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Math Research Assignment #5

The Euclidean Algorithm is a method of finding the GCF of two numbers. The larger number is divided by the smaller number. This process is repeated with the remainder in the quotient replacing the divisor and the divisor in the previous division operation becoming the new dividend. This is done until the remainder is zero. In the last division operation, the divisor is the GCF. Euclid's way was subtracting the smaller number from the higher number and subtracting the smaller number from the difference over and over again until the difference was smaller than the subtractend . The subtractend becomes the first number and the difference becomes the second number. This entire process is repeated until 0 is reached. When 0 is reached, the subtractend is the answer. These methods are similar because the repeated subtraction is essentially division. Every number is a multiple of the GCF. When a multiple of a number, say x, is subtracted from another multiple of x, the difference is a multiple of x. If y equals the first number one wants to find the GCF of and z equals the second number, xy-xz=x(y-z). X is always a factor. This method works because the remainders in the Euclidean algorithm continue to get smaller until the GCF is 0. Say one of the numbers represents the length of a line, and the smaller number represents the length of a smaller line. By dividing the longer line by the smaller line, there will be a little left over. Whatever is left over can be distributed among the smaller line. The left over line can be divided among the smaller line and the process be shifted like in the Euclidean algorithm. Once there is no remainder, there final line has been made. That final line can fit into the length of all other lines that exist by the end.