Names (pair) _____ Date _____

Very Large Numbers

Example

The Sun is about $150{,}000{,}000$ km from the Earth. So many zeros are hard to read, so we write the number in short:

$$150{,}000{,}000 = 1.5 \times 100{,}000{,}000 = 1.5 \times 10^{8}$$

We moved the decimal point 8 places to the left, to just after the first digit. That is why the raised number is 8.

Remember

Scientific notation writes a number as $a \times 10^{n}$, where $1 \leq a < 10$: there is exactly one digit before the decimal point, and it is not 0. The number n tells how many places the decimal point moved.

1 ON YOUR OWN Write in scientific notation.

$3{,}000 =$ ☐

$45{,}000 =$ ☐

$7{,}200{,}000 =$ ☐

$600{,}000{,}000 =$ ☐

$12{,}345 =$ ☐

$980 =$ ☐

2 ON YOUR OWN Write as an ordinary number.

$4 \times 10^{3} =$ ☐

$2.5 \times 10^{6} =$ ☐

$9.07 \times 10^{4} =$ ☐

$1 \times 10^{9} =$ ☐

Names (pair) _____ Date _____

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

a) $45{,}000 = 45 \times 10^3$ **is scientific notation.** **true / false**

Correction: _____

b) $7{,}200{,}000 = 7.2 \times 10^5$ **true / false**

Correction: _____

c) 0.5×10^3 **is scientific notation.** **true / false**

Correction: _____

4 IN PAIRS The distances from the Earth are written in scientific notation. Put them in order from smallest to largest and write them as ordinary numbers.

to	scientific notation	ordinary number (km)	order
the Moon	3.844×10^5 km		
the Sun	1.496×10^8 km		
Mars (closest)	5.46×10^7 km		
Venus (closest)	3.8×10^7 km		

5 IN PAIRS CHALLENGE Multiply. Write the answer in scientific notation. The rule for multiplying powers helps.

$(2 \times 10^3) \times (3 \times 10^4) =$ ☐ $(4 \times 10^5) \times (5 \times 10^3) =$ ☐

The Powers app · otooly.com/powers

Powers of ten mode: scientific notation step by step, with checked questions in **Practice**.

★ ON YOUR OWN **Exit card.** $52{,}000{,}000 =$ ☐ $3.1 \times 10^5 =$ ☐