📑 Summary

SL - Probability Draft

Subject	Year	Start date	Duration
Mathematics: applications and interpretation	IB1	Week 3, November	6 weeks

Course Part

📕 Inquiry & Purpose

⑦ Inquiry / Higher Order Questions

Type	Inquiry Questions
Skills-based	In what contexts would you expect the normal distribution to the appropriate model?
Skills-based	What does the expected value of a discrete random variable predict about the outcomes of a number of trials?

🔎 Curriculum

⊕ Aims

Develop logical and creative thinking, and patience and persistence in problem solving to instil confidence in using mathematics

◇ Objectives

Inquiry approaches: Investigate unfamiliar situations, both abstract and from the real world, involving organizing and analyzing information, making conjectures, drawing conclusions, and testing their validity.

🗒 Syllabus Content

Topic 4: Statistics and probability

SL Content

SL 4.5

Concepts of trial, outcome, equally likely outcomes, relative frequency, sample space (U) and event.

The probability of an event A is $\mathrm{P}(A) = \dfrac{n(A)}{n(U)}$

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The complementary events A and A' (not A).

Expected number of occurrences.

SL 4.6

Use of Venn diagrams, tree diagrams, sample space diagrams and tables of outcomes to calculate probabilities.

Combined events: $\mathrm{P}(A \cup B) = \mathrm{P}(A) + \mathrm{P}(B) - \mathrm{P}(A \cap B)$

Mutually exclusive events: $\mathrm{P}(A \cap B) = 0$.

Conditional probability: $\mathrm{P}(A|B) = \dfrac{\mathrm{P}(A \cap B)}{\mathrm{P}(B)}$

Independent events: $\mathrm{P}(A \cap B) = \mathrm{P}(A)\mathrm{P}(B)$.

SL 4.7

Concept of discrete random variables and their probability distributions.

Expected value (mean), $\mathrm{E}(X)$ for discrete data.

Applications.

SL 4.8

Binomial distribution.

Mean and variance of the binomial distribution.

SL 4.9

The normal distribution and curve.

Properties of the normal distribution.

Diagrammatic representation.

Normal probability calculations.

Inverse normal calculations

📝 ATL Skills

👆 Approaches to Learning

🧠 Thinking

- In this unit, we will

    ask students to formulate a reasoned argument to support their opinion or conclusion

    give students time to think through their answers before asking them for a response

    set students a task which required higher-order thinking skills (such as analysis or evaluation)

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Developing IB Learners

Learner Profile

Inquirers

Knowledgeable

Thinkers