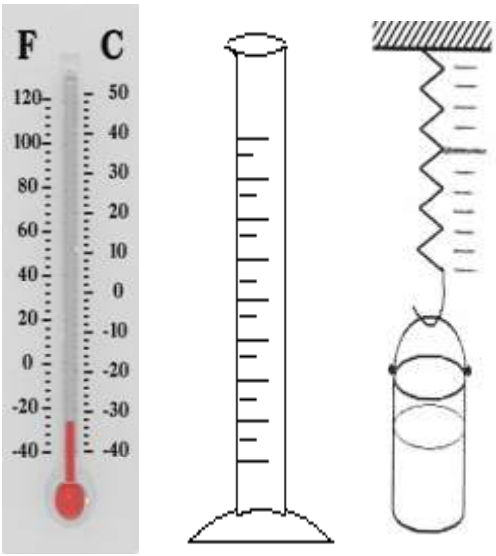
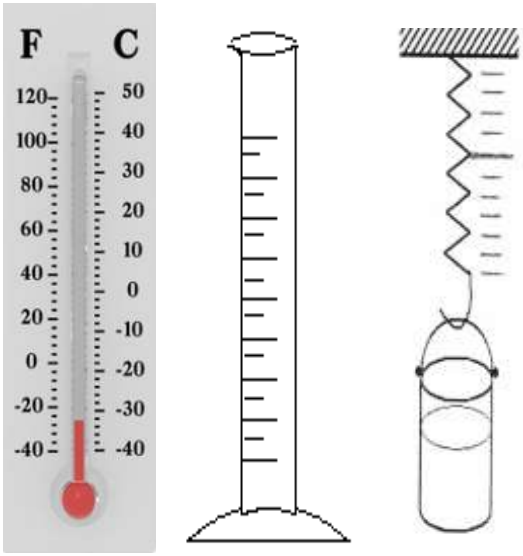
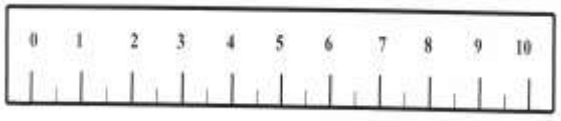
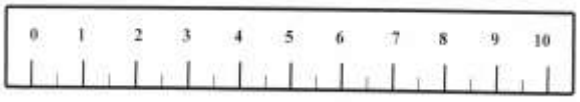
單元一： 物質	Unit 1: Matter
主要觀念: 1.1：測量，比較以及記錄物質的性質；使用 *標準（公制）以及非標準單位 *適當的工具 1.2：描述及比較物質的性質 （大小，形狀，質量/重量，體積，顏色，質地，味道，等等。）	Key Ideas: 1.1: Measure, compare and record physical properties of objects using: *Standard (metric) and nonstandard units *Appropriate tools 1.2: Describe and compare the physical properties of matter (size, shape, mass/weight, volume, color, texture, odor, etc.)
單元大綱	**Unit Overview**
量長度，水量及體積都有不同的工具。溫度計量氣溫。天平量質量。彈簧秤量重量。標準單位是一個大家都接受的度量單位。科學家一般都用公制。 什麼叫做物質？所有佔據空間的都叫物質。物質不但佔據空間並且有質量。質量就是一個東西裏所包含的物質有多少。一個物質有不同的性質。你用感覺去探究物質的性質。不同的物質有不同的性質。	There are different tools to measure the length or volume of a liquid or a solid. A thermometer measures temperature. A pan balance measures mass. A spring scale measures forces. A standard measure is an accepted measurement. Scientists use the International System of Measurements. It is called the Metric System. What is matter? Everything that takes up space is matter. Matter not only takes up space but also has mass. Mass is the amount of matter something contains. There are physical properties of matter. You use your senses to detect physical properties. You can tell one object from another by their physical properties.

單元一： 物質	Unit 1: Matter
關鍵問題：物質的性質是什麼?	Essential Question: What are some of the properties of matter?
主要觀念 1.1：測量，比較以及記錄物質的性質；使用 *標準（公制）以及非標準單位 *適當的工具	Key Idea 1.1: Measure, compare and record physical properties of objects using: *Standard(metric) and nonstandard units *Appropriate tools
科學名詞：1. 特性 2. 質量	Scientific Terms: 1. property 2. mass
內容： 全世界的科學家都用同樣的度量系統，這樣可以互相了解別人所作的實驗。 在教室中做實驗的時候所需的六種工具： *公制尺：測量高度，長度，及寬度 *彈簧秤：測量重量 *天平：測量質量 *溫度計（華氏及攝氏）：測量溫度 *量筒及量杯：測量體積 *燒杯： **溫度計　　量筒　　彈簧秤** 	Content: Scientists throughout the world use the same measuring systems so they can understand each other's experiments. 6 tools you might use in a classroom experiment: * metric ruler: to find height, length, width * spring scale: to find weight *pan balance: to find mass * Fahrenheit(F) and Celsius (C) thermometers: to find temperatures * graduated cylinders and measuring cups: to find volume * beakers: **thermometer　　graduated cylinder　　spring scale** 

量杯　　天平   公制尺 科學家把他們在觀察中所收集的資料作成圖表。把資料作成圖表可以很容易看到一個規律。科學家看到規律以後就可以解釋，或了解他們的資料。 科學家把他們做實驗所用的材料，步驟及觀察寫在筆記裏。這個筆記可以幫助別的科學家做同樣的實驗，驗證實驗的結果。	**measuring cup**　　**pan balance**   **metric ruler** Scientists plot their data (the information gathered from their observations) on graphs. Graphing the data helps to show patterns. Finding patterns helps scientists interpret, or understand, their data. Scientists keep journals to record observations, the materials they used in the experiment and the steps they followed. The recorded information helps the other scientists repeat the experiment, so they can check the results themselves.
複習： 1. 為什麼全世界的科學家都用同樣的度量系統？ 2. 你在教室裏做實驗需要那六種工具？ 3. 從圖表可以看到資料的什麼東西？	Review: 1. Why do scientists around the world use the same measuring systems? 2. What are six tools you might use in a classroom experiment? 3. What do graphs help to show about data?

單元一： 物質	Unit 1: Matter
關鍵問題：物質的性質是什麼?	Essential Question: What are some of the properties of matter?
主要觀念 1.2：描述及比較物質的性質 （大小，形狀，質量/重量，體積，顏色，質地，味道，等等。）	Key Idea 1.2: Describe and compare the physical properties of matter (size, shape, mass/weight, volume, color, texture, odor, etc.)
科學名詞：1. 物質	Scientific Terms: 1. matter
內容： 特性：一種可以被觀察到的東西就叫性質。大小，形狀，顏色，硬度，味道，重量都是一樣東西的性質。 物質：凡是佔據空間以及有質量的就是物質。物質由微粒組成，這些微粒的特性可以由我們的感官觀察得到。物質包括：你，你的衣服，你腳下的人行道。幾乎所有的東西都是物質。只要你可以嚐到，聞到，或觸摸到的東西都是物質。就算一陣微風也是物質，因爲空氣也佔有空間。你吹了一個氣球，你吹到氣球裏的空氣把氣球漲大，在氣球裏的空氣佔據了空間。 什麼不是物質？熱，光，以及想法都是非物質的例子。它們雖然存在但是不佔據空間。 什麼是質量？物質不但佔據空間而且有質量。質量就是一個一個東西所含有的物質。質量可以由天平測量出來。質量的單位是公克。一個東西的質量越多，它就越重。一個東西的質量也是它的一種特性。其它的特性包括外形和組織結構。 體積：一個物質所佔據的空間就是體積。	Content: Property: A property is what can be observed about an object. Size, shape, color, hardness, taste and weight are properties of an object. What is matter? Everything that takes up space and has mass is matter. Matter is made up of particles that have properties that can be observed through our senses. This includes you, your clothes and the sidewalk under you. Just about everything is matter. If you can taste, smell, or touch something, it is matter. Even a breeze is matter because air takes up space. You prove that when you blow up a balloon. The air you blow into the balloon pushes out its sides. The air inside the balloon takes up space. What is not matter? Heat, light, and ideas are examples of things that are not matter. Even thought they exist, they don't take up any space. What is mass? Matter not only takes up space but also has mass. Mass is the amount of matter something contains. Mass is measured with a balance. Mass is measured in grams. The more mass it has, the heavier it is. The mass of an object is one of its physical properties. Other physical properties include an object's look and texture. Volume: It is the amount of space that matter takes up.

顏色，形狀，及質地：你用你的感覺去找出這些性質。 長度，寬度，體積，大小，形狀，質量或重量，及溫度都是物質的性質，這些性質可以幫助我們描述一樣東西。 一個橘子的性質： *表皮凹凸，是軟的—去觸摸時 *圓球狀，是橘色的—去看的時候 *聽到清脆剝落的聲音—去剝開時 *聞到橘子的味道 —去聞的時候 *甜的還是酸的 —去吃的時候	Color, shape, and texture: You use your senses to detect these physical properties. Length, width, volume, size, shape, mass or weight, and temperature are also properties that help us describe an object. Properties of an orange: * bumpy texture, feels soft – when you touch it * round or spherical, an orange color – when you look at it * hear a crisp, ripping sound – when you peel it * smells like an orange – when you smell it *tastes sweet or sour – when you taste it
複習： 1. 什麼叫做物質，舉三個例子。 2. 什麼叫做質量，舉兩個例子，一個有很多質量一個很少質量。 3. 試描述一根香蕉，一個桌子的性質。	Review: 1. What is matter? Give three examples. 2. What is mass? Name one object with a lot of mass and one with little mass. 3. What physical properties could you use to describe a banana, a desk?

答案：	Answer Key
單元 一： 1.1 1. 全世界的科學家都用同樣的度量系統，這樣可以互相了解別人所作的實驗。 2. 這六種工具是：公制尺，彈簧秤，天平，溫度計（華氏及攝氏），量筒及量杯，燒杯。 3. 把資料作成圖表可以很容易看到一個規律。科學家看到規律以後就可以解釋，或了解他們的資料。 1.2 1. 凡是佔據空間以及有質量的就是物質。物質可以由我們的感官觀察得到。只要你可以嚐到，聞到，或觸摸到的東西都是物質。你的衣服，一陣微風，你腳下的人行道，都是物質的例子。 2. 物質佔據空間而且有質量。質量是一個東西含有的物質。質量可以由天平測量出來，它的單位是公克。一個東西的質量越多它就越重。一個高爾夫球的質量很多，一個桌球的質量很少。 3. 香蕉的性質：去觸摸時，表皮光華；去看時，是條形，黃色；去聞的時候，聞到香蕉的味道；去吃的時候，很甜很軟。 一個桌子的性質：去觸摸時，是涼的，很硬但是平滑；去看時，有不同的形狀，有高有矮；去推時，有些重。	Unit 1: 1.1 1. Scientists throughout the world use the same measuring systems so they can understand each other's experiments. 2. The six tools are: metric ruler, spring scale, pan balance, Fahrenheit and Celsius thermometers, graduated cylinders and measuring cups, and beakers. 3. Graphing the data helps to show patterns. Finding patterns helps scientists interpret, or understand, their data. 1.2 1. Everything that takes up space and has mass is matter. Matter can be observed through our senses. If you can taste, smell, or touch something, it is matter. Your clothes, a breeze, and the sidewalk under you, are examples of matter. 2. Matter takes up space and has mass. Mass is the amount of matter something contains. Mass is measured with a balance, in grams. The more mass something has, the heavier it is. A golf ball has more mass; a table tennis ball has little mass. 3. A banana: When you touch it- smooth texture; when you look at it- long and yellow; when you smell it- smells like a banana; when you taste it- tastes sweet and soft. A desk: When you touch it- it's cool, hard but flat and smooth; when you look at it- it has different shapes, some high and some low; when you push it- it has some weight.