Algebra 1

chapter 1

Section 1.6 Manipulating formulae

$S = \frac{D}{T}$

$ST = D$

$T = \frac{D}{S}$

Rules of equations apply

PROJECT MATHS Text & Tests 6

Example 1

(i) If $v^2 = u^2 + 2as$, express a in terms of v, u and s.

(ii) If $\sqrt{\frac{x+y}{x-y}} = \frac{1}{2}$, express y in terms of x. Hence find the value of y when $x = 5$.

(i) $a = ?$

$V^2 = u^2 + 2as$

Swap sides

$u^2 + 2as = v^2$

$-u^2$

$2as = v^2 - u^2$

$\div 2s$

$a = \frac{v^2 - u^2}{2s}$

Example 1

(i) If $v^2 = u^2 + 2as$, express a in terms of v, u and s.

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(i) $y = ?$

$\left(\frac{1}{2}\right)^2 = \frac{1}{4}$ square both sides

multiply by LCD i.e. $4(x-y)$ to get rid of fraction

$-4x, +y$

$\div 5$

$x = 5 \Rightarrow$

$\sqrt{\frac{x+y}{x-y}} = \frac{1}{2}$

$\frac{x+y}{x-y} = \frac{1}{4}$

$\left(\frac{x+y}{x-y}\right) 4(x-y) = \frac{1}{4}(4)(x-y)$

$4x + 4y = x - y$

$5y = -3x$

$y = \frac{-3x}{5}$

$y = \frac{-3(5)}{5} \Rightarrow y = -3$

Exercise 1.6

1. In each of the following, express x in terms of the other variables.

(i) $3x - 2y = 4$ (ii) $2x - b = 4c$ (iii) $5x - 4 = \frac{y}{2}$

(i) $x = ?$

$3x - 2y = 4$

$+2y$ $3x = 4 + 2y$

$\div 3$ $x = \frac{4+2y}{3}$

(ii) $x = ?$

$2x - b = 4c$

$+b$ $2x = 4c + b$

$\div 2$ $x = \frac{4c+b}{2}$

(iii) $x = ?$

$5x - 4 = \frac{y}{2}$

to get rid of fraction $\times 2$ $10x - 8 = y$

$+8$ $10x = y + 8$

$\div 10$ $x = \frac{y+8}{10}$