UNIT Q Chapter 3 Lesson 1

If you see a fraction, ALWAYS clear the fractions first by multiplying everything on both sides by the denominators:

Example 1

$a = \frac{x}{y}$	There is a denominator
$(y)a = \frac{x}{\cancel{y}}(\cancel{y})$	Multiply both sides by y to clear the denominator
$ay = x$	You have cleared the denominator

Example 2

$\frac{b}{ac} = \frac{x}{y}$	There are denominators : ac on the left and y on the right
$(acy)\frac{b}{ac} = \frac{x}{y}(acy)$	Multiply both sides by ac and y to clear the denominators on both sides
$(\cancel{ac}y)\frac{b}{\cancel{ac}} = \frac{x}{\cancel{y}}(ac\cancel{y})$	The ac clears on the left of the equal sign, y clears on the right of the equal sign
$yb = xac$ Or alphabetized: $by = acx$	You have cleared the denominators

Example 3 You can ALWAYS USE CROSS PRODUCTS TO CLEAR THE DENOMINATORS

$\frac{b}{ac} \times \frac{x}{y}$	The product of b and y is equal to the product of x and ac
$by = acx$	This also cleared the denominators and you got the same answer as above with fewer steps

Example 4 Try Cross products again!

$d = \frac{ab}{xy}$	You can put d over 1 to make it a fraction
$\frac{d}{1} \times \frac{ab}{xy}$	Now set the cross products equal
$dxy = ab$	You have cleared the denominators

If you see a Distribution CLEAR the factor outside the distribution to “FREE” the terms inside the parenthesis:

Example 1

$ab = c(x-3)$	Distribution with c as the outside factor
$\frac{ab}{c} = \frac{c}{c}(x-3)$	Divide both sides by c to get rid of c on the right and free the terms in parenthesis
$\frac{ab}{c} = x-3$	You were able to “free” the terms from the parenthesis

Example 2

$ab = \frac{2}{3}(x-3)$	Distribution with $\frac{2}{3}$ as the outside factor
$\left(\frac{3}{2}\right)ab = \left(\frac{3}{2}\right)\frac{2}{3}(x-3)$	Multiply both sides by the reciprocal
$\left(\frac{3}{2}\right)ab = x-3$	You were able to “free” the terms from the parenthesis

Also keep in mind that the answer could have the opposite signs of your answer!

For example

$-b = x-3$	Negative b, positive x and negative 3
Is the same as: $b = -x+3$	Positive b, negative x and positive 3 (they flipped EVERONE’S sign)
And is the same as: $b = 3-x$	Positive b, positive 3 and negative x (they just moved the 3 and x but kept the signs the same)

When every term on both sides signs change this happens in one of two ways:

1) EVERY term was multiplied by a -1

or

2) Every term was divided by a -1

As long as you maintain equality by doing one of the above to every term on both sides, this is correct mathematically.