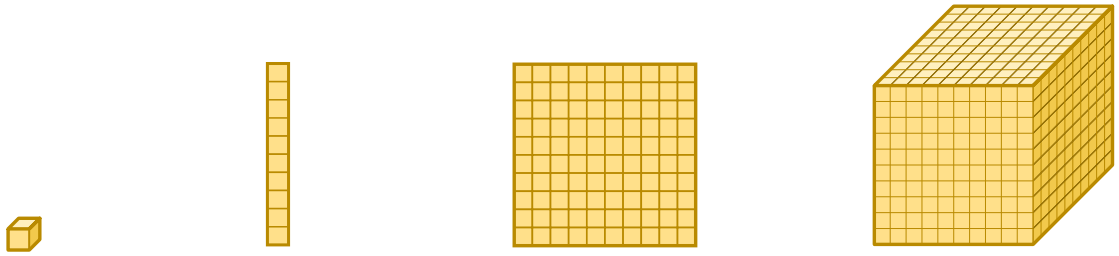
Names (pair) _____ Date _____

Powers of 10

Example

Base ten blocks: ten units make a rod, ten rods make a flat, and ten flats make a cube. Each time we multiply by 10.



1
unit

10
rod: 10 units

$100 = 10 \times 10$
flat: 10 rods

$1{,}000 = 10 \times 10 \times 10$
cube: 10 flats

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

Remember

When we multiply a number by 10, every digit moves one place to the left, and a 0 goes into the ones place. That is why 10^n is written as 1 followed by n zeros: as many factors of 10, as many zeros.

1 ON YOUR OWN Complete the table.

power	product	number	in words
10^1	10	10	ten
10^2	10×10	100	a hundred
10^3			
10^4			
10^5			
10^6			

2 ON YOUR OWN Write as a power of 10.

$1{,}000 =$ ☐

$100{,}000 =$ ☐

$10{,}000{,}000 =$ ☐

$1{,}000{,}000{,}000 =$ ☐

Names (pair) _____ Date _____

Example

Expanded form. Every digit has a place value, and the place values are powers of 10:

$2{,}357 = 2 \times 1{,}000 + 3 \times 100 + 5 \times 10 + 7 = 2 \times 10^3 + 3 \times 10^2 + 5 \times 10 + 7$

3 ON YOUR OWN Write each number in expanded form with powers of 10.

$4{,}806 =$ ☐

$30{,}509 =$ ☐

$7{,}000{,}020 =$ ☐

4 ON YOUR OWN Work out.

$37 \times 10^2 =$ ☐ $5 \times 10^4 =$ ☐

$120 \times 10^3 =$ ☐ $8 \times 10^6 =$ ☐

5 IN PAIRS True or false? Correct the false statements.

a) $10^5 = 50$ **true** / **false**

Correction: _____

b) $10^3 = 10{,}000$**: a 1, three zeros and one more.** **true** / **false**

Correction: _____

c) $4 \times 10^3 = 4{,}000$ **true** / **false**

Correction: _____

The Powers app · otooly.com/powers

Powers of ten mode: a scale from 10^{-9} to 10^9 with examples. Where on the scale is your height, and where is the distance to school? In the **Place Value Blocks** app, build a number with base ten blocks and watch its expanded form.

★ ON YOUR OWN **Exit card.** Write as a power: $100{,}000 =$ ☐

Expand: $6{,}040 =$ ☐