Patterns Functions and Algebra
Study Guide

For our unit test, you will need to know:

- **Patterns** – both numerical and geometric

  **Examples:**

  5, 10, 15, ____, 25, ____

  230, 240, 250 - if this pattern continues, what will be the 6th number in the sequence?

- **Functions** – Complete the function tables

<table>
<thead>
<tr>
<th>In</th>
<th>Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>14</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

  Rule: add 4

<table>
<thead>
<tr>
<th>In</th>
<th>9</th>
<th>12</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out</td>
<td>4</td>
<td>7</td>
<td>20</td>
</tr>
</tbody>
</table>

  Rule: ____

Solve the equation when a = 3.

3 + a = ___
5 x a = ___
10 – a = ___

Find the value of the variable in each equation.

4 + c = 10
24 = 27 – b

c = ____
b = ____
Equality – the equal sign (=) represents equivalent quantities in an equation.

Examples: 5 + 3 = 3 + 5 (commutative property of addition)

2 x 4 = 4 x 2 (commutative property of multiplication)

15 + 5 = 25 -5  2 + 6 + 1 = 6 + 3

Evaluate (solve) for n.

n + 4 = 3 + 7  4 x 6 = n x 4  8 – n = 3 + 1

n = ___  n = ___  n = ___

Joey and Brooke were born on the exact same day, but not in the same year. Their ages are shown in the table.

<table>
<thead>
<tr>
<th>Joey’s Age</th>
<th>2</th>
<th>4</th>
<th>7</th>
<th>15</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brooke’s Age</td>
<td>5</td>
<td>7</td>
<td>10</td>
<td>13</td>
<td>18</td>
</tr>
</tbody>
</table>

When Joey was 18, how old was Brooke? _________

When Brooke was 13, how old was Joey? _________

Which choice best explains the rule for this table? (Circle one)

a. Add three to Joey’s age to find Brooke’s age.

b. Add four to Joey’s age to find Brooke’s age.

c. Subtract three from Joey’s age to find Brooke’s age.

d. Subtract four from Brooke’s age to find Joey’s age.

Choose the example of the associative property of multiplication?

a. 10 x 7 = 7 x 10
b. 8 x (3 x 2) = (8 x 3) x 2

Choose the example of the commutative property of multiplication?

a. 10 x 7 = 7 x 10
b. 8 x (3 x 2) = (8 x 3) x 2