Curriculum Outcomes:

PR1: . **Generalize a pattern arising from a problem-solving context using linear equations and verify by substitution.**

PR3. Model and solve problems using linear equations of the form:

$ax = b; = b$, $a ≠ 0$; $ax + b = c$; $+b = c$, $a ≠ 0$; $= b$, $x ≠ 0$ ax ax xa

$ax + b = cx + d$; $a(bx + c) = d(ex + f)$; $a(x + b) = c$; $ax = b+cx$ **concretely,**

pictorially and symbolically, where $a, b, c, d, e, and f$ **are rational numbers**

Student Friendly: "Rearranging an equation to get all the variables by themselves"

The Two-Step Equation

$$\boxed{2x} + \cancel{3}^{-3} = 14 \quad ^{-3}$$

You will be expected to show work using the algebraic method.

$$\frac{2\boxed{x}}{2} = \frac{11}{2}$$

$$\boxed{x = 5.5}$$

Always verify your work

Verify just means check

How?????

Sub your answer into the left hand side of your equation and see it it equals the right hand side
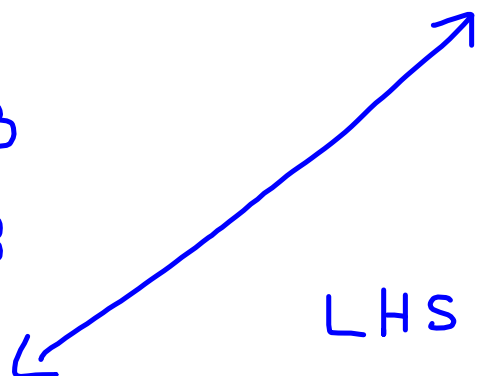
$$x = 5.5$$

LHS
$$2x + 3$$
$$2(5.5) + 3$$
$$11 + 3$$
$$14$$

RHS
$$14$$

LHS = RHS

therefore $x = 5.5$

Warm Up

1) $5w - 2 = 30.5$

2) $\dfrac{x}{2} + 3 = -4.4$

3) Write an equation and then solve:

a) six times a number is -33.6

b) a number divided by -3 is 45.6

Warm Up

1) $5w - 2 = 30.5$ $^{+2}$ $^{+2}$

$$\frac{5w}{5} = \frac{32.5}{5}$$

$$W = 6.5$$

2) $\frac{x}{2} + 3 = -4.4$ $^{-3}$ $^{-3}$

$$\frac{x}{2} (2) = -7.4 \ (2)$$

$$x = -14.8$$

3) Write an equation and then solve:

a) six times a number is -33.6

$$6n = -33.6$$

$$\frac{6n}{6} = \frac{-33.6}{6}$$

$$n = -5.6$$

b) a number divided by -3 is 45.6

$$\frac{n}{-3} = 45.6$$

$$\frac{n}{-3} (-3) = 45.6 (-3)$$

$$n = -136.8$$

4

3) $7 = \dfrac{n}{4} - 15.6$ $+15.6$

$+15.6$ $+15.6$

$22.6 \;^{\times 4} = \dfrac{n}{4} \;^{\times 4}$

$90.4 = n$

$\boxed{n = 90.4}$

INVERSE PROPERTY:

   This property occurs when a mathematical operation is "undone". For example, subtraction "undoes" addition and division "undoes" multiplication. Algebra is based on this property. We sometimes say that we use the "method of inverse operations" to solve algebraic equations.

Use inverse operations to solve for "x":

$$13 \overset{-7}{=} 7 \overset{-7}{+} 3x$$

$$\frac{6}{3} = \frac{3x}{3}$$

$$\boxed{2 = x}$$

$$-14 \overset{-6}{=} \boxed{-2w} + 6 \,\, {}^{-6}$$

$$\frac{-20}{-2} = \frac{-2\boxed{w}}{-2}$$

$$10 = w$$

$$\boxed{w = 10}$$

$$w = 10$$

LHS   RHS

-14 $-2w + 6$

                       $-2(10) + 6$

              LH = RH $-20 + 6$

                       -14
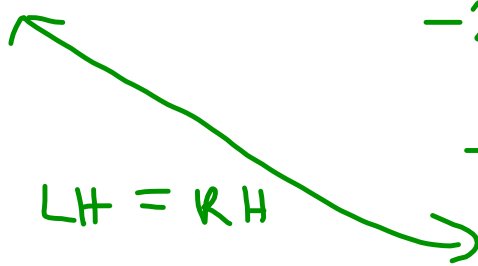
Solve

$$\frac{3x - 1}{2} = 7$$

$$\frac{3x^{(2)}}{2} - \frac{1}{2}^{(2)} = 7^{(2)}$$

$$\boxed{3x} - 1^{+1} = 14^{+1}$$

$$\frac{3x}{3} = \frac{15}{3}$$

$$\boxed{x = 5}$$

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

$$\frac{2x^{(3)}}{3} - \frac{4^{(3)}}{3} = 2^{(3)}$$

$$\boxed{2x} - 4^{+4} = 6^{+4}$$

$$\frac{2x}{2} = \frac{10}{2}$$

$$x = 5$$

Solve

$$4(x-3) = -10$$

$$\boxed{4x} - 12^{+12} = -10^{+12}$$

$$\frac{\cancel{4}\boxed{x}}{\cancel{4}} = \frac{2}{4}$$

$$\boxed{x = 0.5}$$

LHS   RHS

$$4(0.5-3)$$ $$-10$$

$$4(-2.50)$$

$$-10$$

$$7 = 2(3x + 4)$$

$$7^{-8} = \boxed{6x} + 8^{-8}$$

$$\frac{-1}{6} = \frac{\cancel{6}\boxed{x}}{\cancel{6}}$$

$$\frac{-1}{6} = x$$

$$\boxed{x = \frac{-1}{6}}$$

LHS	RHS
7	$2\left(3\left(\frac{-1}{6}\right)+4\right)$
	$2\left(\frac{-3}{6}+4\right)$
	$2\left(\frac{-3}{6}+\frac{24}{6}\right)$
	$2\left(\frac{21}{6}\right)$
	$\frac{42}{6}$
	7

Solve

$$5x^{(3)} + \frac{2}{3}^{(3)} = 1^{(3)}$$

$$\boxed{15x} + 2^{-2} = 3^{-2}$$
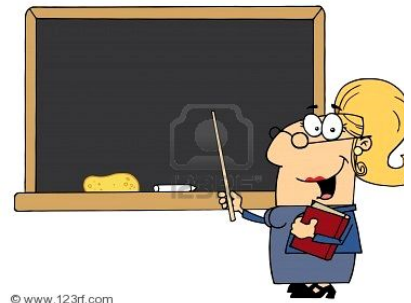
$$\frac{15x}{15} = \frac{1}{15}$$

$$\boxed{x = \frac{1}{15}}$$

LH

$$5\left(\frac{1}{15}\right) + \frac{2}{3}$$

$$\frac{5}{15} + \frac{2}{3}$$

$$\frac{5}{15} + \frac{10}{15}$$

$$\frac{15}{15}$$

$$1$$

RH

$$1$$

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Period

8(all), #9(ab) , #10(abcd), 11, 13,