



Some milestones in the development of mathematical reasoning

<http://topdrawer.aamt.edu.au/Reasoning>

- Foundation:** Reasoning includes explaining comparisons of quantities, creating patterns and explaining processes for indirect comparison of length.
- Year 1:** Reasoning includes explaining direct and indirect comparisons of length using uniform informal units, justifying representations of data, and explaining patterns that have been created.
- Year 2:** Reasoning includes using known facts to derive strategies for unfamiliar calculations, comparing and contrasting related models of operations, and creating and interpreting simple representations of data.
- Year 3:** Reasoning includes using generalising from number properties and results of calculations, comparing angles and creating and interpreting variations in the results of data collections and data displays.
- Year 4:** Reasoning includes using generalising from number properties and results of calculations, deriving strategies for unfamiliar multiplication and division tasks, comparing angles, communicating information using graphical displays and evaluating the appropriateness of different displays.
- Year 5:** Reasoning includes investigating strategies to perform calculations efficiently, continuing patterns involving fractions and decimals, interpreting results of chance experiments, posing appropriate questions for data investigations and interpreting data sets.
- Year 6:** Reasoning includes explaining mental strategies for performing calculations, describing results for continuing number sequences, explaining the transformation of one shape into another and explaining why the actual results of chance experiments may differ from expected results.
- Year 7:** Reasoning includes applying the number laws to calculations, applying known geometric facts to draw conclusions about shapes, applying an understanding of ratio and interpreting data displays.
- Year 8:** Reasoning includes justifying the result of a calculation or estimation as reasonable, deriving probability from its complement, using congruence to deduce properties of triangles and finding estimates of means and proportions of populations.
- Year 9:** Reasoning includes following mathematical arguments, evaluating media reports and using statistical knowledge to clarify situations, developing strategies in investigating similarity and sketching linear graphs.
- Year 10:** Reasoning includes formulating geometric proofs involving congruence and similarity, interpreting and evaluating media statements and interpreting and comparing data sets.

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