

Decoding the Ternary Message in the Cryptography Quilt

The colored ring surrounding the central padlock in the Cryptography Quilt contains a hidden message based on ternary, or base 3, numbers. **Can you decode it?**



In our normal base 10, or decimal, number system, we have a ones place, tens place, hundreds place, etc. In ternary, there's still a ones place, but then there's a threes place, a nines place, and a 27s place! Decimal numbers use digits 0 through 9, but ternary only uses 0, 1, and 2.

Example:

$$\begin{array}{r} \text{Ternary} \\ \mathbf{2\ 0\ 1} \\ \hline (9\ 3\ 1) \end{array} \quad \longrightarrow \quad 2 \times 9 + 0 \times 3 + 1 \times 1 = \mathbf{19}$$

Time to make your Decoder Dictionary! Can you finish filling in all the columns? For the colors column, use a light color to represent 0, a medium color to represent 1, and a dark color to represent 2. In the quilt, it's three shades of blue.

Letter	Decimal	Ternary	Colors		
A	1	001			
B	2	002			
C	3	010			
D		011			
E					
F		020			
G					
H					

Letter	Decimal	Ternary	Colors		
I		100			
J	10				
K					
L					
M					
N		112			
O	15				
P					
Q					
R					
S					
T					
U					
V					
W					
X					
Y	25				
Z	26	222			

Now go to the quilt and decode the message surrounding the padlock! Start at the top. White squares are spaces between words.