PREC12
11.1/11.2

Permutations & Combinations

1. How many ways can five different CD's be arranged on a shelf?

2. There are 9 different CD's. How many ways can 5 of them be arranged on a shelf?

3. There are 15 CD's, six of which will be taken on a trip. How many different sets of six could be taken?

4. How many groups of 4 can be chosen from 13 students?

5. How many committees of 4 (one president, one vice-president, one treasurer, and one secretary) can be chosen from 13 students?

6. How many ways can you line up 3 red flags, 5 green flags, and 2 blue flags?

7. Sdoutz has 15 multiple-choice questions ready for a test. 5 answers are A, 3 are B, 2 are C, and 5 are D. How many different tests can be made?

8. For question #7 how many different answer keys would there be?

9. How many triangles can be drawn by connecting the vertices of a 10-sided figure?

10. A committee of six is chosen from 7 boys and 11 girls. How many different committees can be formed for each scenario?
    a) there must be equal number of girls and boys
    b) there must be at least 3 boys
    c) there must be at least 3 girls

11. Five cards are dealt from a regular 52-card deck. How many hands are possible for each scenario?
    a) exactly one-pair
    b) exactly three of a kind
    c) exactly two-pairs (pairs are different from each other)
    d) four of a kind
    e) full-house

KEY

1) $5!$

2) $9P_5$

3) $15C_6$

4) $13C_4$

5) $13P_4$

6) $\frac{10!}{3!5!2!}$

7) $15!$

8) $\frac{15!}{5!3!2!5!}$

9) $10C_3$

10) a) $7C_5 \cdot 11C_3$

b) $7C_3 \cdot 11C_3 + 7C_4 \cdot 11C_2 + 7C_5 \cdot 11C_1 + 7C_6 \cdot 11C_0$

c) $11C_3 \cdot 7C_3 + 11C_4 \cdot 7C_2 + 11C_5 \cdot 7C_1 + 11C_6 \cdot 7C_0$

11) a) $13C_1 \cdot 4C_2 \cdot 12C_3 \cdot 4C_1 \cdot 4C_1 \cdot 4C_1$

b) $13C_1 \cdot 4C_3 \cdot 12C_2 \cdot 4C_1 \cdot 4C_1$

c) $13C_2 \cdot 4C_2 \cdot 4C_2 \cdot 4^4C_1$

d) $13C_1 \cdot 4C_4 \cdot 48C_1$

e) $13C_1 \cdot 4C_3 \cdot 12C_1 \cdot 4C_2$