

Area of Learning: Mathematics		History of Mathematics	
Big Ideas	Elaborations		
<ul style="list-style-type: none"> Mathematics has developed over many centuries and continues to evolve. 			
<ul style="list-style-type: none"> The development of number and number systems occurred in many areas of the world and has evolved over time. 			
<ul style="list-style-type: none"> The algebra of today is an accumulation of work throughout the ages by mathematicians from many cultures. 			
<ul style="list-style-type: none"> Tools and technology have progressed mathematics forward. 			
<ul style="list-style-type: none"> Historical mathematicians nurtured a sense of play and curiosity which lead to the development of many areas in mathematics. 			
Curricular Competencies	Elaborations	Content:	Elaborations
<p><i>Students are expected to do the following:</i></p> <p>Reasoning and Analyzing</p> <ul style="list-style-type: none"> Explore, make connections, predict, analyze, generalize, and make conclusions Use historically appropriate tools and technology to explore problems from the past <p>Understanding and Solving</p> <ul style="list-style-type: none"> Explore multiple strategies used to solve problems throughout history Develop, construct, and apply mathematical understanding through play, inquiry and problem solving Engage in problem-solving experiences that are connected to place, story and cultural practices relevant to the historical context <p>Communicating and Representing</p>		<p><i>Students are expected to know the following:</i></p> <ul style="list-style-type: none"> Number & Number Systems: including written and oral numbers, zero, rational numbers, pi, irrational numbers, prime numbers Patterns & Algebra: early algebraic thinking, variables, early uses of algebra, Cartesian plane, notation, Fibonacci sequence Geometry: of lines, angles, triangles, Euclid's Five Postulates, geometric constructions, developments through time Probability & Statistics: Pascal's Triangle, games involving probability, early beginnings of statistics & 	<ul style="list-style-type: none"> Number & Number Systems: <ul style="list-style-type: none"> such as Egyptian, Babylonian, Roman, Greek, Arabic, Mayan, Indian, Chinese, First Peoples, exploring the idea of different bases, different forms of arithmetic, infinity, problems from The Rhind Papyrus, Eratosthenes Patterns & Algebra: <ul style="list-style-type: none"> Al-Khwarizmi's <i>Algebra (book)</i>, Indian mathematics, Islamic mathematics, Descartes, golden

- Communicate in a variety of ways including written and oral language from a variety of cultures
- Understanding historical mathematical understanding through concrete, pictorial, and symbolic representations of the past

Connecting and Reflecting

- Accessing the significance of key figures throughout history and their contributions to the advancement of mathematics
- Explore, apply and connect concepts to each other
- Explore the consequences of mathematic on culture socially and politically
- Incorporate First Peoples principles of learning for example storytelling, learning takes patience and time

probability

- **Tools & Technology:** the development over time from clay tables to modern day calculators and computers
- **Cryptography:** use of cyphers, encryption and decryption throughout history, modern uses of cryptography in war and digital applications

ratio, patterns in art

- **Geometry:**
 - Problems from the Rhind Papyrus, Mosco Papyrus, Pythagoras, Hippocrates and construction problems of Antiquity, geometry in Euclid's *Elements (book)*, Archimedes, Apollonius, Pappus's *Book III (book)*, Indian and Arabic contributions, Descartes and Fermat,
- **Probability & Statistics:**
 - Pascal, Cardano, Fermat, Bernoulli, Laplace, ancient games such as dice and the Egyptian game called Hounds and Jackals, Egyptian record keeping, Graunt and the development of statistics through a need for merchant insurance policies etc.
- **early beginnings:**
 - forms of tabulating information leading to the beginnings of probability &

			<p>statistics</p> <ul style="list-style-type: none">• Tools & Technology:<ul style="list-style-type: none">○ Papyrus, stone tablets, bone, compass straight, edge, abacus, scales, slide rule, rulers, protractor, calculators, computers• Cryptography:<ul style="list-style-type: none">○ cuneiforms, Spartan military use of ciphers, first documentation of cyphers in the Arab world, John Wallis, WWII and the Enigma Machine, barcodes, modular, RSA coding, current coding techniques and security in digital password encryption
--	--	--	--