Summary

SL - Quadratics Draft

Subject	Year	Start date	Duration
Mathematics: applications and interpretation	IB1	Week 3, March	4 weeks

Course Part

Inquiry & Purpose

Inquiry / Higher Order Questions

Type	Inquiry Questions
Skills-based	Why is it useful to model real-life situations such as the path of a firework using a quadratic?
Skills-based	Why is it useful to write quadratic functions in different forms?

Curriculum

Aims

Develop an understanding of the concepts, principles and nature of mathematics

Objectives

Communication and interpretation: Transform common realistic contexts into mathematics; comment on the context; sketch or draw mathematical diagrams, graphs or constructions both on paper and using technology; record methods, solutions and conclusions using standardized notation; use appropriate notation and terminology.

Syllabus Content

Topic 2: Functions

SL Content

SL 2.3

The graph of a function; its equation $y = f(x)$

Creating a sketch from information given or a context, including transferring a graph from screen to paper.

Using technology to graph functions including their sums and differences.

SL 2.4

Determine key features of graphs.

Finding the point of intersection of two curves or lines using technology.

SL 2.5

Quadratic models. $f(x) = ax^2 + bx + c \quad ; \quad a \neq 0$. Axis of symmetry, vertex, zeros and roots, intercepts on the x-axis and y -axis.

Direct/inverse variation: $f(x) = ax^n, \quad n \in \mathbb{Z}$

Cubic models: $f(x) = ax^3 + bx^2 + cx + d$

SL 2.6

Develop and fit the model:

Given a context recognize and choose an appropriate model and possible parameters.

Determine a reasonable domain for a model.

Find the parameters of a model.

Test and reflect upon the model:

Comment on the appropriateness and reasonableness of a model.

Justify the choice of a particular model, based on the shape of the data, properties of the curve and/or on the context of the situation.

Use the model:

Reading, interpreting and making predictions based on the model.

ATL Skills

Approaches to Learning

Thinking

- In this unit, we will

  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)

  build on a specific prior task

  help students to make their thinking more visible (for example, by using a strategy such as a thinking routine)

Developing IB Learners

Learner Profile

Inquirers

Knowledgeable

Thinkers