

LESSON 2



CA Standards
KEY NS.2.2 Memorize to automaticity the multiplication table for numbers between 1 and 10.

AF 1.2 Solve problems involving numeric equations or inequalities.

Also NS 2.0, KEY AF.2.1, MR 1.1

Multiply with 9

Objective Use patterns to multiply when 9 is a factor.

Learn by Example

This chart shows the 9s facts. The yellow boxes show the facts you already know.

These facts follow a special pattern that can help you learn and remember them.

Factors	Product
<u>1</u> × 9 =	9
<u>2</u> × 9 =	18
<u>3</u> × 9 =	27
<u>4</u> × 9 =	36
<u>5</u> × 9 =	45
<u>6</u> × 9 =	54
<u>7</u> × 9 =	63
<u>8</u> × 9 =	■
<u>9</u> × 9 =	■
<u>10</u> × 9 =	■

- Look at each row in the chart. Notice that the tens digit of the product is always 1 less than the underlined factor.

$$\underline{7} \times 9 = 63$$

- Look at each product in the chart. Notice that the sum of the digits in the product is always 9.

$$7 \times 9 = 63 \rightarrow 6 + 3 = 9$$

Find the next product in the chart: $8 \times 9 = \bigcirc$.

- What number is 1 less than 8? Write 7 in the tens place of the product.

$$\underline{8} \times 9 = \underline{7}_ \leftarrow$$

The tens digit in the product is 1 less than the factor you are multiplying by 9.

- Seven plus what number is 9? Write 2 in the ones place of the product.

$$8 \times 9 = \underline{7}\underline{2} \leftarrow$$

The sum of the digits in the product is 9.

Solution: $8 \times 9 = 72$



▶ Guided Practice

Multiply.

1. $\begin{array}{r} 3 \\ \times 9 \\ \hline \end{array}$

2. $\begin{array}{r} 9 \\ \times 7 \\ \hline \end{array}$

3. $\begin{array}{r} 2 \\ \times 9 \\ \hline \end{array}$

4. $\begin{array}{r} 9 \\ \times 5 \\ \hline \end{array}$

5. $\begin{array}{r} 4 \\ \times 9 \\ \hline \end{array}$

6. $\begin{array}{r} 9 \\ \times 1 \\ \hline \end{array}$

7. $\begin{array}{r} 6 \\ \times 9 \\ \hline \end{array}$

8. $\begin{array}{r} 9 \\ \times 10 \\ \hline \end{array}$

9. $\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$

10. $\begin{array}{r} 9 \\ \times 3 \\ \hline \end{array}$

11. $\begin{array}{r} 9 \\ \times 9 \\ \hline \end{array}$

12. $\begin{array}{r} 7 \\ \times 9 \\ \hline \end{array}$

Ask Yourself

- How can I find the tens digit in the product?
- How can I find the ones digit in the product?

Guided Problem Solving

Use the questions to solve this problem.

13. Yoon Ki visited the Olympic National Park rainforest for 9 days. She bought 3 postcards each day. How many postcards did she buy in all?
- Understand** How many days was Yoon Ki's trip? How many postcards did she buy each day?
 - Plan** Choose a way to solve the problem.
 - Solve** Use your plan. Write the answer.
 - Look Back** Solve the problem a different way. Did you get the same answer?



Solve.

14. Look back at Problem 13. If Yoon Ki bought 6 postcards each day instead of 3, how many postcards would she have in all?



Math Talk How can you use patterns to help you find 9×9 ?