Blaise Pascal Essay, Research Paper

Hey i better get member ship Blasie Pascal Blaise Pascal was a French religious thinker, mathematicican, and physicist who possessed one of the greatest minds of the 17th century. Pascal was born in Clermont-Ferrand in central France on June 19, 1623. Pascal had two sisters named Gilberte and Etienne, who reffered to him as a prodigy. The Pascal family mother passed away in June of 1626, therefore the family moved to France in 1631. After his family moved to France, Pascal’s father temporarily withdrew from the government service, where he was a high ranking civil servant adept in mathematics. He did this to devote himself to the education of his children. At the age of twelve Pascal figured out a proposition of Euclidean geometry by himself. Pascal’s father kept him from mathematics until he reached the age of sixteen. Pascal never attended a university, but he was inventiably spoiled and his emotional development was compromised. When he reached the age of sixteen it was discovered that he was a true genius at mathematics and science, allowing him to accompany his father along on scientific gatherings. By the time he was seventeen he wrote a essay on conic sections, a work in projective geometry that contained a theorem on conic sections that was named after him. At the age of eighteen Pascal invented the adding machine, which is now known as the calculator. Pascal’s main pupose of inventing the calculator was to help his father out when he was apointed representative of the king regarding all of the financial matters in upper Normady. The principles of this adding machine were extended into a hand-cranked calculator during the 18th and 19th century. By the 20th century, the electronic computer began to replace the adding machines. Another significant branch of mathematics that Pascal worked on during the 17th century was Probability. Probability deals with the likehood of observing one of the several outcomes that can occur in an event. In Probability, an event is a single happening-sometimes called a trial- and an outcome is one of the possible results. For friends who gambled, he calculated the chance of loss or gain which led him to his probability theory. Suppose that 5 coins are tossed at the same time. You want to figure out the probability that exactly 2 coins will show heads. The number of ways this can happen is given by C(5,2) or 10. The probaility may be found by using the binomial expansion. Let Ph represent the probability that heads will show on one coin on one toss. Let Pt represent the probability that tails will show on one coin. (Ph +Pt) = 1Ph Pt + 5Ph Pt + 10Ph Pt + 10Ph Pt + 5Ph Pt + 1Pt Coefficient Term Meaning Probability C(5,0) 1Ph 1 way to get 5 heads 1( ) or C(5,1) 5Ph Pt 5 ways to get 4 heads and 1 tail 5( ) ( 0 or C(5,2) 10Ph Pt 10 ways to get 3 heads and 2 tails 10( ) ( ) or C(5,3) 10PH Pt 10 ways to get 2 heads and 3 tails 10( ) ( ) or C(5,4) 5PhPt 5 ways to get 1 head and 4 tails 5( ) ( ) or C(5,5) 1Pt 1 way to get 5 tails 1( ) or Thus, the probability that excactly two coins will show heads is Pascal worked with Pierre de Fermat to discuss the probability theory as it is related to games of chance. This work attributed in his interest in calculating odds in the various gambling periods played during this period. In the 18th century a French mathematition, Abraham de Moirve studied such games and developed the distribution of possible outcomes known as the bell-shaped curve or Normal Distribution. Facsinated with Physics, Pascal began reproducing and simplifying experiments of Evangelista Torricelli concerning the effect of atmospheric pressure and the equillibrium of liquids. Torricelli filled a long glass tube with mercury, closed at one end, stopped the open end with his finger, and the inverted tube, placing the open end in a bowl full of mercury. When he removed his finger, the mercury in the tube sank only part way down the tube and remained held to. Torricelli hypothesized that the results were due to the pressure in the atmosphere. Pascal did not except Torricelli’s hypothesis, so he worked tirelessly to extend the hypothesis made by Torricelli. Pascal repeated this experiment using tubes, syringes, bellows , and siphons of various lenghts, shapes and sizes with different fluids, suchas quicksilver, water, wine, oil, and air. In 1648 Pascal proved by experimentation that the level of mercury column in a barometer is determined by an increase or decrease in the surrounding atmoshperic pressure rather than a vacuum, verifying the hypothesis of Evangelista Torricelli. Meanwhile, Pascal conducting barometric tests at the top and foot of Puy-de-Dome Mountains, opened the way for systematic studies of Hydrodynamics and Hydrostatics.

Hydrodynamics pertains to the branch of fluid dynamics that deals with liquids. Hydrostatistics deals with the branch of hydrodynamics dealing with statics of fluids, especially the equillibriumand pressure liquids. Pascal invented the syringe, perfected barometer, and the hydraulic press. The hydraulic press is based on the principle of the area times the distance pressed is eqaul to the force, which applies to the machine that permits a small force applied to a small piston to produce, through fluid pressure, a large force on a piston(A x DP=F). Pascal also had some part in the invention of the Hydraulic Lift, due to the fact that it is an of Pascal’s Law . It works on the principle that effort required to move something is the product of the force and distance the object is moved. Pascal’s Law states that pressure applied to a contained liquid are transmitted unreduced throughout the liquid irrespective of the area over which pressure is applied. When a fluid is at rest, a force perpendicular to any surface in contact with it, allows the container wall or the surface of a body imersered in it . Pressure is force per unit area. The SI unit of pressure is the pascal.1 pascal= 1N/m Pascal ha also came up with a arithmatical triangle known as Pascal’s Triangle: an arrangement of numbers that were used to calculate binomial coefficients. 1 1 1 1 2 1 1 3 3 1 1 4 6 4 11 5 10 10 5 1 It is constructed by adding to adjacent numbers in a line and putting thier sums between them, but on the next line down it is convienient to straighten out the left side of the triangle and to label the rows accurately by n= 1,2,3, and so on. The same follows as for labeling the column r= 1,2,3, and so on. Each entry is the sum of the one above it together with the the one above it and to the left. If all the blank spaces are thought of as zero’s, then it counts for all rows to be n=1 and on. The entry on the nth row and rth column is called C(n,r) are binomial coeficients, since they appear in the binomial theorem. The familiar fomula is (x+y) = x +2xy =yIt has coefficients of 1,2,1 on the right side. These are the row n=2 simalarily to (x+y) = x +3x y+3xy +y Pascal was one of the most eminent mathematicians and physcist of this day and one of the greatest mystical writers in Christian literature. He reasoned that the value of eternal happiness is infinite and that the probability of gaining such happiness by religion may be small, but is infinitely greater than any other course of human conduct or belief. Pascal’s most famous work, The Pensees, a set of deeply personal medatations in somewhat fragmented form on human suffering and faith in God. Pascal’s wager expresses that the conviction that the belief in God is rational: If God does not exist, one stands to lose nothing by believing in him anyway, while if he does exist, one stands to lose everything by not believing. On the night of November 23, 1654 “from aproximately ten-thirty till half past midnight,” a great change came over Pascal.(Given a mystical vision of God, he was enjoined to renounce the world and surrender to Jesus Christ.) At the age of 39, Pascal was in intense pain after a malignant growth in his stomach, which eventually spread to his brain. He no longer could bare the pain, and died suddenly on the night of August 19, 1622. Pascal’s discoveries and experiments still help people today in thier every day lives. He was an outstanding mathematician and phycist, who has left a significant impact in history.