

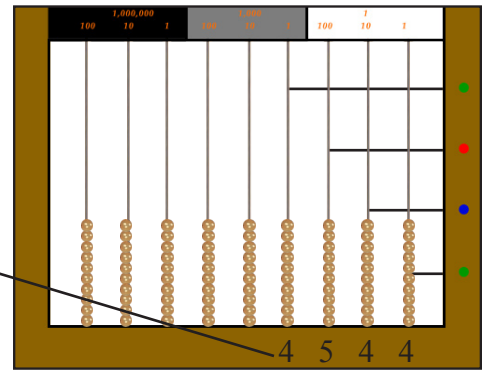
Flat Bead Frame (Two digit Multiplication):

- Use small strip of paper for the actual Problem.
- Write it so it is under the corresponding bar.

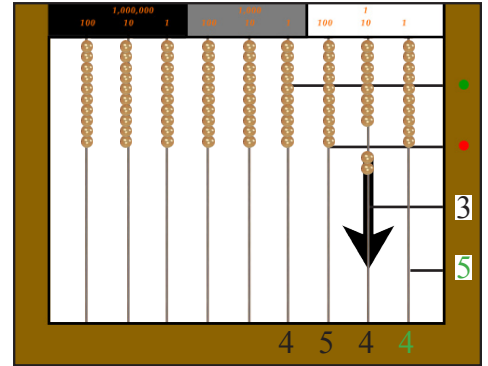
4 5 4 4 x 3 5

Cut along dotted lines and place on the actual board

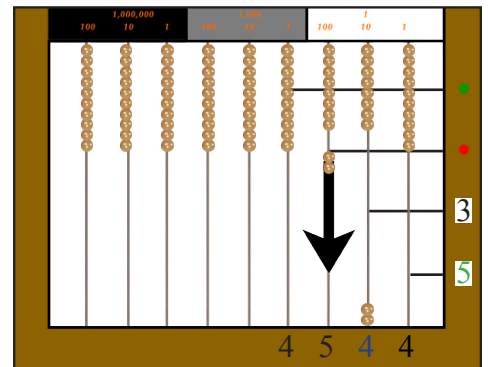
4 5 4 4 x 3 5



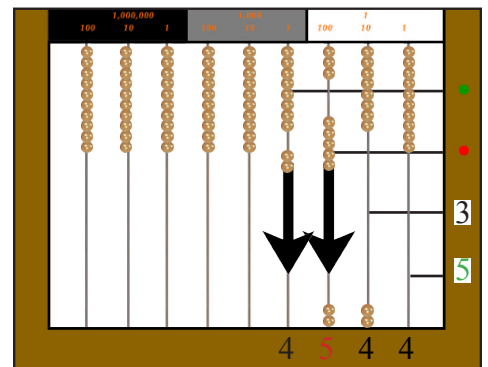
Step 1: Start with the multiplication problems.
Start with $4 \times 5 = 20$



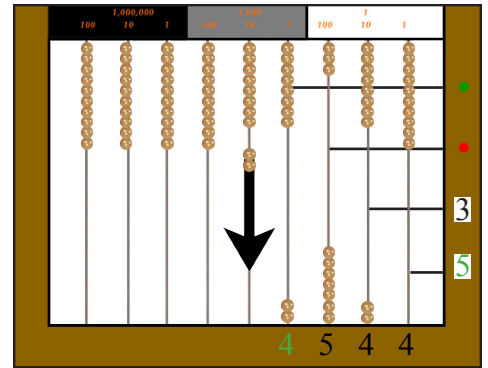
Step 2: Multiply the unit in the 1s in vertical line (5) by the 10s in the horizontal line (40). We get 200.



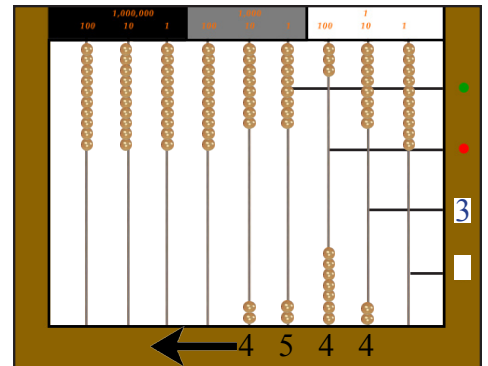
Step 3: Multiply the unit in the 1s in vertical line (5) by the 100s in the horizontal line (500). We get 2500.



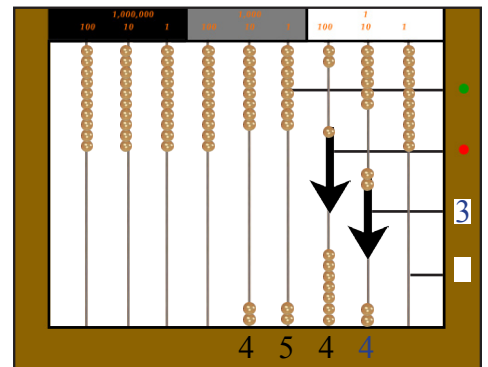
Step 4: Multiply the unit in the 1s in vertical line (5) by the 1000s in the horizontal line (4000). We get 20000.



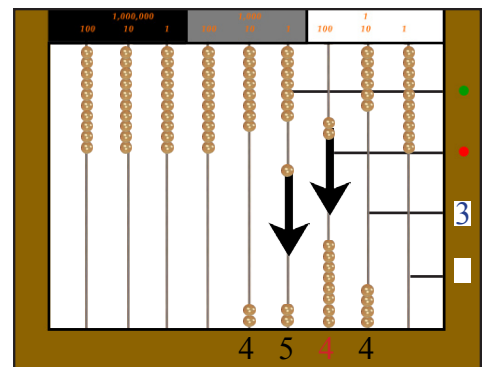
Step 5: Now we flip the 5 over and begin to multiply the 10s column. To make the magic zero we shift the bottom paper over (4544) to the 10s bar.



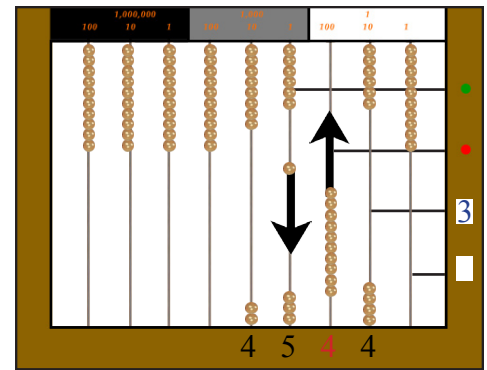
Step 6: Multiply the unit in the 10s in vertical line (3) by the 10s in the horizontal line (40). We get 120.



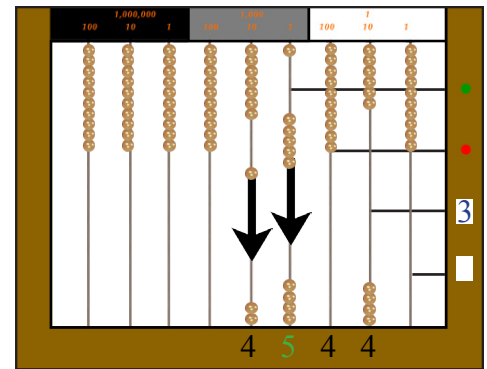
Step 7: Multiply the unit in the 10s in vertical line (3) by the 100s in the horizontal line (400). We get 1200.



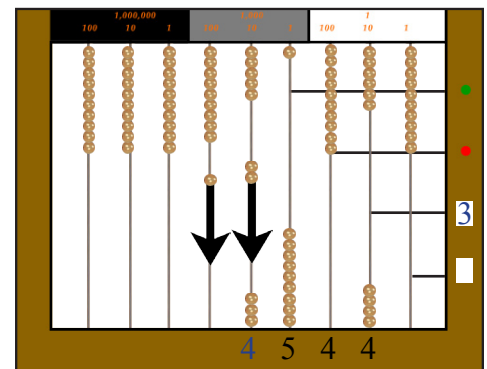
Step 8: Since we have 10 golden beads in the 100s column we know it equals 1000.



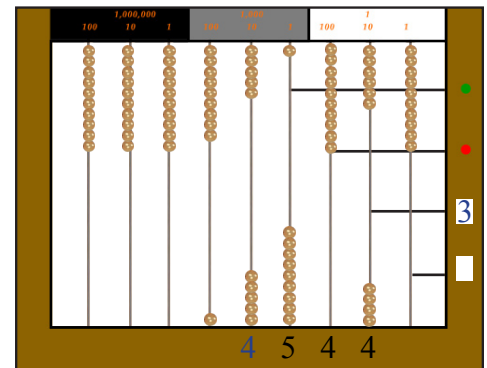
Step 9: Multiply the unit in the 10s in vertical line (3) by the 1000s in the horizontal line (5000). We get 15000.



Step 10: Multiply the unit in the 10s in vertical line (3) by the 10000s in the horizontal line (40000). We get 120000.



Step : Now we have our answer by counting the numbers at the bottom of the flat bead frame. 159,040



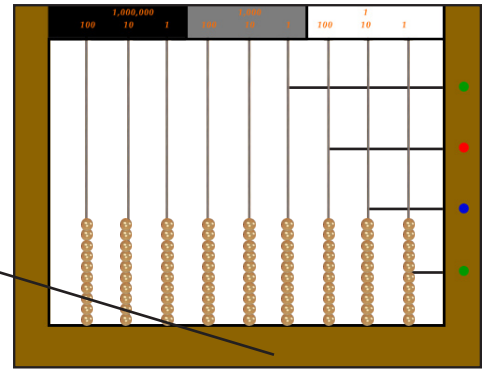
Flat Bead Frame (Two Digit Multiplication with partial Product):

- Use small strip of paper for the actual Problem.
- Write it so it is under the corresponding bar.

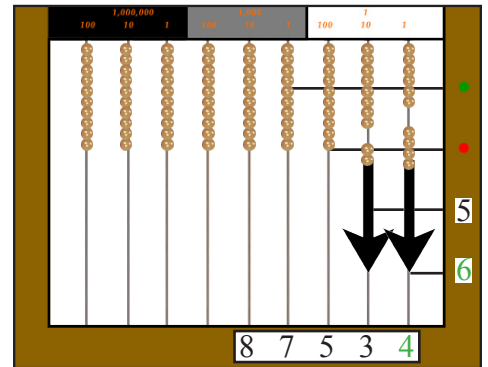
$$\begin{array}{r} 87534 \\ \times 56 \\ \hline \end{array}$$

Cut along dotted lines and place on the actual board

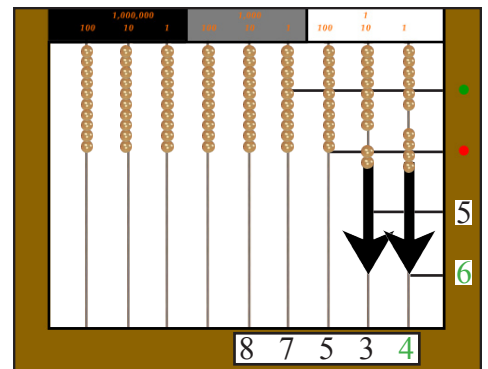
$$\begin{array}{r} 87534 \\ \times 56 \\ \hline \end{array}$$



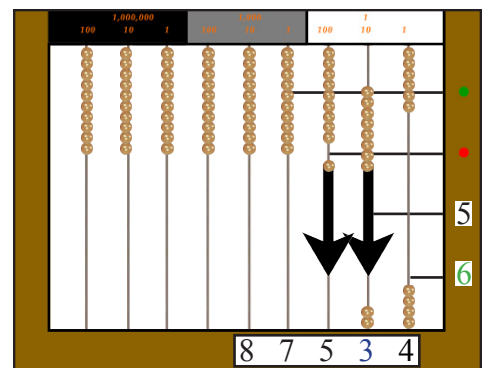
Step 1: Start with the multiplication problems.
Start with $6 \times 4 = 20$



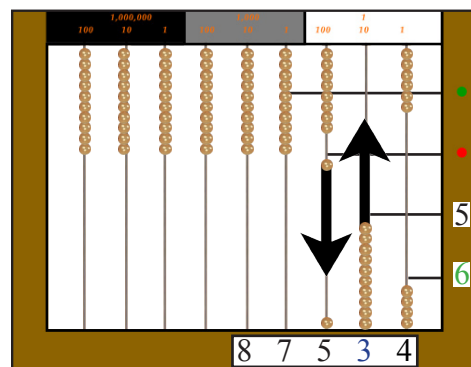
Step 2: Multiply the unit in the 1s in vertical line (6) by the 1s in the horizontal line (4). We get 24.



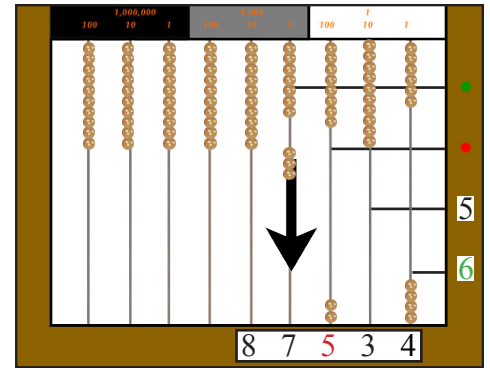
Step 3: Multiply the unit in the 1s in vertical line (6) by the 10s in the horizontal line (4). We get 24.



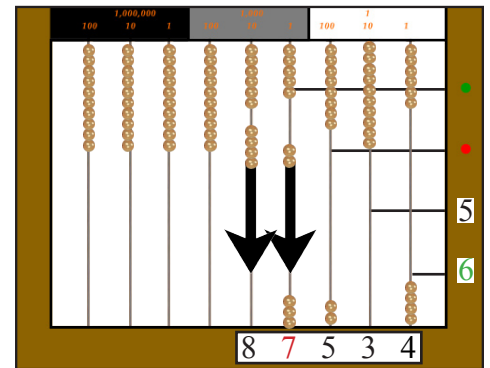
Since we have 10 beads in the 10s column we need to exchange for a hundred bead.



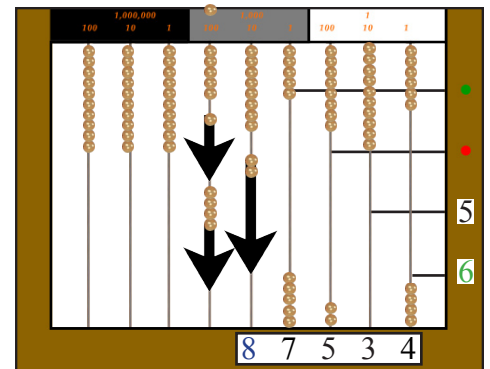
Step 4: Multiply the unit in the 1s in vertical line (6) by the 100s in the horizontal line (5). We get 300.



Step 5: Multiply the unit in the 1s in vertical line (6) by the 1000s in the horizontal line (7). We get 42000.

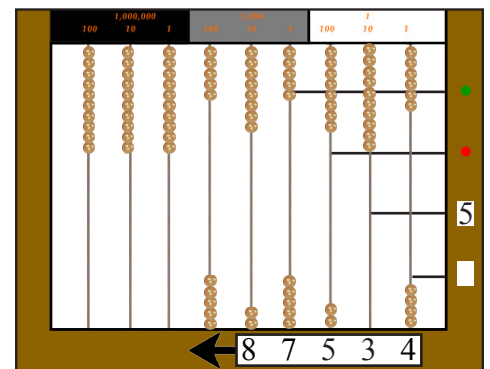


Step 6: Multiply the unit in the 1s in vertical line (6) by the 1000s in the horizontal line (7). We get 42000. An additional golden because we have greater than 10 beads in the 10,000 column.

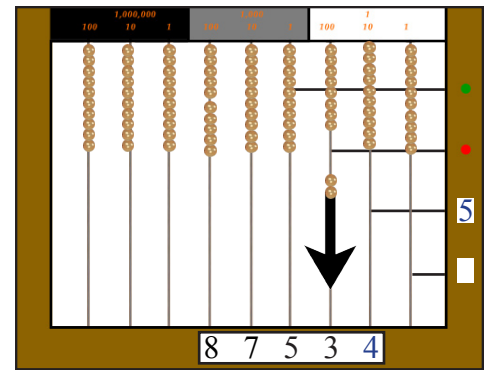


Step 7: Since we are done multiplying with the 1s row we need to record the partial product. We also have to move the multiplian over and flip the 1s square (6) over.

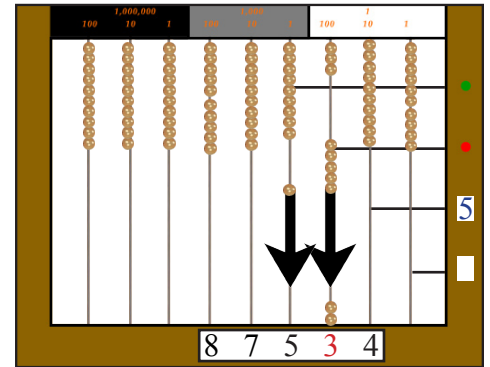
$$\begin{array}{r}
 8 \ 7 \ 5 \ 3 \ 4 \\
 \times \quad \quad \quad 5 \ 6 \\
 \hline
 5 \ 2 \ 5 \ 3 \ 0 \ 4 \text{ - partial product 1}
 \end{array}$$



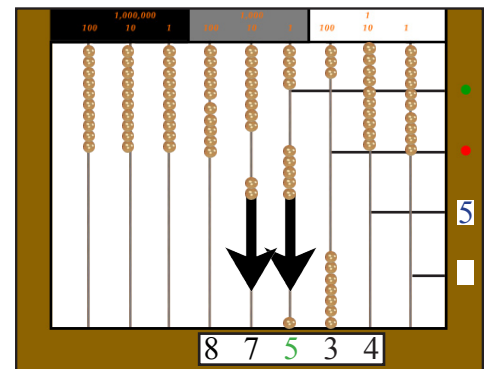
Step 8: Multiply the unit in the 10s in vertical line (5) by the 10s in the horizontal line (4). We get 200.



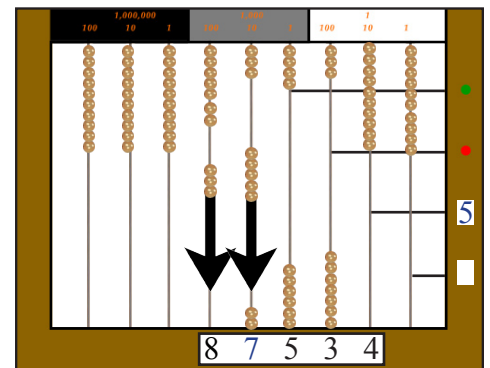
Step 9: Multiply the unit in the 10s in vertical line (5) by the 100s in the horizontal line (3). We get 1500.



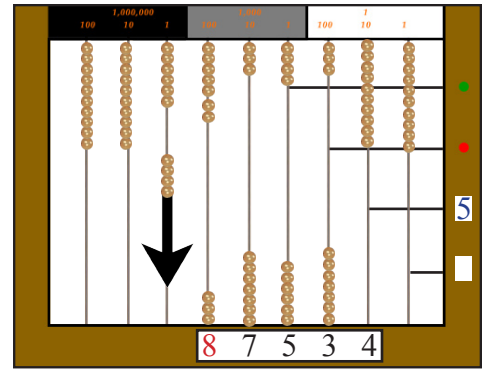
Step 10: Multiply the unit in the 10s in vertical line (5) by the 1000s in the horizontal line (5). We get 25000.



Step 11: Multiply the unit in the 10s in vertical line (5) by the 10000s in the horizontal line (7). We get 350000.

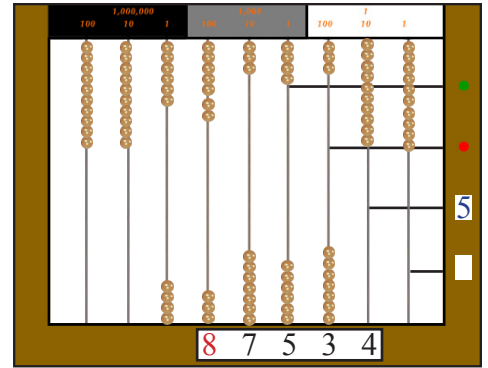


Step 12: Multiply the unit in the 10s in vertical line (5) by the 100000s in the horizontal line (8). We get 4000000.



Step 13: Since we are done multiplying with the 10s row we need to record the partial product.

$$\begin{array}{r}
 8 \ 7 \ 5 \ 3 \ 4 \\
 \times \qquad \qquad \qquad 5 \ 6 \\
 \hline
 5 \ 2 \ 5 \ 3 \ 0 \ 4 \text{ - partial product 1} \\
 4 \ 3 \ 7 \ 6 \ 7 \ 0 \ 0 \text{ - partial product 2} \\
 \hline
 \end{array}$$



Step 14: Now that the problem is done we need to add the two partial products together in the problem and on the Bead Chain..

$$\begin{array}{r}
 8 \ 7 \ 5 \ 3 \ 4 \\
 \times \qquad \qquad \qquad 5 \ 6 \\
 \hline
 5 \ 2 \ 5 \ 3 \ 0 \ 4 \text{ - partial product 1} \\
 4 \ 3 \ 7 \ 6 \ 7 \ 0 \ 0 \text{ - partial product 2} \\
 \hline
 4,9 \ 0 \ 2,0 \ 0 \ 4
 \end{array}
 \quad \rightarrow$$

