Combinatorics 2017 HW 1.2

Student ID: Name: Score:

1. How many different permutations for word“Combinatorics”? (Case sensitive)

2. The coefficient number of $a^2b^2c^2$ in the expanded equation of $(2a+b+c)^6$ is ____。【Please calculate the exact number】

Answer: 360

Explanation: $\frac{6!}{2!2!2!}\times 2^2 = 90\times 4=360$

1. For the case of giving fruits to 3 children, in total there are 12 identical apples, each child may at least have a fruit, it contains ____ types of ways.

Answer：55

Explanation: Set the fruit giving away for i^{th} child as xi, xi≥1 x1+x2+x3=12 令 y1=x1-1,y2=x2-1,y3=x3-1y1+y2+y3=9 yi≥0. The non-negative integer solution number is C(9+3-1,9)=55。

Think About：The number of non-negative integer solution number of x1+x2+x3=12, and x1<=5, x2<=8,x3<=5

What is the number of integral solutions of the equation x1+x2+x3=30; in which x1⩾5, x2⩾-8,x3⩾5