Interleaved: calculating with standard form

ANSWERS

1

Work out $(3 \times 10^4) \times (2 \times 10^5)$.
Give your answer in standard form.

Which method? **Add the powers** | Subtract the powers | Ordinary numbers first

$3 \times 2 = 6$, $10^9 \times 10^5 = 10^9$

Answer 6×10^9

2

Work out $(5 \times 10^6) + (3 \times 10^5)$.
Give your answer in standard form.

Which method? Add the powers | Subtract the powers | **Ordinary numbers first**

$5{,}000{,}000 + 300{,}000 = 5{,}300{,}000$

Answer 5.3×10^6

3

Work out $(8 \times 10^9) \div (2 \times 10^3)$.
Give your answer in standard form.

Which method? Add the powers | **Subtract the powers** | Ordinary numbers first

$8 \div 2 = 4$, $10^9 \div 10^3 = 10^6$

Answer 4×10^6

4

Work out $(7.2 \times 10^5) - (4 \times 10^4)$.
Give your answer in standard form.

Which method? Add the powers | Subtract the powers | **Ordinary numbers first**

$720{,}000 - 40{,}000 = 680{,}000$

Answer 6.8×10^5

5

Work out $(4 \times 10^3) \times (5 \times 10^6)$.
Give your answer in standard form.

Which method? **Add the powers** | Subtract the powers | Ordinary numbers first

$4 \times 5 = 20$, so $20 \times 10^9 = 2 \times 10 \times 10^9$

Answer 2×10^{10}

6

Work out $(3 \times 10^8) \div (6 \times 10^2)$.
Give your answer in standard form.

Which method? Add the powers | **Subtract the powers** | Ordinary numbers first

$3 \div 6 = 0.5$, so $0.5 \times 10^6 = 5 \times 10^5$

Answer 5×10^5

7

A forest has about 3×10^5 trees.
Each tree has about 6×10^4 leaves.
Roughly how many leaves are in the forest?
Give your answer in standard form.

Which method? **Add the powers** | Subtract the powers | Ordinary numbers first

$3 \times 6 = 18$, so $18 \times 10^9 = 1.8 \times 10^{10}$

Answer 1.8×10^{10}

8

A shop sold 2.4×10^5 phone cases in January and 9×10^4 in February. How many did it sell in the two months altogether?
Give your answer in standard form.

Which method? Add the powers | Subtract the powers | **Ordinary numbers first**

$240{,}000 + 90{,}000 = 330{,}000$

Answer 3.3×10^5

Interleaved: calculating with standard form *further practice*

ANSWERS

9

A hard drive holds 8×10^{12} bytes.
A film takes up 4×10^9 bytes.
How many films fit on the hard drive?

$8 \div 4 = 2$, $10^{12} \div 10^9 = 10^3$, so 2×10^3

Answer 2000

10

Work out $(2.5 \times 10^4) \times (3 \times 10^{-2})$.
Give your answer in standard form.

$2.5 \times 3 = 7.5$, $10^4 \times 10^{-2} = 10^2$

Answer 7.5×10^2

11

Work out $(6.4 \times 10^{-3}) + (3 \times 10^{-4})$.
Give your answer in standard form.

$0.0064 + 0.0003 = 0.0067$

Answer 6.7×10^{-3}

12

A sheet of paper is 8×10^{-3} cm thick.
How tall is a pile of 5×10^2 sheets?
Give your answer as an ordinary number.

$8 \times 5 = 40$, so $40 \times 10^{-1} = 4$

Answer 4 cm

13

An elephant has a mass of about 6×10^3 kg.
A mouse has a mass of about 2×10^{-2} kg.
How many times heavier is the elephant than the mouse? Give your answer in standard form.

$6 \div 2 = 3$, $10^3 \div 10^{-2} = 10^5$

Answer 3×10^5

14

A space probe must travel 3.1×10^8 km.
So far it has travelled 6×10^7 km.
How far does it still have to go?
Give your answer in standard form.

$310{,}000{,}000 - 60{,}000{,}000 = 250{,}000{,}000$

Answer 2.5×10^8 km

15

Work out $(5 \times 10^4)^2$. Give your answer in standard form.

$(5 \times 10^4) \times (5 \times 10^4)$: $5 \times 5 = 25$, so 25×10^8

Answer 2.5×10^9

16

Ella says $(4 \times 10^5) + (2 \times 10^5) = 6 \times 10^{10}$.
Explain her mistake and give the right answer.

she added the powers, as if multiplying:
$400{,}000 + 200{,}000 = 600{,}000$

Answer 6×10^5