Dr. Taylor's Pedagogical Notes

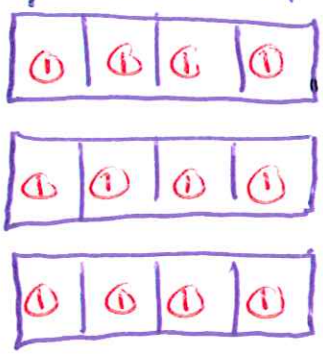
— MULTIPLYING WHOLE NUMBERS —

HOW MANY IS: 4 x 3

LET US LOOK AT THIS PROBLEM IN A VARIETY OF WAYS TO GIVE OUR STUDENTS "UNDERSTANDING"

I USING STRIP DIAGRAM:

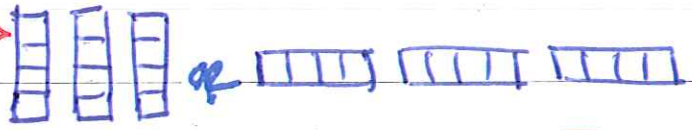
① 4 x 3 (④) IS LIKE SAYING SHOW "4", 3 TIMES.



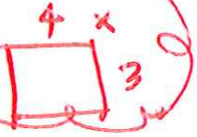
IN USING THIS STRATEGY WE EMPHASIZE HOW LARGER NUMBERS ARE MADE UP OF A SERIES OF "UNITS" (①)

② NOW WE CAN SIMPLY COUNT ALL OF THE INDIVIDUAL LITTLE SQUARES [①], OR WE CAN SHOW MULTIPLICATION AS "REPEATED ADDITION": ④ + ④ + ④ = 12

③ WHEN USING THIS MODEL IT IS IMPORTANT TO VARY THE ORIENTATION TO HELP STUDENTS WITH MULTIPLE MODEL ANALYSIS...



* NOTE! PUSHING THESE STRIP MODELS INTO RECTANGULAR BOX WILL YIELD THE "AREA" METHOD:



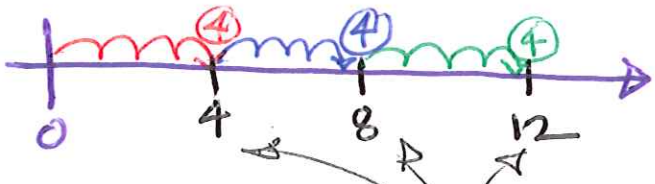
Dr. Taylor's Pedagogical Notes

4 x 3 CONTINUED . . .

II USING AN OPEN NUMBER LINE:

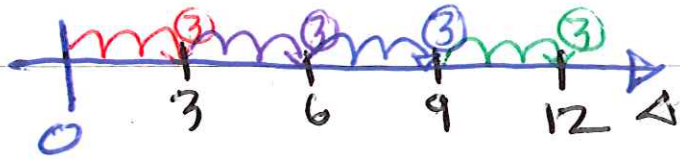
① 

② 4 x 3 IS LIKE SAYING SHOW 4, 3 TIMES.



③ THEN WE CAN "SKIP COUNT" BY 4's, OR COUNT CHRONOLOGICALLY, TO GET TO THE ANSWER.

④ I THINK HERE IT IS WORTH NOTING THAT SOME STUDENTS MIGHT "SKIP" BY 3's, 4 TIMES. THIS CAN BE USED LATER TO HELP UNPACK "COMMUTATIVITY" FOR ALGEBRA.



Dr. Taylor's Pedagogical Notes

4 x 3 CONTINUED . . . .

III USING REPEATED ADDITION:

① $4 \times 3 = 4 + 4 + 4 = 12$ (3 x's)

— OR —

② $4 \times 3 = 3 + 3 + 3 + 3 = 12$ (4 x's)

③ THE IMPORTANT "TAKE AWAY" FOR STUDENTS IS THE UNDERSTANDING OF "GROUPING" AND "ITERATION". IF THIS IS EMBEDDED IN THE LEARNING THEN STUDENT ARE BETTER ABLE TO <u>APPLY</u> KNOWLEDGE TO OPEN ENDED PROBLEMS. (WITH OR WITHOUT ALGORITHMIC KNOWLEDGE)