Work with numbers between 0 and 1 in standard form

1 Complete the statements.

a) $0.007 = 7 \times \square = 7 \times 10^{-3}$

b) $0.06 = 6 \times \square = 6 \times 10^{\square}$

c) $0.0008 = 8 \times \square = \square \times 10^{\square}$

d) $0.0000004 = \square \times \square = \square \times 10^{\square}$

e) $\frac{7}{10000} = \square \times \square = \square \times 10^{\square}$

f) three thousandths $= \square \times \square = \square \times 10^{\square}$

g) 2 millionths $= \square \times \square = \square \times 10^{\square}$

2 Tick the numbers that are **not** in standard index form.

4×10^{-27}	$6 \times 10^{-\frac{3}{4}}$	0.05×10^{-2}	5.4×10^{-6}
7×10^{5}	$1.6 \times 10^{-0.4}$	$10 \times 10^{-1.5}$	10×10^{-1}

3 Write >, < or = to complete the statements.

a) $0.0001 \bigcirc 10^{-4}$

b) $0.004 \bigcirc 3 \times 10^{-2}$

c) $8 \times 10^{-2} \bigcirc 0.9$

d) $\frac{1}{2} \bigcirc 5 \times 10^{-1}$

e) $3 \times 10^{-5} \bigcirc \frac{3}{100000}$

4 Write the standard form numbers as ordinary numbers.

a) $6 \times 10^{-3} = \square$

b) $7 \times 10^{-4} = \square$

c) $8 \times 10^{-5} = \square$

d) $5 \times 10^{-2} = \square$

e) $8 \times 10^{-6} = \square$

f) $10^{-1} = \square$

5 Fill in the missing information.

a) $0.008 = 8 \times 0.001 = 8 \times 10^{-3}$

b) $0.009 = 9 \times 0.001 = \square \times 10^{-3}$

c) $0.0085 = 8.5 \times 0.001 = \square \times 10^{-3}$

d) $0.0083 = \square \times 0.001 = \square \times 10^{-3}$

e) $0.027 = \square \times 0.01 = \square \times 10^{-2}$

f) $0.000062 = \square \times \square = \square \times 10^{\square}$

g) $0.67 = \square \times \square = \square \times 10^{\square}$

h) $0.00000056 = \square \times \square = \square \times 10^{\square}$

6 Write the ordinary numbers in standard index form.

a) $0.0004 =$ _____

b) $0.00043 =$ _____

c) $0.000437 =$ _____

d) $0.002 =$ _____

e) $0.0021 =$ _____

f) $0.00201 =$ _____

7 Write the standard form numbers as ordinary numbers.

a) $3 \times 10^{-3} =$ ☐

b) $3.1 \times 10^{-3} =$ ☐

c) $3.81 \times 10^{-3} =$ ☐

d) $8.27 \times 10^{-4} =$ ☐

e) $8.27 \times 10^{-5} =$ ☐

f) $8.207 \times 10^{-5} =$ ☐

8 **a)** The length of a plant cell is about 0.00005 m.

Write this length in standard form.

_____ m

b) A blood cell is about 8×10^{-6} m long.

Write this length as an ordinary number.

☐ m

c) The diameter of a proton is about 0.00000000000000087 m.

Write this length in standard form.

_____ m

9 **a)**

–4 is smaller than –3,
so 6×10^{-4} is smaller than
8×10^{-3}

Do you agree with Jack? _____

Explain your answer.

_____

_____

b) Write the numbers in ascending order.

7 hundredths	7×10^{-7}	0.007	7.5×10^{-2}	0.017

_____

_____

6×10^{-7}	$\frac{6}{100000}$	0.000000667	6.6×10^{-6}	6 millionths

_____

_____

10

0.3×10^{-4} is not in standard form.
$0.3 \times 10^{-4} = 3 \times 10^{-1} \times 10^{-4} = 3 \times 10^{-5}$
Now the number is in standard form.

Use Mo's reasoning to write these numbers in standard form.

a) $0.7 \times 10^{-4} =$ _____

$70 \times 10^{-4} =$ _____

$0.07 \times 10^{-4} =$ _____

b) $0.6 \times 10^{-3} =$ _____

$0.06 \times 10^{-3} =$ _____

$600 \times 10^{-3} =$ _____

c) $53.8 \times 10^{-4} =$ _____

$538 \times 10^{-4} =$ _____

$0.0538 \times 10^{-4} =$ _____