

Subpopulations

How many ways are there of splitting five balls into two groups (subpopulations), one of two balls and the other of three balls?



a



b



c



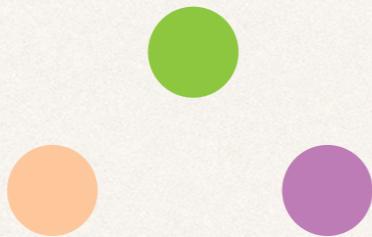
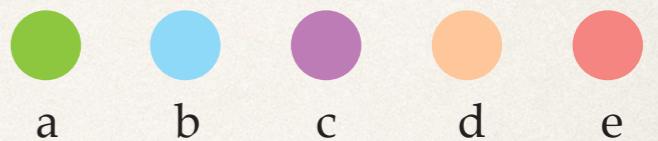
d



e

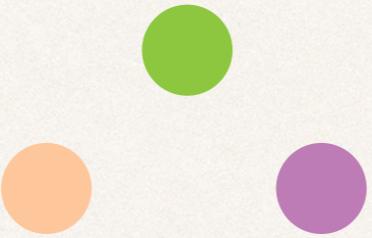
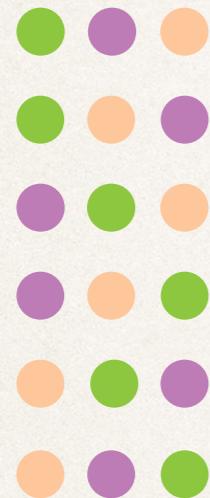
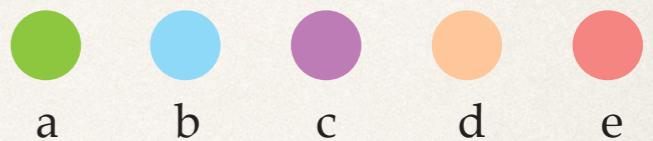
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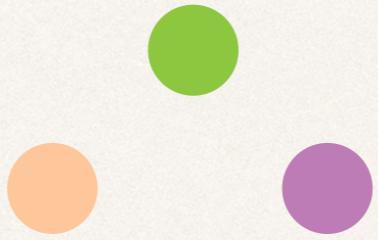
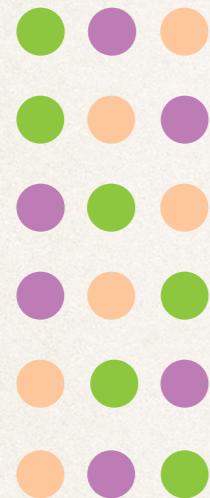
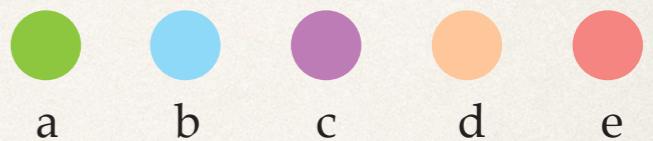
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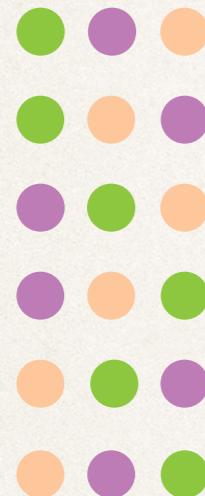
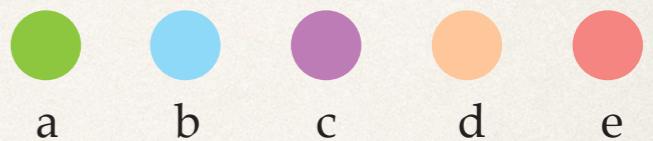
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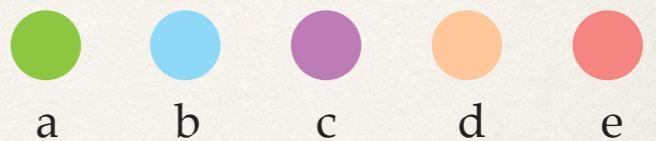
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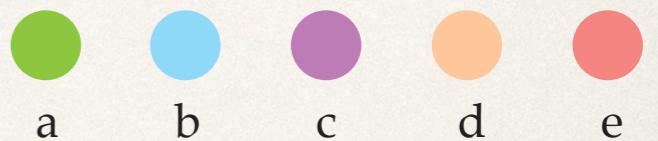
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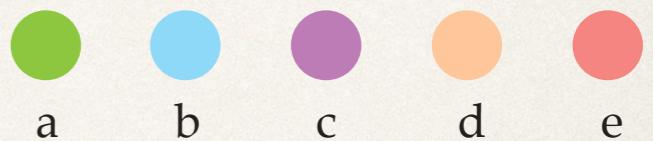


Ordered sample	Subset (subpopulation)
(a, c, d)	{a, c, d}
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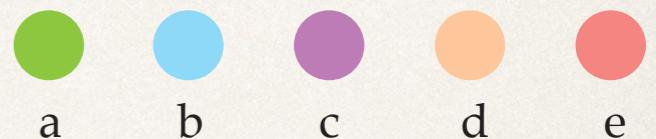
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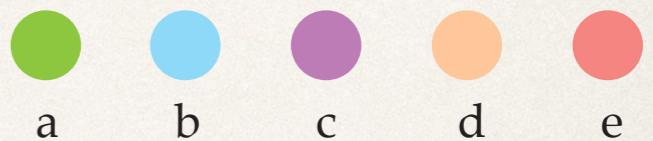
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Binomial coefficient: "5-choose-3"

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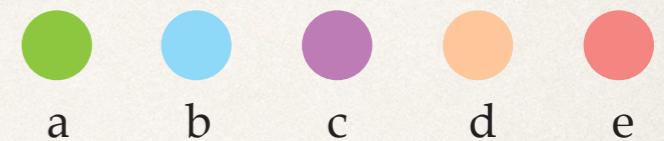
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Generalisation: The number of subpopulations $\{a_{j_1}, a_{j_2}, \dots, a_{j_k}\}$ of size k that can be drawn from a population $\{a_1, a_2, \dots, a_n\}$ of size n :

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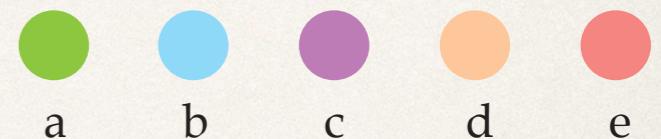
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Convention:
 $\binom{n}{0} = 1$ for $n \geq 0$.