Week 5/6
Term 3
2021

HAWKER COLLEGE
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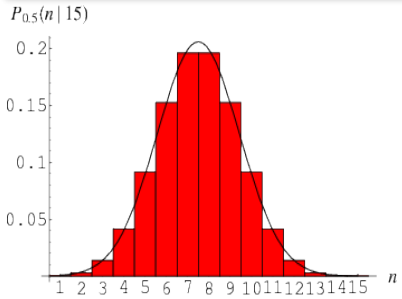
SMM4
Binomial Distribution and Bernoulli Trials

Goals



By the end of this fortnight, 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):

Week 5:

- Read through Section 11A and 11B on Binomial Distributions. Study and make notes on examples 1-10.

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 $1 - p$.

Week 6:

- Read through Section 11D Expected value, variance and standard deviation on Binomial Distributions. Study and make notes on examples 15-18.

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

Investigation

In-class this week during your double. Please come prepared.

QFO
Quiz/Forum/Other

Quiz on mathspace

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