A LaTeX Sample Diagram

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I divide my answer into sections so as to see the layout of this typesetting engine.

1 Introductory rubbish

There's no denying that combinatorics is a fine art of counting. Therefore, questions related to this branch of math is hard for students who don't like math.

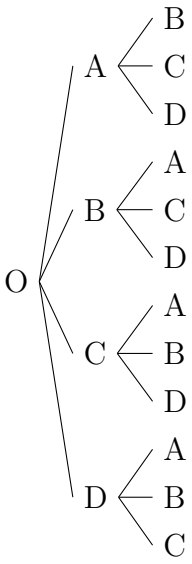
The objective of this article is to test my skills in drawing simple diagrams in LaTeX, as well as to clarify the conceptual difference between ${}_{10}C_2$ and ${}_{10}C_1 \times {}_9C_1$.

2 So-called "analysis" to the problem

The meaning of ${}_{10}C_2$ is easy to imagine. What's left is to think of a way to perceive ${}_{10}C_1 \times_9 C_1$. A visual way to understand the problem is good.

However, "10" is *too big* for drawing such diagram. Thus, I reduce "10" to "4".

3 The diagram



4 Actual answer

To see the difference better, I use an unordered list so that the following 2 sentences won't be put into the same paragraph.

- From the above diagram, the *order* of picking 2 things *does count*.
- From the equation below, the *order* of picking 2 things *doesn't count*. In ${}_{10}C_2$, we have

$$\binom{10}{2} = \frac{9 \cdot 8}{2!}.$$