



February Fog

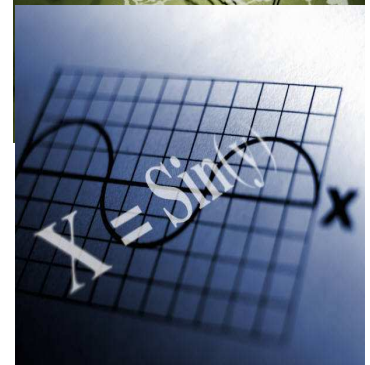
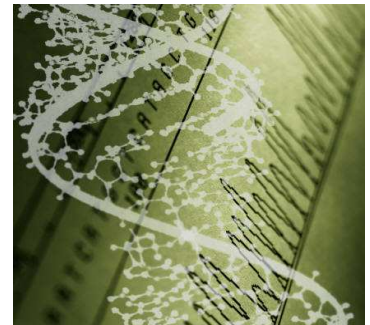
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So we have had some bad air days recently in Beijing, but the good news is that the weather is definitely starting to get milder and hopefully that means the smog is going to get better too! This month we get to know Mr Readdy in the Maths Department (page 2), and find out about the whale bones found in Chile in 2011 (page 3). We have some important information for Year 11 (revision - page 4, IB - pages 6&7) and Mr Taylor begins his series on Theory of Knowledge in Maths (page 5). Our spotlight this month is on two classes in Science - a Year 8 group and a Year 9 group - look for your friends' faces in the photos (pages 8-11). And as always, some puzzles for you to try (pages 4 & 12).

Have a great month everyone!

Ms Pratt



Teacher Biography of the Month - Mr Readdy



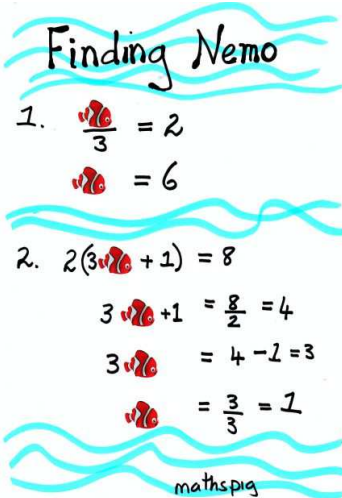
Teaching has not been the only career Mr. Readdy has embarked upon. His rich and varied experience is a result of being a stock control manager for both a large supermarket and a DIY superstore to a car garage attendant ensuring cars were sparkling clean for their prospective customers.

Throughout his youth, Mr. Readdy grew up in a very quiet village buried in the rural depths of Southwest England where he built up and run his own youth club as a teenager together with his friends. The village had its own football club too and you could say that the players were the entire adult male population of this tiny rural community. They did get recognition (from abroad) surprisingly, which led to the village being twinned with a similar sized village around Roscoff, in northwest France. This meant he participated in lots of cultural exchange visits and opportunities for brushing up on his French language!

Mr. Readdy enjoys Scuba Diving and has been member of the British Sub Aqua Club with his father. He has dived around the southwestern coast of the UK and even as far as the beautiful Mediterranean Sea. He has also sampled a bit of sky-diving too!

Mr. Readdy enjoys a personal challenge and apart from his Scuba and Sky diving escapades, he enjoys Jungle trekking, camping and climbing. All this was delightfully brought to life for him when he did a three week hiking expedition around the Amazon basin up through Venezuela. His next adventure will take him to the rain-forests of Borneo.

Mr. Readdy has an Electrical Engineering Degree and a Post-Graduate Certificate in Mathematics Education. He is happily married with one beautiful daughter and has been living in China for six years. This is only just a glimpse of Mr. Readdy's world!



Study Tip of the Month



When you are studying, having the TV on is a big no-no. It requires you to switch your attention between your study and what is happening on the screen which means you are less effective.

However, the jury is still out on music.

Music's effect on memory performance varies between individuals. Some studies have found music to aid the memory performance of individuals with ADD/ADHD, while reducing it in individuals without the disorder. Music can be motivating (making studying more enjoyable) while still detracting from memory performance. You must determine whether you're better off with or without it. If you cannot bring yourself to study without music, it may be worth the minor negative effect it can have on memory.

“Whale Graveyard” Explained

You may have seen in the news three years ago that the widening of the Pan-American highway in Chile resulted in the exposure of an enormous find of whale fossils from the Late Miocene. It was something of a mystery to scientists, who did not have an easy explanation for their location, or the fact that the fossils were facing the same direction and were upside down.

After a detailed study, archaeologists are proposing that the whales died in not one, but four separate events each separated by over 1000 years. The hypothesis is that toxic algal blooms were responsible for sudden mass deaths at various points in the lagoon which used to exist in that location.

Among the whales were other important marine predators and grazers, such as extinct creatures like walrus whales (dolphins that evolved a walrus-like face) and bizarre aquatic sloths.



Reminder about Revision Sessions:

Year 11 students are reminded about all the available revision sessions for Maths and Science. Please see below for a list and take advantage of these opportunities!

LUNCHTIME SCIENCE

SESSIONS:

MONDAY: 1:15 B110/B122
 TUESDAY: 1:15 B110/B122
 WEDNESDAY: 1:15 B110
 THURSDAY: 1:15 B122
 FRIDAY: 1:15 B110

AFTER SCHOOL SCIENCE SESSIONS:

TUESDAY: IGCSE MASTERCLASS
 Room B122
 WEDNESDAY:
 CHEMISTRY MASTERCLASS
 Room B110
 THURSDAY:
 PHYSICS MASTERCLASS
 Room B306

WEEKEND PHYSICS SESSIONS:

10am - 1pm B105

 8th March - Waves
 15th March - Energy
 22nd March - Radioactivity
 29th March - Practicals

AFTER SCHOOL MATHS HELP

11 TO 13:

TUESDAY: B320*
 WEDNESDAY: B320
 THURSDAY: B320
 *after bus duty

LUNCHTIME MATHS

HELP:

On request!

*Can you figure
out the what his
plan was?*



Two scientists walk into a bar.

The first scientist says, "I'll have some H₂O."

The second scientist says, "I'll have a glass of water, too. Wh... why did you say H₂O? Like, I know it's the chemical formula for water and all, but it's the end of the day and there's really no need to intentionally over-complicate things like that in a situation outside of work."

The first scientist stares at his drink, angry that his assassination plan has failed.

Maths and Theory of Knowledge

With the IB Diploma starting next year, that means ToK is on its way also. Does anyone know what ToK is?

In the spirit of ToK, I pose these questions:

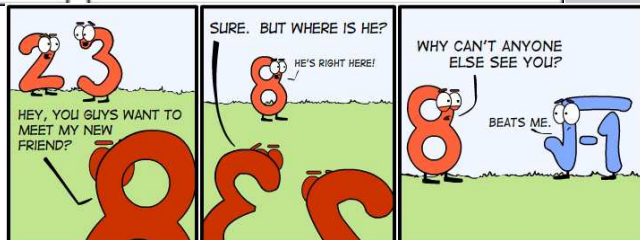
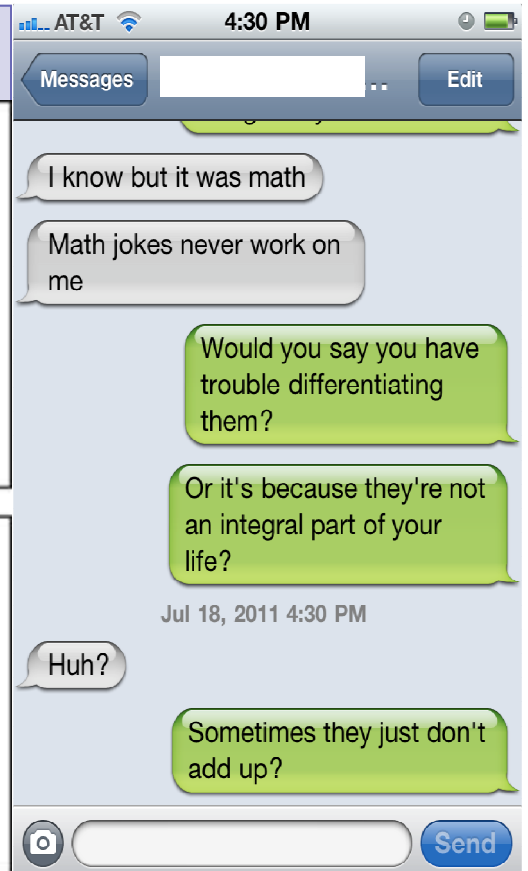
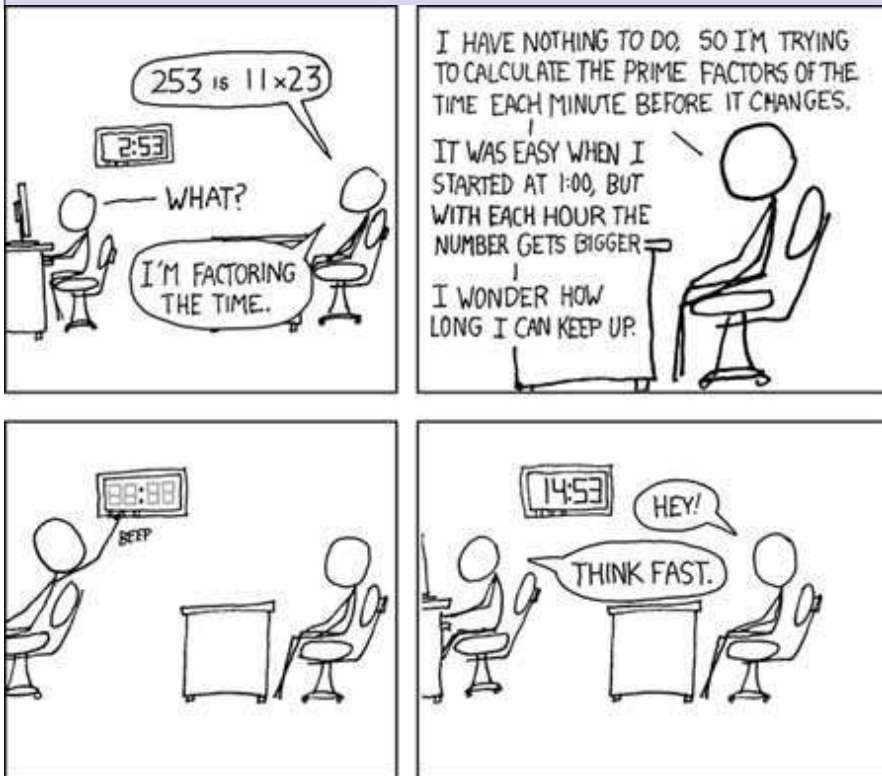
We use time all the time and if wasn't there we would not be on time. So thankfully time is there. Is "time" something that has always been there and it was discovered, or is it man-made? Why are there 24 hours in a day? Why are there 364.25 days in a year?

If you have an answer for me or would like to discuss these ideas, then come and see me and earn a merit.

Mr Taylor - B320.



And on that note...



IB Information

Year 11 students must complete their Options choices for next year's IB Diploma courses by 7th March. Maths courses are found in Group 5; Science courses are in Group 4. Here is some information for comparison to help you make your decision:

MATHEMATICS - IB @ BSB

The nature of mathematics can be summarized in a number of ways: for example, it can be seen as a **well-defined body of knowledge**, as an **abstract system of ideas**, or as a **useful tool**. For many people it is probably a combination of these, but there is no doubt that mathematical knowledge provides an important key to understanding the world in which we live.

Because individual students have different needs, interests and abilities, there are **three different courses** in mathematics. These courses are designed for different types of students: those who wish to study mathematics in depth, either as a subject in its own right or to pursue their interests in areas related to mathematics; those who wish to gain a degree of understanding and competence to understand better their approach to other subjects; and those who may not as yet be aware how mathematics may be relevant to their studies and in their daily lives. Therefore, great care should be taken to select the course that is most appropriate for an individual student.

MATHEMATICAL STUDIES SL

This course has an emphasis on applications of mathematics, and the largest section is on statistical techniques. It is designed for students with varied mathematical backgrounds and abilities. It offers students opportunities to learn important concepts and techniques and to gain an understanding of a wide variety of mathematical topics.

It prepares students to be able to solve problems in a variety of settings, to develop more sophisticated mathematical reasoning and to enhance their critical thinking. The project is an extended piece of work based on personal research involving the collection, analysis and evaluation of data. Students taking this course are well prepared for a career in social sciences, humanities, languages or arts.

These students may need to utilize the statistics and logical reasoning that they have learned as part of the Mathematical Studies SL course in their future studies.

Syllabus Component	Teaching Hours
Topic 1	20
Number and algebra	12
Topic 2	12
Descriptive statistics	20
Topic 3	20
Logic, sets and probability	17
Topic 4	17
Statistical applications	18
Topic 5	18
Geometry and trigonometry	20
Topic 6	18
Mathematical models	23
Topic 7	23
Introduction to differential calculus	25
Project	25
Total Teaching Hours	150

Assessment Component	Weighting
External assessment (8 hours)	80%
Paper 1 (1 hour 30 minutes)	40
15 compulsory short-response questions based on the whole syllabus.	
Paper 2 (1 hour 30 minutes)	40
6 compulsory extended-response questions based on the whole syllabus.	
Internal assessment	20%
This component is internally assessed by the teacher and externally moderated by the IB at the end of the course.	
The project is an individual piece of work involving the collection of information or the generation of measurements, and the analysis and evaluation of the information or measurements.	

MATHEMATICS SL

This course caters for students who already possess knowledge of basic mathematical concepts, and who are equipped with the skills needed to apply simple mathematical techniques correctly. The majority of these students will expect to need a sound mathematical background as they prepare for future studies in subjects such as chemistry, economics, psychology and business administration.

Syllabus Component	Teaching Hours
Topic 1	9
Algebra	24
Topic 2	24
Functions and equations	16
Topic 3	16
Circular functions and trigonometry	16
Topic 4	16
Vectors	33
Topic 5	33
Statistics and probability	40
Topic 6	40
Calculus	10
Mathematical exploration	10
Total Teaching Hours	150

Assessment Component	Weighting
External assessment (8 hours)	80%
Paper 1 (2 hour 30 minutes)	40
No calculator allowed. (120 marks)	
Section A	
Compulsory short-response questions based on the whole syllabus.	
Section B	
Compulsory extended-response questions based on the whole syllabus.	
Paper 2 (1 hour 30 minutes)	40
Graphic display calculator required. (90 marks)	
Section A	
Compulsory short-response questions based on the whole syllabus.	
Section B	
Compulsory extended-response questions based on the whole syllabus.	
Internal assessment	20%
This component is internally assessed by the teacher and externally moderated by the IB at the end of the course.	
Mathematical exploration	
Internal assessment in mathematics SL is an individual exploration. This is a piece of written work that involves investigating an area of mathematics. (10 marks)	

MATHEMATICS HL

This course caters for students with a good background in mathematics who are competent in a range of analytical and technical skills. The majority of these students will be expecting to include mathematics as a major component of their university studies, either as a subject in its own right or within courses such as physics, engineering and technology. Others may take this subject because they have a strong interest in mathematics and enjoy meeting its challenges and engaging with its problems.

Syllabus Component	Teaching Hours
Topic 1	30
Algebra	22
Topic 2	22
Functions and equations	24
Topic 3	24
Circular functions and trigonometry	36
Topic 4	36
Statistics and probability	48
Topic 5	48
Calculus	48
Option syllabus content	48
Students must study all the sub-topics in one of the following options as listed in the syllabus details.	
Topic 6	10
Statistics and probability	10
Topic 7	10
Set, relations and groups	10
Topic 8	10
Mathematical exploration	10
Topic 9	10
Mathematical exploration	10
Total Teaching Hours	150


Assessment Component	Weighting
External assessment (8 hours)	80%
Paper 1 (2 hours)	30
No calculator allowed. (120 marks)	
Section A	
Compulsory short-response questions based on the core syllabus.	
Section B	
Compulsory extended-response questions based on the core syllabus.	
Paper 2 (2 hours)	30
Graphic display calculator required. (120 marks)	
Section A	
Compulsory short-response questions based on the core syllabus.	
Section B	
Compulsory extended-response questions based on the core syllabus.	
Paper 3 (1 hour)	20
Graphic display calculator required. (60 marks)	
Compulsory extended-response questions based mainly on the syllabus options.	
Internal assessment	20%
This component is internally assessed by the teacher and externally moderated by the IB at the end of the course.	
Mathematical exploration	
Internal assessment in Mathematics HL is an individual exploration. This is a piece of written work that involves investigating an area of mathematics. (10 marks)	

IB Group 4 Chemistry

Sciences

Who can study Chemistry?

Chemistry is an experimental science that combines academic study with the acquisition of practical and investigational skills. It is often called the central science, as chemical principles underpin both the physical environment in which we live and all biological systems. Apart from being a subject worthy of study in its own right, chemistry is a prerequisite for many other courses in higher education, such as medicine, biological science and environmental science, and serves as useful preparation for employment.




IB Group 4 Chemistry

Sciences

Who can study Chemistry?

Students who have done an IGCSE or GCSE (or equivalent course) in either Chemistry or Double Award Coordinated Science are suitable candidates for this course. Students must be willing and able to work and learn independently, and explore the subject through both theoretical and practical means.



What will I study?

Syllabus Detail	Teaching Hours (SL)	Teaching Hours (HL)
Core		95
1. Stoichiometric relationships	13.5	6
2. Atomic structure	4	4
3. Periodicity	13.5	9
4. Chemical bonding and structure	7	4.5
5. Energetics/thermochemistry	8	8
6. Chemical kinetics	8	8
7. Equilibrium	11	11
8. Acids and bases		
9. Redox processes		
10. Organic chemistry		
11. Measurement and data		
Additional higher level (AHL)		60
12. Atomic structure	2	2
13. The periodic table—the transition metals	7	4
14. Chemical bonding and structure	7	7
15. Energetics/thermochemistry	4	4
16. Chemical kinetics	4	4
17. Equilibrium	10	10
18. Acids and bases	4	4
19. Redox processes	12	12
20. Organic chemistry	2	2
21. Measurement and analysis		
Option	15	25
a. Materials	15	25
b. Biochemistry	15	25
c. Energy	15	25
d. Medicinal chemistry	15	25
Practical scheme of work	40	60
Practical activities	20	40
Individual investigation (internal assessment—IA)	10	10
Group 4 project	10	10
Total Teaching Hours	150	240

IB Group 4 Physics


Sciences

Why study Physics?

Physics is the most fundamental of the experimental sciences, as it seeks to explain the universe itself from the very smallest particles—currently accepted as quarks, which may be truly fundamental—to the vast distances between galaxies.

“Physics is a tortured assembly of contrary qualities: of skepticism and rationality, of freedom and revolution, of passion and aesthetics, and of soaring imagination and trained common sense.”

Leon M Lederman (Nobel Prize for Physics, 1988)




IB Group 4 Physics

Sciences

Who can study Physics?

Students who have done an IGCSE or GCSE (or equivalent course) in either Physics or Double Award Coordinated Science are suitable candidates for this course. Students must have also studied Mathematics, and be willing to spend time and effort learning the many concepts and formulae within the subject.



What will I study?

Syllabus Detail	Teaching Hours (SL)	Teaching Hours (HL)
Core		95
0. Measurements and uncertainties	5	5
1. Mechanics	22	22
2. Thermal physics	11	11
3. Waves	15	15
4. Electricity and magnetism	18	18
5. Circular motion and gravitation	5	5
6. Atomic, nuclear and particle physics	14	14
7. Energy production	8	8
Additional higher level (AHL)		60
9. Wave phenomena	17	17
10. Fields	11	11
11. Electromagnetic induction	16	16
12. Quantum and nuclear physics	16	16
Option	15	25
A. Relativity	15	25
B. Engineering physics	15	25
C. Imaging	15	25
Practical scheme of work	40	60
Practical activities	20	40
Individual investigation (internal assessment—IA)	10	10
Group 4 project	10	10
Total Teaching Hours	150	240

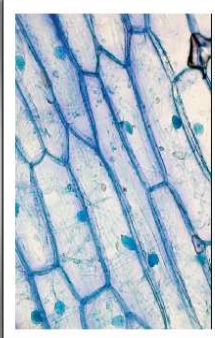
IB Group 4 Biology

Sciences

Why study Biology?

Biologists attempt to understand the living world at all levels using many different approaches and techniques. At one end of the scale is the cell, its molecular construction and complex metabolic reactions. At the other end of the scale, biologists investigate the interactions that make whole ecosystems function.

Many areas of research in biology are extremely challenging and many discoveries remain to be made. Biology is still a young Science and great progress is expected in the 21st century. This progress is sorely needed at a time when the growing human population is placing ever greater pressure on food supplies and on the habitats of other species, and is threatening the very planet we occupy.




IB Group 4 Biology

Sciences

Who can study Biology?

Students who have done an IGCSE or GCSE (or equivalent course) in either Biology or Double Award Coordinated Science are suitable candidates for this course. An interest in Biology is a bonus, but a good work ethic and positive attitude are a must!



What will I study?

Syllabus Detail	Teaching Hours (SL)	Teaching Hours (HL)
Core		95
1. Cell biology	15	15
2. Molecular biology	21	21
3. Genetics	15	15
4. Ecology	12	12
5. Evolution and biodiversity	12	12
6. Human physiology	20	20
Additional higher level (AHL)		60
7. Nucleic acids	30	30
8. Metabolism, cell respiration and photosynthesis	14	14
9. Plant biology	13	13
10. Genetics and evolution	8	8
11. Animal physiology	16	16
Options	15	25
A. Neurobiology and behaviour	15	25
B. Biotechnology and bioinformatics	15	25
C. Ecology and conservation	15	25
D. Human physiology	15	25
Practical scheme of work	40	60
Practical activities	20	40
Individual investigation (internal assessment—IA)	10	10
Group 4 project	10	10
Total Teaching Hours	150	240

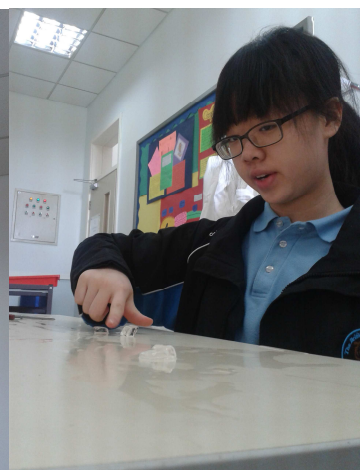
Spotlight on a Year 8 Science Class

One of the Year 8 Science classes has been studying “Fairground” - a unit that focuses on light, sound, and forces. The students have been doing some super practicals this month: Calculating the speed of sound, discovering various forces, finding a magnetic field, making electromagnets, and even building rockets! We have been having a ‘blast’ in lessons!



Students had to calculate the Speed of Sound by using stopwatches to measure the time between seeing something happen, and hearing it! Our calculation was very near to 340 m/s. Thanks Wei for the photos!!

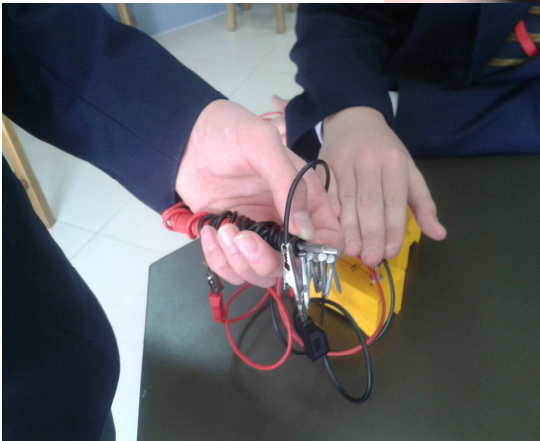
In order to learn how forces act on objects, we did a Circus activity. Toni, Phillip and Rick investigate upthrust, Rachel and Grace find out about magnets, Kelvin observes gravity, Frank and Collin learn about weight, Rachel is ‘wowed’ by electrostatic attraction, and YeJu can understand now what friction is.





To actually be able to see a magnetic field is impossible, so instead we placed a magnet under some paper and shook iron filings over the top. That way, the filings line up in a particular way and we can see how the field lines would look if they were visible!

We learned that in some cases it is more useful if a magnet can be turned on and off! We made a simple electromagnet using wires, a battery, and a nail and students discovered that if you wrap the wire VERY tightly, your magnet is stronger. Also, you can add more than one battery for some real power.



Spotlight on a Year 9 Science Class

Bom Dia! Selamat Datang! Bonjour! Nihao! Sawasdee ka! Preevyet! That's how we say hello in just some of the languages found in Ms Pratt's Year 9 Science class. We have been studying "Jungle Journey" - an awesome topic involving learning about inheritance and variation, and plant functions. They have been up to all sorts in lessons recently - building models of xylem and phloem cells, testing leaves for the presence of starch, and dissecting flowers. Ask one of them to explain to you the process of photosynthesis and if they can do it well, tell Ms Pratt so they can get a sticker!

Groups of students made lovely 3D models of the main transport cells in plants - xylem and phloem. They also had to be able to explain how they work and why they are important in vascular plants.



Sophia, Martina, Susannah and Kimbo



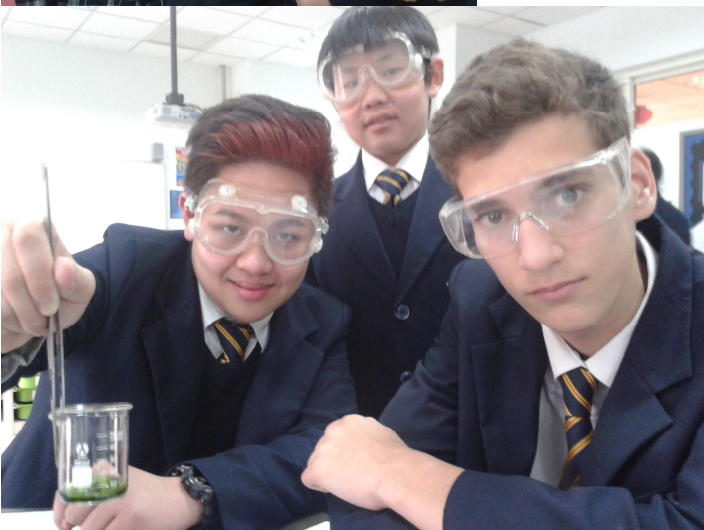
Rosi, Anna and Ziyan
(missing - Chan Young)



Lily, Sarah, Daniel, Ricky and Cathleen



Jordon, Stephanie, Laura and Emma



In order to properly test a leaf with iodine solution to see if it contains starch, we must first boil the leaf, then soak it in ethanol to release the chlorophyll. Here, Jordon, Kimbo and Daniel do a great job of removing the chlorophyll from their leaf.

Sophia and Anna
PERSEVERE as they keep
trying.

Stephanie shows
PRECISION with her
technique.

Ziyan and Chan Young
CONCENTRATE during
the procedure.



Lily holding a lily :) Oh and Sarah too!

Olivia enjoyed looking at
the pollen under the
microscope.

Sophia is creeped out by
something..



The lily dissection was an eye-
opener for some students who did
not know that a flower was so
interesting and complicated! It was
a throat-closer for others - our
friends (such as Cathleen, left) who
are allergic to pollen had to take
special precautions during this
practical.

Martina and Susannah
getting to grips with
ovules.



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Maths Puzzle

Wow - this one takes some figuring. Please give your answer to me or a Maths teacher for a merit! Congratulations to Mr Davies for figuring out last months' puzzle.

-Ms Pratt

*Someone has prepared two envelopes containing money. One contains twice as much money as the other. You have decided to pick one envelope, but then the following argument occurs to you: Suppose my chosen envelope contains $\$X$, then the other envelope either contains $\$X/2$ or $\$2X$. Both cases are equally likely, so my expectation if I take the other envelope is $.5 * \$X/2 + .5 * \$2X = \$1.25X$, which is higher than my current $\$X$, so I should change my mind and take the other envelope. But then I can apply the argument all over again. Something is wrong here! Where did I go wrong?*