Number Bases

Place all answers in the blank space provided. Calculators are allowed.

1. Write $6343_7$ in base 10.

2. Write the decimal number $7508$ in base 7.

3. Convert $8B4_{sixteen}$ to binary form.

4. Convert $10011110_{two}$ to octal form.

5. Write the largest 7 digit base 5 number and write it in decimal form.

6. Which is largest $4312_{five}$, $527_{twelve}$, $2214_{seven}$?

7. Add $1022_3 + 2121_3$ and leave the answer in base 3 form.

8. Perform the division $143_3 ÷ 2_3$ and leave the answer in base 5 form.

9. Multiply $43_7 × 25_7$ and leave the answer in base 7 form.

10. Change $1011.01_{two}$ to decimal form.

11. The multiplication $24_b × 24_b = 1104_b$ is correctly done in base $b$. What is the positive value of $b$?

12. Solve the equation $1000000_2 = 100_b$ for $b$.

13. What is the smallest positive value of $t$ such that $23t42_6$ is divisible by 5?