

香港科學館 HONG KONG SCIENCE MUSEUM

賽馬會環保廊

JOCKEY CLUB ENVIRONMENTAL CONSERVATION GALLERY



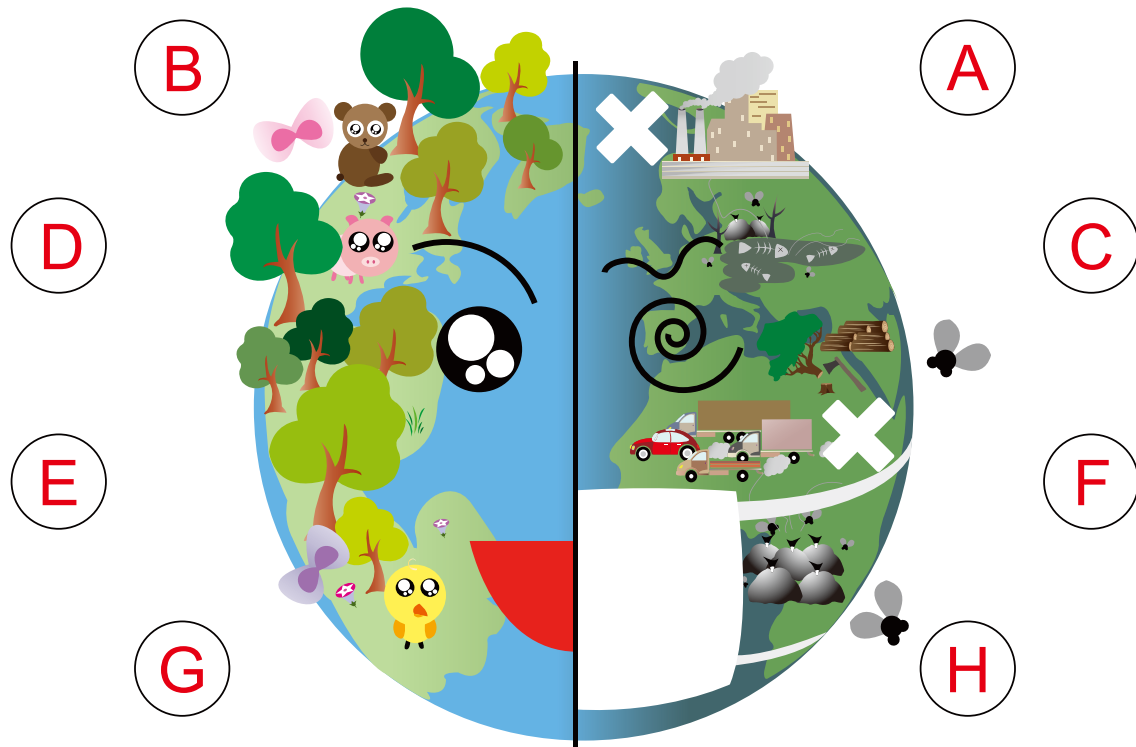
趣味習作
Activity Sheet
教師指南 Teachers' Guide



地球故事、我們的故事 Earth Story, Our Story

1. 地球是一個美麗卻又脆弱的地方。我們的行為既可破壞也可保護它。你希望我們的地球變成甚麼樣子呢？試把下方代表不同行為的英文字母填在適當的位置上。

The Earth is a beautiful but fragile place. The behaviour of human beings can help protect or destroy our planet. What kind of changes to the Earth do you want to see? Each of the English letters below represents a specific behaviour, let's put them on appropriate places.



- A** 砍伐樹木
Logging
- C** 浪費資源
Waste of resources
- E** 減少浪費
Waste reduction
- G** 善用資源
Efficient use of resources

- B** 節約能源
Saving energy
- D** 種植樹木
Tree planting
- F** 污染環境
Polluting environment
- H** 濫捕濫殺動物
Excessive hunting and killing of animals

你認為甚麼因素會威脅地球的健康？

What factors do you think will threaten the health of the Earth?

人口增長、經濟發展、消費行為、氣候變化、自然災害、山火（或任何合理答案） Population growth, economic

development, consumption behaviour, climate change, natural disasters, hill fire (or other reasonable answers)

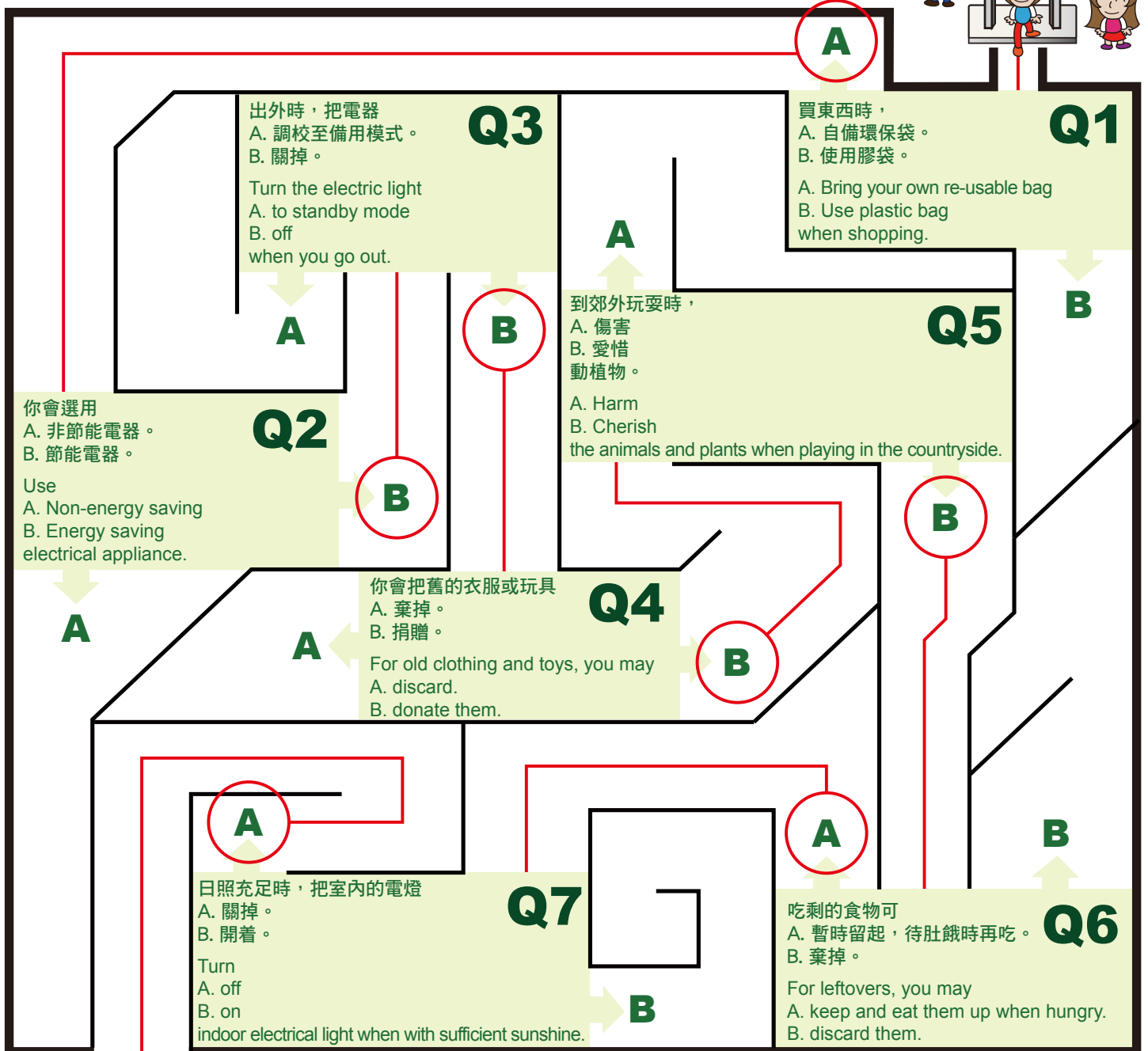
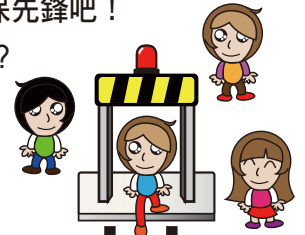


地球故事、我們的故事 Earth Story, Our Story

2. 你想成為保衛地球的環保先鋒嗎？請進入迷宮走一趟，看看你是否有潛質做一個環保先鋒吧！

Do you want to become a pioneer of environmental protection for protecting the Earth ?

Enter the labyrinth and see if you possess the potentialities to become a pioneer!



恭喜你，你已成為環保先鋒的一份子！
Congratulations! You have already become a member of the pioneers for environmental protection!





極地故事 Polar Story

1. 你知道以下的動物是甚麼嗎？試協助這兩種動物的自我介紹吧！

Do you know what the following animals are? Complete the self-introduction of these two animals!

我是 北極熊 。

I am polar bear .

我住在 北極 。

I live in the North Pole .

我喜愛吃 海豹、魚、鳥和鯨 。

I like eating seals, fish, birds and whales .



我（喜愛 / 不喜愛）與同類生活，是 獨居 的動物。

I (like / do not like) living with my species. I am a solitary animal .

我的特徵 / 習性：(1) 精於游泳 (2) 耳朵及尾巴細小，以減少熱量散失
(或任何合理答案) (請列出兩項)

Two of my characteristics / habitual behaviour : (1) being a good swimmer (2) having small ears and tail to avoid heat loss (or any other reasonable answers) .



我是 企鵝 。

I am penguin .

我住在 南極 。

I live in the South Pole .

我喜愛吃 磷蝦、魚和魷魚 。

I like eating krill, fish and squids .

我（喜愛 / 不喜愛）與同類生活，是 群居 的動物。

I (like / do not like) living with my species. I am a social animal .

我的特徵 / 習性：(1) 不會飛行但卻是游泳能手 (2) 有厚厚的皮下脂肪及密布的羽毛，以助保溫和儲存熱量 (或任何合理答案) (請列出兩項)

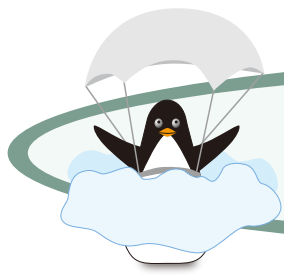
Two of my characteristics / habitual behaviour : (1) being a good swimmer without flying skill (2) having a very thick layer of subcutaneous fat and densely-covered feather to keep warm and store heat (or any other reasonable answers) .



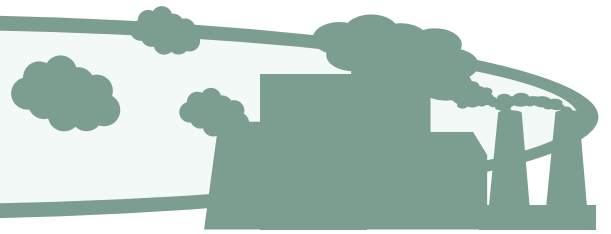
極地故事 Polar Story

2. 試在圖中圈出一些在南極考察時要用到或會見到的東西！
From the diagram below, circle things that will be used or seen when having an expedition in Antarctica!





空氣故事 Air Story

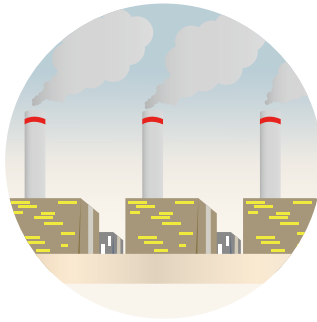


1. 你知道各種不同的空氣污染物的來源嗎？試把代表不同源頭的英文字母填在有關的污染物旁邊！
(答案可多於一項)

Do you know the sources of different air pollutants? Put the letters representing different pollution sources beside the relevant pollutants. (You may choose more than one answer.)



A



B



C



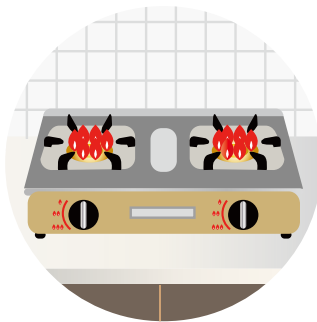
D



E



F



G

二氧化硫 Sulfur dioxide

A, B

氮氧化物 Nitrogen oxides

A, B, C

氡氣 Radon

D

甲醛 Formaldehyde

E

揮發性有機化合物 Volatile organic compounds

F

一氧化碳 Carbon monoxide

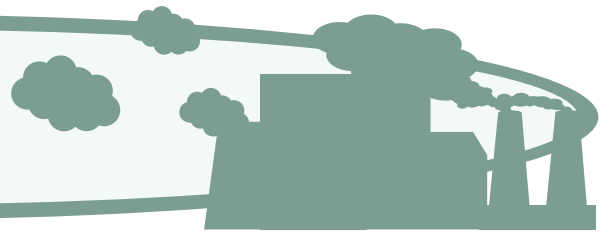
A, C, G

總懸浮粒子 Total suspended particulates

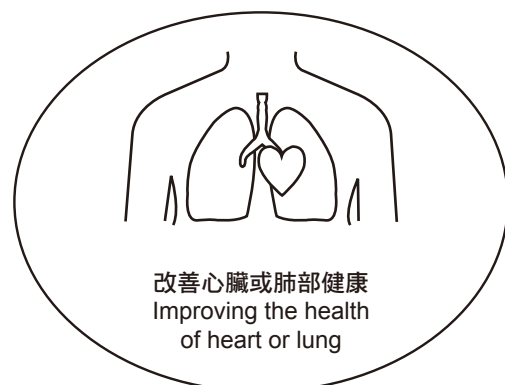
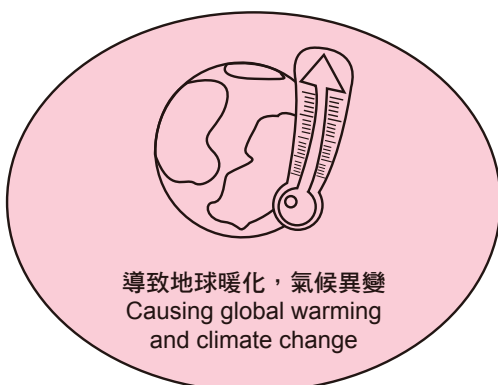
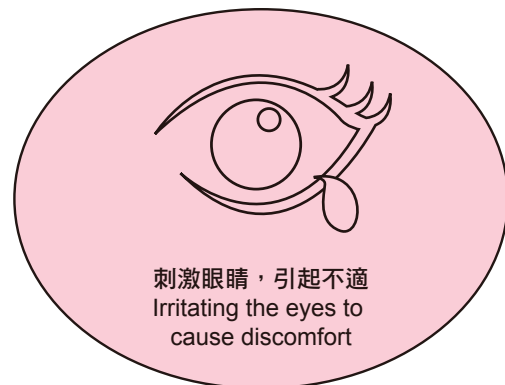
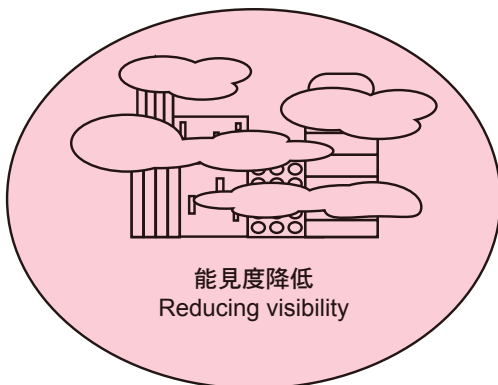
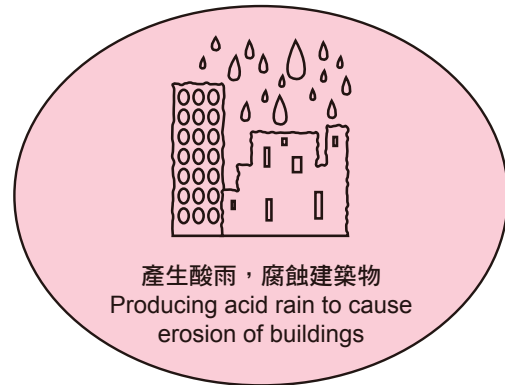
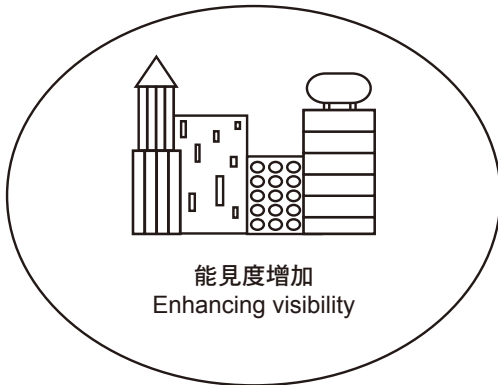
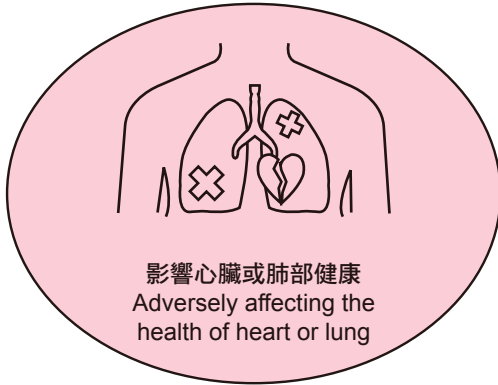
A, B, C

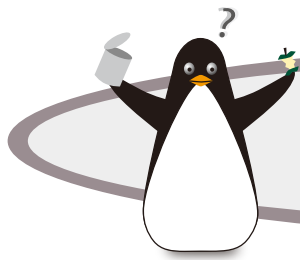


空氣故事 Air Story



2. 空氣污染對我們及地球有甚麼影響呢？試把這些影響填上顏色。
What are the impacts of air pollution on human beings and our planet? Colour them.





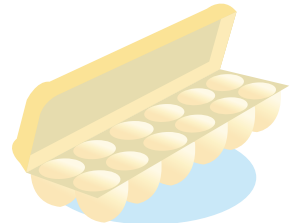
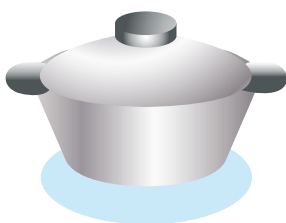
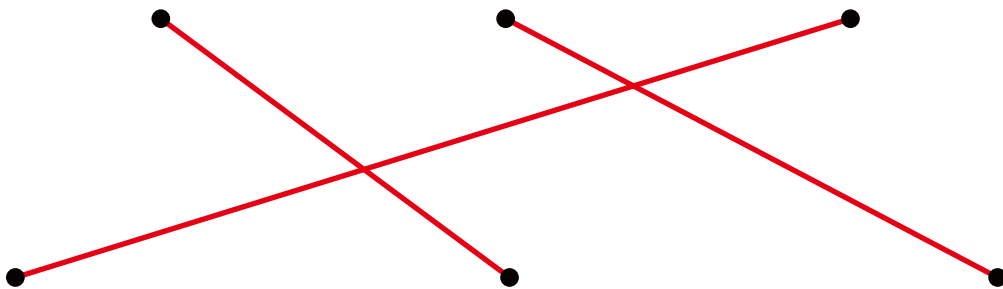
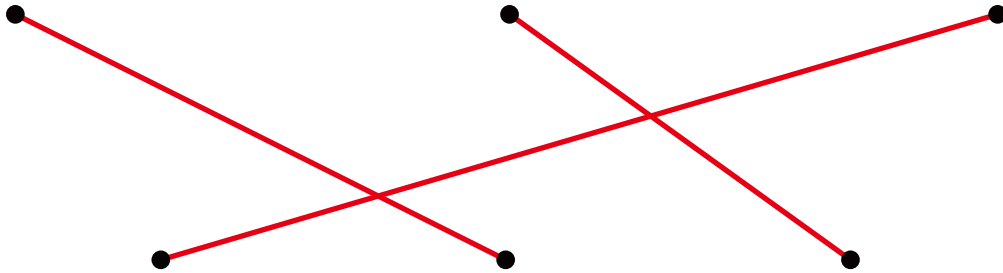
廢物故事 Waste Story



1. 你知道收集廢紙、舊金屬和塑膠的回收桶是甚麼顏色嗎？

試把以下回收桶填上適當的顏色，並把下面將要棄掉的物品放到適當的回收桶內。

Do you know what colours are used to identify waste separation bins for waste paper, used metals and plastics respectively? Colour the bins below appropriately, and dispose the following articles in the proper waste separation bins.



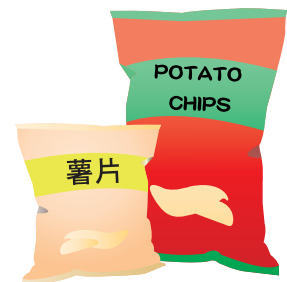
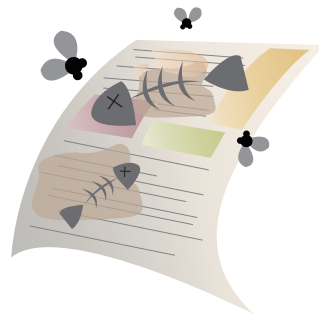
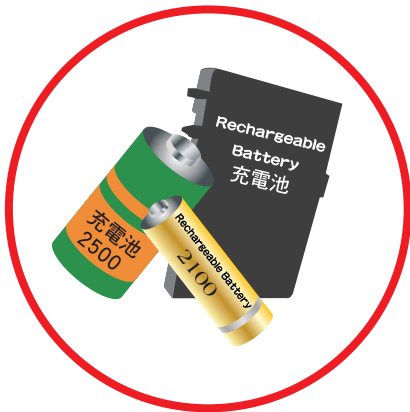
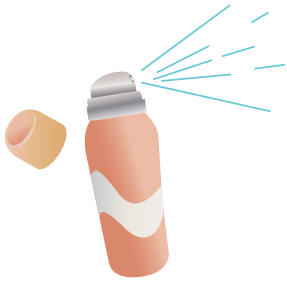


廢物故事 Waste Story



2. 除以上東西外，還有很多物品是可被回收再用的，試把它們圈起來。

Apart from the articles above, there are many more articles that can be collected for recycling. Circle them





廢物故事 Waste Story



3. 除了回收廢物，我們還應該學習如何將廢物再利用。試找尋一件即將廢棄的東西，並運用你的創意把它重新變成有用的物件吧！

Besides recycling, we should learn to reuse wastes so that they can become useful again. Find an article you are going to dispose of and turn it to a useful thing with your creativity!

4. 除了循環再用及物盡其用外，試想想在日常生活中，你還可以實踐哪些廢物管理概念呢？
In addition to recycling and reusing, can you think of any other waste management concepts in our daily life?

減少使用、替代使用、修復重用（或任何合理答案）

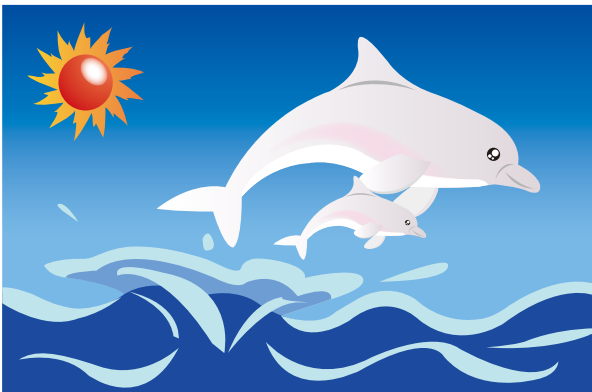
Reduce, replace, repair (or any other reasonable answers)



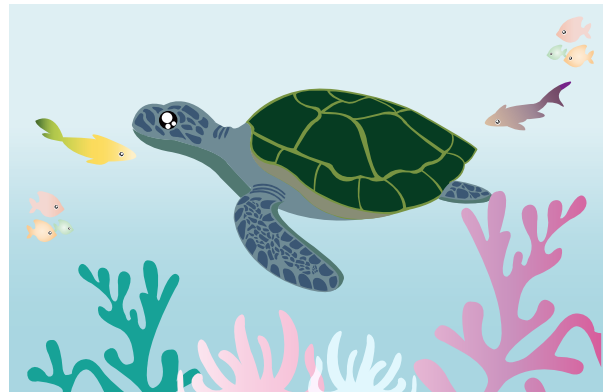
生物故事 Life Story

1. 瀕危物種指一個因濫捕濫殺、環境破壞、數量稀少、棲息地空間不足等原因導致有滅絕危機的物種。以下是一些會在香港出現的瀕危物種，你知道牠們是誰嗎？

Endangered species means a species that is at risk of extinction due to excessive hunting and killing, environmental destruction, rarity in number and limited space of habitat, etc. Below are some endangered species inhabiting in Hong Kong. Do you know who they are?



中華白海豚 Chinese White Dolphin



綠海龜 Green Sea Turtle



盧氏小樹蛙 Romer's Tree Frog



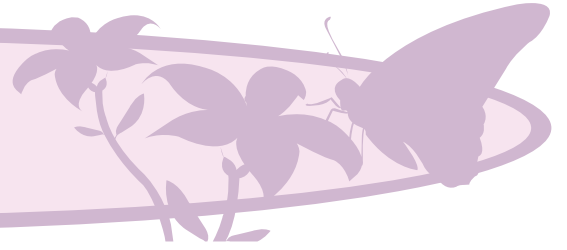
黑臉琵鷺 Black-faced Spoonbill

你願意承諾不購買或進食瀕危物種或其相關的製成品，為保護生態出一分力嗎？

Are you willing to promise not to purchase or consume food or related products made of endangered species so as to contribute a little for ecological conservation?



生物故事 Life Story



2. 你知道植物各個部份的功能和下列蔬果是屬於植物哪一個部份嗎？試把以下三項的資料正確連起來！
Do you know the functions of various parts of a plant and to which part of a plant the following fruits and vegetables belong? Link up the information on the following three columns correctly!

不同植物部份的功能 Functions of different parts of a plant

將水分、養料和食物輸送到植物的各部份
To deliver water, nutrients and food to all parts of a plant

保護內部的種子
To protect the seeds inside

吸引小動物傳播花粉、結成果實
To attract small animals to spread pollen

含有葉綠素，能利用陽光製造養分
To contain chlorophyll which produces nutrients with sunlight

會長出新的植物
To grow a new plant

固定植物在地上及吸收土壤的水分和養料
To fix a plant to the ground, and absorb water and nutrients from soil

植物部份 Parts of a plant



花
Flower



莖
Stem



葉
Leaf



根
Root

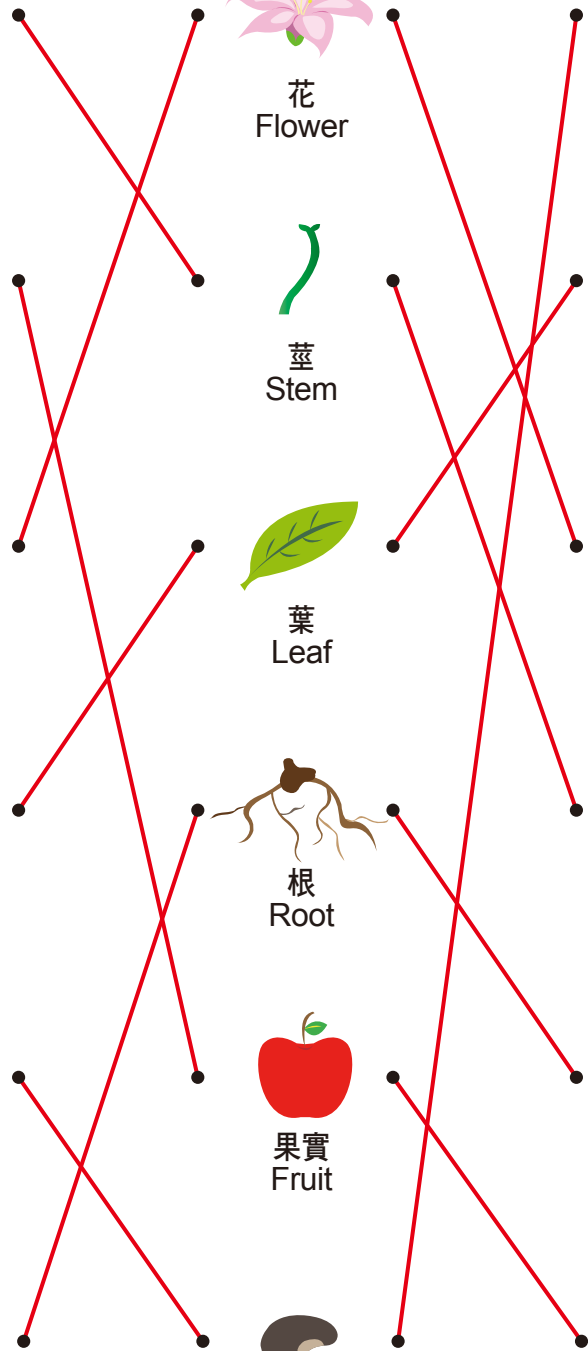


果實
Fruit



種子
Seed

蔬果 Fruits & Vegetables





生物故事 Life Story

3.

二式檢索表是生物學上用來鑑別動植物的常用工具，要製作二式檢索表，我們需要採用二分法的概念和方法。二分法是透過觀察動植物在構造、形態或機能上的不同而作出分類的方法。透過選用某準則（即動植物的特徵），將擁有這些特徵的動物或植物歸類為一組，把沒有這些特徵的撥入另一組，透過不斷重複這個步驟，最後你便可將不同的動植物分門別類了。

“Dichotomous key” is a tool commonly used for identification of plants and animals in biology. To make a dichotomous key, we need to employ the concept and method of dichotomy. Dichotomy classifies plants and animals according to the difference in structure, form or function through observation. By selecting a criterion (i.e. a characteristic of a plant or animal), those possessing this characteristic are categorised into one group while those having no such characteristic are classified as another group. By repeating this procedure for classification based on different characteristics, one can classify all different plants and animals under different categories in the end.

現在試在後頁使用二分法將以下的動物分辨出來！

Turn to next page and differentiate the following animals by using the method of dichotomy!



領角鴞
Collared Scops Owl



香港鬥魚
Hong Kong Paradise Fish



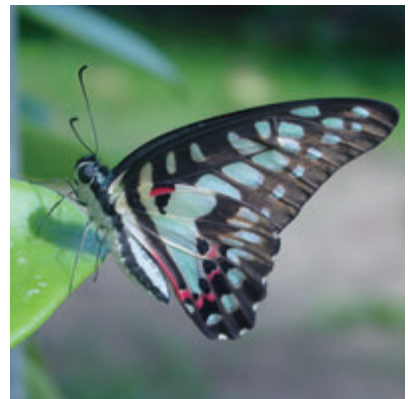
獼猴
Monkey



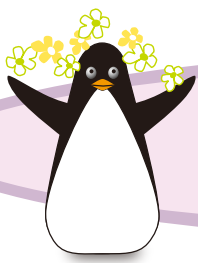
金錢龜
Three-banded Box Terrapin



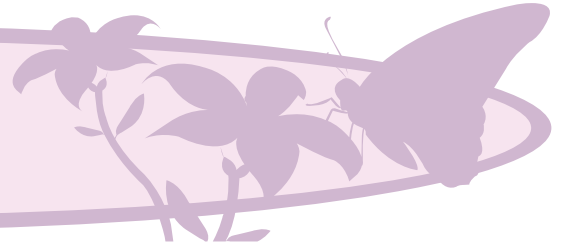
盧氏小樹蛙
Romer's Tree Frog



木蘭青鳳蝶
Common Jay

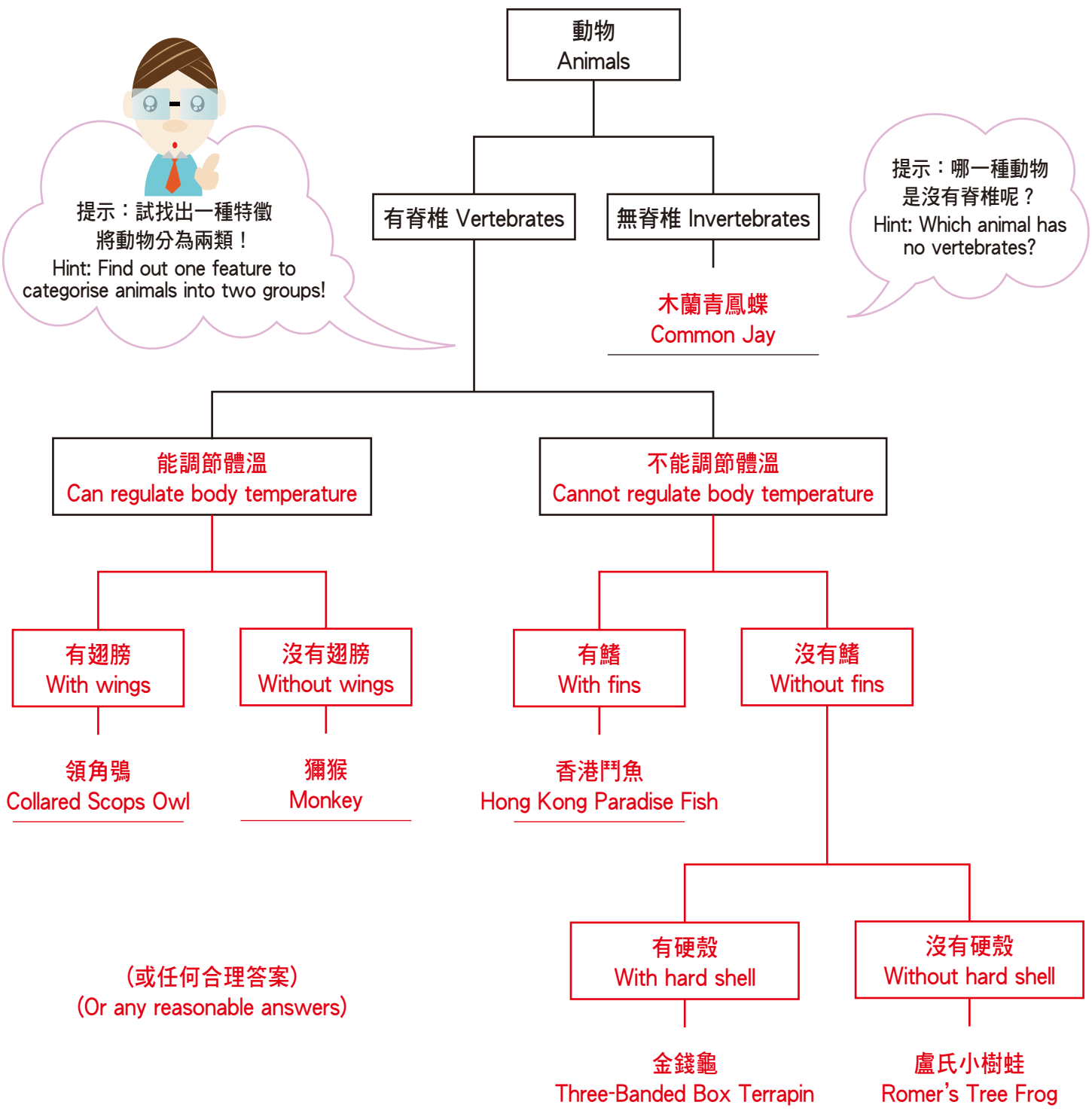


生物故事 Life Story



提示：試找出一種特徵
將動物分為兩類！
Hint: Find out one feature to
categorise animals into two groups!

提示：哪一種動物
是沒有脊椎呢？
Hint: Which animal has
no vertebrates?



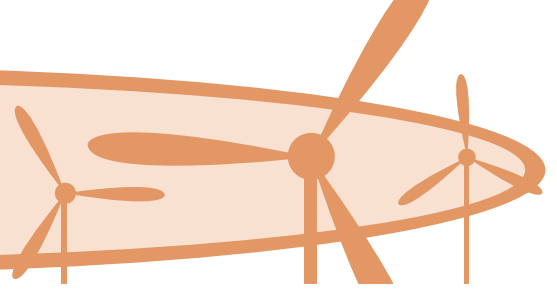
延伸活動 Extended activities

試到郊外或公園觀察不同的動物，並選出6種動物及拍下其照片，然後使用二分法做一個簡易的檢索表，將動物分類。

Observe different animals in the countryside or a park. Choose six kinds of species and take photos for them. Then classify these animals by making a dichotomous key.

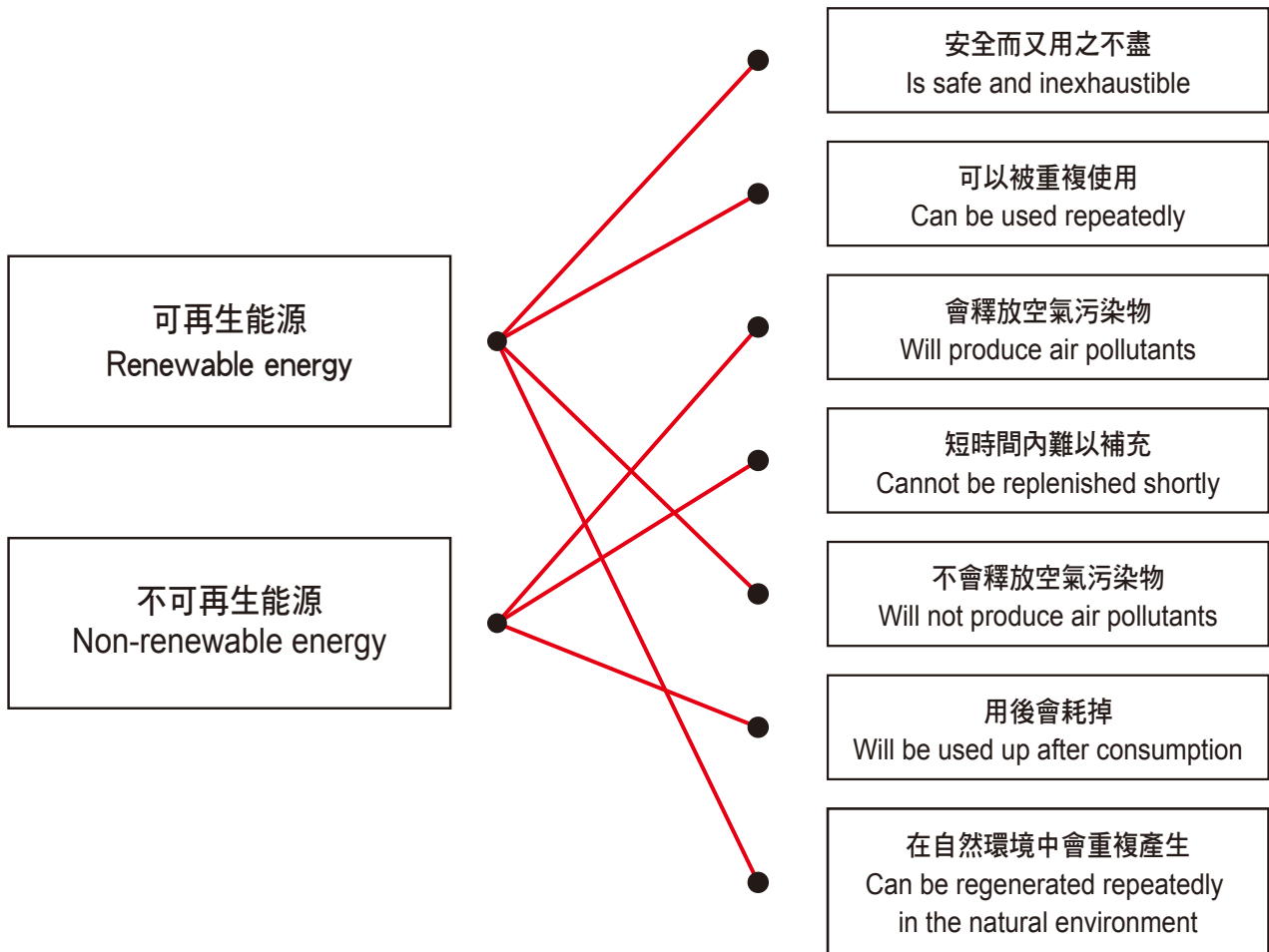


能源故事 Energy Story



1. 能源與我們息息相關，為我們提供熱力和電力。你知道能源分為「可再生能源」和「不可再生能源」嗎？試把左右兩方的資料正確地連起來。

Energy is closely related to mankind because it gives us heat and electricity. Do you know it can be divided into “renewable energy” and “non-renewable energy”? Link up the information on both sides correctly.



試分別寫出三種可再生能源及不可再生能源的例子。

Please list three examples of “renewable energy” and “non-renewable energy” respectively.

可再生能源的例子 Examples of renewable energy :

生物質能、潮汐能、風能、太陽能（或任何合理答案）

Biomass energy, tidal energy, wind energy, solar energy (or other reasonable answers)

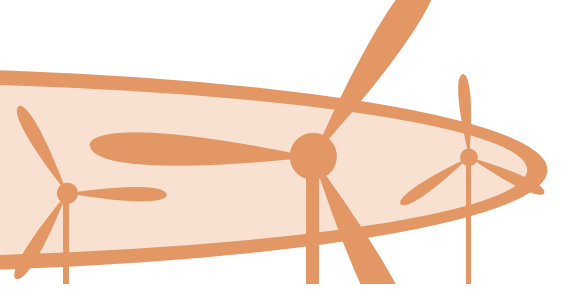
不可再生能源的例子 Examples of non-renewable energy :

煤、石油、天然氣、核能（或任何合理答案）

Coal, petroleum, natural gas, nuclear energy (or other reasonable answers)

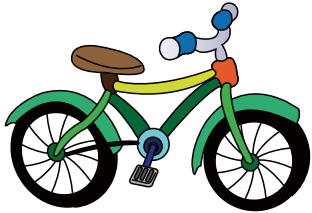


能源故事 Energy Story

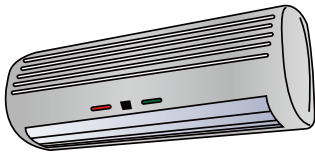
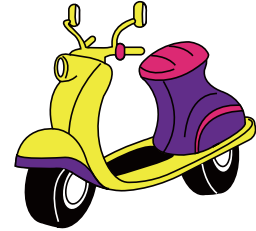


2. 你知道下列哪一項對能源的消耗較少？試在旁邊加上（✓）

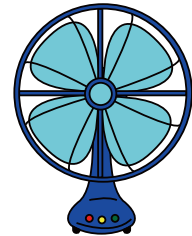
Which kind of behaviour or articles below consume less energy? Put a "✓" beside them.



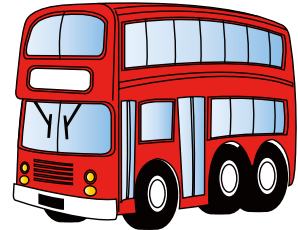
VS



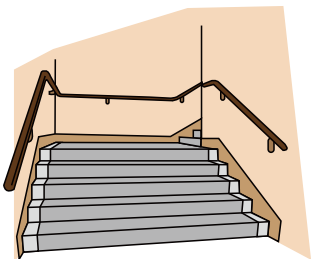
VS



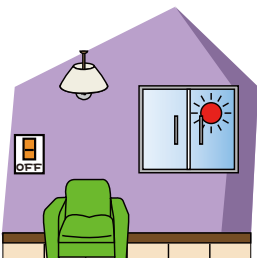
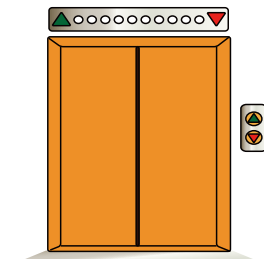
VS



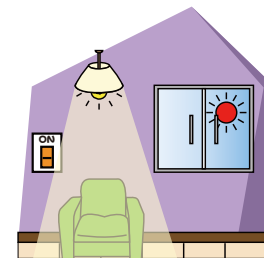
VS



VS



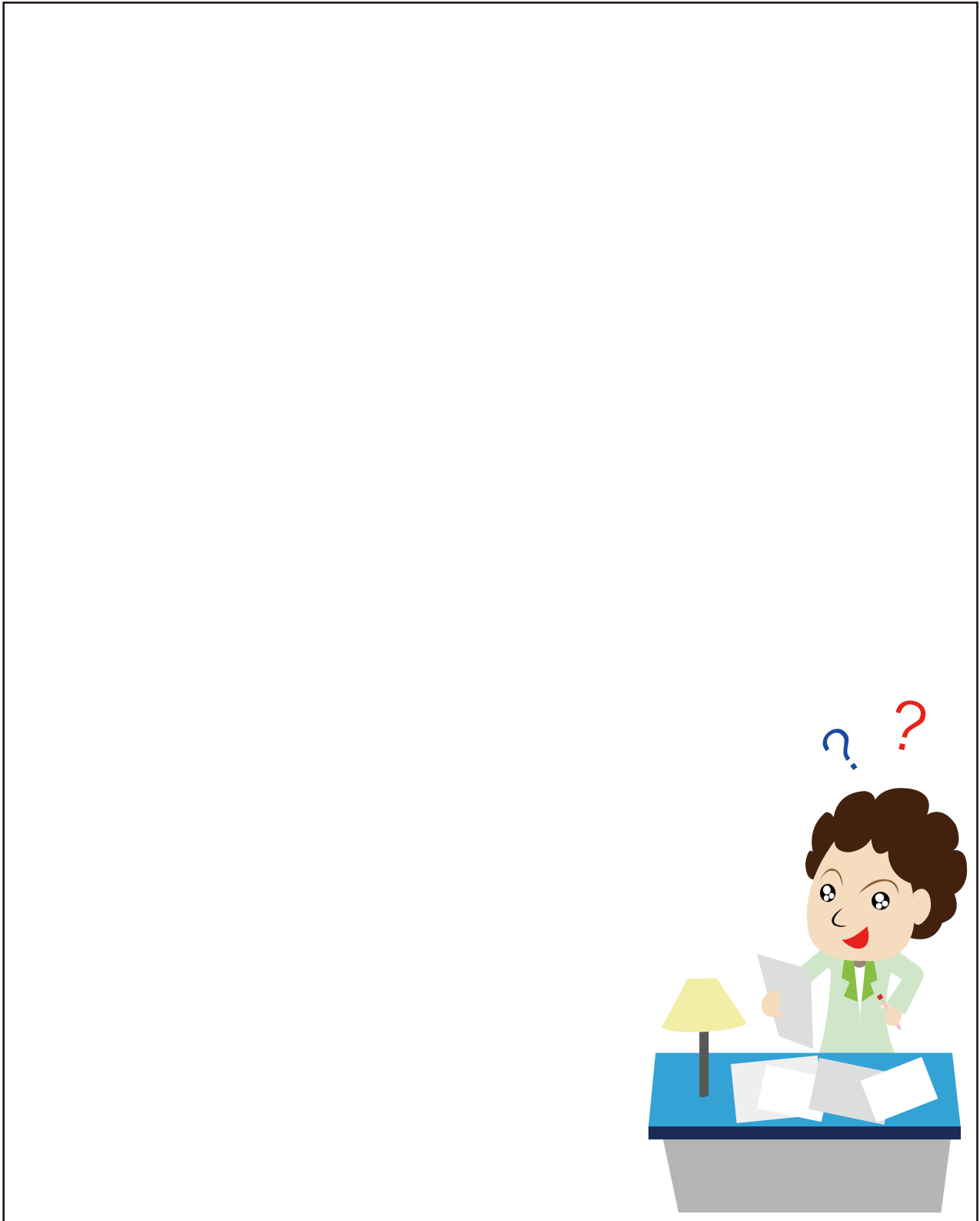
VS

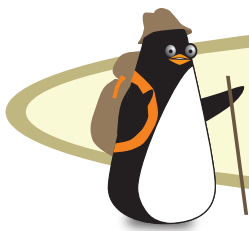




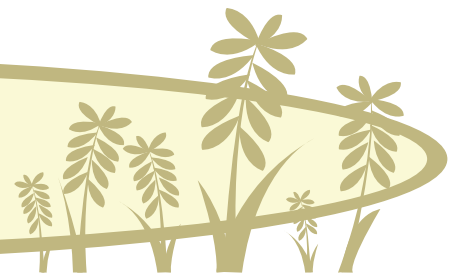
3. 假如你是一名環保汽車工程師，試設計一款既環保又時尚的汽車，並就外型、所需燃料、製造物料等方面加以描述吧！

Imagine you are an environmental engineer on motor vehicles and you are going to design a fashionable and environmentally-friendly car. Describe the shape, fuel required and materials for manufacturing etc. of this green vehicle.





土地故事 Land Story



有機耕種 Organic Farming

1. 以下是一些有關有機耕作的描述，你可以把下方的詞彙正確地填回其描述旁嗎？

The following terms are commonly used in organic farming. Do you know what their functions are? Link up the correct and corresponding information on both sides.

輪作 Crop Rotation	間種 Intercropping	綠肥 Green Manure
適時種植 Planting of seasonal crops	有機堆肥 Organic Compost	

- i. 在同一幅土地上，同時種植超過一種的農作物。

It is the practice of growing more than one kind of crop simultaneously on the same land.

間種
Intercropping

- ii. 在適當的氣候（季節）種植適當的植物，令植物更健康及減少蟲害。

To plant seasonal crops during appropriate climate (season) will grow more healthy plants with less threats from pest and disease.

適時種植
Planting of seasonal crops

- iii. 在不同季節將不同的農作物輪流種植在同一幅土地上。

It is the practice of growing a series of different kinds of crops on the same land in different seasons.

輪作
Crop Rotation

- iv. 利用一些生長迅速，容易腐爛的植物，如豆科植物作肥料。

To use some plants easy to grow and decompose like legumes as fertiliser.

綠肥
Green Manure

- v. 利用可被生物降解的有機物製成的天然土壤改良劑。

To use biodegradable organic matters for making natural soil conditioner.

有機堆肥
Organic Compost



土地故事 Land Story



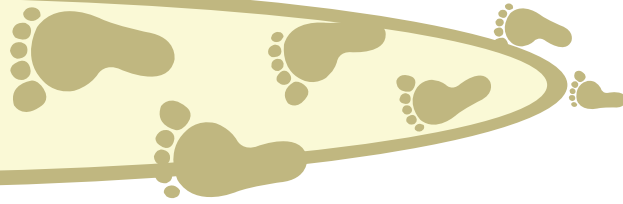
2. 有機農夫需要使用不同的天然方法令泥土更肥沃及防治害蟲。試在下圖中，把可用作天然肥料的東西寫上（✓）、可用來防治蟲害的寫上（○）及可改善泥土健康的寫上（△）。

Organic farmers need to use different natural ways to improve soil fertility and pest control. In the following diagrams, put a proper symbol beside each material appropriately: a (✓) stands for a natural fertiliser, a (○) stands for something used for pest control and a (△) stands for something used for improving soil condition.





土地故事 Land Story



生態足印 Ecological Footprint

生態足印是一種量度人類對生態系統需求的指標。日常生活中如乘搭交通工具、飲食、旅行、購物等，都需要生態系統中若干面積的土地和水域，提供天然資源以供耗用和吸納人類所產生的廢物。生態足印越大，表示對生態資源的需求越高。計算生態足印有助我們了解及比較不同地方對生態資源的需求，從而制訂有效的環保政策並達到永續發展的生活模式。

Ecological footprint is an indicator used to measure the human demands on resources from the ecological system. All kinds of activities in our daily life such as taking transportation, dieting, travelling and shopping consume natural resources from certain area of land and waters in the ecological system. Sufficient space is also required for disposal of wastes after consumption. The larger the ecological footprint, the higher level of ecological resources is demanded. Calculation of ecological footprint helps us understand and compare the human demands on ecological resources from different places, and consequently, enable us to work out and implement effective environmental protection policies so as to achieve a sustainable lifestyle.



現試回答以下問題，看看你對生態足印的認識如何。

Answer the following questions to see how much you know about ecological footprint.

1. 你知道生態足印的單位是甚麼嗎？

Do you know what unit of measurement is used for ecological footprint?

地球公頃 Global hectare

2. 你知道香港的生態足印的主要來源在哪裡？

Do you know what the major contributor to Hong Kong's ecological footprint is?

食物 Food (21%, 2019)



土地故事 Land Story

3. 試想想在家中及學校裏可做些甚麼以減少生態足印？試各舉兩個例子。
Think how we can make the ecological footprint smaller at home and in school.
Give two examples for each situation.

家中 At home:

在不需要時關掉電器、使用具能源效益的電器、少吃肉（或任何合理答案）

Switch off electrical appliances when not in use, use energy efficient electrical appliances, eat less meat (or any other reasonable answers)

學校 In school:

課室沒有人時把燈關掉、減少午餐食物浪費、步行或騎自行車去學校（或任何合理答案）

Switch off lights in empty classrooms, reduce lunch food waste, walk or bike to school (or any other reasonable answers)

4. 以下哪項會增加生態足印？
Which of the following activities will enlarge the ecological footprint ?

廢物利用或循環再用
Reusing or recycling of wastes

增加 / 減少
enlarge / reduce

多吃蔬菜及少吃肉類
Eating more vegetables and less meat

增加 / 減少
enlarge / reduce

排放污染物及溫室氣體
Emission of pollutants and greenhouse gases

增加 / 減少
enlarge / reduce

過度砍伐及捕撈
Over-logging and excessive fishing

增加 / 減少
enlarge / reduce

人口增加
Increase in population

增加 / 減少
enlarge / reduce



水的故事 Water Story

污水處理 Wastewater Treatment

1. 我們日常生活中會產生很多廢水，但廢水其實可再回收作其他用途。作為愛惜食水的你，試寫下兩個回收廢水再用的例子：

A lot of wastewater will come out in our daily life. In fact, wastewater can be collected for reusing. Being a person treasures water, please cite two examples of reusing wastewater:

1. 洗米用的水可用來沖廁 To flush toilet with water used to clean rice 2. 洗菜用的水可用來灌溉盆栽 To water domestic plants with water used to clean vegetables (或任何合理答案 or any other reasonable answers)

2. 你知道以下的廢物是如何被阻隔出來嗎？試把以下廢物和所使用的工具連接起來。

Do you know how the following wastes are separated? Link the following wastes up with the tools separating them.

廢物類型 Waste types		阻隔廢物所使用的工具 Tools for separating the wastes
大砂石 Coarse sandstone		粉狀活性炭 Activated carbon powder
幼砂 Fine sand		濾紙 Filter paper
溶解在水中的顏料 Colours dissolved in water		隔茶網 Tea leaf separator

為甚麼這三種工具可阻隔以上的廢物呢？

Why can these three tools separate the above wastes?

隔茶網的濾孔最大，體積大於其濾孔的大砂石不能通過。濾紙的濾孔更細小，只容許液體通過，而幼砂會被濾紙阻隔。活性炭表面有很多微細的小孔，能夠吸附溶解在水中極細小的顏料粒子。 The holes on the tea leaf separator are the largest. Particles with size larger than its holes, such as coarse sandstone, cannot pass through it. The holes on the filter paper are smaller and only allow liquid to pass through. Fine sand can be retained by the filter paper. There are many fine pores on the surface of activated carbon powder, which can absorb very small pigment particles that are dissolved in water.

試利用以上材料，構思一個處理污水的實驗，並在學校進行該實驗吧！

Design a sewage treatment experiment using these materials and conduct it in your school!



水的故事 Water Story

3. 水對於人類極為重要！我們飲用、沐浴、煮食、洗衣、沖廁及做很多事情，均需要水。但隨着世界人口增加及社會發展，地球部分地方已出現乾淨食水短缺的情況。你每天的用水模式是如何的呢？試完成以下問題，看看你有否珍惜地球的水資源吧！

Water is extremely important to human beings! Water is necessary for a variety of activities in our daily life like drinking, bathing, cooking, laundry, toilet flushing and so on. With increased global population and social development, shortage of clean water has become a problem in many places. What is your pattern of using water every day? Answer the following questions to see if you treasure the water resources on Earth!

i. 用水洗手時，你是否只會把水龍頭開至適中夠用的程度？

Will you only turn on the tap to an optimum level which is sufficient for washing hands?



A. 是 Yes



B. 不是 No

ii. 洗完手後，你是否總會把水龍頭完全關上？

Do you always turn off the tap completely after washing hands?



A. 是 Yes



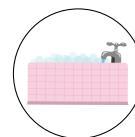
B. 不是 No

iii. 你是用甚麼方法洗澡的？

Which is your way of bathing?



A. 花灑 Taking a shower



B. 浸浴 Taking a bath

iv. 如水喉管漏水，你會否告訴父母安排把它修妥？

If there is leakage of water pipe, will you ask your parents to fix it?



A. 會 Yes



B. 不會 No

v. 你有否試過收集廢水再用？

Have you ever collected waste water for reusing?



A. 有 Yes



B. 沒有 No

vi. 你從沒試過污染河流？

You have never polluted a river, have you?



A. 是 Yes



B. 不是 No

vii. 你是否只會在洗衣機盛滿衣服後才開機洗衣？

Will you start a washing machine for laundry only when dirty clothes are in full load?



A. 是 Yes



B. 不是 No

在測試中，如答案中有：

6至7個A：非常好，你很愛惜水資源！繼續保持節約用水的好習慣吧！

4至5個A：做得好，繼續找尋更多可節約用水的方法吧！

1至3個A：繼續努力！試從日常生活著手，學習愛惜水資源及節約用水吧！

If you get:

6 to 7 As: "You have done very well and treasure water resources much! Keep it up to save water!"

4 to 5 As: "Well done! Keep it up to explore more ways to save water!"

1 to 3 As: "You need to continue to put efforts in this way! Learn to treasure water resources and save water in your daily life!"