GOLDEN PROPORTIONS

A year or so ago, Tom Cowan presented a program on furniture design and discussed the concept of the Golden Proportion. Several of the woodworking magazines have had discussions of the concept as applied to furniture. This essay presents the concept but also interesting aspects of the origin and mathematics of the number.

The concept of “golden proportions” apparently originated with the Greeks and probably with Plato. It relates the width of a rectangle, x, to its length, y. Simply stated, the length relates to the width is in the same proportion as the length relates to the length plus the width. Stated mathematically, x / y = y / (x + y). This can be solved as a quadratic and gives y/x = (sq. root of 5 + 1) / 2 = 1.618034.

For practical use in woodworking, this can be assumed to be 8 / 5 or 1.60.
To apply this to the design of your woodworking project, if the height of your cabinet is 30 inches, the length would be 8/5 times 30 in., or 48 in. Or if your chest of drawers were 56 in. high, the width would be 5/8 of 56, or 35 inches.

The Golden Proportion is an interesting number in that the inverse of 1.618034 = .618034, and vice versa; e.g. (1/ .618034= 1.618034).

And, the square of 1.618034 = 2.618034; so the square root of 2.618034 is 1.618034.

So we see that if we add the width and length, 1+ 1.618 = 2.618. But 2.1618 = 1.618 squared. Now, if we add 1.618 to 1.618 squared we get 1.618 cubed; e.g., 1.618 + 2.618 = 4.236 which exactly equals 1.618 cubed. This is a unique character of the number.

And, if we add the length and width then square it, we get 6.854, which is 1.618 to the fourth power; or also 2.618 squared.

I find this an intriguing number because of its mathematical manipulations. But all you need to remember is the number 8/5 for the design of your furniture.

Ross Roepke