2023 MATH FIELD DAY NAME _____

SCHOOL _____

Number Bases

Place all answers in the blank space provided. Calculators are permitted. You are not expected to answer all questions.

_____ Q1. Write 2023 in base 7.

_____ Q2. Compute the difference $752_{14} - 179_{14}$ leaving your answer in base 14.

_____ Q3. Compute the quotient $2512_6 \div 5_6$ leaving your answer in base 6.

_____ Q4. Convert AAA_{16} to octal.

_____ Q5. Find the base b that makes the equation $112_b = 14$ true.

_____ Q6. Express $6BA_{14}$ as a base 10 number.

_____ Q7. Write the base 4 number 1.23_4 in octal form.

_____ Q8. Consider a base 36 system with digits $0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A = 10, B = 11, \ldots, Z = 35$. Find $BBB_{36} + TRS_{36}$ leaving your answer in base 36.

_____ Q9. Order these numbers from largest to smallest: $13_{10}, 21_3, 11011_2$

_____ Q10. Find the largest three digit base 5 number and convert the number to binary form.

_____ Q11. Determine the base 9 number $\sqrt{1357_9}$.

_____ Q12. Compute the base 5 product $432_5 \times 234_5$.

_____ Q13. For what value(s) of k will the four digit number $4k30_5$ be divisible by 3?