## Factoring is “Un-Multiplying”

**Instructions:** Factor each number. (One factor has already been given, so you just need to find the missing factor.)

<table>
<thead>
<tr>
<th></th>
<th>Factors</th>
<th></th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24 = 6 × 4</td>
<td>2</td>
<td>15 = 3 × ___</td>
</tr>
<tr>
<td>3</td>
<td>10 = 2 × ___</td>
<td>4</td>
<td>24 = 3 × ___</td>
</tr>
<tr>
<td>5</td>
<td>25 = 5 × ___</td>
<td>6</td>
<td>20 = 5 × ___</td>
</tr>
<tr>
<td>7</td>
<td>30 = 10 × ___</td>
<td>8</td>
<td>49 = 7 × ___</td>
</tr>
<tr>
<td>9</td>
<td>21 = 3 × ___</td>
<td>10</td>
<td>18 = 9 × ___</td>
</tr>
<tr>
<td>11</td>
<td>45 = 9 × ___</td>
<td>12</td>
<td>48 = 6 × ___</td>
</tr>
<tr>
<td>13</td>
<td>36 = 6 × ___</td>
<td>14</td>
<td>77 = 7 × ___</td>
</tr>
<tr>
<td>15</td>
<td>18 = 3 × ___</td>
<td>16</td>
<td>81 = 9 × ___</td>
</tr>
<tr>
<td>17</td>
<td>32 = 4 × ___</td>
<td>18</td>
<td>100 = 2 × ___</td>
</tr>
<tr>
<td>19</td>
<td>64 = 8 × ___</td>
<td>20</td>
<td>250 = 50 × ___</td>
</tr>
<tr>
<td>21</td>
<td>14 = 2 × ___</td>
<td>22</td>
<td>144 = 12 × ___</td>
</tr>
</tbody>
</table>
Instructions: List two different factor pairs that will multiply to give you the number shown. (Do not use pairs that include the factor 1.)

1. 20 = \( \underline{4} \times \underline{5} \)
   2. 20 = \( \underline{2} \times \underline{10} \)

3. 18 = \( \underline{\text{___}} \times \underline{\text{___}} \)
   4. 18 = \( \underline{\text{___}} \times \underline{\text{___}} \)

5. 30 = \( \underline{\text{___}} \times \underline{\text{___}} \)
   6. 30 = \( \underline{\text{___}} \times \underline{\text{___}} \)

7. 28 = \( \underline{\text{___}} \times \underline{\text{___}} \)
   8. 28 = \( \underline{\text{___}} \times \underline{\text{___}} \)

9. 45 = \( \underline{\text{___}} \times \underline{\text{___}} \)
   10. 45 = \( \underline{\text{___}} \times \underline{\text{___}} \)

11. 36 = \( \underline{\text{___}} \times \underline{\text{___}} \)
    12. 36 = \( \underline{\text{___}} \times \underline{\text{___}} \)

13. 24 = \( \underline{\text{___}} \times \underline{\text{___}} \)
    14. 24 = \( \underline{\text{___}} \times \underline{\text{___}} \)

15. 16 = \( \underline{\text{___}} \times \underline{\text{___}} \)
    16. 16 = \( \underline{\text{___}} \times \underline{\text{___}} \)

17. 40 = \( \underline{\text{___}} \times \underline{\text{___}} \)
    18. 40 = \( \underline{\text{___}} \times \underline{\text{___}} \)

19. 32 = \( \underline{\text{___}} \times \underline{\text{___}} \)
    20. 32 = \( \underline{\text{___}} \times \underline{\text{___}} \)

21. 50 = \( \underline{\text{___}} \times \underline{\text{___}} \)
    22. 50 = \( \underline{\text{___}} \times \underline{\text{___}} \)

23. 100 = \( \underline{\text{___}} \times \underline{\text{___}} \)
    24. 100 = \( \underline{\text{___}} \times \underline{\text{___}} \)
Finding Factors by Testing for Divisibility

**Instructions:** Test for divisibility by dividing the bigger number by the smaller number. If there is no remainder, then the smaller number you tested IS a factor of the bigger number. Mark the correct box.

**Examples**

- Is 3 a factor of 15?
  - No
  - Yes

- Is 7 a factor of 20?
  - No
  - Yes

**1.** Is 2 a factor of 18?
  - No
  - Yes

**2.** Is 4 a factor of 16?
  - No
  - Yes

**3.** Is 3 a factor of 25?
  - No
  - Yes

**4.** Is 8 a factor of 18?
  - No
  - Yes

**5.** Is 7 a factor of 14?
  - No
  - Yes

**6.** Is 6 a factor of 30?
  - No
  - Yes

**7.** Is 3 a factor of 19?
  - No
  - Yes

**8.** Is 3 a factor of 21?
  - No
  - Yes

**9.** Is 6 a factor of 20?
  - No
  - Yes

**10.** Is 6 a factor of 40?
  - No
  - Yes
Using Divisibility Rules

Note: Testing for divisibility by dividing will always work, but sometimes it’s not necessary. There are some rules about divisibility that you can sometimes use to quickly tell if a number is a factor of another number. This can be very helpful when you are testing larger numbers!

Divisibility Rules
1. If the last digit is even, then the number is divisible by 2.
2. If the sum of a number’s digits is divisible by 3, then the number is divisible by 3.
3. If the last digit is a 0 or a 5, then the number is divisible by 5.
4. If the last digit is a 0, then the number is divisible by 10.

(There are other divisibility rules, but some are more work than just dividing with a calculator!)

Instructions: Use the divisibility rules to decide if the test number is a factor of the bigger number. Mark the correct box.

1. Is 2 a factor of 136?
   - [ ] Yes
   - [x] No

2. Is 5 a factor of 182?
   - [ ] Yes
   - [ ] No

3. Is 2 a factor of 423?
   - [ ] Yes
   - [ ] No

4. Is 3 a factor of 141?
   - [ ] Yes
   - [ ] No

5. Is 5 a factor of 270?
   - [ ] Yes
   - [ ] No

6. Is 2 a factor of 712?
   - [ ] Yes
   - [ ] No

7. Is 3 a factor of 51?
   - [ ] Yes
   - [ ] No

8. Is 10 a factor of 330?
   - [ ] Yes
   - [ ] No

9. Is 3 a factor of 323?
   - [ ] Yes
   - [ ] No

10. Is 5 a factor of 995?
    - [ ] Yes
    - [ ] No
## Finding All the Factors of a Number

**Instructions:** List all the factors of the number shown by doing a divisibility test for each number that is less than or equal to half of the number you are finding factors of. Using a calculator for the divisibility tests is recommended. Remember that 1 and the number itself are always factors. (Hint: You can also use a multiplication table to help you find all the factors.)

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Factor List</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>1 2 5 10</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>