**Math Message:**

1. \(3 \times 3 = 9\)
2. \(3 + 3 = 6\)
3. \(4 \times 4 = 16\)
4. \(4 + 4 = 8\)
5. \(5 \times 5 = 25\)
6. \(5 + 5 = 10\)
7. \(10 \times 10 = 100\)
8. \(10 + 10 = 20\)

**Squaring Numbers**

**OBJ:** Introduce square numbers and exponents

---

Numbers that can be represented by square arrays are called square numbers.

---

The *raised* 2 is called an **exponent**.

Numbers written with an exponent are said to be in **exponential notation**.

Exponential Notation:

\[
4^2 \quad 5^2 \quad 8^2 \quad 10^2
\]

- \(4 \times 4 = 16\)  
- \(4 \text{ squared} = 4 \text{ to the second power}\)

\[
5 \times 5 = 25
\]

\[
8 \times 8 = 64
\]
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1. \(5 \times 5 = 25\)
   \(5^2 = 5 \times 5 = 25\)
   \(4 \times 4 = 16\)
   \(3 \times 3 = 9\)

2. Square numbers
   \(10 \times 10 = 10^2 = 100\)
   \(9 \times 9 = 9^2 = 81\)
   \(8 \times 8 = 8^2 = 64\)
   \(7 \times 7 = 7^2 = 49\)
   \(6 \times 6 = 6^2 = 36\)
   \(5 \times 5 = 5^2 = 25\)
   \(4 \times 4 = 4^2 = 16\)
   \(3 \times 3 = 9\)
   \(2 \times 2 = 4\)
   \(1 \times 1 = 1\)

prime? 1 is self
\(5 \times 5 = 25\)
\(25 \times 1 = 25\)
\(16\)
\(4, 8, 2, 1, 16\)

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### Skyline of Squares

**Directions:**

Place square arrays in size order, starting with the largest square array on the bottom in order to build your square scraper!

On each square array, write the exponential notation and the numeric equation. (See example)

<table>
<thead>
<tr>
<th>Product</th>
<th>Exponential Notation</th>
<th>Square Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 x 4</td>
<td>4²</td>
<td>16</td>
</tr>
<tr>
<td>7 x 7</td>
<td>7²</td>
<td>49</td>
</tr>
<tr>
<td>10 x 10</td>
<td>10²</td>
<td>100</td>
</tr>
<tr>
<td>11 x 11</td>
<td>11²</td>
<td>121</td>
</tr>
</tbody>
</table>

\[3^2\]