Task Design a Soccer Field

Student Text Pages
290–291

Suggested Timing
80 min

Related Resources
BLM 5-17 Task: Design a Soccer Field Rubric

Accommodations

Motor—allow students extra time. Assist students with recording of calculations

Language—allow students to work with a partner. Have them provide some responses orally to check for comprehension

Specific Expectations

Connecting Graphs and Equations of Quadratic Relations

MM1.02 determine and interpret meaningful values of the variables, given a graph of a quadratic relation arising from a real-world application

MM1.09 solve problems, using an appropriate strategy (i.e., factoring, graphing), given equations of quadratic relations, including those that arise from real-world applications (e.g., break-even point)

Teaching Suggestions

- Have students read the entire Task. Discuss the Task and ensure students understand what they are being asked to do.
- Discuss strategies and review necessary skills and concepts for solving problems involving quadratic relations.
- Circulate as students complete the task and assist them as necessary.

Prompts for Getting Started

- Have students refer to their responses to the Investigates and the Examples throughout Chapters 4 and 5.

Hints for Evaluating a Response

Student 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 understand what information was required?
- How much assistance did the student need to model the profile of the length and width of the field?
- How much assistance did the student need to complete the Task?
- What parts of the Task did the student complete/not complete?
- Did the student present work that is clear and easy to follow and understand?
- Did the student demonstrate an understanding of quadratic relations?

Level 3 Sample Response

1. $h = -0.0004(d - 25)^2 + 0.25$
2. $h = -0.0001(d - 50)^2 + 0.25$
3. 9.8 cm
4. 10 m from the sideline
5. minimum 21.7 cm; maximum 24.2 cm

Level 3 Notes

Look for the following:

- minor errors
- understanding of quadratic relations
- understanding of problem-solving techniques
- organised solution and clear justification for responses
- effective use of mathematical terms

What Distinguishes Level 2

Look for the following:

- some significant errors
- some understanding of quadratic relations
- some understanding of problem-solving techniques, but difficulty in applying the techniques
- somewhat organised solution and some justification for responses
- somewhat effective use of mathematical terms

What Distinguishes Level 4

Look for the following:

- very few or no errors
- thorough understanding of quadratic relations
- highly effective use of problem-solving techniques
- highly organised solution and clear, accurate, and detailed justification for responses
- highly effective use of mathematical terms

Ongoing Assessment

- Use **BLM 5-17 Task: Design a Soccer Field Rubric** to assess student achievement.