

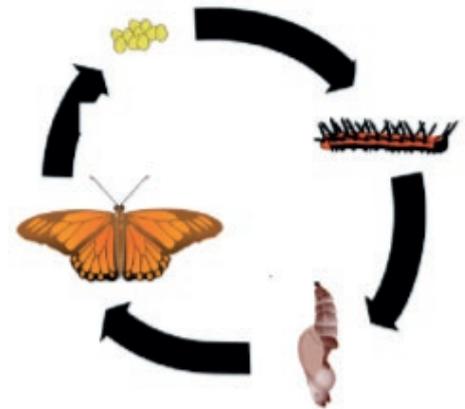
Sample Questions (Primary 3-4/Grades 3-4)

SYLLABUS

Diversity	Cycles	Systems	Interactions	Energy
<ul style="list-style-type: none">• Diversity of living and non-living things• Diversity of Materials	<ul style="list-style-type: none">• Cycles in plants and animals• Cycles in matter and water	<ul style="list-style-type: none">• Plant system• Human system• Solar system	<ul style="list-style-type: none">• Interaction of forces	<ul style="list-style-type: none">• Energy forms and uses

The life cycle of a butterfly consists of 4 stages: Adult, Egg, Larva (Caterpillar) and Pupa. The eggs are laid by a female butterfly on a suitable plant and it takes around 4 to 5 days to hatch into a larva. The time taken for the caterpillar to stay in the pupa is 14 days. At the adult stage, the butterfly only eats nectars from flowers.

John placed a male and a female caterpillar in a container. He places the same amount of fresh leaves in the container daily.



Question 1

What would most likely happen in the container after 13 days?

- There will be one more baby caterpillar
- There will be a total of 2 caterpillars in the container
- There will be a total of 3 caterpillars in the container
- Eggs can be seen on the leaf

Question 2

What would most likely happen in the container after 100 days?

- The whole container will be filled with many butterflies
- There will not be any more of the butterflies and caterpillars alive
- There will be an equal number of butterflies and caterpillars
- The container will be filled with many caterpillars and very few butterflies

Answers: b, b

Sample Questions (Primary 5-6/Grades 5-6)

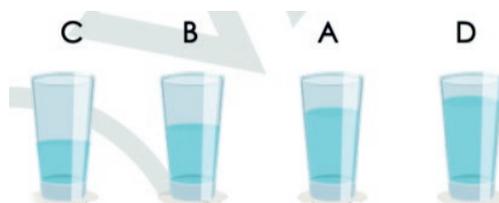
SYLLABUS

Diversity	Cycles	Systems	Interactions	Energy
<ul style="list-style-type: none"> Diversity of living and non-living things Diversity of Materials 	<ul style="list-style-type: none"> Cycles in plants and animals Cycles in matter and water 	<ul style="list-style-type: none"> Human system Cell system Electrical system Solar system 	<ul style="list-style-type: none"> Interaction of forces Interaction within the environment 	<ul style="list-style-type: none"> Energy forms and uses Energy conversion

A group of students wanted to know which part of the playground is the hottest. They placed 4 similar cups with the same amount of water each.



After an hour, the students placed the cups in ascending order of the height of water in the cup



Which part of the playground is the hottest?

- a) A
- b) B
- c) C
- d) D

(Answer: c)

Sample Questions (Secondary 1-2/Grades 7-8)

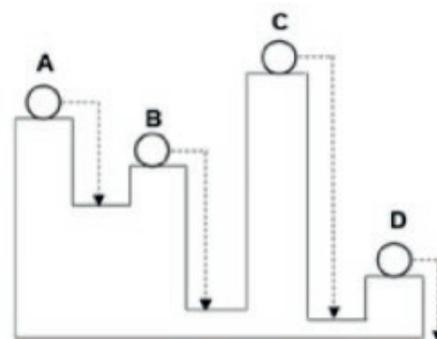
SYLLABUS

Diversity	Cycles	Systems	Interactions
<ul style="list-style-type: none"> • Exploring Diversity of Matter by their Physical Properties • Exploring Diversity of Matter by its Chemical Composition • Exploring Diversity of Matter Using Separation Techniques • Understanding Diversity of Living Things 	<ul style="list-style-type: none"> • Model of Cells – the Basic Units of Life • Model of Matter – The Particulate Nature of Matter • Model of Matter - Atoms and Molecules • Ray Model of Light 	<ul style="list-style-type: none"> • Transport System in Living Things • Human Digestive System • Human Sexual Reproductive System • Electrical Systems 	<ul style="list-style-type: none"> • Interactions through the application of forces Energy and Work Done • Transfer of Sound Energy through Vibrations • Effects of Heat & its Transmission • Chemical Changes

Four identical balls are rolled down from different heights as shown below. Select the ball that shows the least amount of energy transferred to another form

- Ball A
- Ball B
- Ball C
- Ball D

(Answer: d)



Sample Questions (Secondary 3-4/Grades 9-11)

SYLLABUS

	Secondary 3	Secondary 4
Chemistry	<ul style="list-style-type: none"> • Experimental Chemistry • The Particulate Nature of Matter • Formulae, Stoichiometry and the Mole • Electrolysis • Energy from Chemicals • Chemical Reactions 	<ul style="list-style-type: none"> • Acids, Bases and Salts • The Periodic Table • Metals • Air • Organic Chemistry
Biology	<ul style="list-style-type: none"> • Cells Structure and Organisation • Movement of Substances • Biological Molecules • Nutrition in Humans • Nutrition in Plants • Transport in Flowering Plants • Transport in Humans • Respiration in Humans 	<ul style="list-style-type: none"> • Excretion in Humans • Homeostasis • Co-ordination and Response in Humans • Reproduction • Cell Division • Molecular Genetics • Inheritance • Organisms and their Environment

(Syllabus continued on the next page)

Sample Questions (Secondary 3-4/Grades 9-11)

SYLLABUS

	Secondary 3	Secondary 4
Physics	<ul style="list-style-type: none">• Physical Quantities, Units and Measurement• Kinematics• Dynamics• Mass, weight & density• Turning Effect of Forces• Kinetic Model of Matter• Pressure• Temperature• Thermal properties of matter• Energy, Work and Power	<ul style="list-style-type: none">• General Wave properties• Light• Electromagnetic Spectrum• Sound• Static Electricity• Current of Electricity• D.C. circuit• Practical Electricity• Magnetism• Electromagnetism• Electromagnetic Induction

Chemistry (Secondary 3/Grade 9)

A mixture of 100 cm³ of methane and 50 cm³ of ethane was fully burnt with an excess of oxygen gas. After cooling to room temperature, the residual gas was passed through aqueous potassium hydroxide. What volume of gas was absorbed by the alkali?

- a) 150 cm³
- b) 200 cm³
- c) 250 cm³
- d) 300 cm³

(Answer: b)

One mole of methane gas burnt will produce one mole of carbon dioxide gas. However, one mole of ethane gas burnt will produce two moles of carbon dioxide gas. Hence, the total volume of carbon dioxide gas that will be produced and absorbed by the alkali will be
 $100 + 2(50) = 200 \text{ cm}^3$

Sample Questions (Secondary 3-4/Grades 9-11)

Chemistry (Secondary 4/Grade 10-11)

In which of the following changes does water molecules increase in volume?

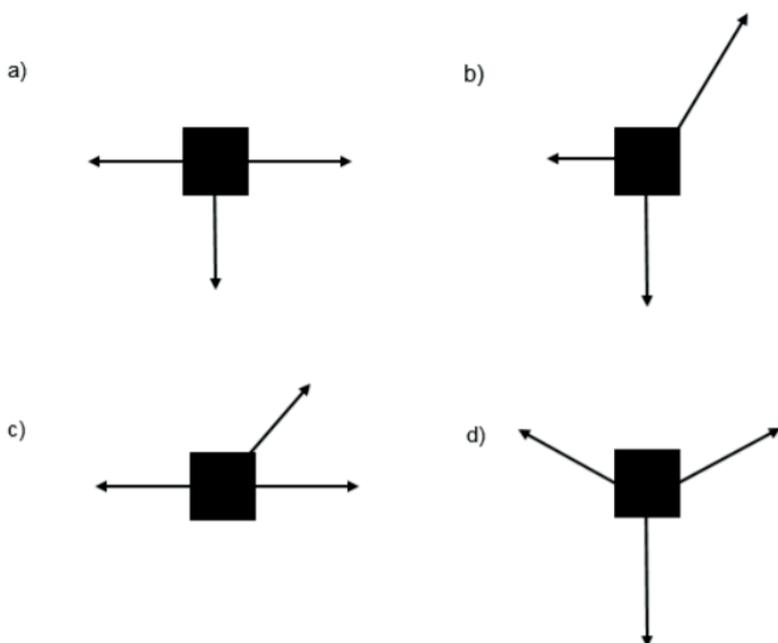
- a) When ice at 0°C melts to form water at 0°C
- b) When water at 0°C freezes to form ice at 0°C .
- c) When the temperature of water increases from 0°C to 4°C .
- c) When steam condenses to form liquid water.

(Answer: b)

When water changes state from liquid to solid state, the hydrogen bonds between water molecules become stronger and this causes water to expand, taking on a more defined six-sided crystalline structure that is about 9% less dense than water in its liquid form.

Physics (Secondary 3/Grade 9)

The following options shows a system of forces acting on an object. Which of the following shows the correct vector diagram of an object in equilibrium?



(Answer: b)

The forces acting on the box are in equilibrium as all the forces cancel each other out.

Sample Questions (Secondary 3-4/Grades 9-11)

Physics (Secondary 4/Grade 10-11)

The diagram below shows a cup of water filled to the brim and an ice cube is floating on top.



After the ice has melted, water in the cup will

- a) overflow
- b) stay at the same level.
- c) decrease in water level.
- c) freeze

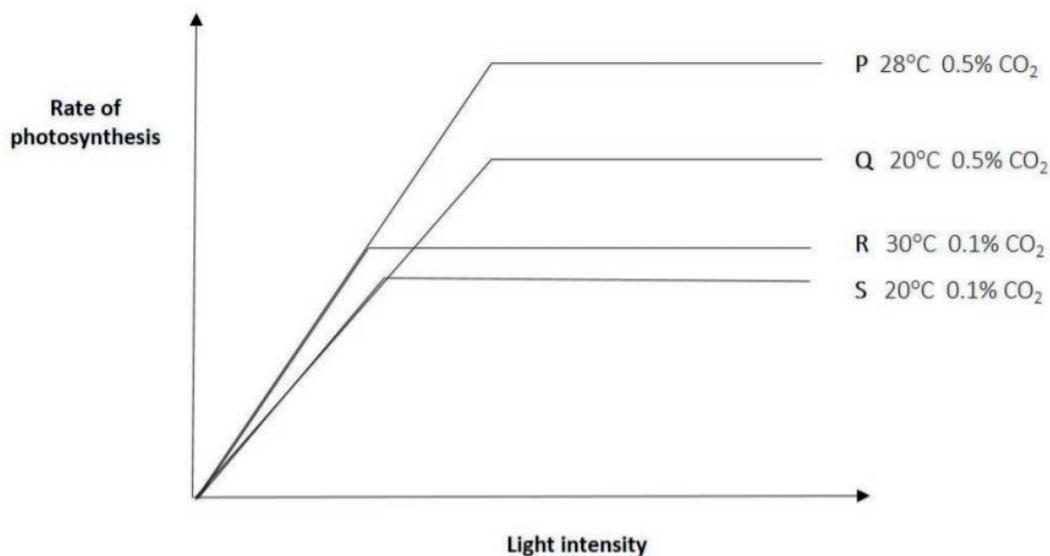
(Answer: b)

Initially, as the ice is floating on top of the water, it displaces water that is equivalent in volume to support its own weight; after the ice melts completely, the displaced volume is replaced by the volume of the amount of water present in the ice cube. Hence, the water level does not change and remains at the same level.

Sample Questions (Secondary 3-4/Grades 9-11)

Biology (Secondary 3/Grade 9)

The graph shows the results of an experiment investigating the effect of light intensity on the rate of photosynthesis at two different temperatures and two different carbon dioxide concentrations.



At high light intensity, which factor is limiting the rate of photosynthesis shown on curve X and which curve supports this?

- a) Carbon dioxide concentration, curve S supports as the photosynthetic rate becomes constant at lower light intensities.
- b) Carbon dioxide concentration, curve R supports as a decrease in carbon dioxide concentration decreases the photosynthetic rate
- c) Temperature, curve S supports as the photosynthetic rate becomes constant at lower light intensities.
- c) Temperature, curve P supports as an increase in temperature increases the photosynthetic rate.

(Answer: d)