

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Tides are measured by the heights of the tide above or below sea level. The difference between the two heights represents how much greater the high tide is than the low tide. The table shows the high and low tides and the difference between their heights at each of three locations. Some of the data in the table are missing.

**Tide Heights and Differences in Feet**

| Location | High Tide | Low Tide | Difference Between High and Low Tides |
|----------|-----------|----------|---------------------------------------|
| P        | 8.53      | 0.63     |                                       |
| Q        | 6.98      | -0.94    | 7.92                                  |
| R        |           | -1.02    | 6.75                                  |

**PART A**

- Find the difference high and low tides for location P. Show your work or explain your answer.
- Find high tide for location R. Show your work or explain your answer.



Enter your answer and explanation in the space provided.

**PART B**

The tides are measured at a fourth location, T. The mean of the low tide values at locations P, Q, R, and T is -0.27 foot. What is the value of the low tide at location T? Show your work or explain how you found your answer.



Enter your answer and explanation in the space provided.

## ANSWER KEY

| <b>Rubric Part A</b> |  |
|----------------------|--|
| <b>Score</b>         | <b>Description</b>   |
| <b>2</b>             | <p>Student response includes the following 2 elements.</p> <ul style="list-style-type: none"> <li>• Computation component = 1 point               <ul style="list-style-type: none"> <li>○ The student finds the difference between high and low tides for location P, 7.9 feet. The student finds the high tide for Location R, 5.73 feet.</li> </ul> </li> <li>• Reasoning component = 1 point               <ul style="list-style-type: none"> <li>○ The student shows work or explanation how both answers were determined</li> </ul> </li> </ul> <p>Note: A student could earn the points this alternative way:</p> <ul style="list-style-type: none"> <li>• 1 point: Finds the difference between high and low tides for Location P, 7.9 feet and shows work or explanation.</li> <li>• 1 point: Finds high tide for Location R, 5.73 feet and shows work or explanation.</li> </ul> <p>Sample Student Response:<br/>For Location P, I subtract the low tide from the high tide (<math>8.53 - 0.63</math>). For Location R, I add the difference between the tides and the low tide (<math>6.75 + (-1.02)</math>). (Accept other valid explanations.)</p> <p>The difference at Location P is 7.9 feet.<br/>High tide at Location R is 5.73 feet.</p> |
| <b>1</b>             | Student response includes 1 of the above elements.   |
| <b>0</b>             | Student response is incorrect or irrelevant.   |
| <b>Rubric Part B</b> |  |
| <b>Score</b>         | <b>Description</b>   |
| <b>2</b>             | <p>Student response includes each of the following 2 elements.</p> <ul style="list-style-type: none"> <li>• Computation component = 1 point               <ul style="list-style-type: none"> <li>○ The student finds the value of the low tide at location T, 0.25 feet.</li> </ul> </li> <li>• Reasoning component = 1 point               <ul style="list-style-type: none"> <li>○ The student shows work or explains how the answer was found.</li> </ul> </li> </ul> <p>Sample Student Response:<br/>The low tide at location T is 0.25 feet. (Accept equivalent answers.)</p> <p>For a mean of -0.27 the sum of the 4 low tides has to be <math>4(-0.27) = -1.08</math>.<br/>Subtract the sum of the known low tides.<br/><math>-1.08 - (0.63 + (-0.94) + (-1.02))</math><br/><math>= -1.08 - (-1.33)</math><br/><math>= -1.08 + 1.33 = 0.25</math></p> <p>(Accept other valid explanations.)</p>   |
| <b>1</b>             | Student response includes 1 of the above elements.   |
| <b>0</b>             | Student response is incorrect or irrelevant.   |

| <b>Glow</b> | <b>Grow</b> |
|-------------|-------------|
|             |             |