Book 4B Unit 5 (Chapter 9-10)
Happy Preview (1)

Grade: A 5/3

Date: 4th March, 26

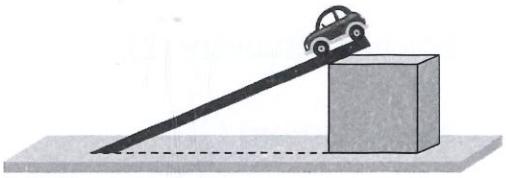
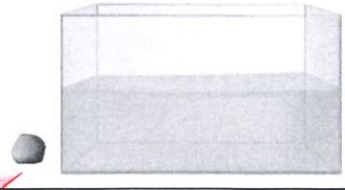
Module and Topic: Book 4B Unit 5 Ch.9 Scientific Process and Advancement & Ch.10 Fair Testing

A. Learning Objectives:
1. What scientific spirits and attitudes should we develop?
2. What are the three elements of a fair test?
3. How do we do a fair test?

B. Preview method:

★ Activity 1

A variable is the part of an experiment that is changed. A fair test is a scientific experiment where you make sure that only one thing is being tested at a time. Decide and circle what variable we should change in the following situations.

i. You want to investigate the best material to be used for a raincoat to keep you dry on a rainy day. You use a spray bottle to spray water on the raincoat to simulate rain. 	ii. You want to see whether the steepness of the ramp affects the speed of a toy car moving down it. 
A. The size of the raincoat (B) The material used for the raincoat C. The distance from which you spray water	A. The toy car B. The surface of the ramp (C) The steepness of the ramp
iii. You want to test how the weight of a rock affects the speed that it sinks. 	iv. You want to test what happens to the time the parachutes with canopies of different sizes take to fall. 
A. The depth of water (B) The rocks with different weights C. The amount of water	(A) The size of the canopy B. The shape of the canopy C. The height from where the parachute is dropped

Activity 2

Read the following information about Professor Sir Charles Kao Kuen.

Professor Sir Charles Kao Kuen is internationally renowned as the 'Father of Fiber Optics' and a Nobel Laureate in Physics. He invented optical fibres, which allow information to be transmitted at the speed of light.

Since the 1930s, thin strands of glass called fibers have been used to look inside the body. But they didn't work well for sending information far away because too much light was lost. In the 1960s, Professor Kao found a way to fix this after years of research. He made very clear glass fibers that let enough light through. Along with laser technology, this made it possible to use glass fibers for communication.

Today, the transmission of information across the Internet relies on his invention.

Reference: Website o the Nobel Prize (https://www.nobelprize.org/prizes/physics/2009/kao/facts/)

What scientific spirits and attitudes should we learn from him?

We should always have doubts. He improved a this strands of glass to optical fibers.

You are right! We can also learn to be creative and imaginative from him.

**C. Extension (Higher Order Thinking)

Activity 3

You want to see how room temperature affects the time it takes for ice cream to melt. Analyse the three elements of fair testing in this experiment. Complete the table.

Three important elements of fair testing	Answer(s)
i. Testing only one factor	Room temperature
ii. Measure the affected variable (find out the effect)	Melting condition of ice cream
iii. Control other factors (keep constant)	Size of ice cream Start at the same time

Name one more factor that should be controlled.

The material of the plate.