"What a Wonderful World!" Colorful Cultural Activity for the Whole Family (1) – Build a Texas Abacus and Watch Your Kids Fall in Love with Arithmetic

Introduction

Remember, the purpose of any project in this series is for the whole family to have fun. Therefore, if you come across any difficulty at any time, do not get frustrated. Instead, take to the Internet for help. Or you can email me at tingkuo@att.net.

Before anything, let me show you the finished product first. (See Figure 1.)

Abacus originated from China. Traditionally, all the beads are of the same shape and color and all columns contain the same number of beads. But if you look closely in the picture, you will see that each column has its own unique color. There are, also, three columns that contain only one single bead. I will tell you what the advantages are:

1) The columns are color-coded, meaning, you can designate and distinguish the place-values more easily. You can also work on decimal numbers, which are numbers containing the decimal point.

2) Each of the three single-bead columns is there to designate either the number is positive or negative. Traditionally, there is no way to designate negative numbers in an abacus.

3) You can also see there are three parts. They are actually three abacuses side by side. I do this so that the two numbers to be operated on can also be represented, with the operations usually done and the result shown on the last part. The last part is the largest of the three areas to the right.

Figure 1: a Texas abacus.

With these improvements and advantages in mind, therefore, I gave it the name 'Texas Abacus.'

Please take some time to get familiar with the abacus in the picture before you continue to the next part of the project.

The Box

To do the project, you will first need a box. If you are not sure you can do it, please ask your husband to make it for you. It is actually quite simple[1].

Length: 12"

Width: 5-½"

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[1] Remember: we are not building a precision tool; therefore, a little deviation from the measurements should not be that big a deal. Or, you can have your own design – such as how to cut and join the sides, however is convenient for you -- as long as the finished product looks similar and serves the same purposes.

Figure 2: the box.

Height including the base board: 1-½".

The four walls of the box and the divider wall inside are of the same thickness: ½"

From the top edge to the center of the diver wall: 2"

From the center of the diver wall to the bottom edge: 3-½"

Before you construct the box, drill the holes for the strings first (top wall, divider wall, and bottom wall). There will be 26 strings with a distance of 1cm between each neighboring pair. (Refer to the first picture). The holes will be drilled horizontally 3/16" from the top of the wall. The 5/64" drill bit will be the most ideal.

Once you have drilled the holes and constructed the box, give it a protective coating of your favorite color. For me, of course, I chose the pecan color.

<div align="center">Stringing the Beads</div>

The stringing is easy. I used 30-lb fishing line. You can do whatever way you want. I did two neighboring strings at the same time but did it twice. Therefore, each column of beads was doubly stringed to add to the strength.

For the beads, I used the beads purchased from Walmart that had been sitting in my house for quite some time. You can choose your own colors; for example, which color you use for place value 1's column, which color for place value 10's column, etc. Because each step along the way, the user is actually pitting one digit in a number against one digit in another number, color-coding will greatly facilitate your identifying the correct digits you are working on and also to locate the correct places where you put the answers on. Yes, along the way, each step has its own answer. It is the development of these work-in-process answers along the way that will eventually materialize into the final answer the question is asking for.

I particularly want to point out that in the abacus I made the colors are repeating themselves in exactly the same order, because the same colors represent the same place values. The only exception is that in the largest area, because there are five more digits than the other two areas, these five extra digits are represented by their own unique colors or shapes or sizes.

Once you understand the whole idea, you may proceed to string the beads. I am sure you will have a lot of fun. But be patient. It may take up to three or four hours. Tie the ends tightly with three simple knots and apply a tiny bit of glue before cutting the extra lengths off.

Remember, this beautiful instrument will not only let your kids visualize numbers, it will actually let them touch the numbers. What a wonderful way to learn arithmetic!