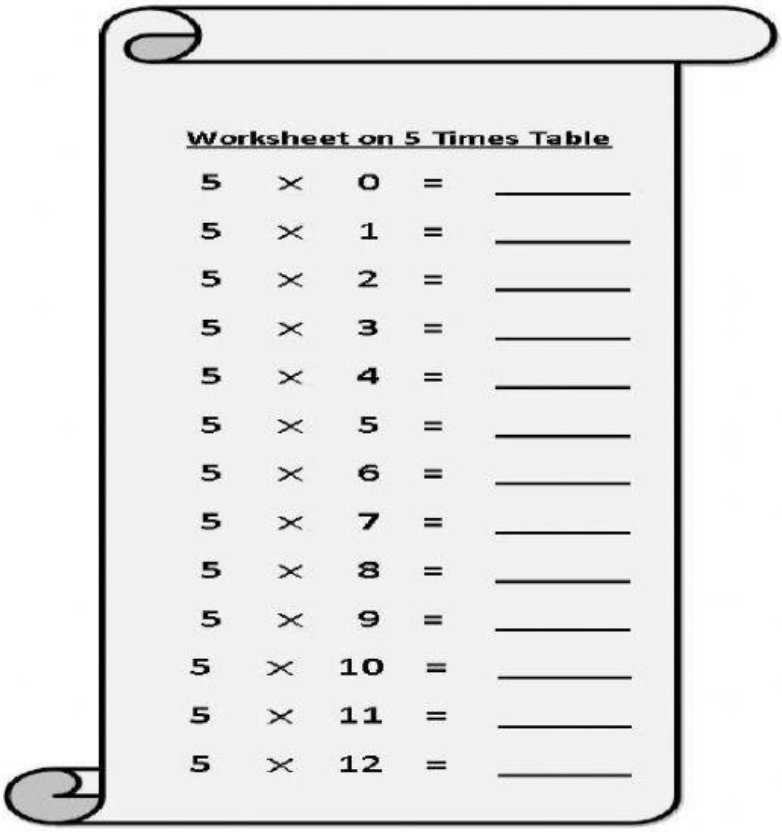
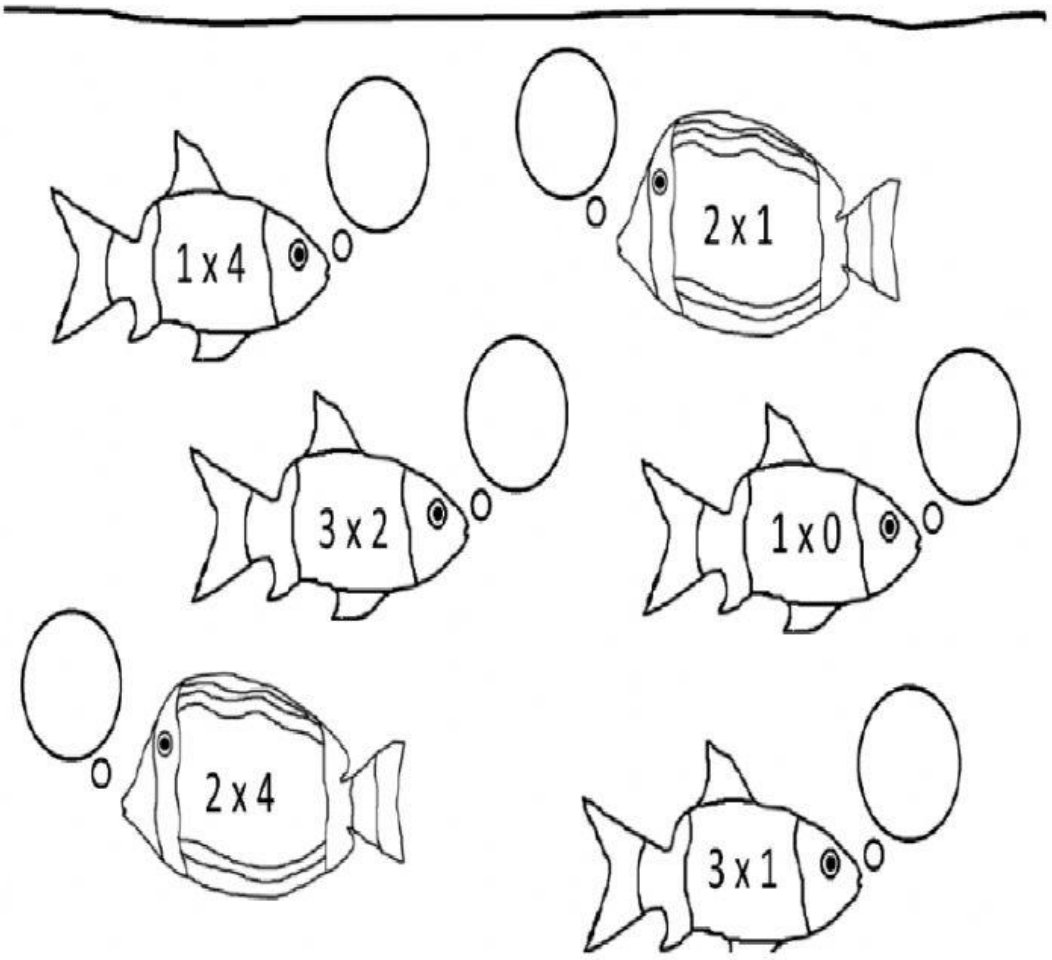
Name : date: Grade : subject :



Write the correct answer inside the bubbles.



Powers and 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 10^2 as 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.

$3^4 = 3 \times 3 \times 3 \times 3$ Write 3^4 as a product.
$= 81$ 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. $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 =$ _____

Powers and Exponents

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

a) 5^3 = _____

b) 6^2 = _____

c) 2^8 = _____

d) 3^6 = _____

e) 1.1^4 = _____

f) 0.7^3 = _____

g) **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.

_____

_____

h) **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?

_____

_____

_____

_____

Write using exponents. For example, 8 × 8 × 8 is written as 8. You don't have to solve.

a) $6 \times 6 \times 6 \times 6 \times 6 \times 6 \times 6 =$ _____

b) $10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 =$ _____

Write the following in expanded form.

a) $3^{10} =$ _____

b) $3^{8} =$ _____

Solve

a) $3^{4} =$ _____

b) $8^{3} =$ _____

c) $9^{2} =$ _____

Find the greatest common factor for each pair of numbers.

1) 4, 8

Factors of 4 = _____

Factors of 8 = _____

GCF(4, 8) = _____

2) 12, 20

Factors of 12 = _____

Factors of 20 = _____

GCF(12, 20) = _____

Find the least common multiple (LCM) of 2 and 3.

The multiples of 2 are: **2, 4, 6, 8, 10, 12, 14, 16, 18...**

The multiples of 3 are: **3, 6, 9, 12, 15, 18....**

The common multiples of 2 and 3 are: **6, 12, 18...**

The least common multiple of 2 and 3 is **6.**

Find the LCM of 3 and 4.

The multiples of 3 are: _____, _____, _____, _____, _____, _____, _____, _____, _____ ...

The multiples of 4 are: _____, _____, _____, _____, _____, _____, _____ ...

The common multiples of 3 and 4 are: _____ and _____

The LCM of 3 and 4 is: _____