

1.7 Writing and Evaluating Complete Modeling Responses

Chapter 1: Basic Problem Solving and Mathematical Modeling

Name: _____

Date: _____

Class/Period: _____

Problem 1.100 Directions:

For each response, decide whether it is correct and complete. If not, identify the error and revise the reasoning.

A park has 15 tables with 8 seats each and 26 extra chairs. A student writes $15 + 8 + 26 = 49$, so 49 people can sit. Evaluate the response.

Problem 1.103 Directions:

For each response, decide whether it is correct and complete. If not, identify the error and revise the reasoning.

A club collects 138 cans on Monday and 126 on Tuesday. The cans are placed equally into 12 boxes. A student writes $(138 + 126) \div 12 = 22$, so each box holds 22 cans. Evaluate the response.

Problem 1.101 Directions:

For each response, decide whether it is correct and complete. If not, identify the error and revise the reasoning.

There are 190 students. A van holds 12 students. A student writes $190 \div 12 = 15 \text{ R } 10$, so 15 vans are needed. Evaluate the response.

Problem 1.104 Directions:

For each response, decide whether it is correct and complete. If not, identify the error and revise the reasoning.

Plan A provides 7 buses with 42 seats each. Plan B provides 9 vans with 34 seats each. A student says Plan B has more seats because 9 is greater than 7. Evaluate the response.

Problem 1.102 Directions:

For each response, decide whether it is correct and complete. If not, identify the error and revise the reasoning.

A school buys 9 cases of 32 bottles and gives away 64 bottles. A student writes $9 \times 32 - 64 = 224$. The student says 224 bottles remain. Evaluate the response.

Problem 1.105 Directions:

For each response, decide whether it is correct and complete. If not, identify the error and revise the reasoning.

A bakery has 250 rolls and packs 18 rolls per tray. A student writes $250 \div 18 = 13 \text{ R } 16$, so 13 full trays can be packed and 16 rolls remain. Evaluate the response.

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Problem 1.106 Directions:

For each response, decide whether it is correct and complete. If not, identify the error and revise the reasoning.
A class has 6 boxes of 25 markers and receives 30 more markers. The markers are divided equally among 9 tables. A student writes $(6 \times 25 + 30) \div 9 = 20$, so each table receives 20 markers. Evaluate the response.

Problem 1.107 Directions:

For each response, decide whether it is correct and complete. If not, identify the error and revise the reasoning.
A number is multiplied by 4 and then increased by 9 to make 61. A student works backward using $(61 + 9) \div 4$. Evaluate the response.

Problem 1.108 A school fair has 14 game booths. Each booth needs 18 prize tickets for the first hour and 12 more prize tickets for the second hour. Prize tickets come in packs of 50.

Part A. Create a model for the total number of prize tickets needed.

Part B. Determine the number of packs the school must open.

Part C. Explain how the remainder from the division affects the number of packs.

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Problem 1.109 A community garden has 9 rows with 28 plants in each row. Volunteers move 36 plants to a new garden and divide the remaining plants equally among 12 sections.

Part A. Write a sequence of equations that represents the situation.

Part B. Find the number of plants in each section.

Part C. Explain why the subtraction must occur before the final division.

Problem 1.110 Two plans are proposed for transporting 250 students.

- Plan A uses 6 buses with 44 seats each.
- Plan B uses 9 vans with 30 seats each.

Each bus costs 380 dollars, and each van costs 240 dollars.

Part A. Determine whether each plan has enough seats.

Part B. Find the total cost of each possible plan.

Part C. Recommend a plan and justify the recommendation using both capacity and cost.

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Problem 1.111 A library is preparing reading kits. It has 20 boxes with 24 books in each box and 15 boxes with 16 books in each box. Each kit needs 12 books.

Part A. Create a model that represents the total number of books and the number of complete kits.

Part B. Determine the number of complete kits and the number of books left over.

Part C. Explain why the leftover books do not create another complete kit.