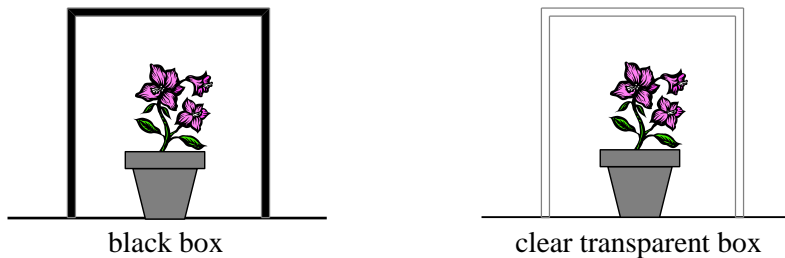


2017 SAT Sample Questions

SECTION A

This section consists of 24 multiple-choice questions. Choose the best answer for each question.

4. Samuel carried out an experiment to find out whether plants would grow healthier in bright environment or in dark environment. He covered two potted plants, one with a black box and the other with a clear transparent box, as shown in the diagrams below. He then observed the plants daily for two weeks.



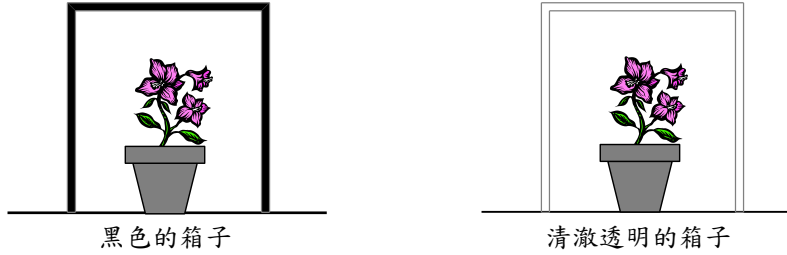
Which of the following measures should Samuel take in order that the experiment can give meaningful results?

- (1) Holes should be punched near the bottom edges of the boxes.
 - (2) The soil in the pots should be treated with fertilisers before the experiment.
 - (3) The set-ups shown above should be placed under sunlight.
- A. (1) only
B. (2) only
C. (1) and (3) only
D. (2) and (3) only

甲部

本部共設 24 題多項選擇題。選出每題最佳的答案。

4. 炳良做一個實驗以找出植物在光亮環境還是在黑暗環境中生長得較健康。他用兩個箱子(一個是黑色的,而另一個是清澈透明的)蓋著兩盆植物,如下圖所示。在隨後兩星期,他每天觀察這些植物。

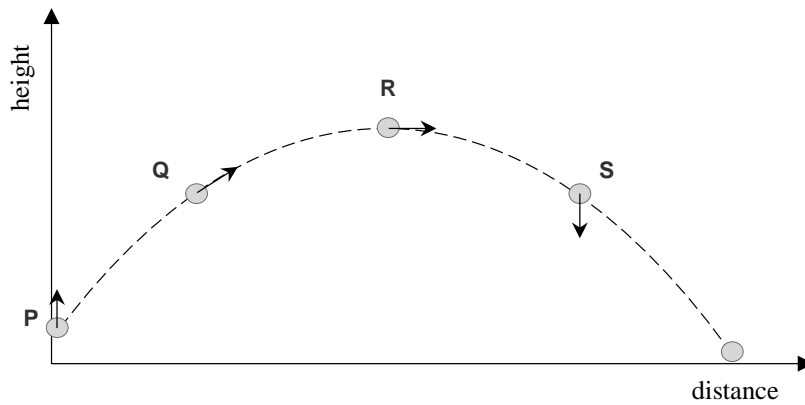


若要得到有意義的實驗結果,炳良應採取下列哪項或哪些措施?

- (1) 必須在各箱子的周圍近底部處鑽上孔洞。
- (2) 進行實驗前,必須在盆中的泥土施肥。
- (3) 應把上圖所示的裝置放在陽光下。

- A. 只有 (1)
- B. 只有 (2)
- C. 只有 (1) 和 (3)
- D. 只有 (2) 和 (3)

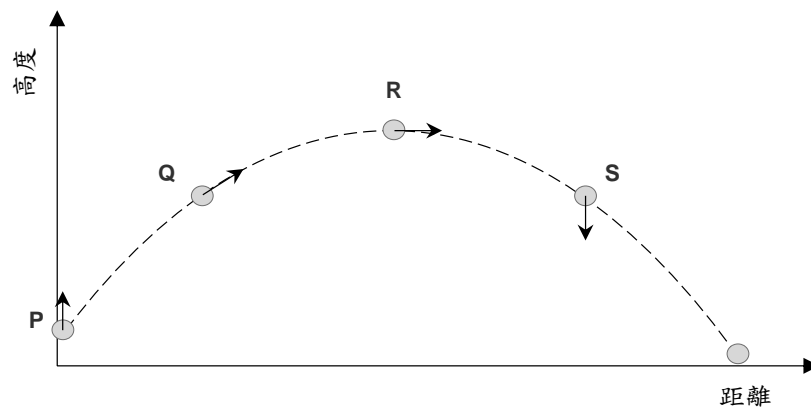
7. Toby throws a ball in air at an angle. The diagram below shows the path of the ball and four positions, **P**, **Q**, **R** and **S**, of the ball along the path:



In which of these positions, does the arrow represent the direction of the force acting on the ball? (Assume that there is no air resistance.)

- A. **P**
- B. **Q**
- C. **R**
- D. **S**

7. 國強以某角度向空中擲出一球。下圖顯示球的途徑，以及球在該途徑中的四個位置（**P**、**Q**、**R** 和 **S**）：



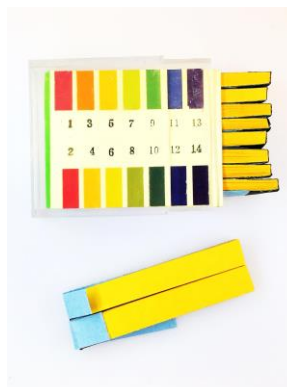
在這些位置所顯示的箭號，何者代表施於該球的力的方向？（假設沒有空氣阻力。）

- A. **P**
- B. **Q**
- C. **R**
- D. **S**

8. In the laboratory, pH meter and pH paper are commonly used for measuring pH values. The photos below show a pH meter and a pack of pH paper.



pH meter



pH paper

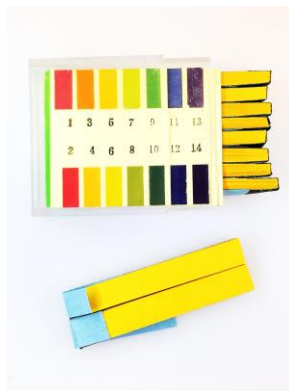
In which of the following experiments should a pH meter be used instead of pH paper?

- (1) showing that vinegar is acidic
 - (2) finding the pH value of a sample of soy sauce
 - (3) monitoring the pH change of an aquarium
- A. (1) and (2) only
B. (1) and (3) only
C. (2) and (3) only
D. (1), (2) and (3)

8. 在實驗室，pH 計和 pH 試紙常用來量度 pH 值。以下照片顯示一個 pH 計和一盒 pH 試紙。



pH 計

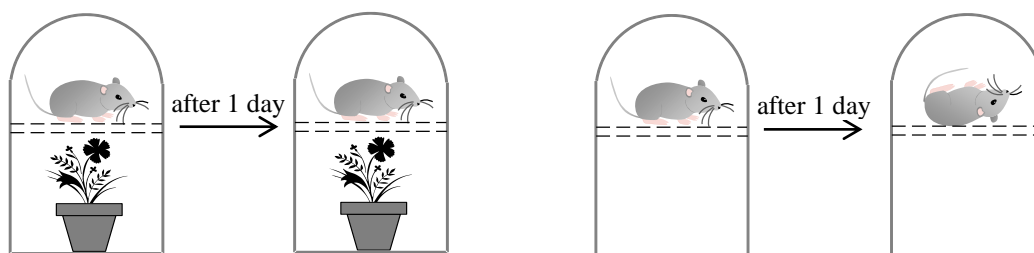


pH 試紙

下列哪些實驗應使用 pH 計，而不使用 pH 試紙？

- (1) 顯示醋帶酸性
 - (2) 找出一個醬油樣本的 pH 值
 - (3) 監測魚缸的 pH 變化
-
- A. 只有 (1) 和 (2)
 - B. 只有 (1) 和 (3)
 - C. 只有 (2) 和 (3)
 - D. (1)、(2) 和 (3)

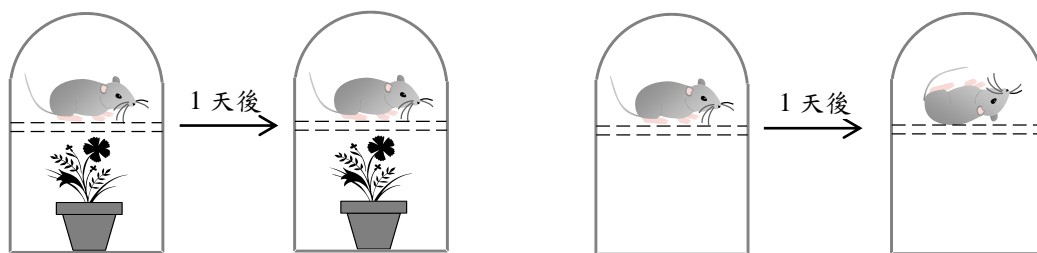
20. A scientist carried out an experiment by keeping a mouse in each of two identical vessels placed under sunlight. One of the vessels contained a green plant while the other did not. The diagrams below show the set-ups used and the results obtained after one day:



Which of the following statements can be deduced from the experimental results?

- A. The mouse requires oxygen for respiration.
- B. The green plant undergoes photosynthesis to produce oxygen.
- C. The mouse feeds on the green plant.
- D. The green plant provides substances for the survival of the mouse.

20. 一名科學家做了一個實驗，他在兩個置於陽光下的相同容器內各放一隻老鼠。其中一個容器內有綠色植物，而另一容器則否。下圖顯示實驗所用的裝置，以及一天後的結果：



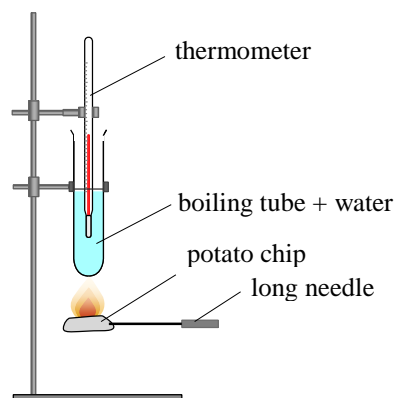
從實驗的結果，可推斷出下列哪一項陳述？

- A. 老鼠呼吸時需要氧。
- B. 綠色植物進行光合作用時產生氧。
- C. 老鼠以綠色植物為食物。
- D. 綠色植物提供了老鼠生存所需物質。

SECTION B

Answer ALL questions. Write your answers in the Answer Sheet provided.

1. Mary used the set-up shown below to find the energy content of a brand of potato chip:



- (a) Listed on your Answer Sheet are seven steps (denoted by letters **A** to **G**) in Mary's experiment. Put these steps in their proper order as in the experiment. (The first three steps have been done for you.) (1 mark)
- (b) Complete the word equation for the burning of the potato chip. (1 mark)
- (c) The table below lists the experimental results obtained in five trials of Mary's experiment:

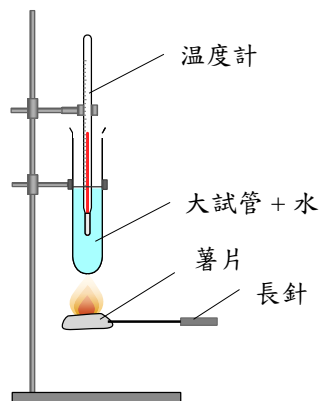
Trial	Mass of potato chip burnt (g)	Temperature of the water in the boiling tube	
		Initial temperature (°C)	Final temperature(°C)
1	0.10	25.0	33.0
2	0.18	25.0	39.5
3	0.31	25.0	50.0
4	0.43	25.0	60.5
5	0.50	25.0	?

- (i) Plot a graph to show the relationship between 'the mass of potato chip burnt' and 'the temperature rise of the water in the boiling tube'. (3 marks)
- (ii) From your graph, estimate the final temperature of the water in the boiling tube in Trial 5 of the experiment. (1 mark)
- (d) In Mary's experiment, is it necessary to keep the initial temperature of the water in the boiling tube the same in each trial? Explain your answer. (2 marks)
- (e) It can be worked out from the experimental results that burning 100 g of the potato chip would give about 200 kcal of energy. But the food label of the potato chip shows that 100 g of the potato chip has 440 kcal of energy. Suggest TWO reasons for the difference between the two values. (2 marks)

乙部

全部問題均須作答。把答案寫在所提供的答題紙上。

1. 淑儀利用下圖所示的裝置來找出某牌子薯片所含的能量：



- (a) 答題紙上已列出淑儀所做實驗的七個步驟（以英文字母 A 至 G 表示）。把這些步驟按它們在實驗中出現的正確次序排列。（已完成了首三個步驟。） (1分)
- (b) 完成燃燒薯片的文字方程式。 (1分)
- (c) 淑儀把實驗做了五次，所得到的結果列於下表：

實驗次數	所燃燒薯片的質量(g)	大試管所盛的水的溫度	
		起始溫度(°C)	最終溫度(°C)
1	0.10	25.0	33.0
2	0.18	25.0	39.5
3	0.31	25.0	50.0
4	0.43	25.0	60.5
5	0.50	25.0	?

- (i) 繪一坐標圖以顯示「所燃燒薯片的質量」與「大試管所盛的水的溫度升幅」的關係。 (3分)
- (ii) 從所繪的坐標圖，估算在第5次實驗中大試管所盛的水的最終溫度。 (1分)
- (d) 在淑儀所做各次實驗中，大試管所盛的水的起始溫度是否必須相同？解釋你的答案。 (2分)
- (e) 從實驗的結果，可以算出燃燒 100 g 的薯片會釋出約 200 kcal 的能量。但食物標籤卻列出每 100 g 薯片所含能量為 440 kcal。提出兩項理由說明這兩數值出現的差異。 (2分)