

Mr. Klansek

Name: _____

Date: _____ Block: _____

Numbers in Physics

Fill in the table (13pts)

Prefix:	kilo-	mega-	giga-	tera-	
Symbol:	k	M	G	T	
Value:	10^3	10^6	10^9	10^{12}	
Prefix:	deci-	centi	milli	micro	nano-
Symbol:	d	c	m	μ	n
Value:	10^{-1}	10^{-2}	10^{-3}	10^{-6}	10^{-9}

1.) Round the following calculations to the proper number of significant digits (use **Scientific Notation**): (6pts)

(a) 6.19×2.8

(b) $3.18/1.702$

(c) $(4.10 \times 302 - 1100)/1.56 \times 10^{-4}$

(d) $6.82 - 2.111$

(e) $213 - 0.01$

(f) $5.19 \times 10^{-2} + 1.83 + 219$

2.) Use appropriate **prefixes** to write the following measurements without the use of exponents (**NOT Scientific Notation**): (4pts)

(a) $6.35 \times 10^{-2} \text{ L}$ 6.35 cL

(b) $6.5 \times 10^{-6} \text{ s}$ $6.5 \mu\text{s}$

(c) $9.5 \times 10^{-4} \text{ m}$ 0.95 mm

(d) $4.23 \times 10^{-9} \text{ m}^3 \left(\frac{\text{mm}}{1 \times 10^{-3} \text{ m}} \right)^3 = 4.23 \text{ mm}^3$

Short Answer (show all work) (3pt each)

3.) Simplify: a. $\frac{6m/s}{(3/4)s} = \frac{\frac{6m}{1s}}{\frac{3s}{4}} = \frac{6m}{1s} \cdot \frac{4}{3s} = \frac{2.4m}{s^2} = 2.4 m/s^2$

b. $\frac{\frac{x^2}{9} + \frac{1}{4}}{6x} = \frac{\frac{4x^2 + 9}{36}}{6x} = \frac{4x^2 + 9}{216x}$

4.) Solve

$$T = 2\pi \sqrt{\frac{L}{g}} \quad (\text{for } g)$$

$$\frac{T}{2\pi} = \sqrt{\frac{L}{g}}$$

$$\frac{T^2}{(2\pi)^2} = \frac{L}{g}$$

$$gT^2 = 4\pi^2 L$$

$$g = \frac{4\pi^2 L}{T^2}$$

5.) If v is measured in ~~m/s~~ t is measured in (s), x is measured in (m) and a is measured in (m/s^2), circle all equations that are correct (6pt)

$\Delta t^2 = 2\Delta x/a$ $s^2 = s^2$ $\Delta v = a/\Delta t$ $\frac{m}{s} = \frac{m/s^2}{s} = \frac{m}{s^3}$ $\Delta t = \Delta x/v$ $s = \frac{m}{m/s} = \frac{ms}{s} = s$
 $a = v^2/\Delta x$ $\frac{m}{s^2} = \frac{m^2/s^2}{m} = \frac{m}{s^2}$ $a = t^2/\Delta x$ $\frac{m}{s^2} = \frac{s^2}{m}$ $t = \Delta x/\Delta x$ $s = \frac{(m/s)^2}{m} = \frac{m^2/s^2}{m} = \frac{m}{s^2} = \frac{m}{s^2}$

6.) How many square inches are in 6.3 square feet? (3 pt)

$$6.3 \text{ ft}^2 \left(\frac{12 \text{ in}}{1 \text{ ft}} \right)^2 = 907 \text{ in}^2$$

7.) How fast (in m/s) is a car travelling if its speed is 55 mph? (6 pt)

$$\frac{55 \text{ mi}}{h} \left(\frac{5280 \text{ ft}}{1 \text{ mi}} \right) \left(\frac{12 \text{ in}}{1 \text{ ft}} \right) \left(\frac{2.54 \text{ cm}}{1 \text{ in}} \right) \left(\frac{1 \times 10^{-2} \text{ m}}{1 \text{ cm}} \right) = \frac{8.85 \times 10^4 \text{ m}}{h}$$

$$\frac{8.85 \times 10^4 \text{ m}}{h} \left(\frac{3600 \text{ s}}{1 \text{ h}} \right) = \boxed{24.6 \text{ m/s}}$$