Changing the subject of a formula

Changing the subject of a formula is a way of rearranging a formula to determine a missing quantity in terms of other quantities.

Example. 1) Make x the subject of $y = \frac{x-3}{2} + 1$

times by 2

$$y = \frac{x+3}{2} + 1$$
times by 2

$$2y = x + 3 + 2$$
times by 2

$$2y = x + 5$$
take away 2

$$x = 2y - 5$$
take away 2

Example. 2) Make k the subject of $y = \frac{k+1}{k+2}$

$$y = \frac{k+1}{k+2} = \frac{k+1+1-1}{k+2} = \frac{k+2-1}{k+2} = \frac{k+2}{k+2} + \frac{-1}{k+2} = 1 + \frac{-1}{k+2}$$

take away 1

$$y = 1 + \frac{-1}{k+2}$$

take away 1

$$y - 1 = \frac{-1}{k+2}$$

times by (k+2)

$$(y - 1)(k+2) = -1$$

divide by (y-1)
take away 2

$$k = \frac{-1}{y-1} - 2$$

divide by (y-1)
take away 2

Exercise)

- 1. Make x the subject of y = 2(x 3)
- 2. Make *b* the subject of $a = \frac{2b+1}{b+2}$