Student Text Pages
230–231

Suggested Timing
80 min

Tools
• calculators
• graphing calculators
• grid paper
• rulers

Related Resources
BLM 5.T.1 Task: Charity Fundraising
    Rubric
BLM G1 Grid Paper

Specific Expectations
Graphing and Writing Equations of Lines
In this Task, students will
ML2.06 determine the equation of a line, given its graph, the slope and *y*-intercept, the slope and a point on the line, or two points on the line

Solving and Interpreting Systems of Linear Equations
ML3.01 determine graphically the point of intersection of two linear relations (e.g., using graph paper, using technology)
ML3.02 solve systems of two linear equations involving two variables with integral coefficients, using the algebraic method of substitution or elimination
ML3.03 solve problems that arise from realistic situations described in words or represented by given linear systems of two equations involving two variables, by choosing an appropriate algebraic or graphical method

Teaching Suggestions
• Have students read the entire Task. Discuss the Task and ensure that students understand what they are being asked to do.
• Discuss strategies and review the necessary skills and concepts for solving problems involving linear relations using an algebraic approach and/or a graphing calculator.
• Use **BLM G1 Grid Paper** for this activity. Have graphing calculators available for students who wish to use them.
• Circulate as students complete the Task and prompt and/or assist them as necessary.
• Students can answer question 3 using the method of their choice (algebraically or graphically).

Prompts for Getting Started
• Some students may benefit from generating tables of values for solving questions 1 and 2.
• Discuss a range of acceptable *x*- and *y*-values in order to assist students with determining appropriate window settings for a graphing calculator.

Hints for Evaluating a Response
Students' responses are being assessed for the level of mathematical understanding they represent. As you assess each response, consider these questions:
  • How much assistance did the student need to get started writing equations?
  • How much assistance did the student need to get started with the graphing?
  • How much assistance did the student need to complete the Task?
  • Did the student provide graphs that are clearly labelled?
  • What parts of the Task did the student complete/not complete?
  • Did the student show an understanding of writing linear equations?
  • Did the student show an understanding of linear systems?

Ongoing Assessment

- Use **BLM 5.T.1 Task: Charity Fundraising Rubric** to assess student achievement.

Accommodations

Memory—Some students may benefit from using their workbook and/or their notes

Motor—Some students may require additional time to complete the Task.

Level 3 Sample Response

1. $y = (1 - 0.4)(4)x$

$y = 2.4x$

2. a)

$$300r - p = 1050$$
$$-\underline{100r - p = \quad 50}$$
$$200r \qquad = 1000$$

$200r = 1000$

$r = 5$

$100(5) - p = 50$

$500 - 50 = p$

$p = 450$

The fixed rental fee was \$450 and the ticket price was \$5.

b) $y = 5x - 450$

3. a) $y = 2.4x$

$y = 5x - 450$

$2.4x = 5x - 450$

$2.6x = 450$

$x \approx 173$

If 173 tickets are sold, Options A and B will raise about the same amount for charity.

b) If fewer than 173 tickets were expected to be sold, then Option A will raise more money. If more than 173 tickets were expected to be sold, then Option B will raise more money.

4. a)

Option A	Option B
$y = 2.4x$	$y = 5x - 450$
$y = 2.4(200)$	$y = 5(200) - 450$
$y = 480$	$y = 550$

If 200 tickets are sold, Option B would raise \$70 more.

b) If 100 tickets are sold, Option A will raise more money. The difference in the amounts raised will increase. This could be explained graphically or logically because 100 tickets is further from the equivalence amount of 173 tickets than 200 tickets is.

Level 3 Notes

Look for the following:
- Generated all equations with little assistance
- Determined correct answers with little assistance or determined most answers correctly without assistance
- Gave a good explanation for question 4 part b)
- Solved the linear system with little assistance and correctly interpreted the results

What Distinguishes Level 2

At this level, look for the following:
- Generated equations with some assistance
- Determined some correct answers
- Gave an acceptable explanation for question 4b)
- Solved the linear system with some assistance and interpreted the results with assistance

What Distinguishes Level 4

At this level, look for the following:
- Generated all equations with no assistance
- Determined correct answers with no assistance
- Gave a thorough explanation for question 4b)
- Solved the linear system without assistance and correctly interpreted the results