Name:
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Math 7 Manipulating Basic Algebraic Equation (Part 2)

The two last equations we are going to look at to solve involve having a constant to eliminate. Generally to solve equations with constants you will first eliminate them, and then simplify the coefficient as we have done before. The rules are still the same.

1) Do the opposite
2) What you do to one side of the equation, you must do to the other

** Important → when you <u>eliminate</u> a constant it becomes zero

Eliminate = 0
Simplify = 1
} remember

The two basic types of algebraic equations we solve involving constants are

3) $y = ax + b$ (coefficient: a; constant: b; variable: x)

4) $y = \frac{x}{a} + b$

ex) $-12 = -2x - 4$

the 4 is being subtracted therefore the opposite is to add 4 to both sides

$-12 = -2x - 4$ becomes
$+4 \quad +4$ 0

$-8 = -2x$

the -2 is multiplying therefore divide both sides by -2

$\frac{-8}{-2} = \frac{-2x}{-2}$

$4 = x$

check

$-12 = -2x - 4$

$-12 = -2(4) - 4$

$-12 = -8 - 4$

$-12 = -12$ ✓ yes

$2.7x + 14.3 = -13.24$

$2.7x + 14.3 = -13.24$
$-14.3 \quad -14.3$

$\frac{2.7x}{2.7} = \frac{-27.54}{2.7}$

$x = -10.2$

check

$2.7x + 14.3 = -13.24$

$2.7(-10.2) + 14.3 = -13.24$

$-27.54 + 14.3 = -13.24$

$-13.24 = -13.24$ ✓ yes

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ex) $= \frac{x}{-5} + 12$

$14 = \frac{x}{-5} + 12$

$-12 \qquad -12$

$(-5)2 = \frac{(-5)x}{-5}$

$-10 = 1x$

$-10 = x$

check

$14 = \frac{x}{-5} + 12$

$14 = \frac{-10}{-5} + 12$

$14 = 2 + 12$

$14 = 14$ ✓ yes

ex) $-10.3 + \frac{x}{1.2} = -7.8$

$-10.3 + \frac{x}{1.2} = -7.8$

$+10.3 \qquad +10.3$

$(1.2)\frac{x}{1.2} = 2.5(1.2)$

$1x = 3$

$x = 3$

check

$-10.3 + \frac{x}{1.2} = -7.8$

$-10.3 + \frac{3}{1.2} = -7.8$

$-10.3 + 2.5 = -7.8$

$-7.8 = -7.8$

✓ yes

Hilroy