1.3 Surface Area

Explore Symmetry and Surface Area

The following notes provide guidelines to help you adapt the Explore Symmetry and Surface Area section from *MathLinks 9*.

- Review how to find the area of rectangles and circles. Discuss how to calculate the surface area of right rectangular prisms and cylinders.
- Use the Warm Up to review how to find the surface area of prisms and the area of shaded regions of 2–D shapes.
- Review the shape of the outside of a cylinder by cutting a wrapper from a soup can. Discuss the dimensions of this shape (circumference and height).
- Work through #1 in the Explore exercise as a class activity to help weaker students.
- Use **BLM 1–9 Section 1.3 Warm Up** to review the Pythagorean relationship before doing #3.
- Students may benefit from doing the Reflect and Check in small discussion groups.

Examples

- Post the formulas for surface area of different prisms and an example of each from Link the Ideas on page 26 of *MathLinks 9 Adapted*.
- Encourage students to use calculators.

Working Example 1:

- Have students make the shape out of interlocking cubes to use as a visual.

Working Example 2:

- This example is a simplified version of the example provided in *MathLinks 9*. To reduce the number of calculations required, the back and edges of the bookcase have been omitted as areas to be painted.
- Encourage students to draw the shape of each area to be calculated.
- Students may benefit from working in pairs to complete this example.
- If students want to include the back of the bookcase in their calculations, encourage them to use one calculation for the inside of the back. Show students a drawing of a rectangle that is 115 cm $\times$ 140 cm with dotted lines to show the front of the shelves, the sides, and the top of the bookcase.

Communicate the Ideas, Practise, and Apply

- Review the definition of *composite drawings* and what happens to the surface area when two shapes are put together.
- Students may benefit from working through these exercises in pairs. Encourage equal participation.
- Provide students with interlocking cubes for #1 and #3 to #6.
- Some candle holders are in the shape of the object in #8. If possible, provide a visual for students to help them see the areas they need to calculate.
- Provide students who need additional practice with **BLM 1–10 Section 1.3 Extra Practice**.

Common Errors

- Some students may struggle with finding the dimensions of all the faces of an object.

R_x Provide visuals and manipulatives of the objects for students to use. Encourage students to draw and then label the dimensions of each face. Use different coloured pencils to mark sides that touch, are in common, or are part of another side.