1. a. Skip-count by nine.

   9, 18, 27, 36, 45, 54, 63, 72, 81, 90

   b. Look at the tens place in the count-by. What is the pattern?

      The tens place increases by 1.

   c. Look at the ones place in the count-by. What is the pattern?

      The ones place decreases by 1.

2. Complete the equations.

   a) 10 more than 0 is \( \underline{10} \)

      1 less is \( \underline{9} \)

      \( 1 \times 9 = \underline{9} \)

   b) 10 more than 9 is \( \underline{19} \)

      1 less is \( \underline{18} \)

      \( 2 \times 9 = \underline{18} \)

   c) 10 more than 18 is \( \underline{28} \)

      1 less is \( \underline{27} \)

      \( 3 \times 9 = \underline{27} \)

   d) 10 more than 27 is \( \underline{37} \)

      1 less is \( \underline{36} \)

      \( 4 \times 9 = \underline{36} \)

   e) 10 more than 36 is \( \underline{46} \)

      1 less is \( \underline{45} \)

      \( 5 \times 9 = \underline{45} \)

   f) 10 more than 45 is \( \underline{55} \)

      1 less is \( \underline{54} \)

      \( 6 \times 9 = \underline{54} \)

   g) 10 more than 54 is \( \underline{64} \)

      1 less is \( \underline{63} \)

      \( 7 \times 9 = \underline{63} \)

   h) 10 more than 63 is \( \underline{73} \)

      1 less is \( \underline{72} \)

      \( 8 \times 9 = \underline{72} \)

   i) 10 more than 72 is \( \underline{82} \)

      1 less is \( \underline{81} \)

      \( 9 \times 9 = \underline{81} \)

   j) 10 more than 81 is \( \underline{91} \)

      1 less is \( \underline{90} \)

      \( 10 \times 9 = \underline{90} \)
3. a. Analyze the equations in problem 2. What is the pattern?

The pattern is add 10 then subtract 1. 10-1.
To get a nines fact you add 10, then subtract 1.

b. Use the pattern to find the next 4 facts. Show your work.

<table>
<thead>
<tr>
<th>11 x 9 =</th>
<th>12 x 9 =</th>
<th>13 x 9 =</th>
<th>14 x 9 =</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 + 10 = 100</td>
<td>99 + 10 = 109</td>
<td>108 + 10 = 118</td>
<td>117 + 10 = 127</td>
</tr>
<tr>
<td>100 - 1 = 99</td>
<td>109 - 1 = 108</td>
<td>118 - 1 = 117</td>
<td>127 - 1 = 126</td>
</tr>
<tr>
<td>11 x 9 = 99</td>
<td>12 x 9 = 108</td>
<td>13 x 9 = 117</td>
<td>14 x 9 = 126</td>
</tr>
</tbody>
</table>

c. Kent notices another pattern in problem 2. His work is shown below. He sees that:
   - the tens digit in the product is 1 less than the number of groups
   - the ones digit in the product is 10 minus the number of groups

| 2 x 9 = 18 | tens digit | 1 = 2 - 1 | ones digit | 8 = 10 - 2 |
| 3 x 9 = 27 | 2 = 3 - 1 | 7 = 10 - 3 |
| 4 x 9 = 36 | 3 = 4 - 1 | 6 = 10 - 4 |
| 5 x 9 = 45 | 4 = 5 - 1 | 5 = 10 - 5 |

Use Kent's strategy to solve 6 x 9 and 7 x 9.

6 x 9 = 54 → 5 = 6 - 1 and 4 = 10 - 6
7 x 9 = 63 → 6 = 7 - 1 and 3 = 10 - 7

d. Show an example of when Kent's pattern doesn't work.

12 x 9 = 108. 0 does not equal 12 - 1. And 8 does not equal 10 - 12.
4. Each number sentence contains a letter representing the unknown. Find the value of each unknown. Then write the letters that match the answers to solve the riddle.

\[
\begin{align*}
  a \times 9 &= 54 & 81 \div 9 &= g \\
  a &= 6 & g &= 9 \\
  9 \times d &= 72 & d &= 8 \\
  o \div 9 &= 10 & e \times 9 &= 63 \\
  o &= 90 & e &= 7 \\
  9 \times n &= 27 & 9 \times s &= 36 \\
  n &= 3 & s &= 4 \\
  t \times 9 &= 18 & i \div 9 &= 5 \\
  t &= 2 & i &= 45 \\
\end{align*}
\]

How do you make one vanish?

Add a 'g' and it's gone!