Name:

1	
2	
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4	
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6	
7	
8	

Name:

9.

10.

Matching [1 pt each] How many? The answers (our of order) are:

15, 32, 37, 64, 240, 360, 671, 1296

1. How many length-4 lists from symbols A, B, C, D, E, F are possible if repetition is allowed?

2. How many length-4 lists from symbols A, B, C, D, E, F are possible if repetition is not allowed?

3. How many length-4 lists from symbols A, B, C, D, E, F are possible if repetition is not allowed and the symbol E must appear somewhere in the list?

4. How many length-4 lists from symbols A, B, C, D, E, F are possible if repetition is allowed and the symbol E must appear at least once in the list?

5. How many subsets of {A, B, C, D, E, F} are there?

6. How many subsets of {A, B, C, D, E, F} have four elements?

7. How many subsets of {A, B, C, D, E, F} have an E in them?

8. How many subsets of {A, B, C, D, E, F} either have an E in them or have four elements?

Mathematical writing [3 pts each] Prove each of the following statements. Write your proofs clearly and carefully on the back of your answer sheet.

9. Suppose $n \in \mathbb{Z}$. Prove that if n^2 is odd, then n is odd.

10. Prove that if $a, b \in \mathbb{Z}$ then $a^2 - 4b - 3 \neq 0$.