# 3.4 Using Exponents to Solve Problems

### Explore Operations on Powers

The following notes provide guidelines to help you adapt the Explore Operations on Powers section from *MathLinks 9*.

- Read aloud and discuss the introduction.
- Review the meaning of *operations*, *doubles*, *product of a number*, *power*, *triples*, and *exponential form*.
- Provide students with **BLM 3–6 Explore Operations on Powers** so that they have ready-made tables for #1, #2, and #5.
- Have students complete the activity in groups of two or three, or as a teacher-led exercise.

### Examples

- Have students do the Warm Up to review how to use formulas.
- Post the formulas for reference or distribute **Master 25 Formulas**.
- Review and reinforce the meaning of *exponential expression*, *hypotenuse*, *right triangle*, *equilateral triangle*, and *Pythagorean relationship* as you proceed through the examples.
- Review the relationship between the diameter and the radius:
  $r =$ half of the diameter *or* $\frac{d}{2}$; $d = 2 \times$ radius *or* $2r$.
- Review how to write formulas without using the multiplication sign. For example, $SA = 6s^2$.

### Communicate the Ideas, Practise, and Apply

- Post the formulas for reference or give students **Master 25 Formulas**.
- Have students work in pairs to discuss and complete #5 to #7.
- Reinforce the proper key sequence for each student's calculator.
- Provide students who need additional practice with **BLM 3–7 Section 3.4 Extra Practice**.

### Math Link

- Review how to find the surface area of a cube. Display cubes of side lengths 3 cm, 4 cm, and 5 cm to use as a visual for students who struggle with 3-D shapes.

### Common Errors

- Some students may have difficulty memorizing formulas.

**R$_x$** Distribute copies of **Master 25 Formulas** in plastic sheets for students to put in their binder and refer to when needed. Alternatively, post formulas with diagrams close to their working area.