Multiplication by Nine Finger Mat

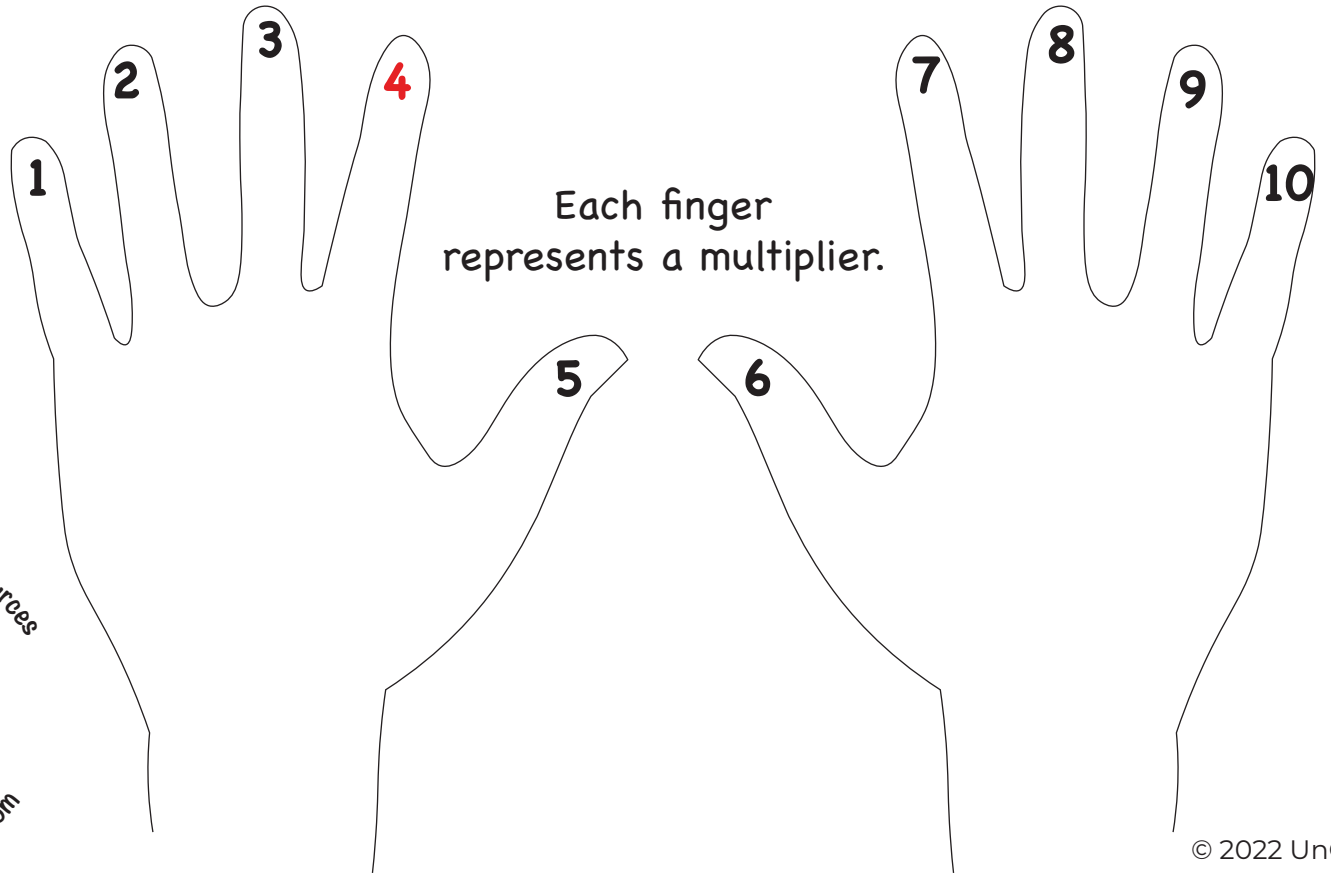
Multiply nine by a single digit. Notice that the number in the ten's place is one less than the multiplier.

4x9=36 4-1=3

All multiples of nine have a digit sum of nine. The number in the unit's place plus the number in the ten's place must add up to nine.

4x9= 3+___=9 3+6=9

4x9= 36



Elementary Math Resources

UnCommon-Core.com

Hello Teachers,

Thank you for downloading this handout. After decades of teaching, now I am sharing some of the activities I designed for my students and some new ones as well.

Please, check out the self-paced teacher education courses on UnCommon-Core.com.

While you are there, sign up for your free copy of **Colorful Collections:** *A Mindful Exploration of Proper Fractions.*

Also, visit my Teachers Pay Teachers store UnCommon-Core dot com.

Thank you again. All the best,

Isabelle

Isabelle Hoag M.Ed.
Director of Education
UnCommon-Core.com

Example

Multiplication by Nine Finger Mat

9 x 3 = 27

two tens = 20

seven units = 7

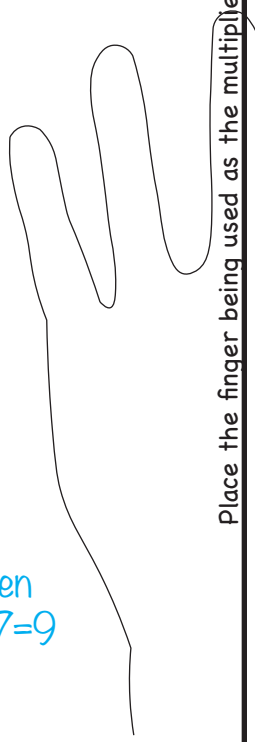
There are two fingers in the ten's place.

This image shows the third finger being used as the multiplier. The number fact being solved is nine times three. Do not count the 'multiplier finger' in the tens or the units.

When multiplying by nine, the ten's digit in the product will be one less than the multiplier. In 9x3 the ten's digit will be two.

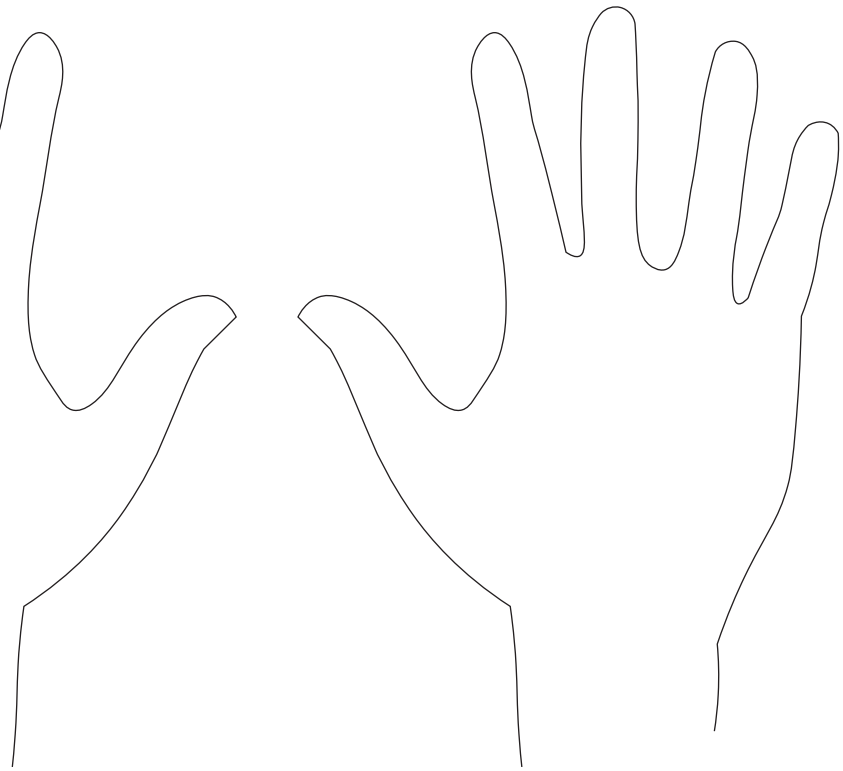
The digit in the unit's place will be the number which, when added to the ten's digit, will result in a total of nine!

With two in the ten's place, there will be a seven in the unit's place for a digit sum of nine. 2+7=9



Place the finger being used as the multiplier over this line.

There are seven fingers in the unit's place.



Teacher Tips

Multiplication by Nine Finger Mat

Let your students work in pairs to multiply nine times every digit from one to ten. This will help them learn how to use the **Multiplication by Nine Finger Mats**.

Fun Bulletin Board Display

Copy the **Multiplication by Nine Finger Mat** for each student in your class.

Arrange your class in ten groups. Give each of group a nine times fact to illustrate.

Let the students in each group help each other trace their hands on the mat showing the correct finger position needed to solve their math fact.

Make sure they trace in pencil first, just in case. When they are happy with the way their hands look, the children can outline with markers and fill in the details with crayon. Some may want to show the edges of their sleeves, rings, or fingernail polish.

Have the children write their names and math fact on the page. Then arrange their mats on a bulletin board to share.

After your students understand how to use the **Multiplication by Nine Finger Mat** independently, let them try some **Times Nine Math Facts** by themselves.

Encourage students to look for patterns in the nine times table. Plan class discussions around the interesting patterns that can be found when multiplying by nine.

There are many patterns in the nines times table which do not appear in any other times table:

- Every product of nine has a digit sum of nine. 3+6=9, 4+5=9, & 8+1=9
- When the multiplier is a single digit, the number in the ten's place will be one less than the multiplier.
- When the products of nine times one to nine times ten are listed vertically, the unit's place digits are arranged in descending order from 9 to 0.
- When the products of nine times one to nine times ten are listed vertically, the ten's place digits are arranged in ascending order from 0 to 9.

9x1=09
9x2=18
9x3=27
9x4=36
9x5=45
9x6=54
9x7=63
9x8=72
9x9=81
9x10=90

Multiplication by Nine
Finger Mat

Ten's Place	Unit's Place

Place the finger being used as the multiplier over this line.

Multiplication by Ninety
Finger Mat

Hundred's Place	Ten's Place

Place the finger being used as the multiplier over this line.

Multiplication by Nine Hundred
Finger Mat

Thousand's Place	Hundred's Place

Place the finger being used as the multiplier over this line.

Times Nine Math Facts

name:

Write the answers to the math facts. If you cannot recall the product, then use the Multiplication by Nine Finger Mat to figure it out.

0x9=	10x9=
1x9=	1x9=
2x9=	5x9=
3x9=	9x9=
4x9=	11x9=
5x9=	6x9=
6x9=	8x9=
7x9=	7x9=
8x9=	12x9=
9x9=	2x9=
10x9=	4x9=
11x9=	0x9=
12x9=	3x9=

0 x9	1 x9	2 x9	3 x9	4 x9
5 x9	6 x9	7 x9	8 x9	9 x9
10 x9	11 x9	12 x9	9 x5	9 x0
9 x2	9 x9	9 x3	9 x7	9 x10
5 x9	6 x9	1 x9	7 x9	9 x9

Times Nine Math Facts

name:

Write the answers to the math facts. If you cannot recall the product, then use the Multiplication by Nine Finger Mat to figure it out.

9x0=	10x9=
9x1=	1x9=
9x2=	5x9=
9x3=	9x9=
4x9=	11x9=
5x9=	6x9=
6x9=	8x9=
7x9=	7x9=
8x9=	12x9=
9x9=	2x9=
10x9=	4x9=
11x9=	0x9=
12x9=	3x9=

4 x9 =	7 x9 =	2 x9 =	9 x9 =	5 x9 =
6 x9 =	8 x9 =	3 x9 =	8 x9 =	7 x9 =
10 x9 =	11 x9 =	12 x9 =	9 x5 =	9 x0 =
9 x2 =	9 x9 =	9 x3 =	9 x7 =	9 x10 =
5 x9 =	12 x9 =	3 x9 =	7 x9 =	9 x9 =

Multiples of Nine ~ Digit Sums

name:

Look for numerical patterns to help you multiply by nine and also check to see if the answer is correct.

Multiply nine by a single digit. Notice that the number in the ten's place is **one less** than the multiplier.

4x9=36 4-1=3

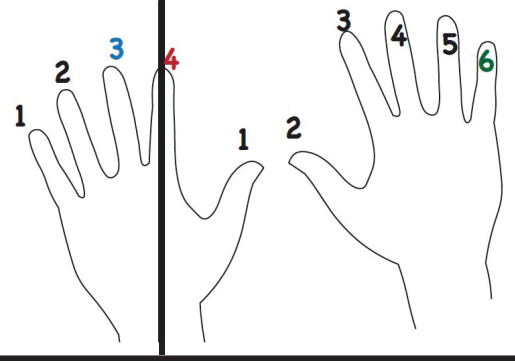
All multiples of nine have a digit sum of nine. The number in the unit's place plus the number in the ten's place must add up to nine.

4x9= 3+___=9 3+6=9

4x9= 36

Multiplication by Nine

Tens	Units



Find the digit sum of each answer. If the answer is correct put a check next to it. If the answer is wrong, put an X next to it.

81x9=709 7+0+9=16=1+6=7 X

42x9=378

79x9=712

64x9=576

27x9=243

60x9=548

25x9=225

210x9=1,890

355x9=3195

1729x9=15,563

Multiples of Nine ~ Digit Sums

name:

Solve each math fact. Then, add the digits of each multiple of nine. Hmmm. What happened?

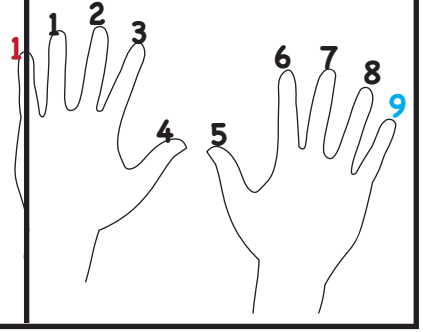
4x9=36	3+6=
1x9=	=
2x9=	=
3x9=	=
4x9=	=
5x9=	=
6x9=	=
7x9=	=
8x9=	=
9x9=	=
10x9=	=
11x9=	=
12x9=	=

0 x9	1 x9	2 x9	3 x9	4 x9
5 x9	6 x9	7 x9	8 x9	9 x9
10 x9	11 x9	12 x9	9 x5	9 x0
9 x2	9 x9	9 x3	9 x7	9 x10
5 x9	6 x9	1 x9	7 x9	9 x9

Multiplication by 9, 90, or 900

The multiplier is one – use the first finger.

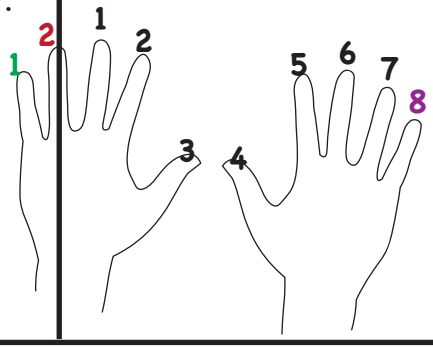
1x9=9
1x90=90
1x900=900



Multiplication by 9, 90, or 900

The multiplier is two – use the second finger.

2x9=18
2x90=180
2x900=1800

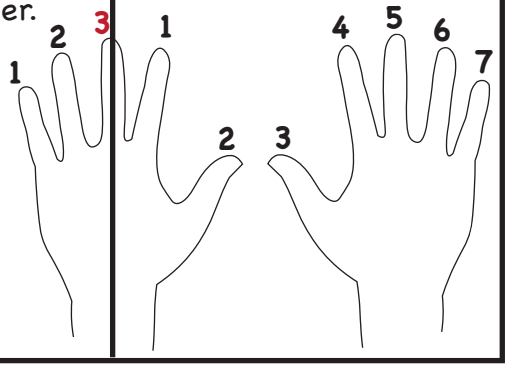


Count the fingers in each place and multiply by the value assigned to that place.

Multiplication by 9, 90, or 900

The multiplier is three – use the third finger.

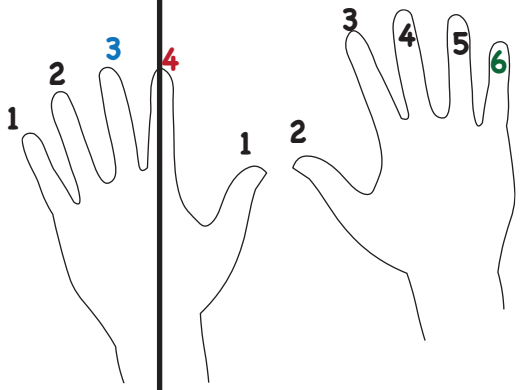
3x9=27
3x90=270
x900=2700



Multiplication by 9, 90, or 900

The multiplier is four – use the fourth finger.

4x9=36
4x90=360
4x900=3600

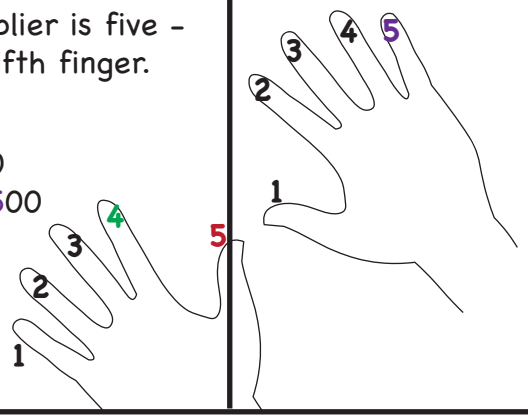


Answer Key

Multiplication by 9, 90, or 900

The multiplier is five - use the fifth finger.

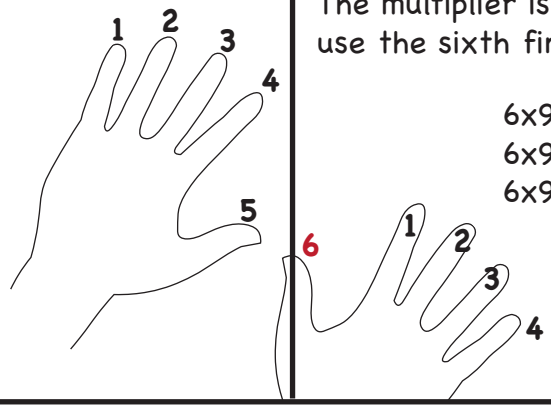
5x9=45
5x90=450
5x900=4500



Multiplication by 9, 90, or 900

The multiplier is six - use the sixth finger.

6x9=54
6x90=540
6x900=5400

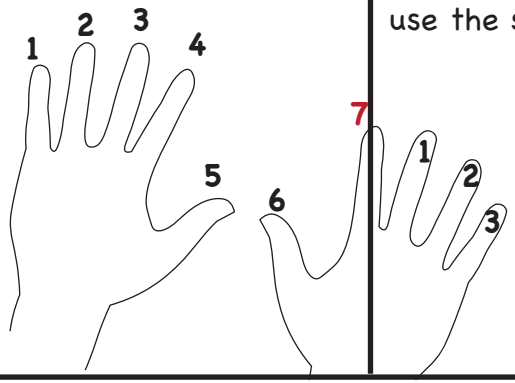


Count the fingers in each place and multiply by the value assigned to that place.

Multiplication by 9, 90, or 900

The multiplier is seven - use the seventh finger.

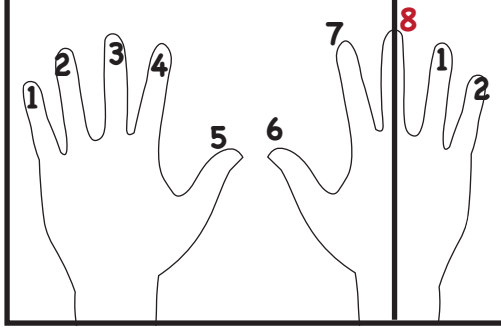
7x9=63
7x90=630
7x900=6300



Multiplication by 9, 90, or 900

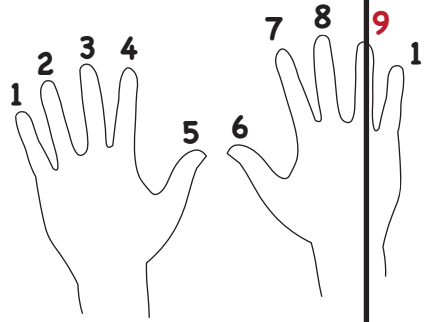
The multiplier is eight - use the eighth finger.

8x9=72
8x90=720
8x900=7200



Answer Key

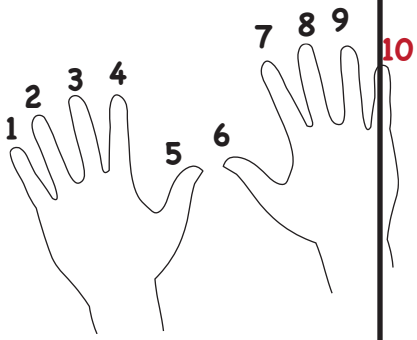
Multiplication by 9, 90, or 900



The multiplier is nine – use the ninth finger.

9x9=81
9x90=810
9x900=8100

Multiplication by 9, 90, or 900



The multiplier is ten – use the tenth finger.

10x9=90
10x90=900
10x900=9000

Count the fingers in each place and multiply by the value assigned to that place.

Multiples of nine have digit sums of nine!

81x9=709 7+0+9=16=1+6=7 X

42x9=378 3+7+8=18=1+8=9 ✓

79x9=712 7+1+2=10=1+0=1 X

64x9=576 5+7+6=18=1+8=9 ✓

27x9=243 2+4+3=9 ✓

60x9=548 5+4+8=17=1+7=8 X

25x9=225 2+2+5=9 ✓

210x9=1,890 1+8+9+0=18=1+8=9 ✓

355x9=3195 3+1+9+5=18=1+8=9 ✓

1729x9=15,563 6+11+3=20=2 X

Answer Key

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Multiplication by Nine Finger Mat