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Achievement objective NA6-7

In a range of meaningful contexts, students will be engaged in thinking mathematically and statistically. They will solve problems and model situations that require them to:

- relate graphs, tables, and equations to linear, quadratic, and simple exponential relationships found in number and spatial patterns.

Indicators

- Demonstrates understanding of relationships, including linear, quadratic ($y = ax^2 + bx + c$, where a is not zero), and simple exponential relationships ($y = ax^n$, where a is a positive integer).
- Makes connections between representations such as number patterns, spatial patterns, tables, equations, and graphs.
- Identifies and uses key features including gradient, intercepts, vertex, and symmetry.
- Makes links with solving equations [NA6-5](#) and coordinate geometry [GM6-7](#).

Progression

NA6-7 links to M7-2.

What is new/changed?

- This achievement objective implies a use of technology. It is not about graph sketching skills but has more of a focus on linking representations (patterns, tables, equations and graphs) and interpreting features of graphs in context.

Possible context elaborations

- Matchstick patterns
- [Tukutuku patterns](#)
- Simple growth and decay patterns
- Given data in a table about a linear, quadratic or exponential context, find the equation that fits the data. Students could use table of differences, technology, guess and check, or other methods.
- Given a linear, quadratic or exponential graph about a context, find the equation of the graph.
- Sketch the graph of linear, quadratic and exponential equations.
- Find the equation of a line given any two points, or gradient and one point.
- [Activity: Forensic formulas](#)
- [Activity: 100m sprint times](#)
- [Activity: Cell phone pricing plan](#)
- [Activity: Straight line pictures](#)
- [The fence: Costing a fence](#)
- [Matchsticks](#)
- [Number pattern investigations](#)
- [Sprints: Linear graphs](#)

Assessment for qualifications

NCEA achievement standards at level 1 and 2 have been aligned to the *New Zealand Curriculum*. Please ensure that you are using the correct version of the standards by going to the [NZQA website](#).

Aligned level 3 achievement standards will be registered by NZQA for use in 2013.

Full information on the level 3 draft standards and the alignment process can be found on [NCEA on TKI](#).

The following achievement standard(s) could assess learning outcomes from this AO.

- AS91028 Mathematics and statistics 1.3 Investigate relationships between tables, equations and graphs
- AS91029 Mathematics and statistics 1.4 Apply linear algebra in solving problems

Refer to the draft standards matrix.

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