**Relations Between Problems, II**

* *Below are seven problems, labeled A,B,C,D,E,F,G. The object is to place the letter of each problem in one of the boxes below.*
* *Put letters in the same box if they are mathematically the “same” problem, apart from superficial differences of context.*
* *If problems in different boxes are closely related mathematically, connect their boxes by a line, or by a double line if the connection is very strong. (Note, you need not use all of the boxes, and you may reasonably answer this question even if you have not completely solved the individual problems.)*
* *Work on this individually for a few minutes. Then compare answers in your group.*
* *Try to come to some consensus on how to* ***explain*** *(to the whole group) your choices, in particular the nature of the connections.*

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1. *A taxi wants to drive (efficiently) from one corner to another that is 5 blocks north, and 3 blocks east. How many possible routes are there to do this?*
2. *On the number line, starting at 0, you are to take 8 steps, each of which is either distance 1 to the right, or distance 1 to the left, and in such a way that you end up at -2. How many different such walks are there?*
3. *The home team won a soccer game 5 to 3. How many possible sequences of scoring were there as the game progressed?*
4. *You have coins worth 3¢ and 5¢. With 8 such coins, how many different values can you obtain?*
5. *From a group of 8 students, you need to select a (5-person) basketball team. How many different ways are there to do this?*
6. *You are to cut a 9-inch ribbon into six pieces, each of length a whole number of inches. How many ways are there to do this?*

*G.**In the expansion of (1 + x)8, what is the coefficient of x3?*