

1. Write $n = 1492$ in the base $b = 2$, $b = 4$, and $b = 8$. What is the relationship among these representations? In other words, find a way to convert between these bases without translating them to and from decimal.
2. Find the unknown digit x from the equation $2x3_4 = 1x10_3$.
3. Construct the tables of addition and multiplication for the base $b = 6$ and evaluate $215_6 + 304_6$, $203_6 \times 405_6$.
4. Find the base -5 representation of all the numbers from 1 to 25.
5. Find the base 4 representation of $1/9$. Prove your answer.
6. Find the base -4 representation of $1/3$ and then show that your answer is correct.
7. How many two-digit positive integers N have the property that the sum of N and the number obtained by reversing the order of the digits of N is a perfect square?
8. A check is written for x dollars and y cents, both x and y two-digit numbers. In error it is cashed for y dollars and x cents, the incorrect amount exceeding the correct amount by \$17.82. Find a possible value for x and y .
9. The rightmost digit of a six-digit number N is moved to the left end. The new number obtained is five times N . What is N ?