Name: _____ Student #:_____

Date: _____ T.A. #: _____

Mathematics 12 Pre-Calculus
LEARNING GUIDE 18 TEST – PERMUTATIONS & COMBINATIONS

/17

***Full marks will NOT be given for the final answer only.**
When using a calculator, you should provide a decimal answer that is correct **to at least two decimal places** (unless otherwise indicated). Such rounding should occur **only** in the final step of the solution.

1. Lisa has 2 blouses, 4 skirts, and 2 sweaters, how many different outfits can she select to wear to school? (1 mark)

2. How many two letter permutations are there in the word LIGHT? (1 mark)

3. Brent is writing an exam with 10 multiple choice questions on it. Each question has 4 possible answers (A, B, C, and D).

    a) How many ways can he answer the exam? (1 mark)

    b) Brenda wrote the test a few days earlier and got 100% . He told Brent the following: "these are the answers to the test: 3A's, 2B's, 2C's and 3D's." How many ways can Brent answer the test using this information? (2 marks)

/5

4. Marge has become a member of the PTA. There are 20 members on the PTA. Calculate the number of ways a 4 person executive consisting of four people (president, vice-president, treasurer, and secretary) can be chosen. (1 mark)

5. Explain what ${}_7P_3$ means. Explain why does ${}_3P_7$ not make sense. (2 marks)

6. Solve for n. (1 mark each)

   a) ${}_nP_2 = 56$

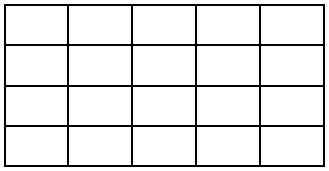
   b) ${}_nC_{n-2} = 45$

7. A work crew consists of 12 people. How many ways can a group of three be selected for a job? (2 marks)

/7

8. How many possible ways can a person get from A to B if one can only move down or to the right? (1 mark)

A



B

9. Expand $(3a + 2b)^3$ using the binomial theorem. (2 marks)

10. Determine the indicated term.

a) the 4^{th} term in the expansion of $(x - 1)^{12}$. (1 mark)

b) the middle term in the expansion of $(x - 4)^8$. (1 mark)

/5