

Math 13000 Review Suggestions for Final Exam

1. Polya's Problem Solving Process
2. Problem solving strategies
3. Numeration systems: be able to distinguish between additive, positional, and place value systems and know examples of each.

4. Set Notation:

a. $A \cap C =$

- a. $\{ \}$
- b. $\{ M, A \}$
- c. $\{ M, A, T, H, E, X \}$
- d. $\{ M, A, T, H \}$
- e. none of these

$U = \{ M, A, T, H, E, X \}$ $A = \{ M, A, T, H \}$ $B = \{ E, X, A, M \}$ $C = \{ E, X \}$

b. $(A \cup B) \cup C =$

- a. $\{ M, A, T, H, E, X, A, M \}$
- b. $\{ E, X \}$
- c. $\{ T, H, E, X \}$
- d. $\{ M, A \}$
- e. none of these

5. Order of operations – be careful when using PEMDAS. Understand that this means parentheses, exponentiations, multiplications and divisions (in order that they appear from left to right), additions and subtractions (in order that they appear from left to right).

6. Convert 34 to a base five number, a base three number, a base six number.

7. Convert 134_{seven} to a base 10 number. Also 324_{six} and 231_{five}

8. Identify the properties for addition and multiplication: Commutative, Associative, Distributive, Closure, Identity, Inverse.

There are many examples in the book. Remember to look at the different properties with respect to the Whole numbers, Integers and Rational numbers.

9. Prime numbers, composite numbers, and composite numbers that are square numbers.

- What are prime numbers?
- What is different about the number of factors of a prime number and the number of factors of composite numbers? Square numbers?

10. State and use the divisibility rules for 2, 3, 4, 5, 6, 9, powers of 10

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11. If the temperature is now 0° , what will it be 3 hours from now if it decreases $2\frac{1}{2}^{\circ}$ each hour?
12. Find a fraction half way between two fractions. Find a fraction one third of the way between two fractions. This is the property of density for the rational numbers.
13. On Friday the mountain team advanced $1\frac{3}{4}$ miles. On Saturday the team advanced only $\frac{1}{3}$ as far. What was the total team distance for the two days?
14. Find the Greatest Common Factor and Least Common Multiple using prime factors for 24 and 48; 145 and 285
15. In a 30 member musical cast, 18 have singing parts, 5 have both tap-dancing and singing parts, and 8 have neither singing nor tap-dancing parts. How many have tap-dancing but not singing parts?
16. Show array multiplication using 16×13 and $2\frac{1}{2} \times 1\frac{3}{4}$, identify the partial products.
17. Be able to multiply using the Lattice Multiplication algorithm.
18. Be able to use the standard regrouping addition algorithm with bases *other than base ten*.
19. Use a “red and green balloon model” for signed number (integer) addition, subtraction (the “take away” method), multiplication and division
20. Fraction operations for addition, subtraction, multiplication and division.
21. Problem solving with fractions