Metric Conversions

M	k	h	da		d	c	m	μ
mega	kilo	hecto	deca	base	deci	centi	milli	micro
10^6	10^3	10^2	10^1	10^0	10^{-1}	10^{-2}	10^{-3}	10^{-6}
				g, m, s	$\left(\frac{1}{10}\right)$	$\left(\frac{1}{100}\right)$	$\left(\frac{1}{1000}\right)$	$\left(\frac{1}{10^6}\right)$

move decimal to right ($\times 10^?$) →

← move decimal to left ($\div 10^?$)

Ways to convert:

1. slide the decimal
2. use prefix (if going to base unit)
3. use factor labelling

29. 4008 g = mg

① slide decimal

4008 g = 4008000 mg (move 3 dec pl. to right)

② N/A – not converting to base unit.

③ factor labelling ← conversion factor

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

$x\ mg = 4008000\ mg$

30. 48 mL = L

① slide decimal

48 mL = 0.048 L (3 places to left)

② convert to base unit using the prefix.

$48\ mL = 48 \times 10^{-3}\ L = 4.8 \times 10^{-2}\ L$

10^{-3}

③ factor labelling:

$x\ L = 48\ mL \left(\frac{1\ L}{1000\ mL}\right) = 0.048 L$

31. 239 mm = cm

① move decimal

239 mm = 23.9 cm

② N/A

③ Factor labelling:

$x\ cm = 239\ mm \left(\frac{1\ cm}{10\ mm}\right) = 23.9\ cm$

32. 38 kg = mg

① slide decimal (6 places to right)

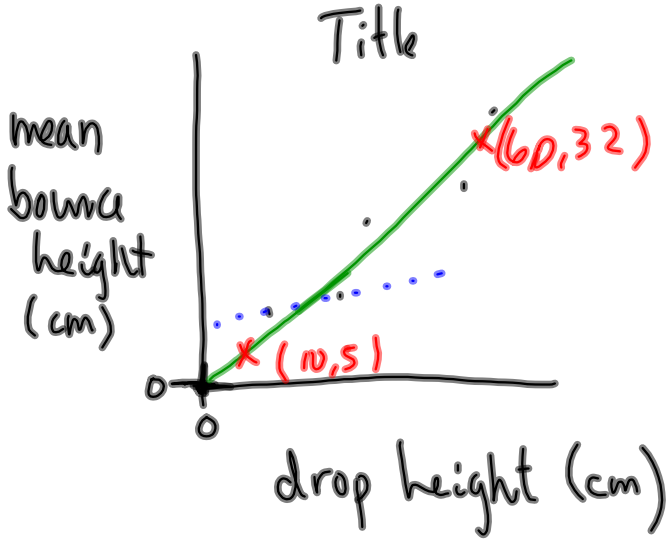
38 kg = 38 000 000 mg

② N/A

③ Factor labeling

$x\ mg = 38\ kg \left(\frac{1000\ g}{1\ kg}\right)\left(\frac{1000\ mg}{1\ g}\right)$

Bounce that Ball



$$m = \frac{\Delta y}{\Delta x}$$

$$m = \frac{32 - 5}{60 - 10}$$

$$m = \frac{27}{50}$$

$$\boxed{m = 0.54}$$

$y = mx + b$

$5 = (0.54)(10) + b$

$5 = 5.4 + b$

$\boxed{b = -0.4}$

$y = mx + b$

$y = 0.54x - 0.4$

$$\boxed{h_b = 0.54 h_d - 0.4}$$

9. $\text{slope} = \dfrac{\text{change in bounce height}}{\text{change in drop height}}$

$$0.54 = \frac{5.4}{10} = \frac{54}{100}$$

for every 10 cm increase in drop height there is a 5.4 cm increase in bounce height