

Standard Form Mastery

Practice Worksheet (Compact Layout)

I DO

(a) Write 0.0000407 in standard form.

(b) Work out the value of $(3.2 \times 10^4) \times (5 \times 10^3)$.
Give your answer in standard form.

WE DO

(a) Write 0.000702 in standard form.

(b) Work out the value of $(4.5 \times 10^5) \times (2 \times 10^4)$.
Give your answer in standard form.

YOU DO 1

(a) Write 0.0000051 in standard form.

(b) Work out the value of $(2.5 \times 10^3) \times (4 \times 10^6)$.
Give your answer in standard form.

YOU DO 2

(a) Write 0.0003008 in standard form.

(b) Work out the value of $(6.4 \times 10^2) \times (5 \times 10^5)$.
Give your answer in standard form.

CHALLENGE

Work out the value of:

$$\frac{4.8 \times 10^7}{1.2 \times 10^3} + (3 \times 10^3)$$

Give your answer in standard form.

ANSWERS & WORKED SOLUTIONS**I Do**

(a) **Step 1:** Place the decimal point after the first non-zero digit: 4.07

(a) **Step 2:** Count the jumps to the original decimal point. It moves 5 places left, so the power is -5 . **Answer:** 4.07×10^{-5}

(b) **Step 1:** Multiply the numbers: $3.2 \times 5 = 16$.

(b) **Step 2:** Multiply the powers of 10 by adding exponents: $10^4 \times 10^3 = 10^7$.

(b) **Step 3:** We have 16×10^7 . Since 16 is not between 1 and 10, adjust to 1.6×10^1 .

(b) **Step 4:** Combine: $1.6 \times 10^1 \times 10^7$. **Answer:** 1.6×10^8

We Do

(a) **Step 1:** Move decimal to get 7.02. It moved 4 places. **Answer:** 7.02×10^{-4}

(b) **Step 1:** Multiply numbers: $4.5 \times 2 = 9$.

(b) **Step 2:** Add exponents: $10^5 \times 10^4 = 10^9$.

(b) **Step 3:** Combine. 9 is between 1 and 10, so it's already in standard form. **Answer:** 9×10^9

You Do 1

(a) **Step 1:** Move decimal to get 5.1. It moved 6 places. **Answer:** 5.1×10^{-6}

(b) **Step 1:** Multiply numbers: $2.5 \times 4 = 10$.

(b) **Step 2:** Add exponents: $10^3 \times 10^6 = 10^9$.

(b) **Step 3:** Adjust 10×10^9 to standard form (1.0×10^1). **Answer:** 1×10^{10}

ANSWERS & WORKED SOLUTIONS (CONTINUED)

You Do 2

(a) **Step 1:** Move decimal to get 3.008. It moved 4 places. **Answer:** 3.008×10^{-4}

(b) **Step 1:** Multiply numbers: $6.4 \times 5 = 32$.

(b) **Step 2:** Add exponents: $10^2 \times 10^5 = 10^7$.

(b) **Step 3:** Adjust 32×10^7 to $3.2 \times 10^1 \times 10^7$. **Answer:** 3.2×10^8

Challenge

Step 1: Do the division first (BIDMAS). Divide numbers: $4.8 \div 1.2 = 4$.

Step 2: Subtract exponents for division: $10^7 \div 10^3 = 10^4$. The first term is 4×10^4 .

Step 3: To add $(4 \times 10^4) + (3 \times 10^3)$ without a calculator, convert to ordinary numbers: $40000 + 3000$.

Step 4: Add them: 43000.

Step 5: Convert back to standard form. **Answer:** 4.3×10^4