Learning Enhancement Team

University of East Anglia
STUDENT SUPPORT SERVICE

Worksheet: Rearranging Equations

Transposing (or rearranging) equations is one of the most common mathematical skills you will use as a scientist. You can also solve equations with a single variable using identical methods. This worksheet offer a chance to practise these skills.

Model answers to this sheet

Rearranging Equations study guide

1. Solve the following equations (try rearranging the equations for x):

a. $5x = 8$ $x = \frac{8}{5}$

b. $5x + 3 = 8$ $5x = 5$ $x = 1$

c. $\frac{x}{5} = 8$ $x = 40$

d. $5x - 3 = -8$ $5x = -5$ $x = -1$

e. $5 - x = 8$ $x = -3$

f. $\frac{5x+3}{2} = 8$ $5x + 3 = 16$ $5x = 13$ $x = \frac{13}{5}$

g. $\frac{5-x}{4} = 8$ $x = -27$

h. $\frac{1}{5x+2} = 8$ $40x + 16 = 1$ $40x = -15$ $x = \frac{-15}{40} = -\frac{3}{8}$

i. $5 - x = 8x$ $x = \frac{5}{9}$
$5 = 9x$
$x =$

j. $\frac{1}{5-x} = \frac{1}{8x}$ $8x = 5 - x$
$9x = 5$
$x = \frac{5}{9}$

2. Transpose the following equations for the variable stated:

a.	$C = \pi d$	for d	$d = \frac{C}{\pi}$
b.	$c_1 v_1 = c_2 v_2$	for v_2	$v_2 = \frac{c_1 v_1}{c_2}$
c.	$F = BQv$	for Q	$Q = \frac{F}{Bv}$
d.	$Q = U + pV$	for p	$p = \frac{Q-U}{V}$
e.	$\frac{V_p}{V_s} = \frac{N_p}{N_s}$	for N_s	$N_s = \frac{N_p V_s}{V_p}$
f.	$\theta = \frac{\lambda}{d}$	for d	$d = \frac{\lambda}{\theta}$
g.	$s = \frac{(u+v)t}{2}$	for u	$(u+v)t = 2s \quad u = \frac{2s}{t} - v$
h.	$KE = \frac{1}{2}mv^2$	for v	$v = \pm\sqrt{\frac{2KE}{m}}$
i.	$s = ut + \frac{1}{2}at^2$	for a	$a = \frac{2(s-ut)}{t^2}$ or $a = \frac{2s}{t^2} - \frac{u}{t}$
j.	$\frac{pV}{T} = nR$	for T	$T = \frac{pV}{nR}$
k.	$a^2 = b^2 + c^2$	for b	$b = \pm\sqrt{a^2 - c^2}$
l.	$\sin\theta = \frac{a}{b}$	for θ	$\theta = \sin^{-1}\left(\frac{a}{b}\right)$