HOW TO FIND THE FACTORS OF A NUMBER

When factoring polynomials, being able to find whole number factors quickly can be useful. Here’s a way to use the TI 83 or 84 graphing calculator to generate a list of factors:

1. Clear the calculator’s y = equation.
2. For example, let’s find the factors of 24. Enter y = \( \frac{24}{x} \) into the calculator’s graphing equation.
3. Then, use the 2nd Table function to get a list of x’s and y’s for that graph.
4. Starting at x = 1 and ending at x = 24, scroll down through the table and look for integer—or whole number—pairs of x’s and y’s (ignore the decimals and duplicate pairs). These are the factors.

For 24, you’ll get:

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>4.8</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>3.4286</td>
</tr>
<tr>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>2.6667</td>
</tr>
<tr>
<td>10</td>
<td>2.4</td>
</tr>
<tr>
<td>11</td>
<td>2.1818</td>
</tr>
<tr>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>1.8462</td>
</tr>
<tr>
<td>14</td>
<td>1.17143</td>
</tr>
<tr>
<td>15</td>
<td>1.6</td>
</tr>
<tr>
<td>16</td>
<td>1.5</td>
</tr>
<tr>
<td>17</td>
<td>1.4118</td>
</tr>
<tr>
<td>18</td>
<td>1.3333</td>
</tr>
<tr>
<td>19</td>
<td>1.2632</td>
</tr>
<tr>
<td>20</td>
<td>1.2</td>
</tr>
<tr>
<td>21</td>
<td>1.1429</td>
</tr>
<tr>
<td>22</td>
<td>1.0909</td>
</tr>
<tr>
<td>23</td>
<td>1.0435</td>
</tr>
<tr>
<td>24</td>
<td>1</td>
</tr>
</tbody>
</table>

Therefore, you see that 24 has 4 integer pairs of factors:

<table>
<thead>
<tr>
<th>1 &amp; 24</th>
<th>2 &amp; 12</th>
<th>3 &amp; 8</th>
<th>4 &amp; 6</th>
</tr>
</thead>
</table>

*Remember that a positive number has pairs of negative factors (-2 • -12 = 24) as well as positive ones (2 • 12 = 24). A negative number, on the other hand, has factor pairs with mixed signs (2 • -12 = -24 and -2 • 12 = -24).

You can also find several “factor” calculators online:

- ClassBrain.com
- algebra.help
- CalculatorSoup