Names (pair) _____ Date _____

Very Small Numbers and Calculating

Example

A bacterium is about 0.000002 m long. A power of 10 is shorter here too, but the raised number is negative:

$0.000002 = 2 \times 0.000001 = 2 \times 10^{-6}$

We moved the decimal point 6 places to the right, to just after the first digit that is not 0. As on sheet 7: 10^{-6} means dividing by 10 six times.

Remember

A number less than 1 in scientific notation has a negative raised number: $0.00035 = 3.5 \times 10^{-4}$. It is still a **positive** number, just a very small one.

1 ON YOUR OWN Complete the table.

power	fraction	decimal
10^{-1}	$\frac{1}{10}$	0.1
10^{-2}		
10^{-3}		
10^{-4}		
10^{-6}		

2 ON YOUR OWN Write in scientific notation.

$0.004 =$ _____

$0.00025 =$ _____

$0.07 =$ _____

$0.0000009 =$ _____

Names (pair) _____ Date _____

3 ON YOUR OWN Write as an ordinary number.

$3 \times 10^{-2} =$ ☐ $4.5 \times 10^{-3} =$ ☐

$1.2 \times 10^{-5} =$ ☐ $7 \times 10^{-1} =$ ☐

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

a) $0.003 = 3 \times 10^{3}$ **true / false**

Correction: _____

b) 10^{-3} **is a negative number.** **true / false**

Correction: _____

c) $2 \times 10^{-5} > 2 \times 10^{-4}$ **true / false**

Correction: _____

5 IN PAIRS Work out. Write the answer in scientific notation.

$(3 \times 10^{-2}) \times (2 \times 10^{5}) =$ ☐

$(8 \times 10^{6}) \div (2 \times 10^{-2}) =$ ☐

$(1.5 \times 10^{-3}) \times (4 \times 10^{-2}) =$ ☐

6 ON YOUR OWN A drop of water has a mass of about 5×10^{-5} kg. How many drops are there in 1 kg of water?

$1 \div (5 \times 10^{-5}) =$ ☐ $=$ ☐

The Powers app · otooly.com/powers

Powers of ten mode: the scale also goes below 1, down to 10^{-9}. Practise scientific notation with checking in **Practice**.

★ ON YOUR OWN **Exit card.** $0.0007 =$ ☐ $2 \times 10^{-3} =$ ☐