HOW TO FIND

THE NUMBER OF PATTERN VARIATIONS

We state quite often in our articles that with so many blocks of pattern we have so many symmetrical variations. How do we know?

There is a branch of mathematics which deals with so called permutations, and it gives us all the answers.

For instance if we have blocks of pattern which cannot be combined, i.e. each block is woven singly, and there is no ground, we have a very simple formula:

$$N = 2^{(n-1)}; \qquad \ldots\ldots\ldots (1)$$

where N is the number of variations, and "n" - the number of blocks. With 4 blocks $N = 2^{(4-1)} = 2^3 = 2x2x2 = 8$.

When the blocks can be combined at will, the formula is much more complicated:

$$N = 2^{\frac{n(n+1)}{2}}; \qquad \ldots\ldots\ldots (2)$$

Here with four blocks we have: $N = 2^{\frac{4(4+1)}{2}} = 2^{10} =$ $2x2x2x2x2x2x2x2x2x2 = 1024$.

When there is ground, and the blocks cannot be combined (but they can be replaced by ground) we have a still different formula:

$$N = \frac{3^n + 1}{2}; \qquad \ldots\ldots\ldots (3)$$

In this case with four blocks we have: $N = \frac{3^4 + 1}{2} =$ $\frac{3x3x3x3 + 1}{2} = \frac{81 + 1}{2} = 41$.

Why in the first two formulas we had "2" as a constant number, and here we have "3" is more than we could explain.

Formula L will apply to Overshot on opposites, plain Bronson, and traditional Overshot (but with reservations).

Formula 2 will work with Swivel, Bronson Lace, Summer-&-Winter, Turned Twills, Double Weaves.

Formula 3 must be used with Spot Bronson, Dropped Weaves etc.

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