Solving Equations

Note Title 16/10/2008

Remember:

- We always do the same thing on both sides of the equation, to keep it 'balanced'.
- Start by adding or subtracting terms in order to get all 'x's on one side of the equal sign, all terms with just a number on the other side
- Finally, divide by the number of 'x's to find what one x equals

Examples

① $8x - 3 = 5x + 12$

$(-5x)$ $(-5x)$

$3x - 3 = 12$

$(+3)$ $(+3)$

$3x = 15$

$(\div 3)$ $(\div 3)$

$x = 5$

② $7 - 2x = 3x + 17$

$(-3x)$ $(-3x)$

$7 - 5x = 17$

(-7) (-7)

$-5x = 10$

$(\div -5)$ $(\div -5)$

$x = -2$

Don't "lose" the − sign here!

OR

$$7 - 2x = 3x + 17$$

$(+2x)$ $(+2x)$

$$7 = 5x + 17$$

(-17) (-17)

$$-10 = 5x$$

$(\div 5)$ $(\div 5)$

$$-2 = x$$

③

$$4x - 7 = 4$$

$(+7)$ $(+7)$

$$4x = 11$$

$(\div 4)$ $(\div 4)$

$$x = \frac{11}{4} = 2\frac{3}{4}$$

④

$$2(3x - 5) \square (x \square) = 8$$

$$6x - 10 - 3x \square 12 = 8$$

$$3x + 2 = 8$$

(-2) (-2)

$$3x = 6$$

$(\div 3)$ $(\div 3)$

$$x = 2$$

⑤

$$\frac{16}{x} + 10 = 8$$

(-10) (-10)

$$\frac{16}{\square} = -2$$

$(\times x)$

$$16 = -2x$$

$(\div -2)$ $(\div -2)$

$$-8 = x$$