

Aide : [FM cal Calcul littéral](#)

Exercice 1 : écrire l'inverse des termes proposés en vous aidant des exemples suivants

Terme	Son inverse	Terme	Son inverse
+ 32	$\frac{1}{32}$	$\frac{-24}{5}$	$\frac{-5}{24}$
-x	$\frac{-1}{x}$	$\frac{2+3x}{6y}$	$\frac{6y}{2+3x}$
1) $\frac{1}{2} \cdot at^2$	$\frac{2}{at^2}$	2) $\frac{1}{2} \cdot m$	$\frac{2}{m}$
3) $\frac{2\pi t}{f}$	$\frac{f}{2\pi t}$	4) $\frac{1}{s}$	$\frac{s}{1} = S$
5) $\frac{v}{\theta}$	$\frac{\theta}{v}$	6) $\frac{F}{s}$	$\frac{s}{F}$
7) $\frac{U-E}{I}$	$\frac{I}{U-E}$	8) $\frac{dy}{dx}$	$\frac{dx}{dy}$
9) $l \cdot \cos\alpha$	$\frac{1}{l \cdot \cos\alpha}$	10) $\frac{\Delta y}{\Delta x} \times t$	$\frac{\Delta x}{\Delta y \times t}$
11) $\frac{9y-4x}{3x+1}$	$\frac{3x+1}{9y-4x}$	12) $\frac{2x}{\frac{3}{r}}$	$\frac{\frac{3}{r}}{2x} = \frac{3}{2x \cdot r}$
13) $-6(2x + y)$	$\frac{1}{-6(2x+y)}$	14) $\frac{9}{2}x - \frac{1}{3}y$	$\frac{1}{\frac{9}{2}x - \frac{1}{3}y}$

Exercice 2 :

Equation	Inverse	Simplification
1) $F = m \cdot a$	$F \times \frac{1}{m} = m \cdot a \times \frac{1}{m}$	$a = \frac{F}{m}$
2) $\omega = \frac{2\pi \cdot n}{60}$	$\frac{60}{2\pi} \times \omega = \frac{2\pi \cdot n}{60} \times \frac{60}{2\pi}$	$n = \frac{60 \cdot \omega}{2\pi}$
3) $v = R \cdot \omega$	$\frac{1}{R} \times v = \frac{1}{R} \times R \cdot \omega$	$\omega = \frac{v}{R}$
4) $E = \frac{1}{2} \cdot m \cdot v^2$	$E \times \frac{2}{m} = \frac{1}{2} \cdot m \cdot v^2 \times \frac{2}{m}$	$v^2 = \frac{2 \cdot E}{m}$
5) $\frac{2x^2 \cdot y}{5z} = 2$	$\frac{2x^2 \cdot y}{5z} \times \frac{5z}{2x^2} = 2 \times \frac{5z}{2x^2}$	$y = \frac{5z}{x^2}$
6) $p = \frac{F}{s}$	$S \times \frac{1}{p} \times p = S \times \frac{1}{p} \times \frac{F}{s}$	$S = \frac{F}{p}$
7) $F_{A/B} = \frac{G \cdot m_A \cdot m_B}{d^2}$	$\frac{d^2}{G \cdot m_B} \times F_{A/B} = \frac{G \cdot m_A \cdot m_B}{d^2} \times \frac{d^2}{G \cdot m_B}$	$m_A = \frac{d^2}{G \cdot m_B} \times F_{A/B}$
8) $2x + 3y = \frac{-4y \times z}{7}$	$\frac{7}{-4y} \times (2x + 3y) = \frac{7}{-4y} \times \frac{-4y \times z}{7}$	$z = \frac{7x}{-2y} - \frac{21}{4}$
9) $\frac{m}{t} \times c \times (T_f - T_i) = K \cdot S \cdot \Delta T_{mlog}$	$\frac{m}{t} \times c \times (T_f - T_i) \times \frac{1}{S \cdot \Delta T_{mlog}}$ $= K \cdot S \cdot \Delta T_{mlog} \times \frac{1}{S \cdot \Delta T_{mlog}}$	$K = \frac{m \cdot c \times (T_f - T_i)}{t \cdot S \cdot \Delta T_{mlog}}$

Exercice 3 automatisé: écrire l'expression finale simplifiée de la relation à l'aide de l'inverse.

$2y = 9x$	$y = \frac{9x}{2}$	1) $\frac{8}{3} \cdot x = \frac{4}{9} \cdot y$	$y = \frac{8 \times 9}{3 \times 4} \cdot x = 6x$
2) $-5y = 6x$	$y = \frac{-6}{5} \cdot x$	3) $\frac{-25}{4} \cdot x = \frac{16}{15} \cdot y$	$y = \frac{15}{16} \times \frac{-25}{4} \cdot x = \frac{-375}{64} x$
4) $9y \cdot z = 21x$	$y = \frac{21x}{9z} = \frac{7x}{3z}$	5) $12y \cdot (-z) = 24x \times 5z$	$x = \frac{12y \cdot (-z)}{24 \times 5z} = \frac{-y}{10}$
6) $-6y \cdot z = -4x$	$z = \frac{-4x}{-6y} = \frac{2x}{3}$	7) $-3y \cdot (-z) = 24x \times 7y$	$z = \frac{24x \times 7y}{-(-3y)} = 56x$
8) $F = m \cdot a$	$m = \frac{F}{a}$	9) $F = m \cdot a$	$a = \frac{F}{m}$
10) $U = RI$	$I = \frac{U}{R}$	11) $U = RI$	$R = \frac{U}{I}$
12) $DP = \frac{M}{M_m}$	$M = DP \times M_m$	13) $DP = \frac{M}{M_m}$	$M_m = \frac{M}{DP}$
14) $T = \frac{1}{f}$	$f = \frac{1}{T}$	15) $6x = \frac{2}{y}$	$y = \frac{2}{6x} = \frac{1}{3x}$
16) $\eta = \frac{T_u \cdot \Omega}{U \cdot I}$	$T_u = \frac{U \cdot I \cdot \eta}{\Omega}$	17) $\eta = \frac{T_u \cdot \Omega}{U \cdot I}$	$I = \frac{T_u \cdot \Omega}{U \cdot \eta}$
18) $-\frac{1}{2}mv^2 = mgh$	$v^2 = \frac{-2mgh}{m} = -2gh$	19) $\frac{1}{2}mv^2 - mgh = Fl \cos \alpha$	$m = \frac{Fl \cos \alpha}{\frac{1}{2}v^2 - gh}$
20) $-\frac{1}{2}at^2 = v_0t + x_0$	$a = \frac{-2}{t^2} \cdot (v_0t + x_0) = -2\left(\frac{v_0}{t} + \frac{x_0}{t^2}\right)$	21) $-\frac{1}{2}at^2 - x_0 = v_0t$	$v_0 = -\frac{1}{2}at - \frac{x_0}{t}$
22) $7y \cdot 2z = \frac{28}{2}x + 14z$	$y = \frac{28x}{2 \times 7 \times 2z} + \frac{14z}{2 \times 7z} = \frac{x}{z} + 1$	23) $y \cdot 3z = \frac{6y(1-7x)}{-5x \cdot (2+y)}$	$z = \frac{2(1-7x)}{-5x \cdot (2+y)}$
24) $mg(z_A - z_B) = mgh$	$h = \frac{mg(z_A - z_B)}{mg} = (z_A - z_B)$	25) $C_f \cdot V_f = C_m \cdot V_m$	$C_m = \frac{C_f \cdot V_f}{V_m}$
26) $Q = m \cdot c \cdot (\theta_f - \theta_i)$	$c = \frac{Q}{m \cdot (\theta_f - \theta_i)}$	27) $\Phi = D_V \cdot \rho \cdot c \cdot (\theta_f - \theta_i)$	$\rho = \frac{\Phi}{D_V \cdot c \cdot (\theta_f - \theta_i)}$