De La Salle College

The Statistical Enquiry Cycle



Unit Plan for Years 7 – 10

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# **Key to resources in this document:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **http://i-cdn.phonearena.com/images/article/49766-image/Small-YouTube-for-Android-update-improves-apps-search-feature.jpg Youtube clip** | **https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcSxOlpiA9lC3O62yR4Z4SYCZ_1K02VNvRRuheWqXpgVZxEW6-Ha Video File** | **http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg PDF Document** | **https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png Web Link** | **https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcTnXG7oXQaUKH-bApSiAU6Vtvuc_q_WVLmQII2vixkQKl9Nol1t Link in this Document** | Learning objects **Digital Learning Object** |
| **http://www.designdownloader.com/item/pngs/folder_1/folder_1-20110810112846-00003.png Folder in share drive** | **http://www.trainuk.co.uk/sites/default/files/styles/thumbnail/public/excel-2010-icon_5.png Excel File** | **http://upload.wikimedia.org/wikipedia/commons/4/48/Microsoft_Word_logo.png Word Document** | http://kr.rutka.net/slike/ikone/galerijaLogo.png **Image File** | **http://www.rebiun.org/PublishingImages/iconos/icono_powerpoint.png Power-Point Document** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Subject:**Mathematics & Statistics | **Year Level:**7 - 10 | **Curriculum Level:**1-6 | **Duration:** 4 weeks |
| **Standard Title:** | Statistical Investigations and Statistical Literacy   |
| **Achievement Objectives:** [**S1-1 S1-2**](http://www.nzmaths.co.nz/level-one-statistics)[**S2-1 S2-2**](http://www.nzmaths.co.nz/level-two-statistics)[**S3-1 S3-2**](http://www.nzmaths.co.nz/level-three-statistics)[**S4-1 S4-2**](http://www.nzmaths.co.nz/level-four-statistics)[**S5-1 S5-2**](http://www.nzmaths.co.nz/elaborations-level-five-statistics) |
| **Key Competencies highlighted in this unit:** | **How students will be encouraged to develop the selected competencies during the unit:** | **Values highlighted in this unit:** | **EOTC opportunities in this unit:** |
| Thinking | **[x]**  | * Pose questions for exploration
* Plan and carry out an investigation
* Make Connections
 | ExcellenceInnovation, Enquiry and CuriosityDiversity/EquityCommunity and ParticipationEcological SustainabilityIntegrityRespect | **[ ]** **[x]** **[ ]** **[x]** **[x]** **[ ]** **[ ]**  | * Design a questionnaire and administer this to students from different classes or to the community
* Identify a problem from Year 7 – 10 camps
* Look at water safety and the swimming ability of De La Salle students
* Identify a problem within the community or school to support ecological sustainability and follow the PPDAC cycle to improve this issue (An example could be litter within the school)
 |
| Using language, symbols and texts | **[x]**  | * Choose appropriate graphical displays
* Interpret findings in context
* Use words and symbols in generalisations
 |  |  |  |
| Managing self  | **[x]**  | * Work Independently
* Manage time effectively
* Set achievable goals
 |  |  |  |
| Relating to others | **[x]**  | * Actively listen
* Negotiate meaning
* Compare and contrast ideas
 |  |  |  |
| Participating and contributing | **[x]**  | * Participate actively in group presentations
* Empower and enable others in a group
* Show awareness of others
* Contribute own ideas to discussions

     |  |  |  |
|  |  |  |  |  | **Managing Authenticity:**  |
|  |  |  |  |  | * Oversee data collection
* Monitor group work and collaboration
* Individual assessment can be included in group presentations to assess that learning has taken place
 |
| **Catholic Character Content:** | **Principles:** | **Cross-Curricular Links:** |
| * Investigation on Bible reading by adapting [Assessment resource Bank](http://arb.nzcer.org.nz/) question “sentence lengths”

      | High ExpectationsTreaty of WaitangiCultural DiversityCoherence | **[ ]** **[ ]** **[x]** **[ ]**  | InclusionLearning to LearnCommunity EngagementFuture Focus | **[x]** **[ ]** **[x]** **[x]**  | * Using data from P.E classes to do analysis – beep test scores, push up and sit up scores, vertical jump
* Look at a relationship covered in science to make meaningful connections

    |
| **Catering for Gifted & Talented Students:** | **Catering for Maori/Pacifica Students:** | **Catering for Learners with Difficulties:** | **Literacy / Numeracy Strategies:** |
| **https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png** [Figure this challenges](http://www.figurethis.org/challenges/math_index.htm)**https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png** [ISLP Poster Competition](http://iase-web.org/islp/Poster_Competition_2014-2015.php)* Critique the PPDAC cycle
 | **https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcTnXG7oXQaUKH-bApSiAU6Vtvuc_q_WVLmQII2vixkQKl9Nol1t** [PPDAC Poster (Maori Version)](#ppdacpostermaori)**http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg** [Pasifika Education Plan](file:///T%3A%5CMathematics%5CAdministration%5CProfessional%20reading%5CPasifikaEducationPlan2013To2017.pdf)**http://upload.wikimedia.org/wikipedia/commons/4/48/Microsoft_Word_logo.png** [Effecting change for Pasifika students](file:///T%3A%5CMathematics%5CAdministration%5CProfessional%20reading%5CEffecting%2Bchange%2Bfor%2BPasifika%2Bstudents.doc)**http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg** [Supporting Pasifika success](file:///T%3A%5CMathematics%5CAdministration%5CProfessional%20reading%5CSupportingPasifikaSuccess.pdf) http://kr.rutka.net/slike/ikone/galerijaLogo.png [Pasifika Compass](file:///T%3A%5CMathematics%5CAdministration%5CProfessional%20reading%5Cpacifica%20compass.jpg)           | **http://upload.wikimedia.org/wikipedia/commons/4/48/Microsoft_Word_logo.png** [I Can Do Sheet](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CStatistics%20and%20the%20PPDAC%20cycle%5CI%20Can%20Do%20Sheet%20Statistics.doc)**http://upload.wikimedia.org/wikipedia/commons/4/48/Microsoft_Word_logo.png** [Year 9 Student Handbook](file:///T%3A%5CMathematics%5CStudent%20handbooks%5Cyear%209%20student%20handbook%20mathematics.docx)**http://upload.wikimedia.org/wikipedia/commons/4/48/Microsoft_Word_logo.png** [Year 10 Student Handbook](file:///%5C%5Cinternal.delasalle.school.nz%5Cshared%5Cstaff%5CMathematics%5CStudent%20handbooks%5Cyear%2010%20student%20handbook%20mathematics.docx)           | * Scaffolding tasks with students
* The use of writing frames

**https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcTnXG7oXQaUKH-bApSiAU6Vtvuc_q_WVLmQII2vixkQKl9Nol1t** [Use of Glossaries](#glossary) **http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg** [Forbidden words activity](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CLiteracy%5Cforbidden-words.pdf)            |
| **Diagnostic Assessment:** | **Formative Assessment:** | **Student Feedback/Feedforward:** | **Teacher Reflection / Evaluation:** |
| * NumPa testing
* ASTTLE testing
 | * Investigations within class

**https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcTnXG7oXQaUKH-bApSiAU6Vtvuc_q_WVLmQII2vixkQKl9Nol1t** [KareKare data investigation](#formative)**[https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcTnXG7oXQaUKH-bApSiAU6Vtvuc_q_WVLmQII2vixkQKl9Nol1t](#formative)** [Kiwi Capers investigation](#formative)**[https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcTnXG7oXQaUKH-bApSiAU6Vtvuc_q_WVLmQII2vixkQKl9Nol1t](#formative)** [Sports investigation](#formative)            | * Reporting on National standards
* E-AsTTle data
* Numpa testing data

             | * Faculty Professional development
* Annual review of Unit planning
 |
| **Summative Assessment:** |  |  |  |
| **https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcTnXG7oXQaUKH-bApSiAU6Vtvuc_q_WVLmQII2vixkQKl9Nol1t** [Investigation will be summarised in a presentation.](#summative)**https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png** [ISLP Poster Competition](http://iase-web.org/islp/Poster_Competition_2014-2015.php)      |  |  |  |

Teaching Unit Plan and Resources for years 7 – 10

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Timeline** | **Achievement Objectives**  | **Literacy and ICT** | **Resources and Activities** | **Page references** |
| **Week 1** | * Introduction to the PPDAC cycle
* Investigative questions
* Planning an investigation
* Gathering and sorting data
 | [The PPDAC Cycle explained](https://www.youtube.com/watch?v=lJWdFvYXvnk)  https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcSxOlpiA9lC3O62yR4Z4SYCZ_1K02VNvRRuheWqXpgVZxEW6-Ha[Amazing Statistics Video](file:///T%3A%5CMathematics%5CVideos%5CStatistics%5CAmazing%20Statistics.flv)https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcSxOlpiA9lC3O62yR4Z4SYCZ_1K02VNvRRuheWqXpgVZxEW6-Ha[200 years that changed the world](file:///T%3A%5CMathematics%5CVideos%5C200_years_that_changed_the_world_high.mp4)https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcSxOlpiA9lC3O62yR4Z4SYCZ_1K02VNvRRuheWqXpgVZxEW6-Ha [Explaining a sample](file:///T%3A%5CMathematics%5CVideos%5CStatistics%5CExplaining%20a%20sample.avi)http://i-cdn.phonearena.com/images/article/49766-image/Small-YouTube-for-Android-update-improves-apps-search-feature.jpg [Bias in Sample Selection](https://www.youtube.com/watch?v=3zc_t1MwrPw#t=11) | http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Figure it out activity - CLAWS](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CFigure%20It%20Out%20Series%5CStatistics%20Claws%20activity.pdf) | https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [NZMATHS](http://www.nzmaths.co.nz/resource/claws) |
|  https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Figure it out activity - Social Sounds](http://www.nzmaths.co.nz/resource/social-sounds) | http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Statistics L4 Bk2 Page 1](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CFigure%20It%20Out%20Series%5Cstatistics4b2.pdf) |
| http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Figure it out activity – Open or closed](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CFigure%20It%20Out%20Series%5COpen%20Or%20Closed.pdf) | http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Statistics L4 Bk2 Pg 10-11](file:///%5C%5Cinternal.delasalle.school.nz%5Cshared%5Cstaff%5CMathematics%5CJunior%20Mathematics%5CFigure%20It%20Out%20Series%5Cstatistics%202-3.pdf) |
| http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Figure it out activity - Logo Appeal](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CFigure%20It%20Out%20Series%5CLogo%20Appeal.pdf) | http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Statistics L2/3 Pg 18](file:///%5C%5Cinternal.delasalle.school.nz%5Cshared%5Cstaff%5CMathematics%5CJunior%20Mathematics%5CFigure%20It%20Out%20Series%5Cstatistics%202-3.pdf) |
| **Week 2**  | * Displaying data in multiple ways
* Identifying trends, patterns, variations, spread, relationships
* Interpreting results in context

https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcTnXG7oXQaUKH-bApSiAU6Vtvuc_q_WVLmQII2vixkQKl9Nol1t[Year 10 PPDAC overview](#y10ppdac)https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcTnXG7oXQaUKH-bApSiAU6Vtvuc_q_WVLmQII2vixkQKl9Nol1t [PPDAC poster](#ppdacposter) https://encrypted-tbn3.gstatic.com/images?q=tbn:ANd9GcTnXG7oXQaUKH-bApSiAU6Vtvuc_q_WVLmQII2vixkQKl9Nol1t [PPDAC poster (Maori)](#ppdacpostermaori)  | http://i-cdn.phonearena.com/images/article/49766-image/Small-YouTube-for-Android-update-improves-apps-search-feature.jpg [OESM video analysing data](https://www.youtube.com/watch?v=L-ur3pRYKFk)https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Module 3 – Which Graph?](http://www.nzmaths.co.nz/resource/which-graph)https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Module 4 – Making evaluations](http://nzmaths.co.nz/resource/making-evaluations)https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Census@schools Data Viewer](http://new.censusatschool.org.nz/tools/data-viewer/)https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [NLVM Boxplots (requires java)](http://nlvm.usu.edu/en/nav/frames_asid_200_g_4_t_5.html?open=instructions)https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [BBC Handling data](http://www.bbc.co.uk/bitesize/ks2/maths/data/)https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Khan Academy videos](https://www.khanacademy.org/math) [Bias in a survey](https://www.youtube.com/watch?v=RwMmrUEVW4U)  | http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Presenting data](file:///%5C%5Cinternal.delasalle.school.nz%5Cshared%5Cstaff%5CMathematics%5CJunior%20Mathematics%5CYear%207%20%26%208%20eBooks%5C)  | Hooked on Statistics Pg 22-36 |
| http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Interpreting data](file:///%5C%5Cinternal.delasalle.school.nz%5Cshared%5Cstaff%5CMathematics%5CJunior%20Mathematics%5CYear%207%20%26%208%20eBooks%5C) | Hooked on Statistics Pg 37-44 |
| http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Figure it out activity - My Town](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CFigure%20It%20Out%20Series%5CMy%20Town.pdf) | http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Statistics Level 2/3 Pg 12](file:///%5C%5Cinternal.delasalle.school.nz%5Cshared%5Cstaff%5CMathematics%5CJunior%20Mathematics%5CFigure%20It%20Out%20Series%5Cstatistics%202-3.pdf) |
| http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Figure it out activity - Too much Telly?](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CFigure%20It%20Out%20Series%5CToo%20Much%20Telly.pdf) | http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Statistics Level 2/3 Pg 6](file:///%5C%5Cinternal.delasalle.school.nz%5Cshared%5Cstaff%5CMathematics%5CJunior%20Mathematics%5CFigure%20It%20Out%20Series%5Cstatistics%202-3.pdf) |
| http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Figure it out activity - Discussing Data](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CFigure%20It%20Out%20Series%5CDiscussing%20Data.pdf) | http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Statistics Level 2/3 Pg 14](file:///%5C%5Cinternal.delasalle.school.nz%5Cshared%5Cstaff%5CMathematics%5CJunior%20Mathematics%5CFigure%20It%20Out%20Series%5Cstatistics%202-3.pdf) |
| http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [How long is a name?](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CStatistics%20and%20the%20PPDAC%20cycle%5CHow%20long%20is%20a%20name.pdf) | From Census@schools |
| http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Figure it out activity - Wild about Juice](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CFigure%20It%20Out%20Series%5CWild%20about%20Juice.pdf) | http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Statistics Level 3 Pg 1](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CFigure%20It%20Out%20Series%5Cstatistics3.pdf)  |
| **Week 3** | Investigations part 1* Select an investigative question to explore the PPDAC cycle, linking the first two weeks of learning into one project.
* S5-2 Critique the sampling process for years 9 and 10
 | https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Spreadsheet tutorials](http://nzmaths.co.nz/spreadsheet-tutorial)Learning objects [Graph Investigator](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CStatistics%20and%20the%20PPDAC%20cycle%5CDigital%20Learning%20Objects%5CGraph%20explorer%5Cindex.html)  | https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Sports Investigation](http://www.nzmaths.co.nz/resource/sports-statistics) | From NZMATHS |
| http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Ideas for Statistical Investigations](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CYear%207%20%26%208%20eBooks%5CMaths%20eBooks)  | Hooked on Statistics Pg 45-47  |
| http://www.designdownloader.com/item/pngs/folder_1/folder_1-20110810112846-00003.png [KareKare Investigation](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CStatistics%20and%20the%20PPDAC%20cycle%5CKare%20kare%20data%20set) | http://www.trainuk.co.uk/sites/default/files/styles/thumbnail/public/excel-2010-icon_5.png [Karekare data cards](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CStatistics%20and%20the%20PPDAC%20cycle%5CKare%20kare%20data%20set%5Ckarekare-cards1.xls)http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Survey questions](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CStatistics%20and%20the%20PPDAC%20cycle%5CKare%20kare%20data%20set%5Csurvey%20questions.pdf)http://upload.wikimedia.org/wikipedia/commons/4/48/Microsoft_Word_logo.png [Blank graph](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CStatistics%20and%20the%20PPDAC%20cycle%5CKare%20kare%20data%20set%5CPopliteal%20length%20blank%20graph.doc) |
| http://www.designdownloader.com/item/pngs/folder_1/folder_1-20110810112846-00003.png [Kiwi Capers Investigation](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CStatistics%20and%20the%20PPDAC%20cycle%5CKiwi%20Capers) | http://upload.wikimedia.org/wikipedia/commons/4/48/Microsoft_Word_logo.png [Teacher Instructions](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CStatistics%20and%20the%20PPDAC%20cycle%5CKiwi%20Capers%5Cteacher%20instructions.doc) |
| https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Assessment resource Bank](http://arb.nzcer.org.nz/) | ARB’s website |
| **Week 4** | Investigations part 2 * Students are familiar with the PPDAC cycle and so now they should be able to investigate a problem and display their findings in classrooms.

Assessment can be in the form of (but not limited to):* Poster
* Report
* Power-Point Presentation
* Video Presentation
* [ISLP Poster Competition](http://iase-web.org/islp/Poster_Competition_2014-2015.php)
 | http://i-cdn.phonearena.com/images/article/49766-image/Small-YouTube-for-Android-update-improves-apps-search-feature.jpg[Lego city investigation video](https://www.youtube.com/watch?v=VaUepDKwErI)For more investigation ideas, refer to:https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Statistical Investigations Units of Work](http://nzmaths.co.nz/statistical-investigations-units-work) https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Statistical Literacy Units of work](http://nzmaths.co.nz/statistical-literacy-units-work) | http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Ideas for statistical investigations](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CYear%207%20%26%208%20eBooks%5CMaths%20eBooks)  | Hooked on Statistics Pg 45-47 |
| http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Statistics Project exemplar](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CInvestigations%5CYear9StatsProjectExemplar.pdf)http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Statistics Project Rubric](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CInvestigations%5CYear9StatsProject%20rubric.pdf)http://www.bre2.net/pdfs/pdf_thumbnail_icon.jpg [Superhero Statistics Exemplar Y7 & Y8](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CInvestigations%5CSuperhero%20Statistics%20exemplar.pdf) |  |
| http://upload.wikimedia.org/wikipedia/commons/4/48/Microsoft_Word_logo.png [Pie investigation](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CStatistics%20and%20the%20PPDAC%20cycle%5CPie%20sales%5Cpie_sales.doc)http://www.trainuk.co.uk/sites/default/files/styles/thumbnail/public/excel-2010-icon_5.png [Pie Data](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CStatistics%20and%20the%20PPDAC%20cycle%5CPie%20sales%5Cpies_raw.xls) | http://www.rebiun.org/PublishingImages/iconos/icono_powerpoint.png [Pie Power-Point](file:///T%3A%5CMathematics%5CJunior%20Mathematics%5CStatistics%20and%20the%20PPDAC%20cycle%5CPie%20sales%5Cpie_sales.ppt) |
| https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Paper plane Investigation](http://www.nzmaths.co.nz/resource/paper-planes) | From NZMATHS |
|  |  |  |  |  |  |

NZC Statistics Levels 1 - 6

| Level | Statistical Investigation | Statistical Literacy |
| --- | --- | --- |
| 1 | Conduct investigations using the statistical enquiry cycle: •posing and answering questions •gathering, sorting and counting, and displaying category data•discussing the results.https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Key Ideas for Statistical Investigations Level 1](http://www.nzmaths.co.nz/statistical-investigations-level-1) https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Level 1 Elaborations](http://www.nzmaths.co.nz/elaborations-level-one-statistics) | Interpret statements made by others from statistical investigations and probability activities.https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Key Ideas for Statistical Literacy Level 1](http://www.nzmaths.co.nz/statistical-literacy-level-1) |
| 2 | Conduct investigations using the statistical enquiry cycle: •posing and answering questions •gathering, sorting, and displaying category and whole-number data • communicating findings based on the data.https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Key Ideas for Statistical Investigations Level 2](http://www.nzmaths.co.nz/statistical-investigations-level-2) https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Level 2 Elaborations](http://www.nzmaths.co.nz/elaborations-level-two-statistics) | Compare statements with the features of simple data displays from statistical investigations or probability activities undertaken by others.https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Key Ideas for Statistical Literacy Level 2](http://www.nzmaths.co.nz/statistical-literacy-level-2) |
| 3 | Conduct investigations using the statistical enquiry cycle: • gathering, sorting, and displaying multivariate category and whole number data and simple time-series data to answer questions• identifying patterns and trends in context, within and between data sets• communicating findings, using data displays.https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Key Ideas for Statistical Investigations Level 3](http://www.nzmaths.co.nz/statistical-investigations-level-3) https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Level 3 Elaborations](http://www.nzmaths.co.nz/elaborations-level-three-statistics) | Evaluate the effectiveness of different displays in representing the findings of a statistical investigation or probability activity undertaken by others.https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Key Ideas for Statistical Literacy Level 3](http://www.nzmaths.co.nz/statistical-literacy-level-3) |
| 4 | Plan and conduct investigations using the statistical enquiry cycle: • determining appropriate variables and data collection methods •comparing distributions visually •communicating findings, using appropriate displays.•gathering, sorting, and displaying multivariate category, measurement, and time-series data to detect patterns, variations, relationships, and trendshttps://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Key Ideas for Statistical Investigations Level 4](http://www.nzmaths.co.nz/statistical-investigations-level-4) https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Level 4 Elaborations](http://www.nzmaths.co.nz/elaborations-level-four-statistics) | Evaluate statements made by others about the findings of statistical investigations and probability activities.https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Key Ideas for Statistical Literacy Level 4](http://www.nzmaths.co.nz/statistical-literacy-level-4) |
| 5 | Plan and conduct surveys and experiments using the statistical enquiry cycle: •determining appropriate variables and measures •considering sources of variation •gathering and cleaning data •comparing sample distributions visually, using measures of centre, spread, and proportion•presenting a report of findings.•using multiple displays, and re-categorising data to find patterns, variations, relationships, and trends in multivariate data setshttps://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Key Ideas for Statistical Investigations Level 5](http://www.nzmaths.co.nz/statistical-investigations-level-5) https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Level 5 Elaborations](http://www.nzmaths.co.nz/elaborations-level-five-statistics) | Evaluate statistical investigations or probability activities undertaken by others, including data collection methods, choice of measures, and validity of findings.https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Key Ideas for Statistical Literacy Level 5](http://www.nzmaths.co.nz/statistical-literacy-level-5) |
| 6 | Plan and conduct investigations using the statistical enquiry cycle: •justifying the variables and measures used;•managing sources of variation, including through the use of random sampling;•making informal inferences about populations from sample data;•justifying findings, using displays and measures.•identifying and communicating features in context (trends, relationships between variables, and differences within and between distributions), using multiple displays;https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Key Ideas for Statistical Investigations Level 6](http://www.nzmaths.co.nz/statistical-investigations-level-6) https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Level 6 Elaborations](http://www.nzmaths.co.nz/elaborations-level-six-statistics) | Evaluate statistical reports in the media by relating the displays, statistics, processes, and probabilities used to the claims made.https://cdn1.iconfinder.com/data/icons/prettyoffice8/256/Insert-hyperlink.png [Key Ideas for Statistical Literacy Level 6](http://www.nzmaths.co.nz/statistical-literacy-level-6) |





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| --- | --- | --- | --- | --- | --- |
| Y10 PPDAC OVERVIEW | Problemicon-problem | Planicon-plan | Dataicon-data | Analysisicon-analysis | Conclusionicon-conclusion |
| **Vocabulary** These words can be used across the PPDAC cycle | RelationshipI wonder / I noticeCompareDifference  | Who what why when howRandom, cluster, sampling, stratified, self-selected sampleFair and bias | Graphs and displayspie, dot plot scatter plot | Outliers, line of best fit, analysis, trend, relationship, +ve –ve strong weak UQ LQ IQRMean median mode | Relationship analysis justify conclude |
| **What to teach** | Give students a list of possible questions | Explore difference between population and sampleIntroduce /use census at schoolsDiscuss why we use sample and not population eg NZ census | Explore a variety of different graphs students to identify which graph best to display data based on problem | How to draw a dot plot / scatter plot | Look at exemplars of conclusions and how they relate to PPDAC cycle. |
| **What students will complete** | Students should be able to identify what a suitable question looks like and possibly write their own statistical problems | Identify VariablesCollect data * Census at schools
* Survey
* questionnaires
 | Construct TableStudents to explain why they chose their specific graph eg scatterplot | Construct appropriate graphs or displays | Answer question explaining the relationship between the variablesInclude a list how to improve on their Investigation eg eliminate outliers to have a more reliable conclusion. |

Glossary

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| --- | --- | --- | --- | --- |
| * Average
 | * Fair and Bias
 | * Box and Whisker Plot
 | * Shape
 | * Problem
 |
| * Mean
 | * Data
 | * Dot Plot
 | * Distribution
 | * Plan
 |
| * Median
 | * Continuous
 | * Bar Chart
 | * Cluster
 | * Data
 |
| * Mode
 | * Discrete
 | * Histogram
 | * Spread
 | * Analysis
 |
| * Frequency
 | * Cluster
 | * Pictogram
 | * Skew
 | * Conclusion
 |
| * Range
 | * Outcome
 | * Pie Chart
 | * Trend
 | * Summary
 |
| * Inter-Quartile Range
 | * Population
 | * Scatter plot
 | * Relationship
 | * Inference
 |
| * Upper Quartile
 | * Sample
 | * Stem and Leaf Plot
 | * Random
 | * Predict
 |
| * Lower Quartile
 | * Limitations
 | * Positive
 | * Compare
 | * Difference
 |
| * Unusual
 | * Representative
 | * Negative
 |  |  |