Indices and scientific notation - practice test 2

Name: _____ Date: _____

16 questions | 40 marks | 55 minutes

A second balanced paper with explanation, error analysis and practical calculations.

A scientific calculator may be used.

1. Write $9^6 \div 9^4$ as one power. [1 mark]

2. Evaluate $10^0 + 10^{-1}$. [2 marks]

3. Simplify $(2^3)^2 \times 2^{-4}$. [2 marks]

4. Evaluate $(-4)^{-1}$. [2 marks]

5. Simplify $(2m^3n)^2$. [2 marks]

6. Simplify $\frac{21p^5q^2}{7p^2q^4}$, using positive exponents, for $p, q \neq 0$. [3 marks]

7. Write 0.00000084 in scientific notation. [2 marks]

8. Write 3.05×10^6 as an ordinary number. [2 marks]

9. Rewrite 0.62×10^8 in standard scientific notation. [2 marks]

10. Arrange in ascending order: 4.1×10^{-3}, 7×10^{-4}, 3.9×10^{-3}. [3 marks]

11. Calculate $(7 \times 10^{-4})(3 \times 10^{6})$. [3 marks]

12. Calculate $\frac{8 \times 10^{-3}}{2 \times 10^{4}}$. [3 marks]

13. Calculate $5 \times 10^{7} - 1.8 \times 10^{7}$. [2 marks]

14. A wire is 2.4×10^{-4} m thick. Find the combined thickness of 500 equal wires laid tightly together. Give metres. [4 marks]

15. A motor turns 1.2×10^{3} times each minute. How many turns does it make in 2 hours at this rate? [4 marks]

16. Leo claims $(3x^2)^2 = 3x^4$. Identify the missing operation and correct the expression. [3 marks]