



The 7 Problems for NZYPT 2020

Problems venues and dates of regional competition, national competition and IYPT team selection.

Competition dates :

Register using <https://forms.gle/TuFznBUIVP4Ggzioo9>

NZYPT Regional competitions: Sat March 7th 2020 in Auckland, Wellington and Christchurch
Auckland = Kristin School, North Shore Wellington =

Christchurch = Rutherford building, University of Canterbury

NZYPT National Final (top 9 teams from across the country): Sat March 21st held in Auckland at ACG Parnell College including the selection of the New Zealand squad for IYPT.

New Zealand team selection trials for IYPT: Sat April 4th venue TBC.

1. Invent Yourself

Design an instrument for measuring current using its heating effect. What are the accuracy, precision and limits of the method?

2. Inconspicuous Bottle

Put a lit candle behind a bottle. If you blow on the bottle from the opposite side, the candle may go out, as if the bottle was not there at all. Explain the phenomenon.

3. Swinging Sound Tube

A Sound Tube is a toy, consisting of a corrugated plastic tube, that you can spin around to produce sounds. Study the characteristics of the sounds produced by such toys, and how they are affected by the relevant parameters.

4. Singing Ferrite

Insert a ferrite rod into a coil fed from a signal generator. At some frequencies the rod begins to produce a sound. Investigate the phenomenon.

5. Saxon Bowl

A bowl with a hole in its base will sink when placed in water. The Saxons used this device for timing purposes. Investigate the parameters that determine the time of sinking.

6. Falling Tower

Identical discs are stacked one on top of another to form a freestanding tower. The bottom disc can be removed by applying a sudden horizontal force such that the rest of the tower will drop down onto the surface and the tower remains standing. Investigate the phenomenon and determine the conditions that allow the tower to remain standing.

7. Pepper Pot

If you take a salt or pepper pot and just shake it, the contents will pour out relatively slowly. However, if an object is rubbed along the bottom of the pot, then the rate of pouring can increase dramatically. Explain this phenomenon and investigate how the rate depends on the relevant parameters.

End.