Curriculum Outcomes:

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

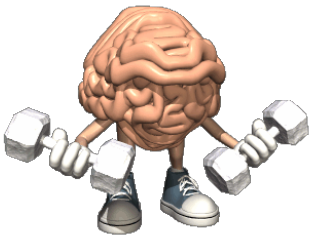
PR3. Model and solve problems using linear equations of the form:

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

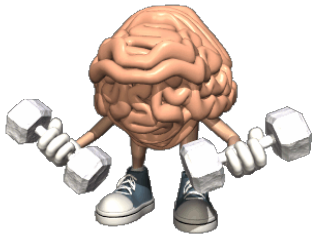
$ax + b = cx + d$; $a(bx + c) = d(ex + f)$; $a(x + b) = c$; ax = b+cx **concretely, pictorially and symbolically, where** ***a, b, c, d, e, and f*** **are rational numbers**

Student Friendly:

"Rearranging an equation with variables on both side of the equal sign"



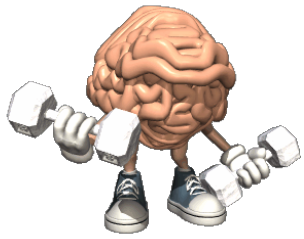
Warm Up



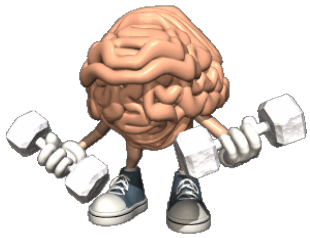
Solve the following

a) $\frac{-3x}{4} + \frac{5}{6} = -2$

b) $\frac{-x}{5} - \frac{5}{3} = \frac{3}{5}$



Warm Up



Solve the following

a)

$$\frac{-3x}{4} + \frac{5}{6} = -2 \quad \times 12 \quad \times 12 \quad \times 12$$

$$\frac{-36x}{4} + \frac{60}{6} = -24$$

$$-9x + 10 = -24 \quad -10 \quad -10$$

$$\frac{-9x}{-9} = \frac{-34}{-9}$$

$$x = \frac{34}{9}$$

b)

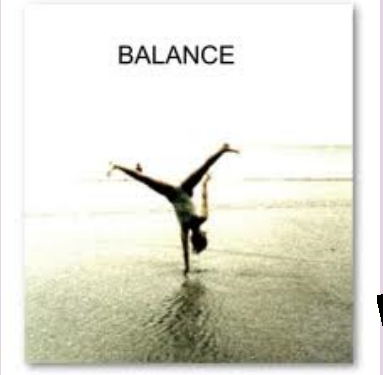
$$\frac{-x}{5} - \frac{5}{3} = \frac{3}{5} \quad \times 15 \quad \times 15 \quad \times 15$$

$$\frac{-15x}{5} - \frac{75}{3} = \frac{45}{5}$$

$$-3x - 25 = 9 \quad +25 \quad +25$$

$$\frac{-3x}{-3} = \frac{34}{-3}$$

$$x = \frac{-34}{3}$$



Section 6.2

$5x - 7 = 3$

$8 - 2x = 10$

$17 = 2x - 8$

$\frac{x}{5} - 3 = 12$

$x - \frac{4}{7} = \frac{-1}{3}$

$5x - 7 + 2x - 9$

$5x + 2x \quad -7 - 9$

$7x \quad -16$

Solving Equations...

Your mission is to keep everything in balance!!

What ever you do to one side...
you must do to the other!!

$$2x - 5 = 10x - 7$$

$-10x \qquad -10x$

$$-8x - 5 = -7$$

$+5 \qquad +5$

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

$$x = \frac{1}{4}$$

Solving Equations...

Your mission is to keep everything in balance!!

What ever you do to one side...
you must do to the other!!

$$2x - 5 = 10x - 7$$

$-2x$ $-2x$

$$-5 = 8x - 7$$

$+7$ $+7$

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

$$\frac{1}{4} = x$$

Solve for x...

Move variables to one side and constants to the other!

$$6x + 2 = 10 + 4x$$

$-4x \qquad -4x$

$$\boxed{2x} + 2 = 10$$

$-2 \qquad -2$

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

$$\boxed{x = 4}$$

$\boxed{x = 4}$

Verify

Move variables to one side and constants to the other!

LHS	RHS
$6x + 2$	$10 + 4x$
$6(4) + 2$	$10 + 4(4)$
$24 + 2$	$10 + 16$
$26 \longleftrightarrow$	26

$$-3c + 7 = 2c - 8$$

$+3c$ $+3c$

$$7 = \boxed{5c} - 8$$

$+8$ $+8$

$$\frac{15}{5} = \frac{5c}{5}$$

$$\boxed{3 = c}$$

Verify

LHS

$-3c + 7$

$-3(3) + 7$

$-9 + 7$

-2

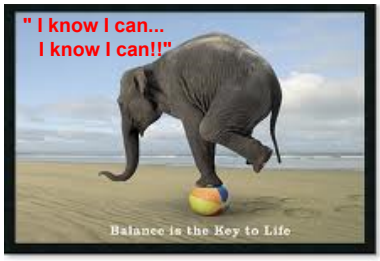
RHS

$2c - 8$

$2(3) - 8$

$6 - 8$

-2



$$\frac{5a}{4}(12) = \frac{1a}{6}(12) + 2(12)$$

$$15a - 2a = 2a - 2a + 24$$

$$\frac{\cancel{13}a}{\cancel{13}} = \frac{24}{13}$$

$$a = \frac{24}{13}$$

$$\frac{5a}{4}(12) = \frac{1a}{6}(12) + 2(12)$$

$$15a - 15a = 2a - 15 + 24$$

$$0 - 24 = -13a + 24 - 24$$

$$\frac{-24}{-13} = \frac{-13a}{-13}$$

$$\boxed{\frac{24}{13} = a}$$

$a = \frac{24}{13}$

multiply by the lowes common multiple

Verify

LHS

$$\frac{5a}{4}$$

$$\frac{5}{1}\left(\frac{24}{13}\right) \div 4$$

$$\frac{120}{13} \div 4$$

$$\downarrow$$

$$\frac{\cancel{120}^{30}}{13} \times \frac{1}{\cancel{4}_{1}}$$

$$\frac{30}{13}$$

RHS

$$\frac{a}{6} + 2$$

$$\left(\frac{24}{13}\right) \div 6 + 2$$

$$\frac{\cancel{24}^{4}}{13} \times \frac{1}{\cancel{6}_{1}} + 2$$

$$\frac{4}{13} + \frac{2}{1}$$

$$\frac{4}{13} + \frac{26}{13}$$

$$\frac{30}{13}$$

$$\longleftrightarrow$$

$$\frac{2a}{3}(15) = \frac{4a}{5}(15) + 7(15)$$

$$10a - 12a = 12a - 12a + 105$$

$$\frac{-2a}{-2} = \frac{105}{-2}$$

$$a = \frac{105}{-2}$$

$$\frac{122}{\cancel{r}}^{\cancel{(r)}} = 3^{(r)}$$

$$\frac{122}{3} = \frac{\cancel{3}r}{\cancel{3}}$$

$$\boxed{\frac{122}{3} = r}$$

You Try

$$\frac{3}{r}(r) + 4(r) = 12(r)$$

$$3 + 4r = 12r$$

$-4x$

$$\frac{3}{8} = \frac{8r}{8}$$

$$\boxed{\frac{3}{8} = r}$$

$r = \frac{3}{8}$

Verify

LHS

$3 \div r + 4$

$3 \div \left(\frac{3}{8}\right) + 4$

$\cancel{3} \times \frac{8}{\cancel{3}} + 4$

$8 + 4$

12

RHS

12

LETTERS AND NUMBERS

Solve

$$9z - 1 - 7z = 7 - 6z - 15$$

$$9z - 7z - 1 = -6z + 7 - 15$$

$$2z - 1 = -6z - 8$$

$+6z$ $+6z$

$$8z - 1 = -8$$

$+1$ $+1$

$$\frac{8z}{8} = \frac{-7}{8}$$

$$\boxed{z = \frac{-7}{8}}$$

You Try

Solve

x = 5

$$5x - 3 + 6x - 4 = -5 - 3x + 8 + 12x$$

$$5x + 6x - 3 - 4 = -3x + 12 - 5 + 8$$

$$\boxed{11x} - 7 = \boxed{9x} + 3$$

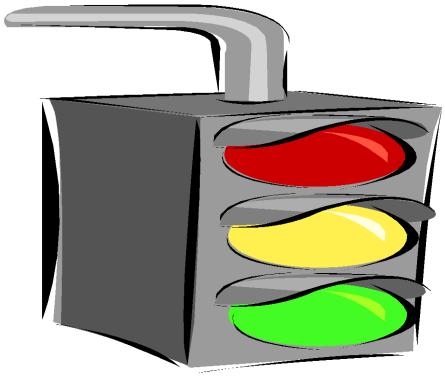
$-9x$ $-9x$

$$2x - 7 = 3$$

$+7$ $+7$

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

$$\boxed{x = 5}$$



Now it is time for Home Learning

Attachments

Solving Equations (6.1 Review) .pdf