Name:_____ Date:_____

Mr. Croom's Physics Chapter 1: Scientific Tool Box

Dimensional Analysis

Determine the proper unites based on the given dimensions.

Example: Distance/ Time = [meter/second]

1. Mass= [ ]
2. Length= [ ]
3. Time = [ ]
4. Mass*Length= [ ]
5. Time/Distance= [ ]
6. (Mass/Time)/Time= [ ]
7. Mass*Time= [ ]
8. Time / Mass= [ ]

Calculator Practice

Problem	Real Answer
1. $\frac{(100)(17)(2)(48)}{(50)(1000)(4)}$	
2. $\frac{(5000)(0.1)(50)(90)}{(19)(5)(0.01)}$	
3. $\frac{(3\times10^{2})(4\times10^{3})(9\times10^{-1})}{(15)(200)(1\times10^{-3})}$	
4. $\frac{(6.023\times10^{23})(600)(4\times10^{-2})}{(400)(90)(30)}$	
5. $\frac{(3\times10^{3})^{2}(900)(17)(\sqrt{4\times10^{10}})}{(1500)(4^{2})(\sqrt{36})}$	
6. $\frac{(4\times10^{4})^{2}(900)(69)(0.001)}{(88)(6)(0.1)(4\times10^{-4})^{2}}$	
7. $\frac{(9\times10^{-3})^{-4}(\sqrt{200})(6\times10^{3})}{(4.5\times10^{5})+(1\times10^{-3})}$	

Do the units on both sides of the equation match? If they don't correct the final units

Example: 25 m/s * 5 s = [m] (Correct) or 25 m/s^2 * 5 s = [m] (Incorrect- The Correct Units are [m/s]

9. 15 m / 5 s = [m/s] _____
10. 8 m/s / 2 s = 4 m/s^2 _____
11. 25 cm * 1 inch / 2.54 cm = [inch] _____
12. 30 ft * 12 inch / 1 ft = [ft] _____
13. 40 mi/hr * 1 hr / 3600 s = [mi/s] _____
14. 20 kg * 30 m/s = [kg m / s] _____

Determine what the final units would be.

Example: 60 inch * 2.54 cm / inch = [cm]

15. 30 m/s * 1 / 3 s = [ ]
16. 30 m /s * 10 m = [ ]
17. 15080 ft * 5280 ft / mi= [ ]
18. 60 m/s * 20 s = [ ]
19. 525 kg m/s^2 * 25 s / 5 m = [ ]
20. 20 s + 25 m/s * 2 s = [ ]

Math review: Solve each problem for the indicated Variable

Example: F= m * a so a= F / m

21. $d = v*t$

    v=_____

22. $E_p = m*g*h$

    h=_____

23. $E_k = \frac{1}{2} mv^2$

    v=_____

24. $d = \frac{1}{2} g*t^2$

    t=_____

25. $v_f = v_o + a*t$

    t=_____

26. $T = 2\pi\sqrt{\frac{l}{g}}$

    g=_____