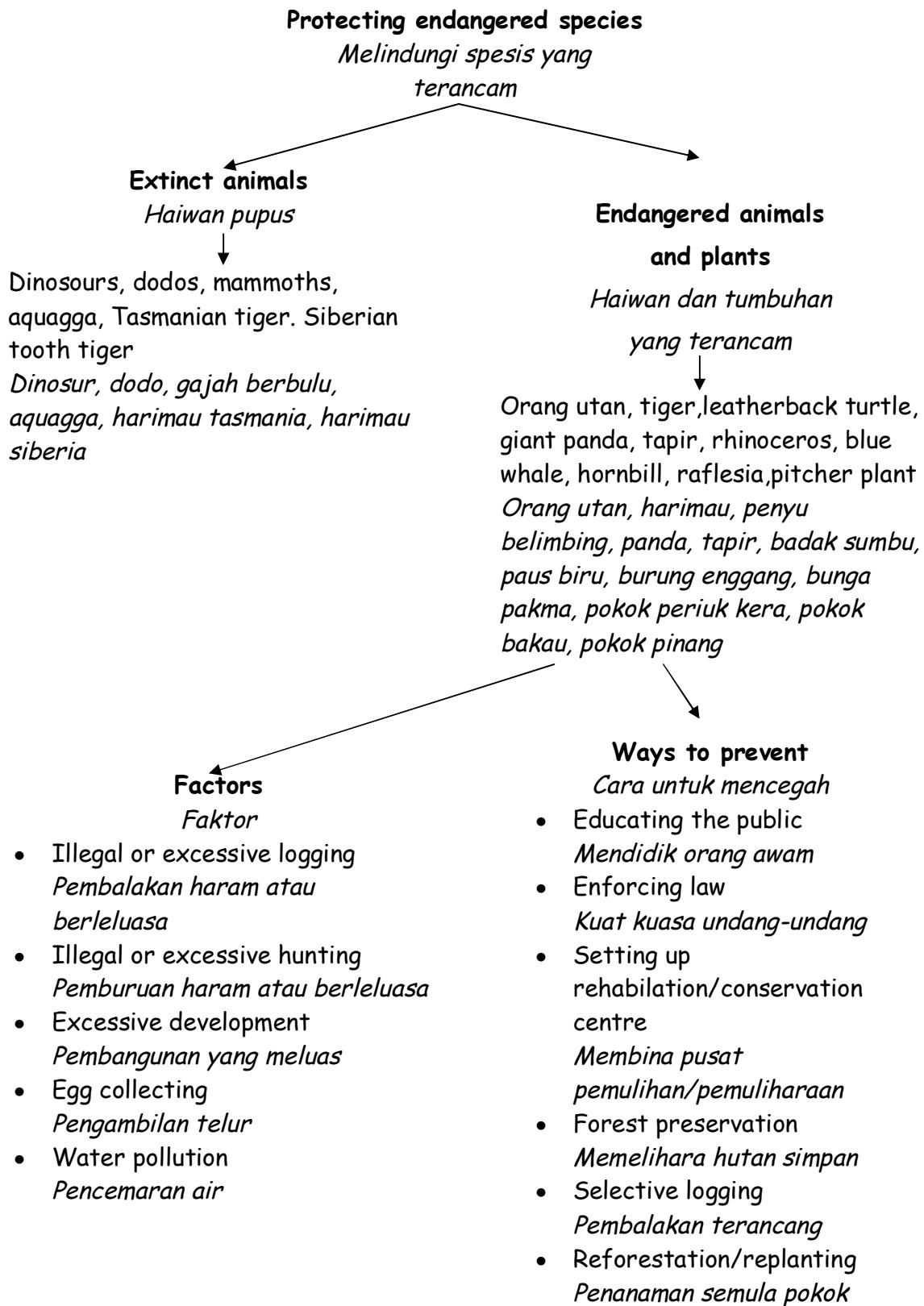
***Note: Greater competition happens when:

***Nota: Persaingan yang sengit berlaku apabila:

- Number of living things increase
Bilangan hidupan bertambah
- Resources for the needs of living things are limited
Sumber keperluan hidupan terhad

Interaction among living things

Interaksi antara benda hidup



Interaction among living things

Interaksi antara benda hidup

Impact of human activities *Kesan daripada aktiviti manusia*



Human's activities *Aktiviti manusia*



- Illegal and excessive logging
Pembalakan haram dan berleluasa
- Illegal and excessive hunting
Pemburuan haram dan berleluasa
- Improper management of development
Kelemahan pengurusan pembangunan

Destructions of the environment *Kemusnahan alam sekitar*

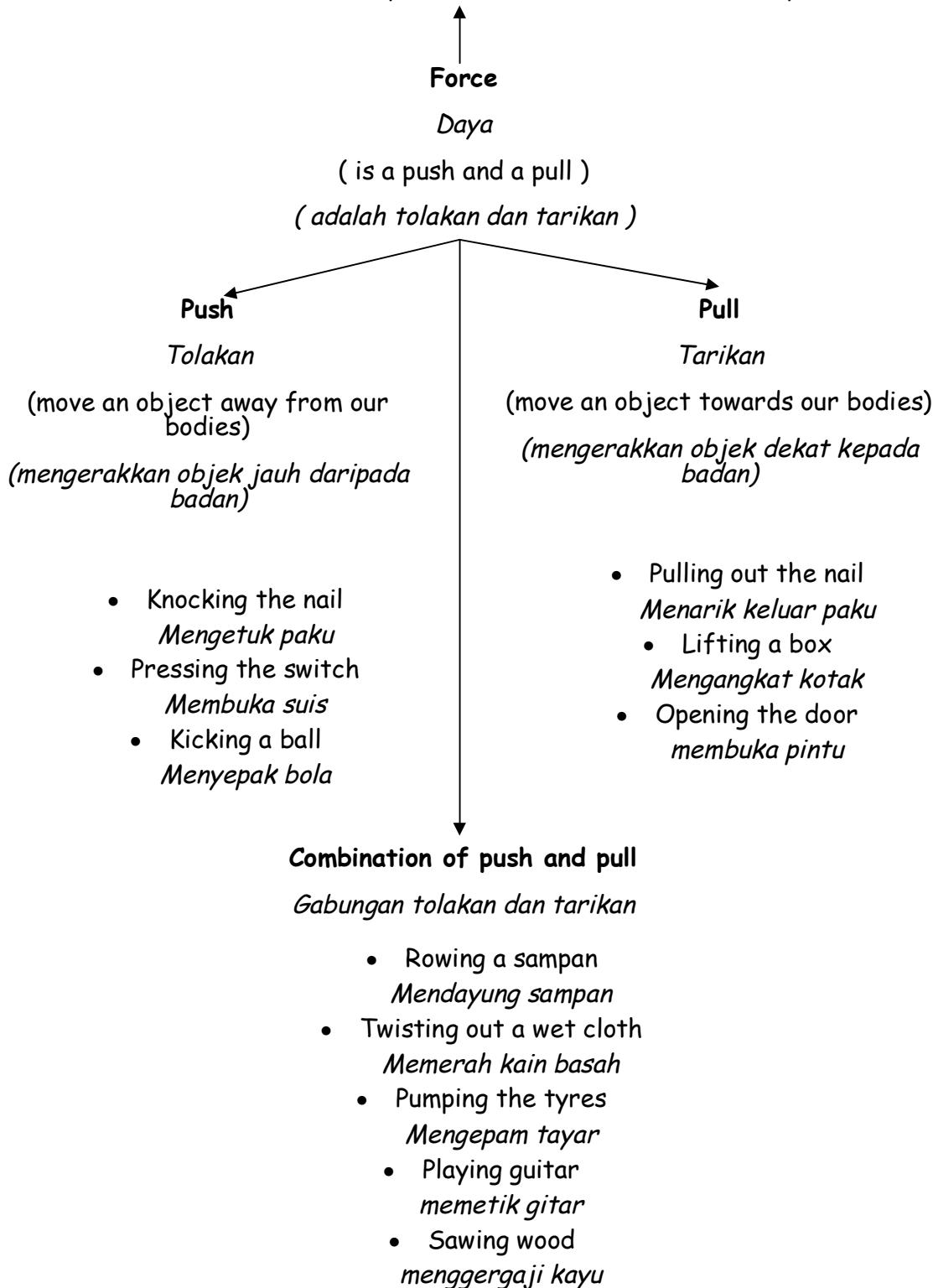
- Land erosion
Hakisan tanah
- Landslides
Runtuhan tanah
- Flash floods
Banjir kilat
- Water pollution
Pencemaran air
- Air pollution
Pencemaran udara

Force

Daya

Cannot be seen but we can feel and observe the effects of the force

Tidak boleh dilihat tetapi kita boleh rasa dan lihat kesannya



Force

Daya

Effects of forces

Kesan-kesan daya

Changes the motion of an object Mengubah pergerakan objek

Changes the shapes of an object Mengubah bentuk objek

- Moves a stationary object
Boleh gerakkan objek yang pegun
 - *kicking a ball*
menendang bola
- Stops a moving object
Memberhentikan objek yang bergerak
 - *catch a moving ball*
menangkap bola
- Changes the direction of a moving object
Mengubah arah pergerakan objek yang bergerak
 - *kick the ball from opposite direction*
tendang bola dari arah yang berlainan
- Changes the speed of moving object
Mengubah kelajuan objek yang bergerak
 - *object moves faster or slower*
objek bergerak laju atau perlahan

Temporarily

Sementara

- *press a sponge*
memiciti span
- *stretch a rubberband*
meregangkan gelang getah

(Elastic object)

(Objek elastic)

Permanantly

Tetap

- *tear a piece of paper*
mengoyakkan kertas
 - *hit a can*
mengemekkan tin

(Inelastic object)

(Objek tidak elastik)

Force

Daya

Friction

Geseren

(the force that opposes motion)

(daya yang menentang pergerakan)



Occurs when two surfaces are moving in contact with each other

Berlaku apabila dua permukaan yang bergerak bersentuhan satu sama lain



Examples

Contoh

- ball rolling on a floor
mengolek bola di atas lantai
 - erasing words
memadam perkataan
 - holding a glass
memegang gelas
 - wiping the window
mengelap tingkap
 - knocking a nail
mengetuk paku



Factors

Faktor

Condition of the surfaces

Keadaan permukaan

- The rougher the type of surface is, the greater the friction produced
Semakin bertambah kasar jenis permukaan, semakin bertambah geseran dihasilkan

Weight of an object

Berat objek

- The heavier the weight of an object is, the greater the friction produced
Semakin bertambah berat objek, semakin bertambah geseran dihasilkan

Force

Daya

Friction

Geseran

Effects of friction

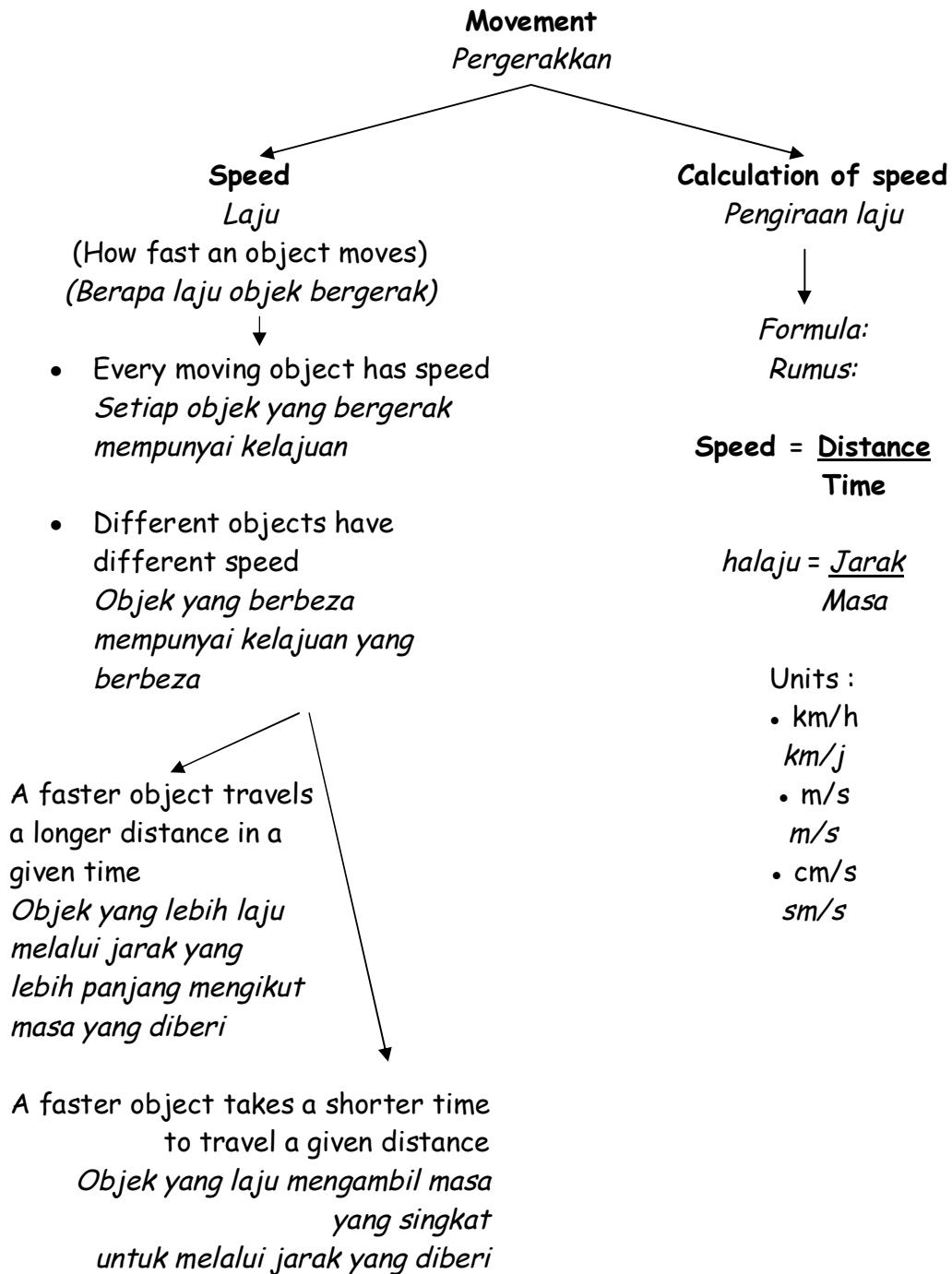
Kesan-kesan geseran

Ways to reduce friction

Cara kurangkan geseran

- Produces heat
Hasilkan haba
- Opposes motion
Berlawanan gerakan
- Causes wear and tear
Menyebabkan haus dan koyak
- Slows down and stops a moving object
Memperlahangkan dan memberhentikan objek yang bergerak
- Use rollers or marbles
Guna penggolek atau guli
- Smoothen surfaces
Melicinkan permukaan
- Use lubricants (oil, grease)
Guna pelincir (minyak, gris)
- Use aerodynamic shape
Guna bentuk aerodinamik
- Use talcum powder, air cushion
Guna bedak talcum, kusyen udara

| Advantages <i>Kelebihan</i> | Disadvantages <i>Kelemahan</i> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • stops a moving vehicles <i>menghentikan kenderaan bergerak</i> • holding/grips things <i>memegang objek</i> • keep the position <i>menetapkan posisi</i> • prevent us from slipping <i>mengelakkan daripada tergelincir</i> • sharpens a knife <i>Mengasah pisau</i> | <ul style="list-style-type: none"> • slow down a moving object <i>memperlahangkan kenderaan bergerak</i> • cause the surfaces of objects to wear out <i>menyebabkan permukaan objek haus</i> • causes heating <i>menghasilkan haba</i> • causes sound pollution <i>pencemaran bunyi</i> • increases cost <i>meningkatkan kos</i> |



Food preservation

Pengawetan makanan

Identified by:

Dikenalpasti melalui:

Observing, touching, smelling, tasting
Pemerhatian, sentuhan, bau, rasa

Food spoilage

Kerosakan makanan

Characteristics of spoilt food

Ciri-ciri makanan yang rosak

- Unpleasant smell
Bau tidak menyenangkan
 - sour, bad, stink
masam, tak menyenangkan, busuk
- Unpleasant taste
Rasa tidak menyenangkan
 - sour, bad
masam, teruk
- Changed colour
Berubah warna
 - dark colour, yellowish
kegelapan, kekuningan
- Changed texture
Berubah jalinan
 - slimy, wilt, curdles
melekit, layu, mendakan
- Mouldy
Berkulat
 - has black spots
tompokan hitam

The conditions for microorganisms to grow

Keadaan untuk mikroorganisma membesar

- Air
Udara
- Water
Air
- Nutrients
Nutrien
- Suitable temperature
Suhu yang sesuai
(high temperature-die, low temperature-inactive)
(suhu tinggi-mati suhu rendah-tidak aktif)
- Suitable acidity
Keadaan asid yang sesuai

***Food spoilage can cause food poisoning (vomiting, diarrhoea, stomach upset)

***Makanan yang rosak boleh menyebabkan keracunan makanan (muntah-muntah, cirit-birit, sakit perut)

Food preservation

Pengawetan makanan

| | Methods of food preservation <i>Cara-cara pengawetan makanan</i> | Examples of foods <i>Contoh-contoh makanan</i> |
|----|----------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| 1 | Drying <i>Pengeringan</i> | Fish, prawns, cuttlefish, fruits <i>Ikan, udang, sotong, buah</i> |
| 2 | Boiling <i>Pemanasan</i> | Meat ,fish, vegetables <i>daging, ikan, sayur</i> |
| 3 | Cooling <i>Pendinginan</i> | Vegetables, fruits <i>Sayur, buah</i> |
| 4 | Freezing <i>Penyejukbekuan</i> | Chicken, meat, prawns, cuttlefish <i>Ayam, daging, udang, sotong</i> |
| 5 | Smoking <i>Pengasapan</i> | Meat, fish <i>Daging, ikan</i> |
| 6 | Pickling <i>Penjerukan</i> | Fruits, vegetables <i>Buah, sayur</i> |
| 7 | Pasteurising <i>Pempasteuran</i> | Milk, juices, ice cream <i>Susu, jus, ais krim</i> |
| 8 | Waxing <i>Pelilinan</i> | Vegetables, fruits <i>Sayur, buah</i> |
| 9 | Bottling/Canning <i>Pembotolan/pengetinan</i> | Meat, fish, fruits, vegetables <i>Daging, ikan, buah, sayur</i> |
| 10 | Salting <i>Pengasinan</i> | Fish, meat, eggs, vegetables, fruits <i>Ikan, daging, telur, sayur, buah</i> |
| 11 | Vacuum packing <i>Pembungkusan vakum</i> | Nuts, crackers, powder milk <i>Kacang, biskut, susu tepung</i> |

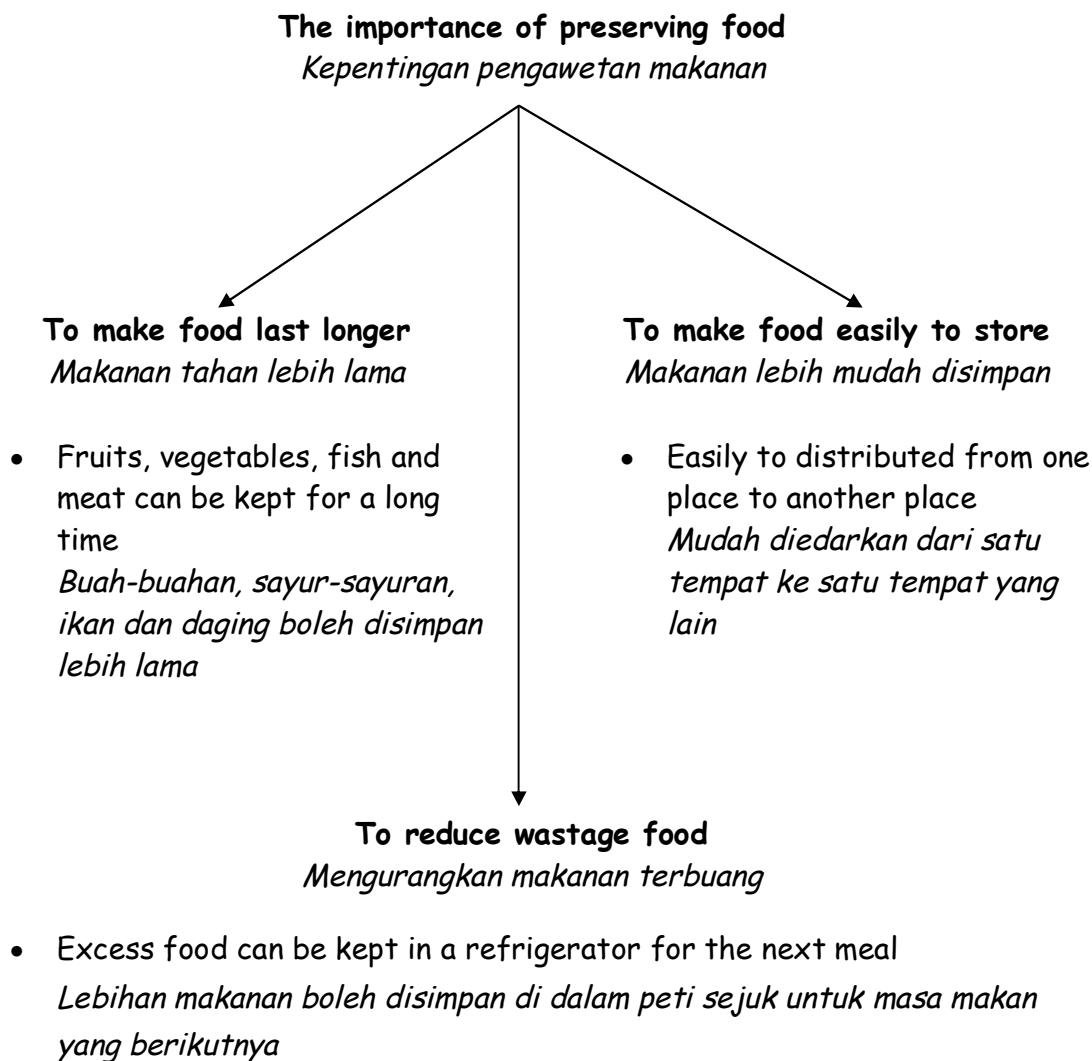
Food preservations

Pengawetan makanan

| | Methods of preservation <i>Cara pengawetan</i> | Process <i>Proses</i> | Disadvantages <i>Kekurangan</i> |
|---|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| 1 | Drying <i>Pengeringan</i> | <ul style="list-style-type: none"> Dries food under hot sun <i>Keringkan makanan bawah terik matahari</i> heats food at a high temperature <i>Panaskan makanan pada suhu yang tinggi</i> | Less nutritious <i>Kurang nutrisi</i> |
| 2 | Boiling <i>Pemanasan</i> | Boils food <i>Panaskan atau masak makanan</i> | Changes food taste and less nutritious <i>Mengubah rasa dan kurang nutrisi</i> |
| 3 | Cooling <i>Pendinginan</i> | Keeps food at a low temperature (0°C - 5°C) <i>Simpan makanan pada suhu yang rendah (0°C-5°C)</i> | Food can spoilt easily after taking it out <i>Makanan mudah rosak apabila dikeluarkan</i> |
| 4 | Freezing <i>Penyejukbekuan</i> | Keeps food at a very low temperature (below 0°C) <i>Simpan makanan pada suhu yang sangat rendah (bawah 0°C)</i> | Food can spoilt easily after taking it out <i>Makanan mudah rosak apabila dikeluarkan</i> |
| 5 | Smoking <i>Pengasapan</i> | Dries food over a fire <i>Asapkan makanan diatas api</i> | Changes taste food <i>Mengubah rasa makanan</i> |
| 6 | Pickling <i>Penjerukan</i> | Soaks food in an acidic solution (vinegar) or saturated sugar solution <i>Rendam makanan dalam larutan berasid (cuka) atau larutan gula tepu</i> | Changes food taste and less nutritious <i>Mengubah rasa makanan dan kurang nutrisi</i> |

| | | | |
|----|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| 7 | Pasteurising <i>Pempasteuran</i> | Heats food at 63°C for 30 minutes and followed by rapid cooling to below 10°C <i>Panaskan makanan pada suhu 63°C selama 30 minit diikuti dengan penyejukan yang pantas bawah suhu 10°C</i> | Lasts for a few days when unwrapped <i>Makanan hanya bertahan beberapa hari selepas dibuka</i> |
| 8 | Waxing <i>Pelilinan</i> | Rubs food with waxes <i>Gosokkan makanan dengan lilin</i> | Lasts for a few weeks <i>Makanan hanya bertahan beberapa minggu</i> |
| 9 | Bottling/Canning <i>Pembotolan/pengetinan</i> | Heats food at very high temperature and keeps food in airtight cans or bottles <i>Panaskan makanan pada suhu yang sangat tinggi dan simpan makanan di dalam tin atau botol yang kedap udara</i> | Changes food colour, taste and less nutritious <i>Mengubah warna makanan, rasa dan kurang nutrisi</i> |
| 10 | Salting <i>Pengasinan</i> | <ul style="list-style-type: none"> Adds a lot of salt to the food <i>Letak garam yang banyak pada makanan</i> Soaks food in a salt solution <i>Rendam makanan dalam larutan gula</i> | Changes food taste and less nutritious <i>Mengubah rasa makanan dan kurang nutrisi</i> |
| 11 | Vacuum packing <i>Pembungkusan vakum</i> | Stores food in a vacuum environment <i>Simpan makanan dalam persekitaran bervakum</i> | Less nutritious <i>Kurang nutrisi</i> |

Food preservations
Pengawetan makanan



Waste Management

Pegurusan bahan buangan

Waste

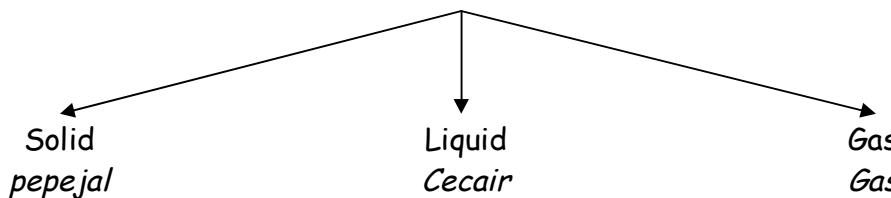
Bahan buangan

(Things that we no longer use and need to be disposed)

(Bahan yang tidak diperlukan lagi dan perlu dibuang)

Types of waste

Jenis bahan



Solid
pepejal

Food waste, old
newspaper, plastic bag,
tin can
Lebihan makanan,
suratkhabar lama,beg
plastic, tin minuman

Liquid
Cecair

Detergent, oil,
chemical waste,
sewage
Pencuci, minyak, sisa
kimia, sisa kumbahan

Gas
Gas

Smoke, toxic gas,
dust, poisonous gas
Asap, gas bertoksik,
habuk, gas beracun

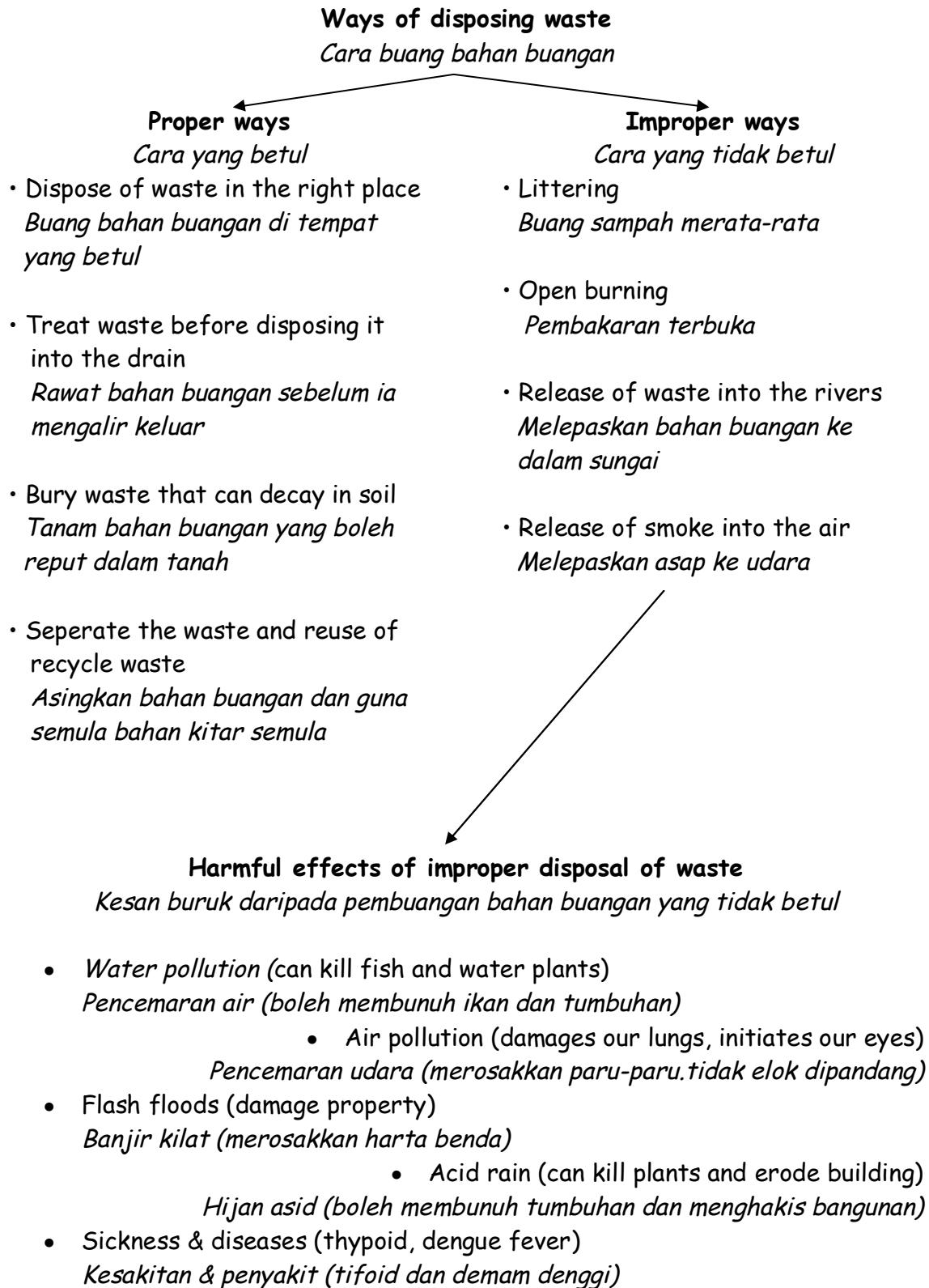
Sources of waste

Sumber bahan

Homes, factories, agriculture, motor vehicles, food stall, open burning
Rumah, kilang, pertanian, kendaraan bermotor, gerai makanan, pembakaran
terbuka

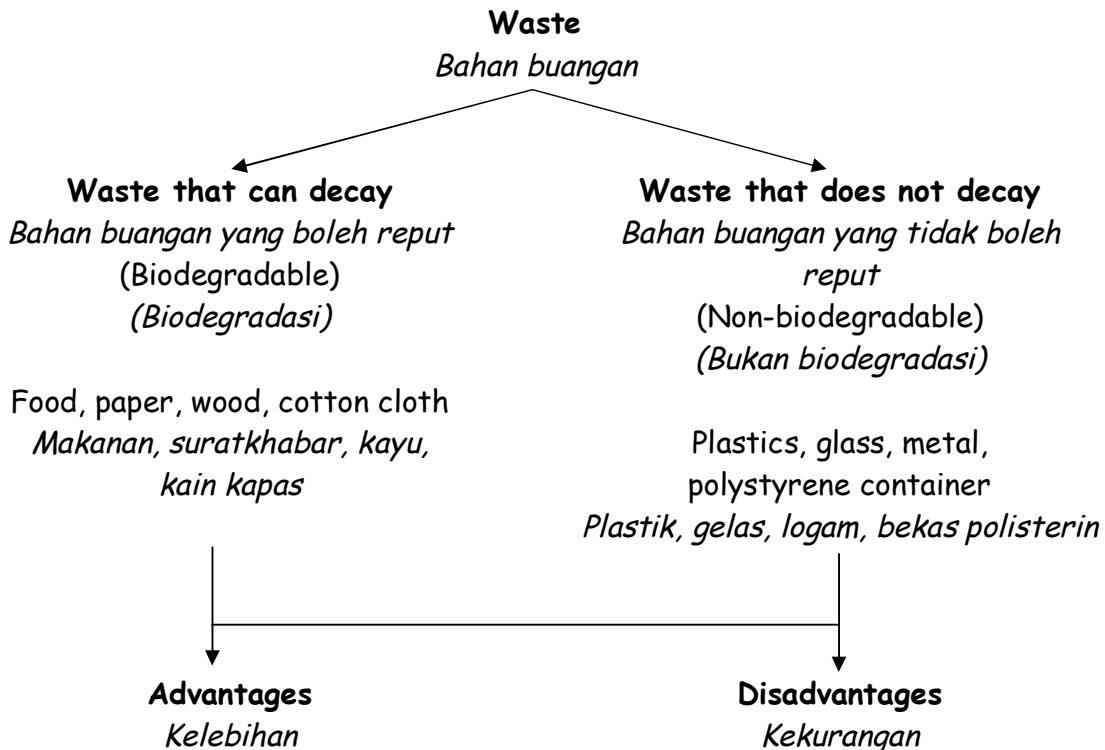
Waste Management

Pegurusan bahan buangan



Waste Management

Pegurusan bahan buangan



- Reduce the amount of waste in the environment
Mengurangkan jumlah bahan buangan dalam persekitaran
- To make the soil fertile as nutrients
Untuk menyuburkan tanah sebagai nutrient
- Gives out poisonous gases and unpleasant smell
Mengeluarkan gas beracun dan bau yang tidak enak
- Affects humans health
Mengganggu kesihatan manusia
- Attracts pest
Menarik kedatangan haiwan perosok
- Contaminated water resources
Mencemari sumber air
- Lower the oxygen content of the water
Mengurangkan kandungan oksigen dalam air

Eclipse Gerhana

Eclipse of The Moon

Gerhana bulan

The Earth is between the Sun and the Moon in a straight line.
Bumi berada di antara Matahari dan Bulan dalam satu garis yang lurus

The Earth blocks sunlight from reaching the Moon

Bumi menghalang cahaya Matahari daripada sampai ke Bulan

Occurs at night-time about 1 hour

Berlaku pada waktu malam dalam masa 1 jam

Happens only on 15th of lunar calendar

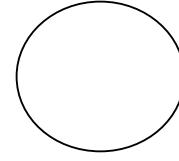
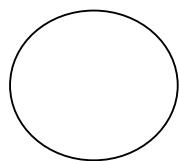
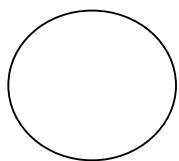
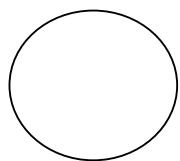
Hanya berlaku pada hari yang ke-15 dalam takwim qamari

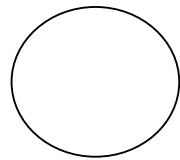
Can observe with naked eyes

Boleh dilihat menggunakan mata kasar

The Moon looks reddish, dark gray or brown

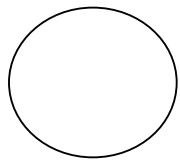
Bulan kelihatan kemerahan, kelabu atau perang





Partial eclipse of the moon happens when a part of moon surface covered by earth's shadow

Gerhana bulan separa berlaku apabila sebahagian permukaan bulan dilindungi oleh baying-bayang bumi



Total eclipse of the moon happens when whole part of moon surface covered by earth's shadow

Gerhana bulan penuh berlaku apabila keseluruhan permukaan bulan dilindungi oleh baying-bayang bumi

Eclipse Gerhana

Eclipse of The Sun

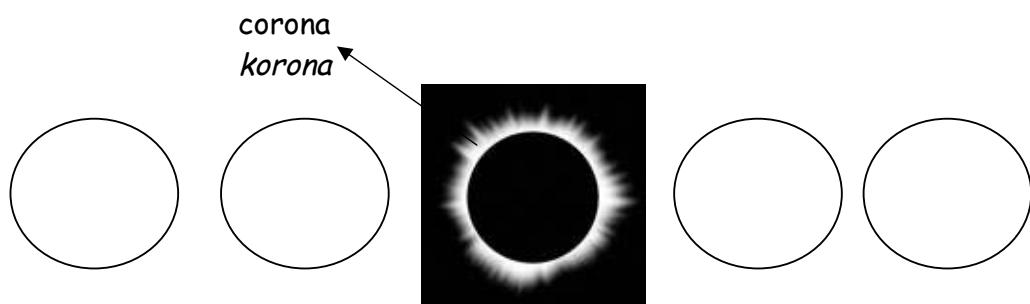
Gerhana Matahari

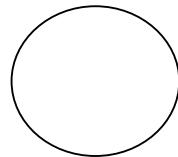
The Moon is between the Sun and the Earth in a straight line.
Bulan berada di antara Matahari dan Bumi dalam satu garis yang lurus

Sunlight is blocked by the Moon
Cahaya Matahari dihalang oleh Bulan

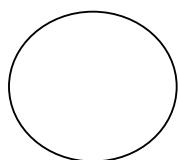
Occurs at day-time only in a few minutes
Berlaku pada waktu siang dalam masa hanya beberapa minit

- The Moon shadow falls on the Earth surface
Bayang-bayang Bulan jatuh ke atas permukaan bumi
- Cannot observe with naked eyes
Tidak boleh dilihat menggunakan mata kasar
- Daylight becomes dark during the total eclipse
Hari siang menjadi gelap menjelang gerhana penuh





Partial eclipse of the sun happens when a part of moon's shadow falls on the earth surface
Gerhana bulan separa berlaku apabila sebahagian bayang-bayang bulan jatuh pada permukaan bumi



Total eclipse of the sun happens when whole part of moon's shadow falls on the earth surface
Gerhana bulan penuh berlaku apabila keseluruhan bayang-bayang bulan jatuh pada permukaan bumi

Machines

Mesin

Simple machines

Mesin ringkas

Simple machine means a device that allows us use less force to make work easier or faster.

Mesin ringkas bermaksud alat yang membenarkan kita menggunakan kurang daya untuk melakukan kerja dengan mudah dan pantas.

| | Simple machines <i>Mesin ringkas</i> | Characteristics <i>Ciri-ciri</i> | Function <i>Fungsi</i> | Examples <i>Contoh</i> |
|---|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| 1 | Lever <i>Tuas</i> | Consists of a bar that is supported at a fixed point called the fulcrum <i>Terdiri daripada bar yang disokong oleh penyokong yang dinamakan fulcrum</i> | To move objects easily <i>Untuk menggerakkan objek dengan mudah</i> | Lid opener, hammer, nail clipper <i>Pembuka botol,</i> <i>tukul,</i> <i>pengetip kuku</i> |
| 2 | Wheel and axle <i>Roda dan gandar</i> | Consists of a wheel that is joined to an axle <i>Terdiri daripada roda yang bersambung dengan gandar</i> | To move or turn an object <i>Untuk menggerakkan atau memusingkan objek</i> | Spanner, car steering, door knob <i>Spanar,</i> <i>stering</i> <i>kereta,</i> <i>tombol pintu</i> |
| 3 | Pulley <i>Takal</i> | Has wheel which moves freely with a rope <i>Mempunyai roda yang bergerak bebas dengan tali</i> | To move an object up, down or sideways <i>Untuk menggerakkan objek ke atas, ke bawah atau ke tepi</i> | Cable car, crane <i>Kereta kabel,</i> <i>kreng</i> |

| | | | | |
|---|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| 4 | Wedge <i>Baji</i> | Has inclined plane on one or both side of its surface <i>Mempunyai satah condong pada satu bahagian permukaan atau kedua-duanya</i> | To cut or separate objects <i>Untuk memotong atau mengasing objek</i> | Axe, door stopper, chisel <i>Kapak, penyental pintu, pahat</i> |
| 5 | Inclined plane <i>Satah condong</i> | A slanted flat surface that connect to other surface of different level <i>Satu permukaan rata yang condong untuk menyambungkan aras yang berbeza</i> | To move object to a higher or lower place <i>Untuk menggerakkan objek ke tempat yang lebih tinggi atau lebih rendah</i> | Stair, slide, slope <i>Tangga, Gelongsor, cerun</i> |
| 6 | Screw <i>Skru</i> | Has a spiral inclined planed called thread <i>Mempunyai satah condong yang membentuk lilitan</i> | To fix two objects together <i>Untuk mengetatkan dua benda bersama</i> | Bottle, screw <i>Bukaan botol, skru</i> |
| 7 | Gear <i>Gear</i> | A wheel or cylinder with teeth <i>Roda atau silinder yang bergigi</i> | To change the speed or direction of movements <i>Untuk mengubah kelajuan atau arah pergerakan</i> | Drill, Watch, bicycle chain <i>Gerudi, jam tangan, rantai basikal</i> |

Machines

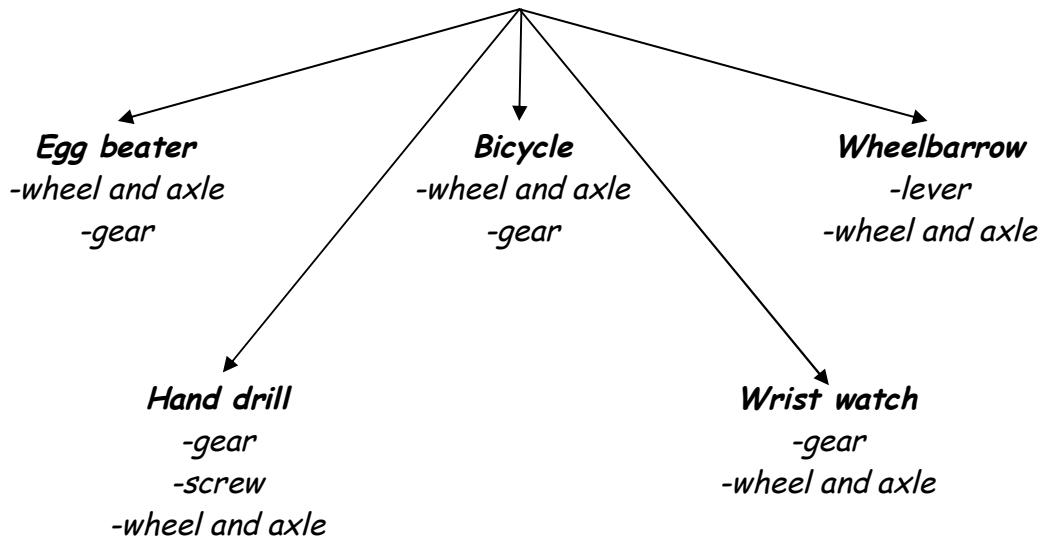
Mesin

Complex machines

Mesin kompleks

Made up of more than one simple machine

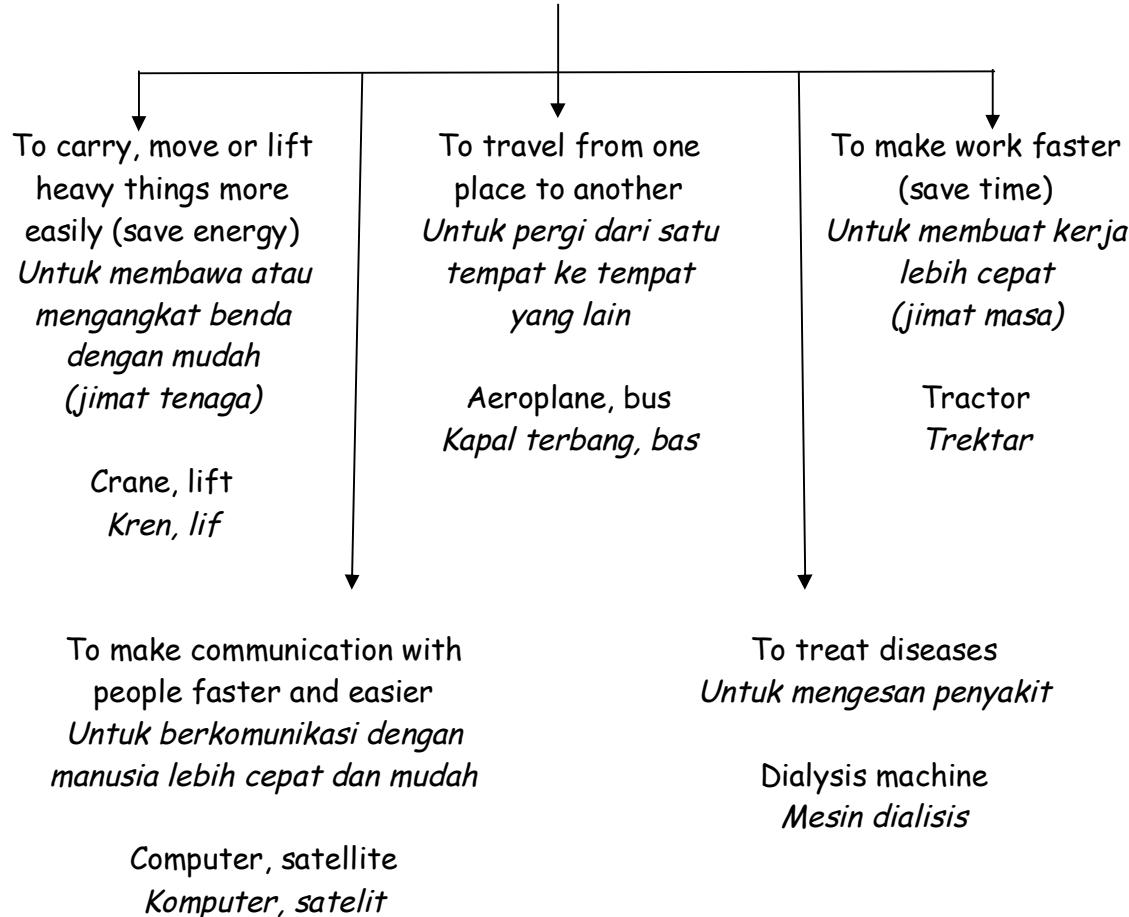
Terdiri lebih dari satu mesin ringkas



Machines

Mesin

Appreciating the invention of machines that make life easier
Menghargai mesin yang dicipta membuatkan hidup menjadi senang



Design a machine to solve a problem

Rekacipta mesin untuk menyelesaikan masalah

1. Identify a problem (draw the plan)
Kenalpasti masalah (lukis pelan)
2. Identify the materials
Kenalpasti bahan
3. Build a model (prototype)
Bina model (prototaip)
4. Test the model (whether it works or not)
Uji model (samada boleh digunakan atau tidak)