### Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_

### Discrete Math Mods: \_\_\_\_\_\_\_\_\_\_\_\_

### Unit: Problem – Solving Pre – Assessment

**Complete the following problems. Read each carefully and follow the directions given. Show work for all calculations.**

1. Four boys were in a line.  Daniel was behind Timothy.  James was between Daniel and Timothy.  Daniel was in front of Colin.  A mud puddle was near the boy who was in the back of the line.  Who was in the back of the line?   Show how you arrived at your answer.

2. Find the next three numbers to continue the list below. Explain how you determined the numbers.

 1, 3, 7, 15, 31, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ …

3. Tony’s restaurant has 55 small square tables to be used for a banquet.  Each table can seat only one person on each side.  If the tables are pushed together to make one long table, how many people can sit at the table?  Show any work used to solve.

4. The Chicago Bears score 18 points in a football game.  In how many different ways can the Bears score these points?  Points are scored as follows:  a safety is 2 points, a field goal is 3 points, a touch down is 6 points and a point after touchdown (PAT) is 1 point (a PAT can’t be scored unless a touchdown is scored first). Show work to support your answer .

5. Letters A, B, and C each stand for a different digit from zero through nine.



Find the value of each of the three letters in the equation above.  Show all work and confirm your values for A, B and C are correct.

Solving a Simpler Problem (Big to Small):  Here are three; I’m leaning toward the last one – it’s similar to the handshake problem but asks something different …

1.        A palindrome is a number like 525 that reads the same backward or forward.  How many palindromes are there between 1 and 1000?  **ANSWER:  108**

2.        Tony’s restaurant has 55 small tables to be used for a banquet.  Each table can seat only one person on each side.  If the tables are pushed together to make one long table, how many people can sit at the table?  **ANSWER:  112**

3.        A total of 231 handshakes were exchanged at a party.  Each person shook hands exactly once with each of the others.  How many people were present at the party?  **ANSWER: 22**

1.       A survey of 100 college students found that 40 students like country music, 30 like gospel music, and 10 like both.  How many like country but not gospel?  How many like neither country nor gospel?    **ANSWERS: 30, 40   (Use a Venn Diagram)**

2.       Four boys were in a line.  Daniel was behind Timothy.  James was between Daniel and Timothy.  Daniel was in front of Colin.  A mud puddle was near the boy who was in the back of the line.  Who was in the back of the line?   **ANSWER: Colin**

 More Answers.

Patterns :

Find the next three numbers in the sequence:

1, 3, 7, 15, 31… 63, 127, 255

Chicago Bears – 12 possibilities

Digit problem A = 2, B = 9 and C = 1