

Reteach

Exponents

A product of like factors can be written using a **base**, the number used as a factor, and an **exponent**, which tells how many times the base is used as a factor. Numbers expressed using exponents are called **powers**. For example, 100 and 1,000 are powers of 10 because they can be written as 10^2 and 10^3 .

Example 1 Write $4 \times 4 \times 4 \times 4 \times 4$ using an exponent.

$$4 \times 4 \times 4 \times 4 \times 4 = 4^5$$

4 is used as a factor five times.

Example 2 Write 3^4 as a product of the same factor. Then find the value.

The base is 3. The exponent is 4. So, 3 is used as a factor four times.

$$\begin{aligned} 3^4 &= 3 \times 3 \times 3 \times 3 \\ &= 81 \end{aligned}$$

Write 3^4 as a product.
Multiply.

Exercises

Write each product using an exponent.

1. $4 \times 4 \times 4$

2. $7 \times 7 \times 7 \times 7 \times 7$

3. $9 \times 9 \times 9 \times 9$

4. $8 \times 8 \times 8 \times 8 \times 8 \times 8$

5. $1 \times 1 \times 1 \times 1$

6. $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

Write each power as a product of the same factor. Then find the value.

7. 5^3

8. 6^2

9. 2^8

10. 3^6

11. 1.1^4

12. 0.7^3

13. **MAMMALS** There are about 10^3 species of bats in the world. Write 10^3 as a product of the same factor. Then find the value.

14. **LANDSCAPE** The deepest point of the Grand Canyon in Arizona is a little over 18^3 feet deep. How deep is the canyon at this point?