

Metric Conversions

mega	kilo	hecto	deca	base	deci	centi	milli	micro
M	k	h	da	g m	d	c	m	$\mu$
$10^6$	$10^3$	$10^2$	$10^1$	$10^0$	$10^{-1}$	$10^{-2}$	$10^{-3}$	$10^{-6}$
					$\left(\frac{1}{10^1}\right)$	$\left(\frac{1}{10^2}\right)$	$\left(\frac{1}{10^3}\right)$	

$\xrightarrow{\text{move decimal to right } (x 10^n)}$   
 $\xleftarrow{\text{move decimal to left } (\div 10^n)}$

Ways to do conversions:

- ① move the decimal
- ② factor labeling
- ③ use the prefix (if going to base unit)

Basic Skill

29. Convert 4008 g to mg

① move decimal 3 places to right

$$4008 \text{ g} = 4008000 \text{ mg}$$

② factor labeling:

$$x \text{ mg} = 4008 \text{ g} \left( \frac{1000 \text{ mg}}{1 \text{ g}} \right)$$

← conversion factor

$$x \text{ mg} = 4008000 \text{ mg}$$

③ use the prefix (if going to base unit)

doesn't apply

30. Convert 48 mL to L

① move the decimal 3 places to left

$$48 \text{ mL} = 0.048 \text{ L}$$

② use factor labeling:

$$x \text{ L} = 48 \text{ mL} \left( \frac{1 \text{ L}}{1000 \text{ mL}} \right)$$

$$x \text{ L} = 0.048 \text{ L}$$

③ use the prefix:

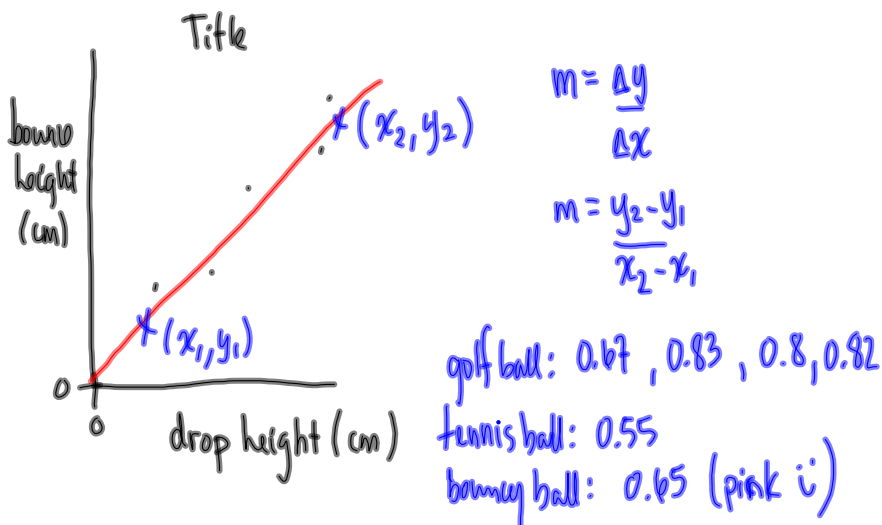
$$48 \text{ mL} = 48 \times 10^{-3} \text{ L}$$

$$\times 10^{-3} = 4.8 \times 10^{-2} \text{ L}$$

31. 239 mm = 23.9 cm

32. 38 kg = 38000000 mg

# Bounce that Ball



$$y = mx + b \quad \leftarrow \text{calculate}$$

7.  $y = 0.55x + 1.2$

8.  $h_b = 0.55h_d + 1.2$

9. Any slope is the ratio of the change in y to the change in x.

More specifically, the slope is the ratio of the change in bounce height to the change in drop height.

$$\text{Slope} = 0.55 = \frac{5.5 \text{ cm} \leftarrow \Delta h_b}{10 \text{ cm} \leftarrow \Delta h_d}$$

For an increase of 10 cm in drop height, the bounce height increases by 5.5 cm

10. y-intercept (theoretically should be zero!)