

Session 16 Unit Seven Post-Assessment (cont.)

| PROBLEM 4 | SCORING: 4 POINTS POSSIBLE |
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| <p>4 ___ Write the correct number in each box to complete the equations.</p> <p>a $25 = 4 \times 5 + \boxed{5}$</p> <p>b $3 \times \boxed{4} = 2 \times \boxed{6}$</p> <p>c $2 \times \boxed{8} - 4 = 2 \times 6$</p> <p>d $40 \div \boxed{4} = 31 - 21$</p> | <ul style="list-style-type: none"> • 1 point for each equation completed correctly. |
| <p>Comments</p> <p>Note that there are many different numbers that can be entered in the boxes for problem 4b to complete the equation correctly.</p> | |

| PROBLEM 5 | SCORING: 8 POINTS POSSIBLE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p>5 The function machine is back! ___ Use the clues to fill in the missing numbers on each chart. Describe a rule the machine could use to get the numbers on the chart. Then write an equation to describe the rule.</p> <div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> <p>a</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <tr><th style="width: 50%;">in</th><th style="width: 50%;">out</th></tr> <tr><td>4</td><td>8</td></tr> <tr><td>6</td><td>10</td></tr> <tr><td>10</td><td>14</td></tr> <tr><td>2</td><td>6</td></tr> <tr><td>0</td><td>4</td></tr> <tr><td>100</td><td>104</td></tr> <tr><td>16</td><td>20</td></tr> <tr><td>55</td><td>59</td></tr> </table> <p>The rule for getting the output numbers is: the input number plus 4</p> <p>Here's how to write our rule as an equation: $\triangle = \square + 4$</p> </div> <div style="width: 45%;"> <p>b</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <tr><th style="width: 50%;">in</th><th style="width: 50%;">out</th></tr> <tr><td>2</td><td>5</td></tr> <tr><td>5</td><td>11</td></tr> <tr><td>7</td><td>15</td></tr> <tr><td>10</td><td>21</td></tr> <tr><td>6</td><td>13</td></tr> <tr><td>20</td><td>41</td></tr> <tr><td>100</td><td>201</td></tr> <tr><td>12</td><td>25</td></tr> </table> <p>The rule for getting the output numbers is: twice the input number plus 1</p> <p>Here's how to write our rule as an equation: $\triangle = \square \times 2 + 1$</p> </div> </div> | in | out | 4 | 8 | 6 | 10 | 10 | 14 | 2 | 6 | 0 | 4 | 100 | 104 | 16 | 20 | 55 | 59 | in | out | 2 | 5 | 5 | 11 | 7 | 15 | 10 | 21 | 6 | 13 | 20 | 41 | 100 | 201 | 12 | 25 | <ul style="list-style-type: none"> • 1/2 point for each correct number entered on either chart (there are 8 numbers to fill in). • 1 point apiece for describing in words the value of the output number. • 1 point apiece for writing an equation that describes the value of the output number. |
| in | out | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 104 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 55 | 59 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| in | out | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 41 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 201 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Comments</p> <p>There are many different ways to write equations for these two functions, and it is not necessary to use the triangle and square to represent the output and input numbers. Accept any equation that's reasonable, and award half a point each for any attempts at symbolic equations, even if they are not completely accurate.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| PROBLEM 6 | SCORING: 3 POINTS POSSIBLE |
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| <p>6 A king promised to give a wise man double the number of grains of rice each day for 64 days. He gave him 1 grain the first day, 2 the second, 4 the third, and so on. Answer the questions about the graph below.</p> <div style="display: flex;"> <div style="width: 45%;"> <p>Grains of Rice for the Wise Man Each Day</p> </div> <div style="width: 55%;"> <p>a Is it a graph of a linear pattern or a non-linear pattern? How do you know? Sample: It's non-linear because the points don't go in a straight line.</p> <p>b Jon says he can't mark the point for the 11th day on this grid. Do you agree or disagree? Why? Sample: I agree because the number of grains doubles each day. There are more than 500 grains on the 10th day, so it'll be over 1,000 on the 11th day and the graph only goes up to 1,000.</p> </div> </div> | <ul style="list-style-type: none"> • 1 point for identifying this as the graph of a non-linear pattern. • 1 point for the correct answer to part b (<i>yes or I agree</i>). • 1 point for an explanation of why it is not possible to mark the point for the 11th day on the grid. |