Comparing/calculating very large and small quantities

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

1. Order from smallest to largest: 3.2×10^5, 7.4×10^4, 2.9×10^5. [2 marks]

The 10^4 quantity is smaller than both 10^5 quantities.

For matching powers compare 2.9 with 3.2.

Answer: $7.4 \times 10^4, 2.9 \times 10^5, 3.2 \times 10^5$

2. Calculate $(4 \times 10^3)(2 \times 10^5)$. [2 marks]

$4 \times 2 = 8$ and $3 + 5 = 8$.

Answer: 8×10^8

3. Calculate $\frac{9 \times 10^7}{3 \times 10^2}$. [2 marks]

$9 \div 3 = 3$ and $7 - 2 = 5$.

Answer: 3×10^5

4. Calculate $2.4 \times 10^6 + 5 \times 10^5$. [2 marks]

$5 \times 10^5 = 0.5 \times 10^6$.

$(2.4 + 0.5) \times 10^6 = 2.9 \times 10^6$.

Answer: 2.9×10^6

5. Calculate $(8 \times 10^{-3})(5 \times 10^{-4})$. [2 marks]

$8 \times 5 = 40$ and $-3 + (-4) = -7$.

$40 \times 10^{-7} = 4 \times 10^{-6}$.

Answer: 4×10^{-6}

6. A file of 6×10^8 bytes is sent at 2×10^6 bytes per second. Find the time, assuming a constant rate. [3 marks]

$t = \frac{6 \times 10^8}{2 \times 10^6} = 3 \times 10^2$.

$3 \times 10^2 = 300$ seconds.

Answer: 300 seconds