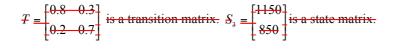# A10: Combinatorics and probability

Question ~~307~~ 306

Jo has either tea or coffee at morning break. If she has tea one morning, the probability she has tea the next morning is 0.5. If she has coffee one morning, the probability she has coffee the next morning is 0.3. Suppose she has coffee on a Monday morning. What is the probability that she has tea on the following Wednesday morning?

[VCAA 2006 MM (CAS)]

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A10: Combinatorics and probability

Question ~~310~~ 307

Every Friday Jean-Paul goes to see a movie. He always goes to one of two local cinemas – the Dandy or the Cino.
If he goes to the Dandy one Friday, the probability that he goes to the Cino the next Friday is 0.5. If he goes to the Cino one Friday, then the probability that he goes to the Dandy the next Friday is 0.6. On any given Friday the cinema he goes to depends only on the cinema he went to on the previous Friday.
If he goes to the Cino one Friday, what is the probability that he goes to the Cino on **exactly two** of the next three Fridays?

[VCAA 2008 MM (CAS)]

Question ~~311~~ 308

A biased coin is tossed three times. The probability of a head from this coin is p.

a. Find, in terms of p, the probability of obtaining
   i. three heads from the three tosses.
   ii. two heads and a tail from the three tosses.
b. If the probability of obtaining three heads equals the probability of obtaining two heads and a tail, find p.

[VCAA 2011 MM (CAS)]

Question ~~312~~ 309

The minimum number of times that a fair coin can be tossed so that the probability of obtaining a head on each trial is less than 0.0005 is

A. 8   **B.** 9   **C.** 10   **D.** 11   **E.** 12

[VCAA 2008 MM (CAS)]

Question ~~313~~ 310

During a holiday, Mark and John play a total of n games of golf. The probability that John wins any game is 0.3. No games are drawn.
If the probability that John wins no games is 0.0576, correct to four decimal places, the total number of games that they play is

A. 1   **B.** 2   **C.** 5   **D.** 8   **E.** 12

[VCAA 2005 MM]