HW 6.5

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May 21, 2015

6. How many ways are there to select five unordered elements from a set with three elements when repetition is allowed?

$C(3+5-1,5) = C(7,5) = C(7,2) = \frac{7!}{2!*5!} = 21$

8. How many different ways are there to choose a dozen donuts from the 21 varieties at a donut shop?

$C(12+21-1,12) = C(32,12) = \frac{32!}{12!*20!} = 225792840$

12. How many different combinations of pennies, nickels, dimes, quarters, and half dollars can a piggy bank contain if it has 20 coins in it?

$C(5+20-1,20) = C(24,20) = C(24,4) = \frac{24!}{4!*20!} = 10626$

14. How many solutions are there to the equation $x1 + x2 + x3 + x4 = 17$

$C(4+17-1,17) = C(20,3) = \frac{20!}{3!*17!} = 1140$