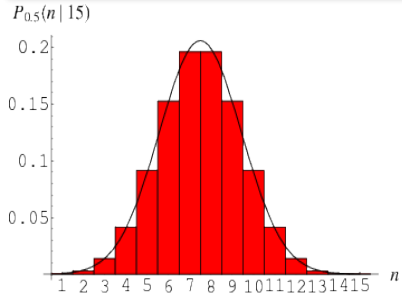
Week 15/16
Term 2
2019

HAWKER COLLEGE
Engage | Inspire | Achieve

Learning Brief MM3: Binomial Distribution and Bernoulli Trials

Goals



By the end of this week, you should be able to:

- understand probability distributions for discrete random variables
- understand Bernoulli trials
- understand binomial theorem and binomial probability distribution
- recognise situations when the binomial distribution applies and learn how to solve problems involving the binomial distribution
- recognise and use the formula and CAS for binomial probabilities and graphs
- understand the assumptions on which the binomial model is based

Theoretical Components

BINOMIAL DISTRIBUTION:
You will require Chapter 11 of Quest Mathematical Methods 12 (Jacplus e-text):
- Read through Section 11A & 11B on Binomial Distributions. Study and make notes on examples 1-5.

https://www.youtube.com/watch?v=xNLQuuvE9ug

https://www.youtube.com/watch?v=WWv0RUxDfbs

http://stattrek.com/probability-distributions/binomial.aspx

$\Pr(X = x) = {}^{n}C_x\, p^x q^{n-x}$ where $x = 0, 1, 2, \ldots n$.
That is:

x = the occurrence of the successful outcome.

The formula may also be written as:

$\Pr(X = x) = {}^{n}C_x\, p^x (1-p)^{n-x}$ where $x = 0, 1, 2, \ldots n$.

Here, the probability of failure, q, is replaced by $1 - p$.

Practical Components

Maths Quest 12 Methods:

EX 11A: 3, 5, 7, 11, 14, 15, 23, 29

EX 11B: 2, 4, 7, 9, 11, 13, 21, 22, 28

EX 11D: As many as you can

We do not study Markov Chains at this point so leave out Exercise 11C

Investigation

Week 15 (Show working)
Calculate the probability of getting:
- exactly 2 heads in 4 throws of a coin
- exactly 5 heads in 10 throws of a coin
- exactly 50 heads in 100 throws of a coin
- exactly 500 heads in 1000 throws of a coin

Week 16
mathspace.co - Bernoulli Mean and Variance

QFO

Quiz/Forum/Other

Be sure to regularly check the Google Classroom for messages and links.