# 5.2 Equivalent Expressions

### Explore Combining Like Terms

The following notes provide guidelines to help you adapt the Explore Combining Like Terms section from *MathLinks 9*.

- Provide students with **Master 8 Centimetre Grid Paper** to draw and label the diagrams.
- Review how to calculate the perimeter of a rectangle and the mathematical translation of expressions involving a value that is a given amount greater than another. For example, $\ell = 3 + w$.

### Examples

- For the Warm Up, review zero pairs, emphasizing that they consist of opposites and therefore cancel out to zero. To calculate overall value, encourage students to ask themselves two questions:
  – Do I have more positive or negative numbers? This provides the sign.
  – By how much? This provides the value.
- After completing #2 and #4, ask students to identify which expressions are simplified and why.

Working Example 1:

- Review the meaning of *coefficient*, *variable*, and *exponents*.

Working Example 2:

- Consider using an opener such as a clip from Walt Disney's *Aladdin*, where Jasmine escapes the palace and goes to the street market. Ask students to pay close attention to the organization of the market. Discuss how the vendors organize their booths and what happens when carts are upset and need to be organized again. Draw parallels between the vendors' way of organizing their wares and the concept of *like terms*.
- Consider modelling terms using algebra tiles early in the discussion of like terms. The physical models help students identify like terms and lead naturally to the concept of combining like terms to simplify an expression.

Working Example 3:

- Remind students to draw boxes or circles around terms to help them isolate like terms.
- Provide students with algebra tiles. If algebra tiles are not available, use **Master 11 Algebra Tiles (Positive Tiles)** and **Master 12 Algebra Tiles (Negative Tiles)**.

### Communicate the Ideas, Practise, and Apply

- Remind and encourage students to use any of the strategies discussed throughout the lessons to assist them.
- Provide students who need additional practice with **BLM 5–4 Section 5.2 Extra Practice**.

### Common Errors

- Some students may apply incorrect signs to terms.

**R$_x$** Encourage students to use any of the following strategies to help them visualize the terms individually: algebra tiles, drawing their own representations, or boxing the terms. Encourage students to use different approaches and select the one they want to use for each question, since some strategies are more helpful in some situations than in others.

- Some students may have difficulty identifying like terms that contain variables in a different order but with the same degree (such as $4xy$ and $2yx$).

**R$_x$** Encourage students to write the variables in each term in alphabetical order, ensuring that they maintain the exponent on the variable that it immediately follows. Remind students that the term is a product, and that multiplication is commutative (order does not affect the product).