

Dr Oliver Mathematics
Worked Examples
Probability 3

From: Edexcel 2004 June Paper 5H (Non-Calculator)

1. (a) (i) Factorise $2x^2 - 35x + 98$. (3)
(ii) Solve the equation $2x^2 - 35x + 98 = 0$.

A bag contains $(n + 7)$ tennis balls.

n of the balls are yellow.

The other 7 balls are white.

John will take at random a ball from the bag.

He will look at its colour and then put it back in the bag.

- (b) (i) Write down an expression, in terms of n , for the probability that John will take a white ball. (3)

Bill states that the probability that John will take a white ball is $\frac{2}{5}$.

(ii) Prove that Bill's statement cannot be correct.

After John has put the ball back into the bag, Mary will then take at random a ball from the bag.

She will note its colour.

- (c) Given that the probability that John and Mary will take balls with different colours is $\frac{4}{9}$, prove that (5)

$$2n^2 - 35n + 98 = 0.$$

- (d) Using your answer to part (a) (ii) or otherwise, calculate the probability that John and Mary will both take white balls. (2)