



Ecole Internationale Provence-Alpes-Côte d'Azur



Forward Planning

Long-Term Semester Planning

Academic Year: 2020-2021

Class :	S5
Subject :	Mathematics (4P)
Teacher :	Erazmus
No. Students :	4

Curriculum – Long-Term Planning 2020-2021

Date	Objectives/ Connaissances	Activités	Resources	8 Compétences clés *	Evaluation
1/9/20 – 16/10/20	Understand the meaning of negative and rational powers; Understand the relation of rational powers and roots; Use negative and rational powers to rewrite scientific formula; Write a number in scientific notation with positive & negative powers; Apply S.I. prefixes; Calculate with scientific notation;	Investigate relations with all kind of formulae from physics, chemistry and biology; Calculate with units using negative exponents; Translate between calculator notation and mathematical notation; Round answers to a certain number of significant figures;	Textbook: GCSE Maths 2 tier-higher for Edexcel; Classwork sheets; Internet sites: -Dr Frost Math -BBC Bitesize -Times Educational Supplement.	1, 3, 5, 6, 8.	Notebook; Homework; Quiz(s); Test(s); Participation; BTESTs;
2/11/20 – 18/12/20	Investigate the class of models which describes quadratic processes; Recognize $a(x-p)^2+q$ and ax^2+bx+c describe the same function; Determine axes-intercepts, the vertex and axis of symmetry of a quadratic function; Apply these concepts to solve real life problems.	Make the difference between accuracy and precision; Investigate quadratic models from economics, physics, chemistry and biology; Connect with function notation;			
4/1/21 – 19/2/21	Recognise polynomial expressions and calculate their value; Know how to add, multiply, simplify & order algebraic	Use examples of formulae with powers from natural and social sciences;			

<p>8/3/21 – 23/4/21</p>	<p>expressions with powers; Investigate the class of models which describes a power relation; Solve simple equations algebraically or more complicated equations graphically with CAS. Investigate the expansion of $y = (x + 1)^n$ and relate to Pascal's triangle;</p>	<p>Make students familiar with as many different relevant formulae from other fields as possible;</p> <p>History of Pascal's triangle with examples from India, Persia, China, Germany,...;</p>			
<p>10/5/21 – 5/7/21</p>	<p>Investigate the class of models which describes exponential growth and decay; Compare linear & exponential models; Solve exponential equations numerically or graphically;</p> <p>Investigate the unit circle and the trigonometric functions (sin & cos) on the unit circle; Sketch the trigonometric functions $y = \sin x$, $y = \cos x$ and $y = \tan x$ over the domain of definition for one period and show that they are periodic; Apply the unit circle to explain how radians are defined; Use degrees & radians to describe the magnitude of an angle; Convert degrees to radians and vice versa;</p> <p>Determine probability using the classical definition; Understand how the probability formulae relate to Venn diagrams, tree diagrams & contingency tables;</p> <p>Calculate elementary</p>	<p>Investigate exponential models from economics, physics, chemistry & biology;</p> <p>Rice on chessboard;</p> <p>Methods to solve include trial and improvement using a spreadsheet, graph, CAS;</p> <p>Use and show periodic models from physics & biology (day length, sound);</p> <p>Use technological tool to investigate the graphs of trigonometric functions;</p> <p>Historical concepts about radians;</p>			

	<p>probabilities using the complement of an event, mutually exclusive and exhaustive events; Understand the concept of conditional probability and the notations $P(A)$ and $P(A B)$; Understand the concept of independent probability to check if two events are independent; Construct a survey to collect information; Create appropriate diagrams to represent the result of surveys; Understand that different samples will show will show variation; Recognize populations and random samples in everyday life situations and explain the difference between the two; Recognize that statistical inference concerns making claims about a population based on a sample; Use stratified sampling techniques so that a sample better reflects the population compared to random sample; Understand that the standard deviation is a measure of variation and how it relates to the mean; Use the mean, mode, median, range, interquartile range and standard deviation to compare data sets.</p> <p>Apply Pythagoras' theorem in 2 perpendicular planes; Apply intercept theorem to plane sections of solids to solve problems involving length;</p>	<p>Visualise formulae with a Venn diagram;</p> <p>Compare good and bad surveys;</p> <p>Discuss how online media can manipulate opinion & be misused (e.g. targeted advertising);</p> <p>Effect of choice of scale to represent data;</p> <p>Make pupils really experience sample variation;</p> <p>How to make a representative committee;</p> <p>Investigate the statement "we can never be sure about these types of inferences", taking into account the uncertainty of these generalisations;</p> <p>Calculate the mean, mode and median;</p> <p>Pythagoras' Theorem in 3D: $a^2 + b^2 + c^2 = d^2$;</p> <p>Investigate what is the longest item that can fit into a</p>			
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<p>*Lien les 8</p>	<p>Recall and apply appropriate formula to calculate surface areas of solids (prisms, cones, cylinders, pyramids, spheres); Understand the effect on volume of enlargement on changing the scale; Recognize and solve real problems which can be modelled with regular solids;</p> <p>Use a software to break down a problem into sub-problems, and write, test and execute a simple program; Create a flow chart for basic algorithm; Know how to assign labels to variables in a program; Understand and apply different types of conditional instructions; Understand and apply different types of computer loops;</p>	<p>pencil case/why a table when going through a door needs to be tilted to fit through;</p> <p>Calculating surface areas of examples from real life e.g. church towers, houses,...;</p> <p>Change the volume, how does it change the radius or change parameters keeping the volume fixed;</p> <p>Approximate a square root: Heron's algorithm;</p>			
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compétences clés:

1. Littérature (lecture et écriture)
2. Multilinguisme
3. Mathématiques, science, technologie et ingénierie



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4. Numérique
5. Personnelles, sociales et capacité d'apprendre à apprendre
6. Citoyenne
7. Entrepreneuriale
8. Sensibilité et expression culturelles