

ANSWERS PHYSICS INTRO:

MEASUREMENT: READ 1-11, 1-2

Sec Review 1-4 Page 19

1) Which SI units would you use for the following measurements?

- A) the length of a swimming pool *meters*
- B) the mass of the water in the pool *kilograms*
- C) the time it takes a swimmer to swim a lap *seconds*

2) Convert the following measurements as indicated.

A) 6.20 mg to kg **6.2mg is 6 places from kg so 0.0000062 kg**

OR: Factor Label Method:

$$6.2\text{mg} * \frac{1\text{g}}{1000\text{mg}} * \frac{1\text{kg}}{1000\text{g}} = 6.2 * 10^{-6}\text{kg}$$

B) $3 * 10^{-9}$ sec to ms

$$3 * 10^{-9}\text{sec} * \frac{1000\text{ms}}{1\text{sec}} = 3 * 10^{-6}\text{sec}$$

C) 88.0 km to mm

$$88\text{km} * \frac{1000\text{m}}{1\text{km}} * \frac{1000\text{mm}}{1\text{m}} = 88,000,000\text{mm} = 8.8 * 10^7\text{mm}$$

3) The following students measure the density of a piece of lead three times. The real density of lead is actually 11.34 g/cm³. Considering all the results, which person's results were accurate? Which were precise? Were any both accurate and precise?

- A) Rachel: 11.32 g/cm³, 11.35 g/cm³, 11.33 g/cm³. **Accurate AND Precise**
- B) Danaiel: 11.43 g/cm³, 11.44 g/cm³, 11.42 g/cm³. **Precise**
- C) Leah: 11.55 g/cm³, 11.34 g/cm³, 11.04 g/cm³. **Neither**

Math TEST:

ALL:

solve for x: $Y = Gm/x + r$

METHOD 1:

$$\begin{aligned} Y-r &= Gm/x + r - r \\ (Y-r) &= Gm/x \\ x * (Y-r) &= Gm/x * x \\ x(Y-r) &= Gm \\ 1/(Y-r) * x(Y-r) &= Gm * 1/(Y-r) \\ x &= Gm / (Y-r) \end{aligned}$$

METHOD 2:

$$\begin{aligned} Y-r &= Gm/x + r - r \\ (Y-r) &= Gm/x \\ 1/Gm * (Y-r) &= Gm/x * 1/Gm \\ (Y-r)/Gm &= 1/x \text{ FLIP} \rightarrow \end{aligned}$$

$$Gm / (Y-r) = x$$

METHOD 3:

$$x * (Y = Gm/x + r)$$

$$x * Y = Gm + rx$$

$$x * (Y) - rx = Gm$$

$$x * (Y-r) = Gm$$

$$1/(Y-r) * x(Y-r) = Gm * 1/(Y-r)$$

$$x = Gm / (Y-r)$$

the shape of a quadratic relationship (**E parabola**)

a) $y = 1/x$

the equation of a linear relationship (**C line**)

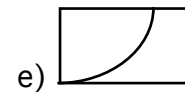
b. straight line

the shape of the graph of a constant increase (**B line**)

c) $y = mx + b$

the equation of a quadratic relationship (**D parabola**)

d. $y = ax^2 + bx + c$



If a is acceleration (m/s^2), v is change in position over time (m/s), x is change in position (m), and t is the time interval (s), which equation is dimensionally correct?

a) $t = x/a$

b) $t = v^2/x$

c) $v = a/t$

d) $t^2 = x/a$

$s = m / (m/s^2)$
 $s = m * s^2 / m$
 $s = s^2$ **NO**

$s = (m/s)^2 / m$
 $s = m^2 / s^2 / m$
 $s = m/s^2$ **NO**

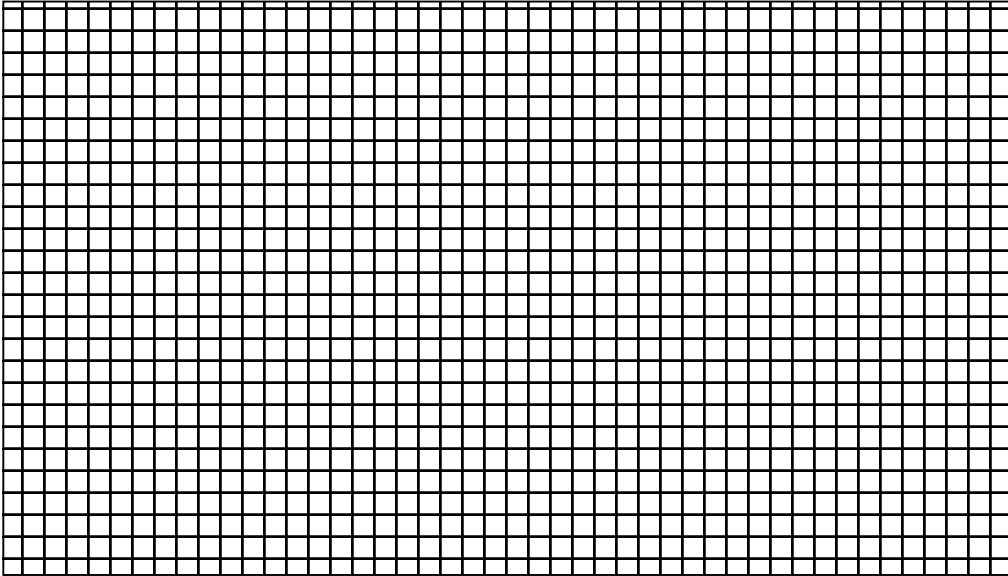
$m/s = (m/s^2) / s$
 $m/s = (m/s^2) * 1/s$
 $m/s = m/s^3$ **NO**

$s^2 = m / (m/s^2)$
 $s^2 = m * s^2 / m$
 $s^2 = s^2$ **YES**

HONORS:

Plot these points and find a best curve fit:

X	Y
2	11
3	16
6	26
8	35
10	43.5



Solve these equations for T (T not zero)

$$D = VT + \frac{1}{2} A T \quad A = -V/T \quad V^2 = -2AD \quad A=10$$

$$D = VT + \frac{1}{2} (10)T \quad 10 = -V/T \quad V^2 = -2 (10) D$$
$$V = -10T \quad D = V^2 / (-20)$$

$$V^2 / (-20) = VT + 5T$$

$$(-10T)^2 / (-20) = (-10T)T + 5T$$

$$100T^2 / (-20) = (-10T)T + 5T$$

$$-5T^2 = -10T^2 + 5T$$

$$0 = -5T^2 + 5T$$

$$0 = 5T(-1T + 1)$$

$$T = 0, 1$$