**6B The Binomial Distribution**

1. Gary is playing chess against Nigel, and has a $\frac{2}{3}$ chance of winning each game.
2. If they play 5 games, what is the probability of Gary winning exactly 3?
3. Find the term containing $x^{3}$ in the following expansion:

$$\left(x+y\right)^{5}$$

1. 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
2. Give the probability distribution of $X$ in table form.

Notes:

1. 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?
2. The random variable $X\~B\left(12,\frac{1}{6}\right)$. Find:
3. $P(X=2)$
4. $P(X=9)$
5. $P(X\leq 1)$
6. 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.
7. Suggest a suitable model for the random variable $X$, the number of members in the sample who are left handed. Justify your choice.
8. Use your model to calculate the probability that:
9. Exactly 7 sample members are left handed
10. Less than two members are left-handed