

TEJ4M-01  
Binary and Decimal Number Systems Review Worksheet

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Date: \_\_\_\_\_

<p>Part 1: Convert the following Binary Numbers into Decimal</p> <ol style="list-style-type: none"><li>1010 1101 = <b>171</b></li><li>0111 1101 = <b>125</b></li><li>1010 = <b>10</b></li><li>1001 0101 = <b>149</b></li><li>1111 1001 = <b>259</b></li><li>1111 0011 = <b>253</b></li><li>1110 1110 = <b>238</b></li><li>1111 = <b>15</b></li></ol>	<p>Part 3: Converting Decimal Numbers to Binary</p> <ol style="list-style-type: none"><li>15 = <b>1111</b></li><li>112 = <b>0111 0000</b></li><li>223 = <b>1101 1111</b></li><li>344 = <b>0001 0100 1110</b></li><li>715 = <b>0010 1100 1011</b></li><li>102 = <b>0110 0110</b></li><li>223 = <b>1101 1111</b></li><li>134 = <b>1000 0110</b></li><li>Practice your binary conversions by playing the binary game at <a href="https://learningcontent.cisco.com/games/binary/index.html">https://learningcontent.cisco.com/games/binary/index.html</a></li></ol>		
<p>Part 2: Comparing Binary Numbers (Use &lt;, &gt;, or = )</p> <ol style="list-style-type: none"><li>101 &lt; 110</li><li>011 &lt; 100</li><li>0110 &lt; 1011</li><li>1010 = 01010</li><li>001 &lt; 010</li></ol>	<p>Part 4: Adding Binary Numbers</p> <table><tr><td><ol style="list-style-type: none"><li><math display="block">\begin{array}{r} 1111 \\ + 100 \\ \hline \end{array}</math><p><b>3: (1 0000 1011)</b></p><p><b>1: 0001 0011</b></p></li><li><math display="block">\begin{array}{r} 10111 \\ + 1111 \\ \hline \end{array}</math><p><b>2. 0010 0110</b></p><p><b>4. 1 0100 0101</b></p></li></ol></td><td><ol style="list-style-type: none"><li><math display="block">\begin{array}{r} 1011\ 1101 \\ + 100\ 1110 \\ \hline \end{array}</math></li><li><math display="block">\begin{array}{r} 1111\ 0111 \\ + 100\ 1101 \\ \hline \end{array}</math></li></ol></td></tr></table>	<ol style="list-style-type: none"><li><math display="block">\begin{array}{r} 1111 \\ + 100 \\ \hline \end{array}</math><p><b>3: (1 0000 1011)</b></p><p><b>1: 0001 0011</b></p></li><li><math display="block">\begin{array}{r} 10111 \\ + 1111 \\ \hline \end{array}</math><p><b>2. 0010 0110</b></p><p><b>4. 1 0100 0101</b></p></li></ol>	<ol style="list-style-type: none"><li><math display="block">\begin{array}{r} 1011\ 1101 \\ + 100\ 1110 \\ \hline \end{array}</math></li><li><math display="block">\begin{array}{r} 1111\ 0111 \\ + 100\ 1101 \\ \hline \end{array}</math></li></ol>
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Part 5: Subtracting Binary - Try to use the logic of borrowing "10" in Decimal to borrow "2 = 10" in Binary.

$$\begin{array}{r} 1. \quad 1101 \\ - \quad 1011 \\ \hline \end{array}$$

10

$$\begin{array}{r} 2. \quad 11110 \\ - \quad 1011 \\ \hline \end{array}$$

10011

$$\begin{array}{r} 3. \quad 11001001 \\ - \quad 10110011 \\ \hline \end{array}$$

00010110

Extension: Multiply the following binary numbers by using the same technique you use for multiplying decimals.

$$\begin{array}{r} 1101 \\ \times \quad 11 \\ \hline \end{array}$$

1101

11010

100111

$$\begin{array}{r} 11110 \\ \times \quad 10 \\ \hline \end{array}$$

111100

$$\begin{array}{r} 11001001 \\ \times \quad 10 \\ \hline \end{array}$$

110010010