4.2 Scale Diagrams

Explore the Accuracy of a Diagram

The following notes provide guidelines to help you adapt the Explore the Accuracy of a Diagram section from *MathLinks 9*.

- Explain the meaning of *scale* and how to represent it as a ratio, as a fraction, as a percent, in words, or in a diagram.
- To help students understand the concept of proportion, draw the enlarged image of the car with very small or very large tires. Discuss why this is not an accurate enlargement.

Examples

Working Example 1:

- For Method 1, remind students that 1 : 14 means 1 unit of the diagram equals 14 units of the actual object.
- Before beginning Method 2, use the Warm Up to review how to find equivalent fractions.
- For Method 2, remind students that in a proportion, the enlargement or reduction must be the same for every dimension of the image (refer to the car with too small or too large tires).
- Remind students that a proportion is a relationship with equivalent ratios.
- Remind students that scale $= \frac{\text{diagram measurement}}{\text{actual measurement}}$. Post this explanation near students' working areas.

Working Example 2:

- Review the meaning of *diameter*.
- For the Show You Know, tell students to measure from the centre of each dot. Review how to convert from km to cm (you may wish to use #5 in the Warm Up).

Communicate the Ideas, Practise, and Apply

- Remind students to use units in their final answers.
- Provide rulers for students to use for #2 and #7.
- For #3, the direction of the arrows depends on where the unknown value is in the proportion. Remind students that if the unknown number increases, they need to multiply. If the unknown number decreases, they need to divide.
- For #7, have students measure the length from the heel to the longest toe.
- Provide students who need additional practice with **BLM 4–3 Section 4.2 Extra Practice**.

Math Link

- Have students remove Math Link 4.1 from their previous work and place it beside the questions in this Math Link.

Common Errors

- Students may write ratios with different units (e.g., 1 cm : 50 km instead of 1 cm : 5 000 000 cm).

R$_x$ Remind students that to compare measurements, they must have the same unit. Post the conversion of metric measurements: