

Name \_\_\_\_\_  
Unit 1: Physics Toolbox Work Packet

Physics  
Mr. Mellon

## Unit 1: Physics Toolbox Work Packet



### I. Significant Figures and Scientific Notation

A. Write the corresponding value for each number using only three sig. figs.

Standard	Scientific Notation	Standard	Scientific Notation
1. 4612	$4.61 \times 10^3$	4. 4,620	$4.620 \times 10^3$
2. 345,008	$3.45 \times 10^5$	5. 0.0000165	$1.6533 \times 10^{-5}$
3. 0.0000403	$4.03 \times 10^{-5}$	6. 0.003972	$3.97 \times 10^{-3}$

B. Perform the following operations (Answer in scientific notation with only 3 sig. figs.):

- $\frac{8.8 \times 10^{16}}{2.2 \times 10^4} = 4.00 \times 10^{12}$
- $\frac{(3.5 \times 10^5)(3.72 \times 10^{-2})}{2.89 \times 10^2} = 45.1 (4.51 \times 10^1)$
- $\frac{(5.33)(7.1)}{(7.5 \times 10^3)} = 5.05 \times 10^{-3} (0.00505)$
- $\frac{(3.2^2 - 1.7^2)}{(2)(9.81)} = 0.375 (3.75 \times 10^{-1})$
- $\frac{(6.67 \times 10^{-11})(7.35 \times 10^{22})(2.22 \times 10^{25})}{(5.98 \times 10^{11})^2} = 3.04 \times 10^{14}$

### II. Unit Conversion

Use your reference tables and these conversion scales to complete the following problems.

**Round to three significant figures, when needed to round.**

1 mile = 5280 ft

1 hr = 60 minutes = 3600 seconds

1 mile = 1609 m

1 gallon = 3.79 L

1 pound = 4.45 Newtons

1 m = 3.3 ft

1. Convert 2422 ft to meters:

$$2422 \cancel{\text{ft}} \times \frac{1 \text{ m}}{3.3 \cancel{\text{ft}}} = \boxed{734 \text{ m}}$$

2. Convert 27 pounds to Newtons:

$$27 \cancel{\text{lb}} \times \frac{4.45 \text{ N}}{1 \cancel{\text{lb}}} = \boxed{120 \text{ N}}$$