

1. Find the value of each of the base three and base four expressions
 - (a) 1010101_3 and 1010101_4
 - (b) 1201101_3 and 1301101_4
 - (c) 12.01101_3 and 11.01301_4
2. Notice that the base three representation use only the digits 0, 1 and 2 while those of base four use only 0, 1, 2 and 3. Explain why only these digits are needed.
3. Find the base three and base four representations of
 - (a) 1999 using both the remainder method and the subtraction method.
 - (b) 2000 using both the remainder method and the subtraction method.
 - (c) $\frac{1}{4}$. What method is available here? Can you modify the remainder method to convert $\frac{1}{4}$ to ternary?
4. Perform the indicated arithmetic
 - (a) $1201_3 \times 10212_3$
 - (b) $1023_4 \times .1_4$
 - (c) $10220_3 + 1.20201_3$
 - (d) $1331_4 + 13211_4$
 - (e) $1031_4 + 1231.1_4$