

Name _____ period _____ Date _____

Significant Digits/Figures

Directions: Part A: Tell the number of significant figures (s.f.) in each of the following measurements. No units are required in the answer.

	Measurement	# of s.f.		Measurement	# of s.f.
1.	48 cm		7.	71.60 g	
2.	306.2 g		8.	0.00432 mm	
3.	0.329 m		9.	10.0 kg	
4.	83.965 °C		10.	3.60×10^{15} sec	
5.	3700 mm		11.	6.24×10^{-4}	
6.	400. cm ³		12.	82.000	

Part B: Perform each of the following calculations, expressing the answer with the correct number of s.f. and units. For questions 1-4 use the rules for addition and subtraction where the least accurate determines the correct s.f. For questions 5-10 use the rules for multiplication and division where the least number of s.f. determines the s.f. in the answer.

Remember $1 \text{ cm} + 1 \text{ cm} = 2 \text{ cm}$, but $1 \text{ cm} \times 1 \text{ cm} = 1 \text{ cm}^2$. Multiplication you add exponents and division you subtract exponents.

	Math Operation	Initial answer (not required, for your use only)	Answer with correct s.f. and units
Ex 1	$3.482 \text{ cm} + 8.51 \text{ cm} + 16.324 \text{ cm} =$	28.316 cm	28.32 cm
1.	$48.0032 \text{ g} + 9.17 \text{ g} + 65.4321 \text{ g} =$		
2.	$12 \text{ cm} + 1.031 \text{ cm} + 7.969 =$		
3.	$80.4 \text{ cm} - 16.532 \text{ cm} =$		
4.	$106.5 \text{ mL} - 30. \text{mL} =$		
Ex 2	$48.2 \text{ cm} \times 1.6 \text{ cm} \times 2.12 \text{ cm} =$	163.4944 cm^3	160 cm^3
5.	$8.3 \text{ m} \times 4.0 \text{ m} \times 0.9823 \text{ m} =$		
6.	$2.89 \text{ cm} \times 4.01 \text{ cm} =$		
Ex 3	$64.34 \text{ cm}^3 \div 8.149 \text{ cm} =$	7.895447294 cm^2	7.895 cm^2
7.	$4.93 \text{ mm}^3 \div 18.71 \text{ mm} =$		
8.	$8.071 \text{ cm}^2 \div 4.216 \text{ cm} =$		
9.*	$\frac{0.57 \text{ mL}}{1} \times \frac{760 \text{ mm}}{740 \text{ mm}} \times \frac{273\text{K}}{250 \text{ K}} =$		
10.*	$51.3\text{g} \times \frac{44.962 \text{ moles}}{115.874 \text{ moles}} =$		

* For numbers 9 and 10, just multiply everything on the top of the fractions and divide by everything on the bottom. Since $8 \div 8 = 1$, $\text{mm} \div \text{mm} = 1$ also.

Directions: Part A: Express each of the following numbers using scientific notation. Don't forget to use correct s.f.

- 1) 100,000 Answer 1×10^5
- 2) 10000000 Answer _____
- 3) 0.01 Answer _____
- 4) 0.0000001 Answer _____
- 5) 400000000000 Answer _____
- 6) 0.008 Answer _____
- 7) 50,000 Answer _____
- 8) 0.0000045 Answer 4.5×10^{-6}
- 9) 38200000 Answer _____
- 10) 280400000 Answer _____
- 11) 0.09850 Answer _____
- 12) 0.003500000 Answer _____

Part B: Write each of the following numbers in expanded form. Don't forget to use correct s.f.

- 1) 1.00×10^4 Answer _____
- 2) 1.0×10^{-8} Answer _____
- 3) 1×10^9 Answer _____
- 4) 1×10^{-6} Answer _____
- 5) 6×10^6 Answer _____
- 6) 5.2×10^{-4} Answer _____
- 7) 3.82×10^2 Answer _____
- 8) 1.96×10^{-4} Answer _____
- 9) 4.38×10^5 Answer _____
- 10) 1.687×10^{-5} Answer _____
- 11) 6.8540×10^{11} Answer _____
- 12) 1.685×10^{-5} Answer _____