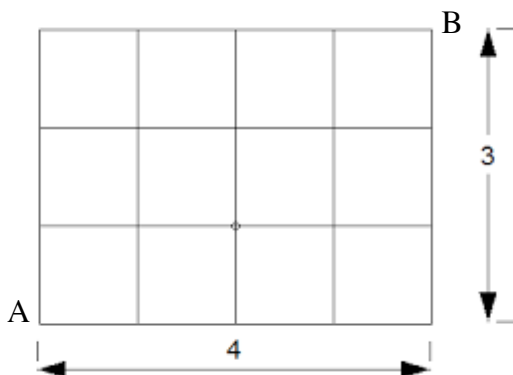


Physics 408 Problem Set 2 Due Wednesday, Sep. 13

1) Consider the 3 by 4 grid shown. Consider possible paths going from A (lower left) to B (upper right). Suppose that the only moves possible are either one step to the right, or one step upward, along one of the edges of the squares forming the grid, with paths from A to B made of a succession of such moves.



- How many different paths from A to B are possible? [Hint: Note that for a successful path you must take 4 steps to the right and 3 steps upward.]
 - How many paths from A to B are possible in the more restricted case that the path must also go through the point with the small circle?
 - Think of a statement connecting the method used for (b) by analogy to the result that the total entropy of separate but coexisting systems is additive (entropy is extensive).
- 2) Consider the die-rolling exercise considered in class, with a standard 6-sided die, but suppose that the die is thrown a large number N times.
- Given a number n (between 0 and N), what is the probability that the total number of 6's is equal to n ?
 - Determine the mean number of 6's to be expected.
 - Find the standard deviation about this average value.
- 3) Schroeder problem 2.6.
- 4) Schroeder problem 2.8.
- 5) Schroeder problem 2.18.