1. Find \( n(S \cap T) \), given that \( n(S) = 7 \), \( n(T) = 8 \) and \( n(S \cup T) = 15 \).

2. If \( n(S) = n(S \cup T) \), what can you conclude about \( S \) and \( T \)?

3. Suppose that all of the 1000 first-year students at a certain college are enrolled in a math and English course. Suppose that 400 are taking both math and English and 600 are taking English. How many are taking a math course?

4. Draw a two-circle Venn diagram and shade the portion corresponding to the set. 
   (a) \( S' \cup T' \); (b) \( S' \cup T \); (c) \( (S \cap T)' \); (d) \( (S \cap T')' \).

5. How many different two-letter words (including non-sense words) can be formed when repetition of letters are allowed?

6. How many ways can five people be arranged in a line for a group picture?

7. A sportswriter is asked to rank eight teams. How many different orderings are possible?

8. A group of five boys and three girls to be photographed.
   (a) How many ways can they be arranged in one row?
   (b) How many ways can they be arranged with the girls in the front row and the boys in the back row?

9. An exam contains six true or false statements. In how many ways can the exam be completed if leaving the answer blank is also an option?

10. A college student eats all his meals at a restaurant offering six breakfast specials, seven lunch specials, and four dinner specials. How many days can he go without repeating an entire day’s menu selection?

11. An area code is a three-digit number where the first digit cannot be 0 or 1. How many different area codes are possible?

12. Fred has 10 different pairs of shoes. If he randomly chooses any two shoes among these 20 shoes, in how many ways can he put on a pair of shoes that do not match?