
## Teaching notes

## How to use this resource

This resource, *Expanding on algebra*, is designed to be used by students with laptops in both online and offline classroom environments.

The mix of online and offline resources and tasks in this resource is intended to promote student understanding and capability in Algebra, and in particular with expanding algebraic expressions including binomial products. Students work mathematically and build their capacity to use a variety of Information and communications technologies.

### Explore

In this section there is a link to a short video from ABC Education that reviews basic algebra terminology and rules. The interactive from PhET uses the area model of multiplication to illustrate binomial multiplication (it will also illustrate up to trinomial multiplication).

### Your tasks

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| **Task 1:** **Presentation**Presentation software | In pairs or groups, students design a seminar presentation. They could choose one or more of the suggested topics. 1. It may be useful to review and discuss with the class some examples of the various index laws and ways to expand and factorise linear expressions before the task.2. Peer markers could check draft content of the presentations.3. A sample [marking rubric](file:///C%3A%5CLRR%20Resources%5C8879%20Expanding%20on%20Algebra%5Cdocuments%5CL4LMathsPowerpointRubric.docx) has been provided with this task. |
| **Task 2:** **Spreadsheet**Excel, Word,Email | Students explore the binomial expansions using an interactive spreadsheet. They may have to use the ‘insert shapes’ and ‘equation’ tabs in making their document. They then share it with a classmate for comment. 1. Begin this task by introducing the binomial products.2. ***QuickTip***: The shaded area is *a2 – b2* which is also *a(a-b) + b(a-b)*.3. They can then share their document with the teacher. |
| **Task 3:** **FOIL acronym**Presentation software | Students choose an acronym and create a presentation demonstrating using the acronym to expand various expressions.1. Allow some time for expanding expressions and discussing useful acronyms.
2. Students could use Audacity to record a song lyric and export it to iTunes.
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### Quality teaching framework

This resource has been developed to support pedagogy and improve student outcomes based around the NSW Quality Teaching framework, with particular focus on the following elements:

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| ***Intellectual quality*** | ***Quality Learning Environment*** | ***Significance*** |
| 1.1 | Deep knowledge | **[ ]**  | 2.1 | Explicit quality criteria | **[x]**  | 3.1 | Background knowledge | **[ ]**  |
| 1.2 | Deep understanding | **[x]**  | 2.2 | Engagement | **[x]**  | 3.2 | Cultural knowledge | **[ ]**  |
| 1.3 | Problematic knowledge | **[ ]**  | 2.3 | High expectations | **[ ]**  | 3.3 | Knowledge integration | **[ ]**  |
| 1.4 | Higher-order thinking | **[ ]**  | 2.4 | Social support | **[ ]**  | 3.4 | Inclusivity | **[ ]**  |
| 1.5 | Metalanguage | **[x]**  | 2.5 | Students’ self-regulation | **[x]**  | 3.5 | Connectedness | **[x]**  |
| 1.6 | Substantive communication | **[x]**  | 2.6 | Student direction | **[x]**  | 3.6 | Narrative | **[x]**  |