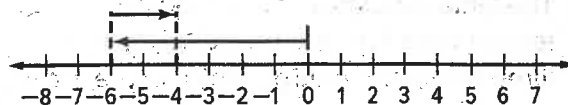# Lesson 2 Multi-Step Problem Solving

Multi-Step Example

Carlos is swimming at the beach. The number line shows his vertical movement in feet. Which expression is represented on the number line model? Describe his vertical movement in relation to the surface of the water. **7.NS.1b, MP 4**

A $(-6) + (-4)$; He swam 6 feet down and then 4 feet down. He is 10 feet below the surface.

B $0 + (-6)$; He swam 6 feet down and is 6 feet below the surface of the water.

C $(-4) + (-2)$; He swam 4 feet down and then 2 feet down. He is 6 feet below the surface.

D $(-6) + 2$; He swam 6 feet down and then 2 feet up. He is 4 feet below the surface.

Use a problem-solving model to solve this problem.

1 Understand

Read the problem. Circle the information you know.
Underline what the problem is asking you to find.

2 Plan

What will you need to do to solve the problem? Write your plan in steps.

Step 1 Determine the direction and length of the red arrow.

Step 2 Determine the direction and length of the blue arrow.

3 Solve

Use your plan to solve the problem. Show your steps.

One arrow starts at 0 and goes to the left to _____. Then,

the other arrow goes to the right 2 units and ends at _____.

So, Carlos swims 6 feet down to −6, then 2 feet up to −4.

He is _____ feet _____ the surface. Choice ____ is correct.

> **Read to Succeed!**
> When an arrow goes to the right, it means adding or a positive number. When it goes to the left, then it means subtraction or a negative number.

4 Check

How do you know your solution is accurate?

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Lesson 2 *(continued)*

Use a problem-solving model to solve each problem.

1 The table describes the change in temperature from the previous day over three consecutive days. Which expression shows the overall temperature change between Sunday and Wednesday? Express the temperature change as an integer. **7.NS.1b,** **MP** **1**

Day	Change in Temperature (°F)
Monday	dropped 2°
Tuesday	dropped 5°
Wednesday	rose 3°

Ⓐ $(5) + (-2); 3°F$

Ⓑ $(-2) + (-3) + 5; 0°F$

Ⓒ $(-2) + (-5) + 3; -4°F$

Ⓓ $(-2) + (-5) + (-3); -10°F$

3 The table shows the transactions of Sierra's checking account during one week. What is her account balance at the end of the week? **7.NS.1b,** **MP** **1**

Transaction	Amount
Beginning balance	$124
ATM withdrawal	$20
Deposit	$35
Bank card purchase	$12

2 In golf, a score of 0 is called *par*. A score *over par* is represented with a positive integer, and a score *under par* is represented with a negative integer. The goal is to get the lowest score possible. Justin and Omar played three rounds of golf, with their scores for each round as shown in the table. What is the winning final score? Who wins the three rounds? **7.NS.1b,** **MP** **1**

	Round 1	Round 2	Round 3
Justin	−2	0	3
Omar	2	−3	1

4 🔖 **H.O.T. Problem** In a convenience store, a tray by the register contains leftover change. Customers can use this change for their purchases, or place their change in the tray for other customers to use. At the beginning of the day, there is 27¢ in the tray. At end of the day, there is 15¢ left in the tray. Only two customers used the change tray, and one of these customers added 6¢. How did the other customer use the tray? Justify your response. **7.NS.3,** **MP** **2**

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