

FAMILY MATH

Analysis of Patterns Using Units of 9, 0, and 1

Dear Family,

Your student is exploring patterns when multiplying and dividing with units of 9, 0, and 1. They use the relationship between 9 and 10 to help them skip-count and multiply by 9. They also identify special patterns that help them better remember nines facts. They investigate multiplication and division patterns with 1 and 0 and discover that there are special rules when multiplying and dividing with these units. Using their knowledge of multiplication and division, they analyze patterns in multiplication tables and use patterns to find unknown numbers. They also write their own word problems and solve word problems with two steps.

Key Term
multiple



9 fours = 10 fours – 1 four

$$\begin{aligned} 9 \times 4 &= (10 \times 4) - (1 \times 4) \\ &= 40 - 4 \\ &= 36 \end{aligned}$$

To find 9 units of four, find 10 units of four and then subtract 1 unit of four.

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

The number of tens in a multiple of 9 is 1 less than the number of groups of 9.

$\boxed{7}$ groups of 0 is $\underline{\quad 0 \quad}$.

$\boxed{7} \times \underline{\quad 0 \quad} = \underline{\quad 0 \quad}$

0 groups of $\boxed{7}$ is $\underline{\quad 0 \quad}$.

$\underline{\quad 0 \quad} \times \boxed{7} = \underline{\quad 0 \quad}$

Any number multiplied by 0 is 0. A number cannot be divided by 0, but 0 divided by any other number is 0.

$1 \times 2 = 2$
 $1 \times 3 = 3$
 $1 \times 4 = 4$
 $1 \times 5 = 5$
 $1 \times 6 = 6$
 $1 \times 7 = 7$
 $1 \times 8 = 8$
 $1 \times 9 = 9$

$1 \times 30 = 30$
 $1 \times 500 = 500$

Any number, except 0, multiplied or divided by 1 is itself.

At-Home Activity

One Group Less

Encourage your student to practice multiplying with units of 9 by using the strategy of multiplying by 10 and subtracting 1 group. Look for an object with a set number of features, such as a fork with 4 prongs or a window with 6 panes. Show it to your student and ask them questions to help them find the total number of features for 9 of those objects.

- “If 1 fork has 4 prongs, how many prongs are on 10 forks?” ($10 \times 4 = 40$)
- “If there are 40 prongs on 10 forks, how many prongs are on 9 forks?” ($40 - 4 = 36$)

If possible, place 10 of the object in front of your student and then remove 1 when you ask about 9 objects.