NAME _____ DATE _____ PERIOD ____

Study Guide and Intervention

7MR1.1, 6AF2.3

A Plan for Problem Solving

You can always use the four-step plan to solve a problem.

Explore	Determine what information is given in the problem and what you need to find.
Plan	Select a strategy including a possible estimate.
Solve	Solve the problem by carrying out your plan.
Check	Examine your answer to see if it seems reasonable.

Example 1 **Plant A and Plant B are two new experimental apple trees being grown in a laboratory. The table displays their heights, in millimeters, when they are 5 to 10 days old.**

Day	5	6	7	8	9	10
Plant A	36	39	42	45	48	51
Plant B	32	36	40	44	48	52

Estimate the height of each plant on day 12.

Explore You know their heights for days 5 to 10. You need to determine their heights in two more days.

Plan Determine whether there is a pattern and extend that pattern to day 12.

Solve Comparing each plant's heights on consecutive days, we see that Plant A's height increases by 3 millimeters each day, while Plant B's height increases by 4 millimeters each day. To estimate Plant A's height on day 12, assume that it will grow 3 millimeters each day past day 10, so it will be 51 + 3 + 3 or 57 millimeters. To estimate Plant B's height on day 12, assume that it will grow 4 millimeters each day past day 10, so it will be 52 + 4 + 4 or 60 millimeters.

Check Given what we know about each plant's height and how plants grow in general, both estimates seem reasonable.

Exercises

Use the four-step plan to solve each problem.

1. **MOVIES** A movie ticket costs $3.50. A large popcorn costs $3.75 and a large soda costs $3.00. How much will it cost two friends to go to a movie if they share a popcorn and each has a large soda? **$16.75**

2. **FLOUR BEETLES** The population of a flour beetle doubles in about a week. How long would it take for the population to grow to eight times its original size? **3 wk**

NAME _____ DATE _____ PERIOD ____

Study Guide and Intervention

7MR1.1, 7NS1.2

Problem-Solving Investigation: Work Backward

You may need to work backward to solve a problems.

Explore	• Determine what information is given in the problem and what you need to find.
Plan	• Select a strategy including a possible estimate.
Solve	• Solve the problem by carrying out your plan.
Check	• Examine your answer to see if it seems reasonable.

Example 1

Mari put money in her savings account each week. She put a certain amount of money in the bank on the first week. On the second week she put twice as much money in the bank as the first week. On the third week, she put $40 less in the bank than on the second week. On the fourth week, she put $20 more in the bank than on the third week. Mari put $200 in the bank on the fourth week. How much money did Mari put in the bank on the first week?

Explore You know that Mari put $200 in the bank on the fourth week. You need to know how much money she put in the bank on the first week.

Plan Start with the amount she put in the bank on the last week and work backward.

Solve Start with the $200 Mari put in the bank on the fourth week.

Fourth Week		Third Week		Second Week		First Week
$200	−$20	$180	+$40	$220	÷ 2	$110
This is $20 more than the third week.	Work backward. Subtract $20.	This is $40 less than the second week.	Work backward. Add $40.	This is twice as much as the first week.	Work backward. Divide by 2.	

Check Start with $110 for the first week and work forward. On the second week she deposited twice as much money in the bank than on the first week, which is $220. On the third week, she deposited $40 less than the second week, which is $180. On the fourth week she deposited $20 more than on the third week, or $200. This is what you know she deposited on the fourth week.

Exercises

Use the work backward strategy to solve each problem.

1. **SHOPPING** Jack spent a total of $87.58 when he went shopping for camping supplies. He spent $36.89 on food, $23.24 on a sleeping bag, and bought lunch. When he got home, he had $15.70. How much did he spend on lunch? **$11.75**

2. **AGE** Sam is 4 years older than Eliot. Eliot is 9 years younger than Xing. Xing is 3 years older than Damien. If Damien is 15 years old, how old are each of the other boys? **Xing is 18 years old; Eliot is 9 years old; Sam is 13 years old.**