The New Zealand Young Physicists Tournament NZYPT 2017

NZYPT entry conditions

All teams consist of 3 students who are attending school (not university). One of the team is nominated as the captain.

All teams need to supply NZYPT with the names and contact email addresses of the team members.

Please note : Participants names and email addresses may be shared with sponsors of the tournament.

Full Team details of the **3 students** in each team do **not** have to be sent in to enrol a team and claim the early bird discount.

Full team details of names and email addresses of students and teachers must be sent using the google docs link

https://docs.google.com/forms/d/e/1FAIpQLSfzZdzlO4o3twowU-onmv4yC3QKOlrF2MKwS661zLRDyGlqrA/viewform

by February 17th 2017.

This allows for team details to be included in the tournament booklets.

All teams must bring **at least** one teacher / judge **per team**. The competition cannot take place without sufficient judges. A team who cannot bring at least one teacher per team to the event must contact Gavin Jennings g.jennings@ags.school.nz to see if it is possible for the team to participate.

The team entry fee includes refreshments throughout the day as well as lunch for all team members and teachers / judges at the tournament.

No further entry fee is required for the national final.

Teams winning through the regional tournaments to the national final in Christchurch are responsible for all of their travelling and accommodation expenses required to participate in the national final.

NZYPT Competition information

Dates

The Regional NZYPT tournaments will be held in Auckland, Wellington and Christchurch on

Saturday 11th March 2017.

The NZYPT National Final will be held in Christchurch at the University of Canterbury on

Saturday 25th March 2017

Fees

To gain the discounted early bird fee of $ 105   teams should organise payment to NZYPT by Friday 2nd December 2016

Teams missing this deadline must organise full payment by Friday 17 February 2017

Provisional registrations can be made now with full team details by Friday 17 February 2017

Pay electronically

IYPT New Zealand bank account
ASB Bank
Account: 12-3044-0488590-00
Account name: IYPT New Zealand

Please put your **full** school name on the reference. (eg St Peters Newmarket)

Venues

Auckland regional venue = Westlake Girls High School, North Shore.

Christchurch regional venue = The University of Canterbury.

Wellington regional venue = Victoria University of Wellington

Entry mechanism

Enter a team using the following link. Note the registration does not need full student names etc at this stage. This is just an intention to participate and an entrance fee.

https://docs.google.com/forms/d/e/1FAIpQLSfzZdzlO4o3twowU-onmv4yC3QKOlrF2MKwS661zLRDyGlqrA/viewform

**Details of the research needed for the competition**

The 7 problems for the NZYPT competition in 2017 are :

1. Invent Yourself

Construct a passive device that will provide safe landing for an uncooked hen's egg when dropped onto a hard surface from a fixed height of 2.5 m. The device must fall together with the egg. What is the smallest size of the device you can achieve?

2. Balloon Airhorn

A simple airhorn can be constructed by stretching a balloon over the opening of a small container or cup with a tube through the other end (see Figure). Blowing through a small hole in the side of the container can produce a sound. Investigate how relevant parameters affect the sound.
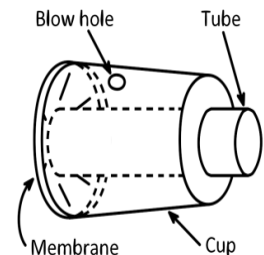
3. Single Lens Telescope

A telescope can be built using a single lens, provided that a small aperture is used instead of an eyepiece. How do the parameters of the lens and the hole influence the image (e.g. magnification, sharpness and brightness)?

4. Fast Chain

A chain consisting of wooden blocks inclined relative to the vertical and connected by two threads (see Figure) is suspended vertically and then released. Compared to free fall, the chain falls faster when it is dropped onto a horizontal surface. Explain this phenomenon and investigate how the relevant parameters affect the motion.
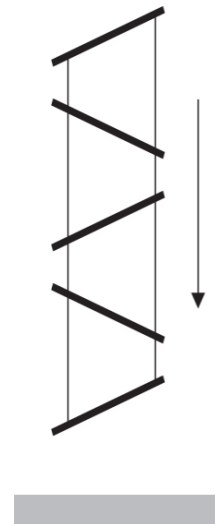
5. Resonating Glass

A wine glass partially filled with liquid will resonate when exposed to the sound from a loudspeaker. Investigate how the phenomenon depends on various parameters.

6. Gee -Haw Whammy Diddle

A gee-haw whammy diddle is a mechanical toy consisting of a simple wooden stick and a second stick that is made up of a series of notches with a propeller at its end. When the wooden stick is pulled over the notches, the propeller starts to rotate. Explain this phenomenon and investigate the relevant parameters.

7. Vacuum Bazooka

A 'vacuum bazooka' can be built with a simple plastic pipe, a light projectile, and a vacuum cleaner. Build such a device and maximise the muzzle velocity.