# Simple Steps for Multiplication Mastery

Welcome to TLC's Simple Steps for Multiplication Mastery! This program will help your student finally master their multiplication facts using a combined multi-sensory approach of VISUALIZATION, FUN GAMES TO GET STUDENTS MOVING WHILE LEARNING, AUDIO RECORDINGS, AND SEQUENTIAL WRITTEN PRACTICE.

This program has **THREE MAIN STEPS**:

Step 1:

VISUALIZATION - the foundation of the math process program and always the first step in learning a new fact family.
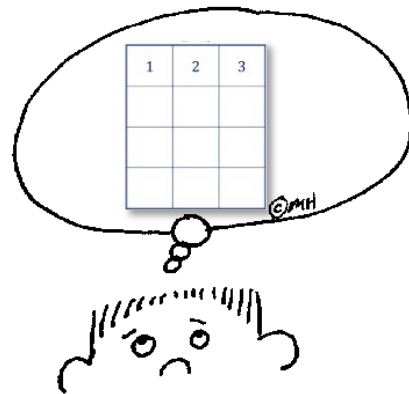
Step 2:

GAMES - fun reinforcement of the fact family!

- Math Ball
- Snatch the Cards
- Tic Tac Toe
- Four Square
- Hide and Go Seek

Step 3:

PRACTICE - audio recordings and worksheets serve as tools to develop automaticity.

3 x 0 =   ...0
3 x 1 =   ...3
3 x 2 =   ...6
3 x 3 =   ...9
3 x 4 =   ...12
3 x 5 =   ...15
3 x 6 =   ...18

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STEP 1
VISUALIZATION
DIRECTIONS

Note: Always start with Grid 1-1, as this builds an important foundation for the rest of the program.

1	2	3

Grid 1-1

1	2	3
4	5	6

Grid 1-2

1	2	3
4	5	6
7	8	9

Grid 1-3

1	2	3
4	5	6
7	8	9
10	11	12

Grid 1-4

Visualization

1. Hold up **Grid 1-1**, just above the student's eyes and a little to his/her right.

2. Ask the student to take a picture of the grid in his/her mind.

3. Now that the student has a picture in their head, they should be able to "see" the numbers. Remove the visual, and ask him/her to write the numbers in the air in front of him/her.

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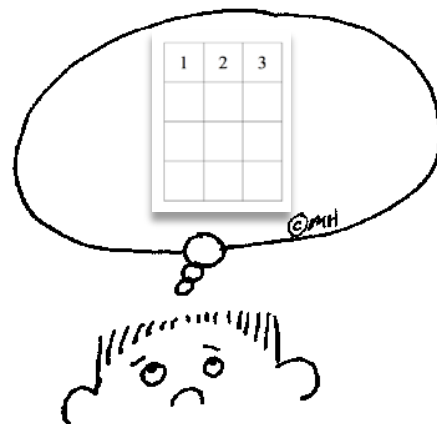
4. Begin asking questions, such as:

- What number is in the first box?　　(*1*)　　That's box 1
- What number is in the middle?　　　(*2*)　　That's box 2
- What is the last number in the row?　(*3*)　　That's box 3
- What number is to the right of the 2?　(*3*)　　Right, in box 3

Note: You can show your student a blank grid and have them point to the box if pointing in the air is too difficult.

WHAT NUMBER IS IN THE FIRST BOX?

"1"

CORRECT! THAT'S BOX 1!
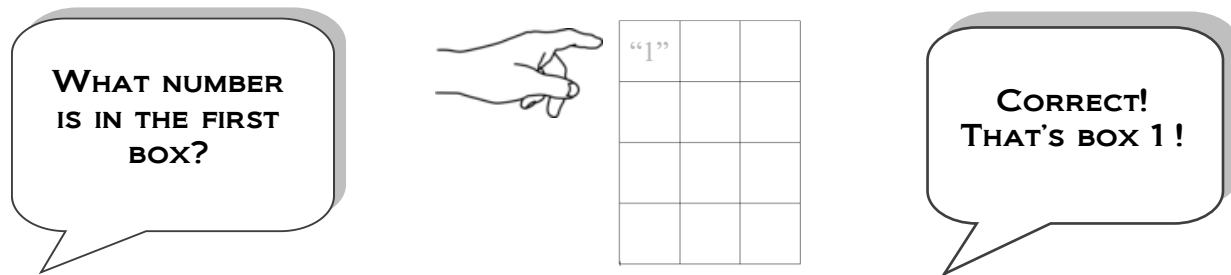
5. Repeat this procedure (taking mental picture, removing visual, questioning, verbally labeling boxes) with
GRID 1-2, 1-3, 1-4 until the student has the entire Grid memorized.

Now that your student can visualize the 1s Grid and knows the 1s tables, we are going to build upon that knowledge.
This way they are using the 1s chart as the image pattern for the new numbers they are learning.

For each set, ask for the box number (1-12) to indicate both the number they are multiplying by and where the answer is on the grid. Everything in box 2 will be 2 times the number you are multiplying by. Box 3 will be 3 times the number you are multiplying by, etc.

STEP 1
VISUALIZATION

APPLICATION TO MULTIPLES OF 2-12

1. Your student is going to use his/her knowledge from **GRID 1** to learn the multiples of 2. Show your student the new Grid (**GRID 2-1**).

2. Explain that the first number in box number 1 is the answer for 2 x 1, in the second box you will see the answer for 2 x 2, and the third box has the answer for 2 x 3.

3. Ask the student to take a picture of the grid in his/her mind.

4. Remove the picture.

2 (2 x 1)	4 (2 x 2)	6 (2 x 3)

GRID 2-1

5. Ask questions, such as:

• What number is in box 1?	(*2*)	That's correct, 2x1=2
• What number is in box 2?	(*4*)	That's correct, 2x2=4
• What number is in box 3?	(*6*)	That's correct, 2x3=6

STEP 1
VISUALIZATION

Linking to Math Facts

**Please note that the Grid number directly relates to the Fact Family that your student is working on. For example, Grid 2 refers to the 2s Fact Family. Grid 3 refers to the 3s Fact Family, etc. **

1. Once the student knows where all the numbers are, you can begin linking to math facts, reminding them that the answer to 2x1 is in the first square, etc. You can ask questions such as:

- Where is 2x1?   *(Box 1 and pointing in the air or on blank grid)*
- What is 2x3?   *(6 and point in the air or to box 3 on the blank grid)*
- Where is 6 on the grid?   *(Box 3 and point in the air or on blank grid)*

2. Repeat the steps in "Application to Multiples" with **Grid 2-2**. Make sure to question student on ALL numbers, not just the new ones.

3. Repeat the steps in "Application to Multiples" with **Grid 2-3**. Make sure to question student on ALL numbers, not just the new ones.

4. Repeat the steps in "Application to Multiples" with **Grid 2-4**. Make sure to question student on ALL numbers, not just new ones.

5. Finally, use the blank grid to ask student questions like:

- What is 2x8? Where is it on the grid?
- Where is 12 on the grid? What number times 2 is 12?
- What number is in the top left corner? What is the math fact?
- What number is in the bottom right corner? What is the math fact?

6. Once your student has memorized the final Grid for the fact family, it is time to reinforce the facts with Games (Step 2) and Practice (Step 3).

7. Repeat the process for **Grids 3 through Grids 12**, remembering to always review the previous Grid for at least 5 minutes before moving on to a new one.

Notes:
*If your student is frustrated or having a difficult time with a number grid, go back to the previous number grid and review until they feel totally confident with it.
*If 3 new numbers at a time is too difficult, you can cover one or two of them with a piece of paper.

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12-1

x12

12	24	36

12	24	36
48	60	72

STEP 1
VISUALIZATION

12-3

12	24	36
48	60	72
84	96	108

12	24	36
48	60	72
84	96	108
120	132	144

1. Choose a math fact group (such as the 12 times table).

2. Player 1 chooses a square with a number in it, says the problem out loud and the answer.
   (Example: If the player picks the number 2 in the grid, he/she says "12 x 2 = 24")

2	9	6	4
8	1	7	3
4	5	9	10
8	7	6	2

12x2=24

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3. Once the player says the correct answer, he/she can color the box in with a marker.

4. Player 2 does the same, using a different colored marker.

5. When a player gets four in a row or four in a square, he/she can draw a line through the numbers and gets one point.

12x5=60
12x9=108
12x6=72
12x7=84

2	9	6	4
8	1	7	3
4	5	9	10
8	7	6	2

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12x4=48
12x3=36
12x10=120
12x2=24

5. When the boxes are all colored in, the player with the most points wins the game.

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Four Square

GAME 1

12	7	9	4
1	3	6	8
7	11	2	5
10	3	4	9

Four Square

GAME 2

2	9	6	12
8	1	7	3
4	5	9	10
11	7	6	2

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x12

FOUR SQUARE

GAME 3

10	2	4	11
6	5	1	9
3	8	7	12
2	6	8	4

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Four Square

3	6	5	2
11	8	10	7
1	4	12	3
2	5	9	4

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x12

Four Square

TEMPLATE

STEP 2
GAMES

Snatch the Cards

DIRECTIONS

1. Cut out the cards with math problems and shuffle the deck (you may also use the blank template to create your own math problems).

12 x 3

12 x 5 ☺
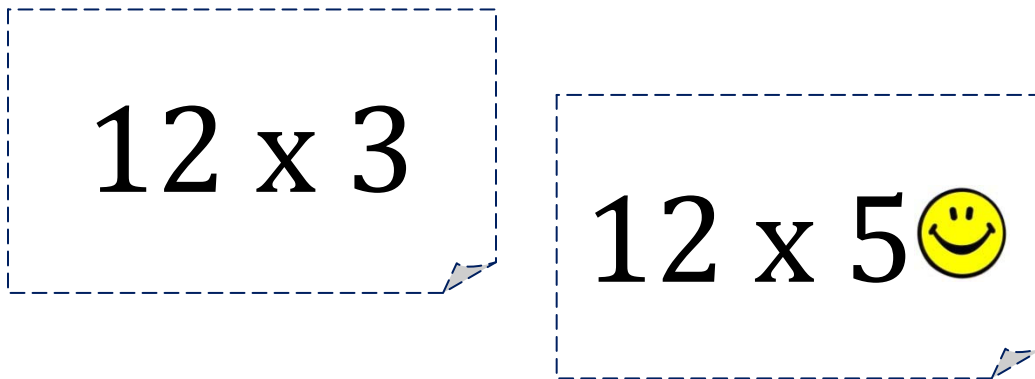
2. Place the cards face down, with a Snatch card at the bottom of the deck (a card with a smiley face on it).

3. Players pick up cards and answer the math problem.

4. When a player picks up a Snatch card, he/she steals the cards from the other players, keeping them all to themselves until the next player picks up a Snatch card.

5. The fun part of the game is that no one knows who will win until the very end when the last player gets the final Snatch card.

Note: Feel free to isolate certain math problems that seem challenging to the student and play with those cards only.

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x12

Snatch the Cards

DECK

12 x 2 😊	12 x 3
12 x 4	12 x 5
12 x 6	12 x 7
12 x 8 😊	12 x 9

Snatch the Cards

12 x 10

12 x 11 😊

12 x 12

STEP 2
GAMES

Snatch the Cards

Snatch the Cards

TEMPLATE

STEP 2
GAMES

Tic Tac Toe

DIRECTIONS

1. The student writes a math problem in each of the nine squares. (Use only a few facts that are repeated in several squares.)

2. Play Tic Tac Toe as usual. In order to mark an X or an O, the players must answer the math problem correctly.

12 x 4	12 x 6	12 x 4
12 x 7	12 x 4	12 x 6
12 x 6	12 x 7	12 x 4

12x4=48

12x7=84

12x6=72

3. The player with 3 in a row first wins!

Note: To add speed and competition to this game, use a minute/seconds timer to see if you can complete the grid faster.
(Aim for fewer than 20 seconds per game)

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x12

Tic Tac Toe

EXAMPLE

12 x 4	12 x 6	12 x 4
12 x 7	12 x 4	12 x 6
12 x 6	12 x 7	12 x 4

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x12

Tic Tac Toe

TEMPLATE

x12

Tic Tac Toe

TEMPLATE

Hide and Go Seek Math Facts

DIRECTIONS

1. Choose 3 or 4 facts that the student seems to have difficulty with.

2. Have the student write out each fact on a separate card, including the answer (the student may also decorate the cards in order to make it interesting and fun).

$$12 \times 7 = 84$$
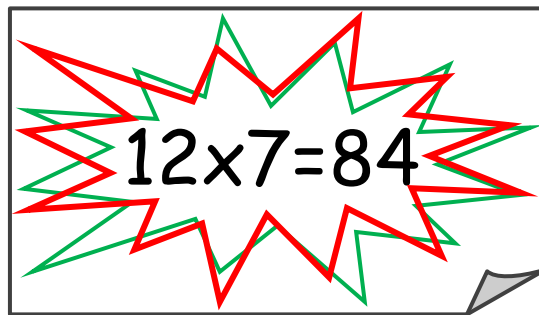
3. The student finds a hiding place for the card someplace in the house, looks at it and places the fact in their visual screen (memory).
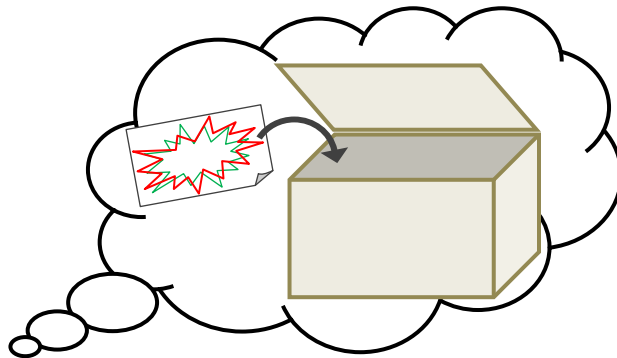
4. When the student is done hiding the cards, ask him/her where each fact is.

5. You can also ask "Where is 12 x 7?" and the student must tell you the hiding place and the answer.

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Math Ball

DIRECTIONS

1. Throw a ball to the student and give a math problem at the same time.

12x7!
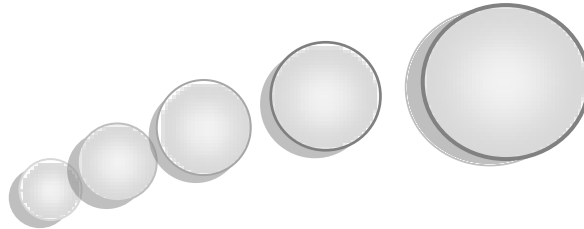
2. The student will catch the ball, and throw it back to you with the answer.
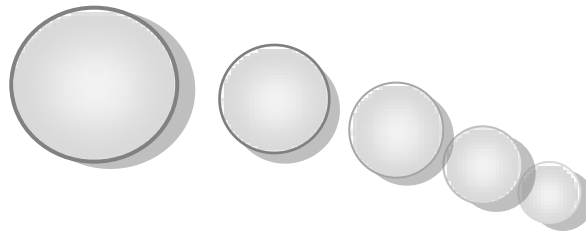
84!

3. You throw the ball back to the student repeating the answer. ("84!")

4. The student throws the ball back with the original question. ("12 times 7!")

5. You throw the ball back to the student with a **division** problem that relates to the original question.

84÷12
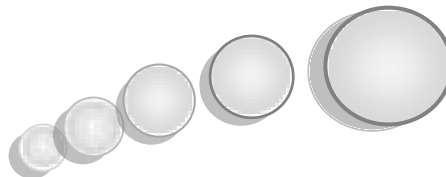
6. The student will throw the ball back with the answer.
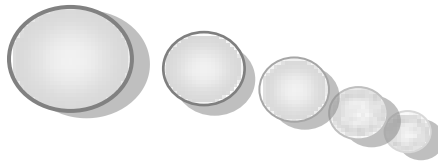
7!

Note: This game can also be played with addition and subtraction facts.

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PRACTICE

AUDIO RECORDING

DIRECTIONS

For this activity you will need a voice recorder. You can use your smart phone, computer, or digital voice recorder.

1. Choose one fact family and record your student saying the equation.
   For example: "12 times 0 equals [wait 2 beats] 0."

2. Each recording should contain the entire fact family. It is helpful to write out the script prior to recording.

Example Script:

12 x 0 = ...0
12 x 1 = ...12
12 x 2 = ...24
12 x 3 = ...36
12 x 4 = ...48
12 x 5 = ...60
12 x 6 = ...72
12 x 7 = ...84
12 x 8 = ...96
12 x 9 = ...108
12 x 10 = ...120
12 x 11 = ...132
12 x 12 = ...144

Click the Sample Recording Folder to hear an example

3. Once recorded, play back the audio and have your student answer the equation before they hear themselves giving the answer on the recording.

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STEP 3
PRACTICE

"Multiplying by 12" Worksheet
ORDERED

After completing these problems, check your answers on the next page.

12 x 0 = _____   0 x 12 = _____

12 x 1 = _____   1 x 12 = _____

12 x 2 = _____   2 x 12 = _____

12 x 3 = _____   3 x 12 = _____

12 x 4 = _____   4 x 12 = _____

12 x 5 = _____   5 x 12 = _____

12 x 6 = _____   6 x 12 = _____

12 x 7 = _____   7 x 12 = _____

12 x 8 = _____   8 x 12 = _____

12 x 9 = _____   9 x 12 = _____

12 x 10 = _____   10 x 12 = _____

12 x 11 = _____   11 x 12 = _____

12 x 12 = _____   12 x 12 = _____

Answers

12 x 0 = 0
12 x 1 = 12
12 x 2 = 24
12 x 3 = 36
12 x 4 = 48
12 x 5 = 60
12 x 6 = 72
12 x 7 = 84
12 x 8 = 96
12 x 9 = 108
12 x 10 =120
12 x 11 =132
12 x 12 =144

PRACTICE

"Multiplying by 12" Worksheet

MIXED

Complete these problems using your 12 times tables.

1	6	2	8	7
x 12	x 12	x 12	x 12	x 12

4	9	12	7	5
x 12	x 12	x 12	x 12	x 12

12	0	12	12	12
x 11	x 12	x 6	x 9	x 5

12	12	12	12	12
x 11	x 0	x 6	x 9	x 5

12	8	2	12	12
x 1	x 12	x 12	x 4	x 10

12 x 2 = _____   12 x 7 = _____   9 x 12 = _____   4 x 12 = _____

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STEP 3
PRACTICE

REVIEW PRACTICE
1

Let's Review! If you need help, use your facts tables.

7 x 3	4 x 6	6 x 9	6 x 5	9 x 0
8 x 3	5 x 8	9 x 6	7 x 7	2 x 6
4 x 4	2 x 2	9 x 9	8 x 2	6 x 5
2 x 4	6 x 3	1 x 9	3 x 2	10 x 6
9 x 9	4 x 0	3 x 12	8 x 4	5 x 7

STEP 3
PRACTICE

Review Practice
2

Let's Review! If you need help, use your facts tables.

6	8	9	11	8
x 5	x 5	x 5	x 2	x 4

8	5	3	7	2
x 3	x 5	x 3	x 7	x 2

8	3	2	1	2
x 7	x 4	x 6	x 1	x 5

5	12	0	6	11
x 7	x 7	x 9	x 6	x 6

10	6	3	7	3
x 3	x 4	x 5	x 7	x 8

STEP 3
PRACTICE

Review Practice
3

Let's Review! If you need help, use your facts tables.

4	1	10	2	8
x 2	x 7	x 8	x 3	x 0

1	2	7	8	4
x 3	x 6	x 8	x 8	x 9

3	2	10	4	9
x 3	x 8	x 9	x 8	x 5

11	3	2	6	10
x 4	x 3	x 3	x 7	x 8

12	4	1	5	8
x 2	x 5	x 12	x 7	x 8

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PRACTICE

REVIEW PRACTICE

4

Let's Review! If you need help, use your facts tables.

6 x 5 = _____   1 x 4 = _____   3 x 3 = _____   2 x 8 = _____

1 x 8 = _____   9 x 3 = _____   4 x 4 = _____   7 x 10 = _____

12 x 6 = _____   3 x 8 = _____   9 x 12 = _____   4 x 3 = _____

6 x 4 = _____   7 x 2 = _____   6 x 6 = _____   10 x 7 = _____

6 x 3 = _____   0 x 9 = _____   5 x 2 = _____   4 x 8 = _____

2 x 0 = _____   8 x 8 = _____   9 x 5 = _____   7 x 11 = _____

2 x 8 = _____   9 x 7 = _____   1 x 3 = _____   7 x 6 = _____

11 x 2 = _____   6 x 8 = _____   9 x 8 = _____   7 x 8 = _____

STEP 3
PRACTICE

REVIEW PRACTICE
5

Let's Review! If you need help, use your facts tables.

4 x 3 = _____   9 x 5 = _____   3 x 6 = _____   9 x 8 = _____

0 x 7 = _____   2 x 4 = _____   7 x 7 = _____   5 x 10 = _____

12 x 1 = _____   4 x 8 = _____   8 x 7 = _____   5 x 9 = _____

9 x 3 = _____   8 x 5 = _____   4 x 4 = _____   2 x 7 = _____

9 x 6 = _____   0 x 3 = _____   4 x 9 = _____   5 x 8 = _____

2 x 1 = _____   3 x 3 = _____   7 x 4 = _____   5 x 10 = _____

2 x 2 = _____   9 x 7 = _____   5 x 5 = _____   4 x 3 = _____

1 x 1 = _____   6 x 3 = _____   9 x 7 = _____   5 x 9 = _____

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