Investigate positive powers of 10

1 Match the numbers with the same value.

10^6	10
10^5	10,000
10^4	100,000,000
10^1	1,000,000
10^8	100,000

2 1 billion = 1,000 million

1 trillion = 1,000 billion

Match the numbers with the same value.

1 million	100,000,000
1 billion	10,000,000,000
100 million	1,000,000,000
1 trillion	1,000,000
10 billion	1,000,000,000,000

3 Write the numbers in ascending order.

a) 10 million, 10^8, 10,000,000,000, 1 billion, 100 thousand

b) 10^{10}, 1 billion, 100 million, 10^7, 1000,000,000,000

4 **a)** Complete the pattern.

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

$1{,}000 \times 100 = \square = 10^{\square}$

$1{,}000 \times 1{,}000 = \square = 10^{\square}$

$1{,}000 \times 10{,}000 = \square = 10^{\square}$

b) Complete the statements.

$100 \times 10{,}000 = \square = 10^{\square}$

$1{,}000 \times 10{,}000 = \square = 10^{\square}$

$100{,}000 \times 10{,}000 = \square = 10^{\square}$

5 **a)** Complete the pattern.

$1{,}000{,}000 \div 10 = 100{,}000 = 10^5$

$1{,}000{,}000 \div 100 = \square = 10^{\square}$

$1{,}000{,}000 \div 1{,}000 = \square = 10^{\square}$

$1{,}000{,}000 \div 10{,}000 = \square = 10^{\square}$

b) Complete the statements.

$100{,}000{,}000 \div 100 = \square = 10^{\square}$

$1{,}000{,}000{,}000 \div 1{,}000 = \square = 10^{\square}$

$100{,}000{,}000 \div 100{,}000 = \square = 10^{\square}$

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6 Brett works out $200 \times 3{,}000$

$200 \times 3{,}000 = 2 \times 100 \times 3 \times 1{,}000$
$= 2 \times 3 \times 100 \times 1{,}000$
$= 6 \times 100{,}000$
$= 600{,}000$

Work out the calculations.

a) $3{,}000 \times 2{,}000$

b) $400 \times 20{,}000$

c) $200 \times 1{,}000 \times 500$

7 Annie is multiplying by powers of 10

Multiplying by powers of 10 is easy, you just add zeros. So, $2.6 \times 10 = 2.60$ and $2.6 \times 100 = 2.600$

a) Explain why Annie is wrong.

b) Correct Annie's mistakes.

2.6×10 $\qquad$ 2.6×100

c) Work out the multiplications.

$2.6 \times 10{,}000$	$3.74 \times 10{,}000$
3.74×10	1.8×10^4
$3.74 \times 1{,}000$	1.8×10^6
$3.6 \times 10{,}000$	1.8×10^5
3.74×100	1.85×10^6