6B The Binomial Distribution

1. Gary is playing chess against Nigel, and has a $\frac{2}{3}$ chance of winning each game.

a) If they play 5 games, what is the probability of Gary winning exactly 3?

b) Find the term containing x^3 in the following expansion:

$$(x + y)^5$$

c) If the probability of Gary winning a chess match is $\frac{2}{3}$, find the probability of him winning exactly 3 games out of 5

a) Give the probability distribution of X in table form.

Notes:

2. Gary is playing chess against Nigel, and has a $\frac{2}{3}$ chance of winning each game. If they play 5 games, what is the probability of Gary winning exactly 3?

3. The random variable $X \sim B\left(12, \frac{1}{6}\right)$. Find:

a) $P(X = 2)$

b) $P(X = 9)$

c) $P(X \leq 1)$

4. The probability that a randomly chosen member of a reading group is left-handed is 0.15. A random sample of 20 members of the group is taken.

a) Suggest a suitable model for the random variable X, the number of members in the sample who are left handed. Justify your choice.

b) Use your model to calculate the probability that:

i) Exactly 7 sample members are left handed

ii) Less than two members are left-handed