6.3 Graphing Linear Relations

Explore Graphs of Linear Relations

The following notes provide guidelines to help you adapt the Explore Graphs of Linear Relations section in *MathLinks 9*.

- Have students complete the Warm Up to review plotting points.
- Review the meaning of *minimum*, *capacity*, *data*, *relationship*, and *linear equation*.
- Have students practise choosing the scale for graphing similar scenarios. Create three graphs with different scales. For example, each one increases by multiples of 4, but they start at 0, 50 000, and 100 000. Have students choose which graph is most appropriate. Then, have them decide whether there is a better graph than the three choices you have given them.
- Define the variables for students (e.g., d represents number of days and l represents number of litres).

Examples

Working Example 1:

- For Method 1, tell students that the accuracy of their estimates depends on the accuracy of the graphs they create. The scales they choose on each axis will have a significant effect on the accuracy of their estimates when extrapolating and interpolating.
- Encourage students to use a ruler for this method.
- Do Method 2 in a computer lab as a teacher-led demonstration so students can see where to place their cursors to select, highlight, and so on. If you have access to graphing calculators, use **BLM 6–4 Method 3: Using a Graphing Calculator**.

Working Example 2:

- For parts c) and d), review examples in which interpolation is not possible.
- Discuss the meaning of *rate of change*. Give examples such as $y = 3x$ and $y = 2x + 5$, and ask students what the rate of change is.
- For the Show You Know, encourage students to use their calculators to find the pattern.

Working Example 3:

- For part a), have students look at the table of values and describe what they see (i.e., the second column is 6; this is why the equation is $d = 6$).
- Discuss the difference in the equations for horizontal and vertical lines and ways to remember the difference.

Communicate the Ideas, Practise, and Apply

- Students may need prompting to understand how to create a table of values in #5. Review horizontal and vertical lines, and which coordinate remains constant for each one.
- For #7, encourage students to create a table of values to see the pattern.
- For #10, students may struggle to work with fractions. Show them the keystrokes for these values for their calculator.
- Provide students who need extra practice with **BLM 6–5 Section 6.3 Extra Practice**.

Math Link

- Read aloud and discuss the introduction and #1.
- Discuss the meaning of *acceleration* and *acceleration rate*.

Common Errors

- Students may incorrectly determine linear equations and, as a result, incorrectly solve subsequent questions.

R_x Encourage students to work in pairs, discussing the procedure of determining equations. Post examples to use as a reference. Remind them to check that their answers are reasonable.