**MATC9 Ch3.5 Key Concepts 3 Minimizing the Surface Area of a Square-Based Prism Worked Example**

**Example**: A box is designed to hold 400 cm$^3$ of cereal and have a minimum surface area. Find the dimensions of the box.

**Solution**: The minimum surface area occurs when the box is cube-shaped. Use your calculator to try different side lengths to find that the side of the cube must measure 7.37 cm.

**Practice**:

**1.** Find the dimensions of a sawdust storage bin that holds 2.4 m$^3$ of sawdust, and minimizes surface area.

**2.** Find the dimensions of a box of cat food that holds 800 cm$^3$, and minimizes surface area.

Answers: 1. side length 1.34 m   2. side length 9.28 cm