



Contributor: Frances Tisdale **Grade Level:** 4th

1. Identify the standards to be addressed:

Grade 4 – State of Texas

Skills:

Mathematics - Strategies

2. Statement of the objective and lesson outcomes:

Students will be able to successfully produce a basic list of multiplication products (multiples), without careless counting errors. These "tools" can then be used with confidence in higher-level problem-solving tasks (when calculators are not permissible). This process is especially helpful as a small group activity for students who are struggling and beginning to shut down.

3. Materials, resources, and technology to be used by teacher/students:

Teacher: Toy hammer in a toolbelt; "Care-less / Care-ful" Poster, Smartboard, dominos.
Students: grid-marked whiteboards or plastic large-grid graphing sheets (1/student), dry-erase markers and erasers (1/student), 1 zip bag/student with 7 teacher-selected real dominoes (or prepared cardboard/foamboard dominoes), sheets of cm grid paper and pencils for each student.

4. Introduction of the topic:

(5 minutes): "Good morning students! Have you ever looked closely at the words 'CARE-LESS' and 'CARE-FUL'? (Show physical poster or Smartboard poster.) Care-less means that we take LESS care with an action or thing, which can lead to simple and unnecessary mistakes. Care-ful means that we are FULL of caring with how we do or say something. We pay close attention to it, and that leads to good things - to accuracy - to being pleased with ourselves and our work. I've noticed that sometimes you work so hard and do a fabulous job of deciphering a complicated, multi-step word problem, only to receive NO credit for your great work because you accidentally missed a basic multiple of one of the numbers. Well, today we are going to learn a way to completely eliminate those careless multiplication slip-ups. **IF** you are willing to take a few extra minutes and **IF** you consistently **USE** a special CARE-FUL strategy of mine, I can promise that you will never again make a mistake with your basic multiplication facts (multiples)! They will become one of the most useful "tools in your toolbelt of math knowledge" [*Teacher takes out the hammer.*] --- just like a carpenter pulls out a hammer to drive nails into an intricate 3-tiered bookcase that he is building. He has the tools and he will get the job done accurately; and so can you --- with the tools you can have at your fingertips --- and at your pencil point. Remember, I did say '**I F**' you will **USE** the tools. Would you like to investigate what I call the DOMINO SAFETY STRATEGY?" (You should have had some fun student interaction during this introduction, or you should have, at the very least, piqued their curiosity.)

5. Procedure for instruction:

5(a) Guided Practice (20 minutes): Bring out a teacher set of 7 special dominoes that you have created on the smart board. (I like to also hold up giant real dominos for the tactile effect!) You will need 7 specific dominos: 3/blank, 4/blank/ 5/blank; 5/1; 5/2, 5/3; and 5/4. I don't use a 2/blank domino because students usually handle the doubles concept as multiplication by 2. Next, create a "T-chart" on the grid you've selected on your Smartboard --- to list all the multiples of each selected "domino". Start with the 3/blank. Place it at the top of

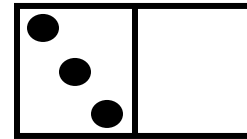
your chart (and write it at the top) with the numbers 1 through 10 down the left side. Now have your students open their zip bags and take out only the 3/blank domino. They should place it at the top of their marker board/grid sheet and copy your drawing onto their grid sheets. (I find grid sheets/paper to be important to keep rows and columns straight and numbers properly associated.)
Now you are ready to work through the chart using the domino as a “safety net”!

Since students know $3 \times 1 = 3$ and $3 \times 2 = 6$, simply write those in. From this point on, the student **must** “touch” each dot on the domino (tactile learning) as he orally counts up (auditory learning). Always touch the dots in the same order – for repetitive consistency! Begin in the upper left corner. You demonstrate and students follow your lead. (You can teach students a new vocabulary word here: the **dots** on a domino are called “pips”!)

3 x 3 Touch each **dot (pip)** on the domino as you all count aloud “7, 8, 9 ; $3 \times 3 = 9$.” Write 9 on the right side.

3 x 4 Touch each **dot** on the domino in the same order as above and count aloud “10, 11, 12; $3 \times 4 = 12$.” Write it in the chart.

This process continues with 3×5 , 3×6 , 3×7 , 3×8 , 3×9 . Students want to stop here and just plug in the 30 because they all know that $3 \times 10 = 30$. Do **NOT** allow this! **X 10 is your “Safety Net”**, your “accuracy check”! If they count from the “x 9” answer and end with the number “30”, then students KNOW everything above is correct! If they do NOT get “30”, there is an error and they must recount from the top. Have students draw a star by “x 10” as a reminder of how important it is to count ALL the way up to the “X 10” answer – the **Safety Net**!



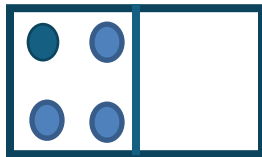
X	3
1	3
2	6
3	9
4	12
5	15
6	18
7	21
8	24
9	27
★ 10	30

Erase the previous answers from the boards and have students place each of the following dominos at the top (and write it at the top), as you all work through the chart together – one domino at a time.

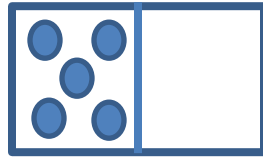
For the **“4” Domino**, touch the dots starting in the upper left corner and count clockwise.

For the **“5” Domino** (and all successive dominos), touch the dots starting in the upper left corner, count around clockwise, and end with the middle dot.

For the **“6”, “7”, “8”, and “9” Dominos**, use the same order as the “5” and then continue with the additional dots on the right half (in the same order as previously touched). It is important to demonstrate and work through this whole process with your students, touching the real dominos. (And your Visual Learners are making a mental picture of the dominos!)

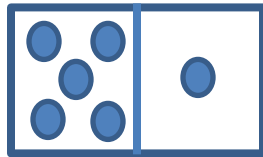


X 4

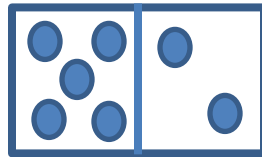


X 5

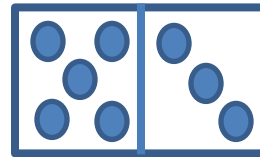
NOTE: Once you reach the **“X 5” Domino**, keep this format for the remainder of the dominos. This “repetitive movement” builds another safety/accuracy factor into the process.



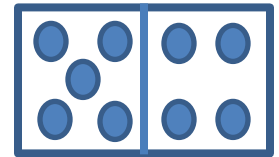
X 6



X 7



X 8



X 9

5(b) Independent Practice (15 minutes): Hand out the centimeter grid paper and pencils. Have students independently repeat the entire domino process on paper. This time, however, they must **DRAW** the dominos at the top of each chart and do NOT erase any chart. Students will now use their pencil points to touch the dots on their domino drawings. [Help them create the first chart.] The end result will be a page of charts with all their needed “tools” (basic multiples) on one grid sheet. (See attached example chart page.) You should move about the classroom monitoring students’ independent practice, assessing their understanding and correct use of their new Domino Safety Strategy (immediate feedback). Provide reteaching and refocusing as needed.

6. Lesson Closure

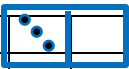
(5 minutes). Compliment students on their practice in generating this new “tool”. Ask for feedback on the ease or difficulty of creating these charts. Remind them of the definitions of the words “careless and careful”. A few extra minutes of “domino work” is worth the effort in accuracy! Ask if students see value in using the Domino Strategy as a tool to avoid those “pesky careless mistakes”! They may share a variety of different perceptions. Validate all.

7. Assessment of student understanding:

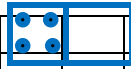
Observation of interest, oral responses, participation in discussion, body language, listening, and following

8. Follow Up :

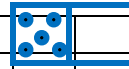
This practice with domino drawings (real dominos when see the need) and written charts should be repeated on following days and accompanied by word problems requiring the knowledge of multiples. Students should gain confidence in their ability to avoid careless mistakes in multiplication while solving complex word problems.



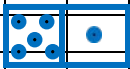
X	3
1	3
2	6
3	9
4	12
5	15
6	18
7	21
8	24
9	27
10	30



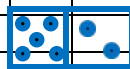
X	4
1	4
2	8
3	12
4	16
5	20
6	24
7	28
8	32
9	36
10	40



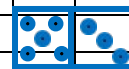
X	5
1	5
2	10
3	15
4	20
5	25
6	30
7	35
8	40
9	45
10	50



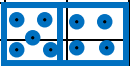
X	6
1	6
2	12
3	18
4	24
5	30
6	36
7	42
8	48
9	54
10	60



X	7
1	7
2	14
3	21
4	28
5	35
6	42
7	49
8	56
9	63
10	70



X	8
1	8
2	16
3	24
4	32
5	40
6	48
7	56
8	64
9	72
10	80



X	9
1	9
2	18
3	27
4	36
5	45
6	54
7	63
8	72
9	81
10	90



Remember: Practice makes “closer to perfect”, & success in one area leads to success in others!

Extension: I have an additional lesson on creating a “**Gross Chart**” (a similar kind of survival strategy) for upper grade level students who have difficulty with figuring Least Common Multiples, Greatest Common Factors, Equivalent Fractions, and Simplified Fractions.