Powers of 10

Name: _____

Grade 5 · Write powers of 10 with exponents and multiply whole numbers by them

How it works

$10^1 = 10$
$10^2 = 10 \times 10 = 100$
$10^3 = 10 \times 10 \times 10 = 1{,}000$
$10^4 = 10 \times 10 \times 10 \times 10 = 10{,}000$

In 10^3 the small raised 3 is the **exponent**. It tells how many times 10 is used as a factor. It is also the number of zeros in the answer.
To multiply a whole number by a power of 10, write that many zeros after it: $6 \times 10^3 = 6{,}000$.

A. Write each power of 10 as a number.

1. **10^2 =** _____
2. **10^4 =** _____
3. **10^1 =** _____
4. **10^6 =** _____
5. **10^3 =** _____
6. **10^5 =** _____

B. Write each number as a power of 10.

1. **1,000 =** _____
2. **100,000 =** _____
3. **10 × 10 =** _____
4. **10 × 10 × 10 × 10 =** _____
5. **1,000,000 =** _____
6. **10 × 10 × 10 =** _____

C. Multiply.

1. **7×10^2 =** _____
2. **34×10^3 =** _____
3. **6×10^4 =** _____
4. **250×10^2 =** _____
5. **9×10^5 =** _____
6. **48×10^1 =** _____
7. **305×10^3 =** _____
8. **12×10^4 =** _____

D. Write the missing exponent in the box.

1. **$5 \times 10^{\square} = 5{,}000$**
2. **$72 \times 10^{\square} = 7{,}200$**
3. **$4 \times 10^{\square} = 400{,}000$**
4. **$36 \times 10^{\square} = 360$**

E. Think about it.

1. How many zeros does 10^6 have when you write it as a number? _____
2. Which is greater, 10^4 or 4×10? Write it. _____

Powers of 10 (Answer Key)

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How it works

$10^1 = 10$
$10^2 = 10 \times 10 = 100$
$10^3 = 10 \times 10 \times 10 = 1{,}000$
$10^4 = 10 \times 10 \times 10 \times 10 = 10{,}000$

In 10^3 the small raised 3 is the **exponent**. It tells how many times 10 is used as a factor. It is also the number of zeros in the answer.
To multiply a whole number by a power of 10, write that many zeros after it: $6 \times 10^3 = 6{,}000$.

A. Write each power of 10 as a number.

1. $10^2 =$ **100**
2. $10^4 =$ **10,000**
3. $10^1 =$ **10**
4. $10^6 =$ **1,000,000**
5. $10^3 =$ **1,000**
6. $10^5 =$ **100,000**

B. Write each number as a power of 10.

1. 1,000 = **10^3**
2. 100,000 = **10^5**
3. 10 × 10 = **10^2**
4. 10 × 10 × 10 × 10 = **10^4**
5. 1,000,000 = **10^6**
6. 10 × 10 × 10 = **10^3**

C. Multiply.

1. $7 \times 10^2 =$ **700**
2. $34 \times 10^3 =$ **34,000**
3. $6 \times 10^4 =$ **60,000**
4. $250 \times 10^2 =$ **25,000**
5. $9 \times 10^5 =$ **900,000**
6. $48 \times 10^1 =$ **480**
7. $305 \times 10^3 =$ **305,000**
8. $12 \times 10^4 =$ **120,000**

D. Write the missing exponent in the box.

1. $5 \times 10^{\boxed{3}} = 5{,}000$
2. $72 \times 10^{\boxed{2}} = 7{,}200$
3. $4 \times 10^{\boxed{5}} = 400{,}000$
4. $36 \times 10^{\boxed{1}} = 360$

E. Think about it.

1. How many zeros does 10^6 have when you write it as a number? **6**
2. Which is greater, 10^4 or 4×10? Write it. **10^4**

   $10^4 = 10{,}000$ and $4 \times 10 = 40$