

## Multiplying equations by a negative number

Sometimes it is more efficient (quicker) to multiply an equation by a negative number rather than moving multiple items across an equation.

Recall, that whatever you do to one side of an equation, you must do to the other side.

Ex. isolate x

$$y = 3z - x$$

$$y + x = 3z - y$$

$$y - y + x = 3z - y$$

$$x = 3z - y$$

$$y = 3z - x$$

$$(-1)y = (-1)3z - x(-1)$$

$$-y = -3z + x$$

$$-y + 3z = -3z + 3z + x$$

$$3z - y = x$$

It may seem that multiplying by a negative number takes longer, but you can see it takes fewer regroupings (one instead of two), and actually we have included more steps than necessary to show the method.

Exercises: isolate x by multiplying by a negative number.

1.)  $y - x = 2z$

2.)  $z - x = 3y$

3.)  $-x + 2 = y$

4.)  $y = 7 - x$

5.)  $y = 3t^2 - x$

6.)  $5 - x = z$

7.)  $3v^2 = y - x$

8.)  $(1/2)mv^2 = y - x$

9.)  $3t - x = y^2$

10.)  $a + b = -x$