M8 - 10.1 - Substitution WS

Evaluate the following for when $x = 5$.

$x + 2 =$

$3 + x =$

$x - 4 =$

$15 - x =$

$x + 2 - 3 =$

$2 \times x =$

$3(x) =$

$(x + 4)3 =$

$3x - 2x =$

$5x + x =$

$(2x) - (4x) =$

Evaluate the following when $x = -2, y = 4$

$x + 3 =$

$y - 2 =$

$x + y =$

$2y + x =$

$3 + y + x =$

$2x + y =$

$2x + 3y =$

$3x + x + 2 + y =$

M8 - 10.1 - "$x \pm b = c$" WS

Solve for x, *by subtracting to both sides*. *Answer should say* $x =$ ____

$x + 3 = 5$ $x + 2 = 7$ $x + 4 = -3$ $x + 5 = -2$

$3 + x = 5$ $4 + x = 8$ $9 + x = -6$ $a + x = -b$

$7 = x + 3$ $4 = x + 1$ $-3 = x + 5$ $x + 5 = 0$

$-8 = 5 + x$ $10 = 9 + x$ $x + 2 = 0$ $a = b + x$

Solve for x, *by adding to both sides*. *Answer should say* $x =$ ____

$x - 2 = 3$ $x - 5 = 9$ $x - 7 = -4$ $x - a = -b$

$-7 + x = 2$ $-12 + x = 3$ $-9 + x = -2$ $-a + x = b$

$8 = x - 3$ $-10 = x - 7$ $4 = -8 + x$ $-b = x - a$

$-2 = -4 + x$ $5 = -2 + x$ $4 = -4 + x$ $b = -a + x$

M8 - 10.1 - $-x \pm b = c$" WS

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Solve for x, *by subtracting to both sides. Then Dividing by negative one. Answer should say* $x =$ ____

$5 - x = 2$ $4 - x = 8$ $2 - x = -3$ $6 - x = -10$

$-x + 5 = 2$ $-x + 4 = -3$ $-x + 2 = 8$ $-x + a = -b$

$4 = 6 - x$ $7 = 5 - x$ $-8 = 6 - x$ $-2 = 4 - x$

$-2 = 5 - x$ $3 = 8 - x$ $7 = 2 - x$ $-b = a - x$

Solve for x, *by adding to both sides. Then Dividing by negative one. Answer should say* $x =$ ____

$-x - 4 = 2$ $-x - 3 = -7$ $-x - 2 = 4$ $-x - a = b$

$-3 - x = -3$ $-5 - x = 2$ $-2 - x = 6$ $-c - x = -d$

$3 = -2 - x$ $-4 = -1 - x$ $3 = -x - 7$ $b = -x - a$

$-5 = -4 - x$ $7 = -x - 5$ $-4 = -6 - x$ $-d = -c - x$

M8 - 10.2 - "$\pm ax = b$" WS

Solve for x, *by dividing to both sides*. *Answer should say* $x =$ ___

$\frac{2x}{2} = \frac{6}{2}$
$x = 3$

$5x = 45$

$10x = 20$

$3x = 12$

$24 = 8x$

$30 = 6x$

$12 = 3x$

$0 = 2x$

Solve for x, *by dividing to both sides*. *Answer should say* $x =$ ____, *as a Simplified Fraction*.

$6x = 3$

$4x = 2$

$2 = 6x$

$8x = 2$

$14x = 10$

$1x = 2$

$20 = 15x$

$bx = a$

Solve for x, *by dividing to both sides*. *Answer should say* $x =$ ____ , *as a Fraction*.

$7x = 2$

$7x = 1$

$5 = 3x$

$1 = 2x$

$4 = 9x$

$0 = 2x$

$3x = 1$

$6x = 7$

Solve for x, *by dividing to both sides*. *Answer should say* $x =$ ___

$3x = 18$

$3x = 3$

$4x = 0$

$4 = 6x$

$2 = 10x$

$45x = 27$

$12 = 4x$

$20x = 15$

$6x = -12$

$-24 = 8x$

$3x = -4$

$-12 = 9x$

$-14x = 21$

$-2x = 2$

$16 = -4x$

$-2x = 0$

$-21x = -15$

$-10 = -2x$

$-12x = -18$

$-21 = -7x$

M8 - 10.2 - "$\frac{x}{a} = b$" WS

Solve for x, *by multiplying to both sides*. *Answer should say* $x =$ ____

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

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

$\frac{x}{5} = 6$

$\frac{x}{3} = 1$

$7 = \frac{x}{2}$

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

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

$0 = \frac{x}{5}$

$\frac{x}{6} = -4$

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

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

$\frac{x}{a} = -b$

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

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

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

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

$-\frac{1}{2} = \frac{1}{-2} = \frac{-1}{2}$

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

$\frac{x}{-9} = 2$

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

$\frac{x}{-5} = 0$

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

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

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

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

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

$6 = \frac{x}{-4}$

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

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

$8 = -\frac{x}{3}$

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

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

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

M8 - 10.2 - "$\frac{ax}{b} = c$" WS

Solve for x, *by multiplying to both sides, then dividing to both sides. Answer should say* $x =$ ____ *Simplify if Necessary.*

$\frac{2x}{3} = 6$

$\frac{2}{3}x = 6$

$\frac{ax}{b} = \frac{a}{b}x$

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

$\frac{2x}{5} = 4$

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

$6 = \frac{3}{4}x$

$\frac{10x}{3} = 2$

$\frac{3x}{5} = 6$

$2 = \frac{1x}{8}$

$\frac{9x}{2} = 3$

$\frac{ax}{b} = c$

$\frac{2x}{-9} = 4$

$10 = -\frac{20x}{5}$

$4 = \frac{-2x}{7}$

$\frac{-3x}{2} = -0$

$\frac{4}{5}x = 6$

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

$-\frac{-3x}{-7} = -6$

$-4 = \frac{3x}{9}$

$-\frac{5x}{7} = -10$

$\frac{12}{-4}x = -3$

$-5 = \frac{-15x}{-2}$

$\frac{ax}{-b} = c$

M8 - 10.2 - "$\frac{ax}{b} = \frac{c}{d}$"WS

$\frac{a}{b}$: $reciprocal = \frac{b}{a}$ $\quad$ $\frac{2}{3}$: $reciprocal = \frac{3}{2}$

Solve for x, *by cross multiplying or multiplying both sides by the reciprocal*. *Answer should say* $x =$ ____
***Simplify if Necessary*.**

$\frac{4x}{6} = \frac{4}{3}$

$3 \times \frac{4x}{6} = \frac{4}{3} \times 6$

$\frac{12x}{12} = \frac{24}{12}$

$x = 2$

$\frac{2}{3}x = \frac{5}{7}$

$\frac{3}{2} \times \frac{2}{3}x = \frac{5}{7} \times \frac{3}{2}$

$x = \frac{15}{14}$

$\frac{3}{5}x = \frac{9}{10}$

$\frac{2}{3}x = \frac{4}{5}$

$\frac{4}{5}x = \frac{6}{7}$

$\frac{2}{7}x = \frac{1}{4}$

$\frac{9}{4}x = \frac{7}{2}$

$\frac{1}{8} = \frac{2}{4}x$

$\frac{-5}{2} = \frac{3x}{4}$

$\frac{1x}{-9} = -\frac{2}{7}$

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

$\frac{a}{b}x = \frac{c}{d}$

$\frac{2}{9}x = \frac{2}{9}$

$\frac{3x}{4} = \frac{6}{8}$

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

$-\frac{a}{b}x = \frac{a}{b}$

M8 - 10.3 - "$\frac{a}{x} = b$" *WS*

Solve for x, *by multiplying to both sides by x, the divide to both sides. Answer should say $x =$ ____*

Simplify if Necessary.

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

$x \times \frac{4}{x} = 2 \times x$

$4 = 2x$

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

$2 = x$

$x = 2$

$\frac{3}{x} = 9$

$\frac{5}{x} = 10$

$\frac{14}{x} = 7$

$15 = \frac{6}{x}$

$4 = \frac{8}{x}$

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

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

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

$\frac{9}{x} = -6$

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

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

$14 = \frac{-7}{x}$

$-5 = \frac{25}{x}$

$-6 = \frac{24}{x}$

$22 = \frac{-2}{x}$

$\frac{-6}{x} = -27$

$-\frac{-8}{x} = 24$

$-15 = -\frac{45}{x}$

$\frac{a}{x} = b$

M8 - 10.3 - "$\frac{a}{bx} = c$" WS

Solve for x, *by multiplying to both sides by ax. Then dividing. Answer should say $x =$ ____*

$\frac{24}{2x} = 3$

$\frac{16}{4x} = 2$

$\frac{15}{3x} = 5$
$=1$

$\frac{36}{3x} = 4$

$3 = \frac{60}{4x}$

$\frac{-27}{3x} = 9$

$4 = \frac{40}{5x}$

$\frac{90}{3x} = -5$

Solve for x, *by multiplying. Then dividing. Answer should say in a Fraction $x =$ ____*
Simplify if Necessary.

$\frac{3}{5x} = 2$

$\frac{2}{3x} = 5$

$\frac{5}{-2x} = -3$

$\frac{2}{5x} = 7$

$\frac{4}{5x} = 3$

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

$5 = \frac{3}{4x}$

$\frac{10}{3x} = 5$

$\frac{5}{2x} = 5$

$\frac{4}{-3x} = 8$

$\frac{4}{-3x} = 6$

$3 = \frac{12}{6x}$

M8 - 10.3 - "$\frac{a}{bx} = \frac{c}{d}$" WS

Solve for x, by Cross Multiplication, Then Dividing. Answer should say $x =$ ____

$\frac{4}{3x} = \frac{2}{3}$ $\frac{2}{3x} = \frac{4}{3}$ $\frac{1}{8} = \frac{2}{4}x$ $\frac{3}{5}x = \frac{9}{10}$

$\frac{-5}{2} = \frac{3x}{4}$ $\frac{1x}{-9} = -\frac{2}{7}$ $-\frac{2x}{3} = -\frac{1}{2}$ $\frac{a}{b}x = \frac{c}{d}$

$\frac{2}{9}x = \frac{2}{9}$ $\frac{3x}{4} = \frac{6}{8}$ $-\frac{3}{7} = \frac{3}{7}x$ $-\frac{a}{b}x = \frac{a}{b}$

M8 - 10.4 - "$ax + b = c$" WS

Solve for x, by subtracting from both sides then dividing to both sides. Answer should say $x =$ ____

$2x + 3 = 9$ $3x + 6 = 12$ $5x + 10 = 30$ $4x + 8 = -4$

$3 + 6x = 21$ $22 = 8x + 6$ $18 = 2x + 4$ $-7 = 2x + 3$

$5x + 8 = -2$ $2x + 9 = 27$ $2 + 3x = 2$ $-5 = 2x + 3$

Solve for x, by adding to both sides then dividing to both sides. Answer should say $x =$ ____

$2x - 3 = 9$ $3x - 6 = 12$ $5x - 10 = 30$ $4x - 8 = -4$

$3 - 6x = 21$ $22 = 8x - 6$ $18 = 2x - 4$ $-7 = 2x - 3$

$3x - 2 = -2$ $-4 = 4x - 8$ $-5 = 2x - 3$ $-2 + 6x = -14$

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M8 - 10.4 - "$-ax + b = c$" WS

Solve for x, by subtracting to both sides then dividing to both sides by $-a$. Answer should say $x =$ ____

$-2x + 4 = 8$

$-3x + 8 = 17$

$-4x + 5 = 21$

$-5x + 10 = -20$

$5 - 3x = 1$

$4 - 6x = -12$

$8 - 3x = 32$

$5 - 7x = -16$

$4 = 2 - 2x$

$-2 = 7 - 3x$

$5 = 3 - 2x$

$10 = 10 - 5x$

Solve for x, by adding to both sides then dividing to both sides by $-a$. Answer should say $x =$ ____

$-2x - 4 = 8$

$-3x - 8 = 16$

$-4x - 5 = 19$

$-5x - 10 = -20$

$-5 - 3x = 1$

$-4 - 6x = -22$

$-8 - 3x = 13$

$-5 - 7x = -26$

$4 = -2 - 2x$

$-1 = -7 - 3x$

$5 = -3 - 2x$

$-10 = -10 - 5x$

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M8 - 10.4 - "$\frac{x}{a} + b = c$" HW

Solve for x, by subtracting from both sides then multiplying to both sides. Answer should say $x =$ ____

$\frac{x}{2} + 3 = 7$

$\frac{x}{3} + 4 = 5$

$\frac{x}{5} + 2 = 12$

$\frac{x}{4} + 4 = 2$

$2 + \frac{x}{7} = 3$

$7 + \frac{x}{6} = 5$

$5 = \frac{x}{9} + 2$

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

Solve for x, by adding to both sides then multiplying to both sides. Answer should say $x =$ ____

$\frac{x}{2} - 3 = 9$

$\frac{x}{3} - 4 = 5$

$\frac{x}{5} - 2 = 6$

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

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

$-7 + \frac{x}{6} = -5$

$-5 = \frac{x}{9} + 2$

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

M8 - 10.4 - " $-\frac{x}{a} + b = c$" HW

Solve for x, by adding or subtracting from both sides then multiplying to both sides.
Answer should say $x =$ ____

$\frac{x}{-2} + 3 = 7$ $\frac{x}{-3} + 4 = 5$ $\frac{x}{-5} + 2 = 12$ $\frac{x}{-4} + 4 = 2$

$\frac{x}{-2} - 3 = 9$ $\frac{x}{-3} - 4 = 5$ $\frac{x}{-5} - 2 = 6$ $\frac{x}{4} - 4 = 2$

Solve for x, by adding or subtracting from both sides then multiplying to both sides, then dividing by negative one. Answer should say $x =$ ____

$-2 - \frac{x}{7} = 3$ $-7 - \frac{x}{6} = -5$ $-5 = -\frac{x}{9} + 2$ $-2 = -2 - \frac{x}{8}$

$2 + \frac{-x}{7} = 3$ $7 - \frac{x}{6} = 5$ $5 = \frac{-x}{9} + 2$ $-2 = -2 - \frac{x}{8}$

M8 - 10.5 - LCD "$x + \frac{b}{c} = \frac{d}{e}$" HW

Solve for x by multiplying each term by the LCD

$$x - 1 = \frac{1}{2}$$
$$2 \times (x - 1) = \frac{1}{2} \times 2$$
$$2x - 2 = 1$$
$$+2 \quad +2$$
$$\frac{2x}{2} = \frac{3}{2}$$
$$x = \frac{3}{2}$$

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

$$2 + x = \frac{7}{2}$$

$$\frac{1}{5} = x + 1$$

$$3 + x = \frac{1}{3}$$

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

$$x + \frac{1}{6} = \frac{1}{3}$$
$$6 \times \left(x + \frac{1}{6}\right) = \frac{1}{3} \times 6$$
$$6x + \frac{6}{6} = \frac{6}{3}$$
$$6x + 1 = 2$$
$$-1 \quad -1$$
$$\frac{6x}{6} = \frac{1}{6}$$
$$x = \frac{1}{6}$$

$$\frac{x}{2} + \frac{1}{4} = \frac{1}{2}$$

$$x + \frac{1}{4} = \frac{2}{3}$$

$$x - \frac{5}{6} = -\frac{1}{3}$$

$$x - \frac{1}{4} = \frac{1}{2}$$

$$\frac{1}{2} + x = \frac{1}{2}$$

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M8 - 10.6 - "$a(x + b) = c$" Distributing WS

Solve for x by dividing or distributing first

$2(x - 2) = 4$

$3(x + 2) = 3$

$4(x - 2) = 4$

$5(x - 2) = 10$

$18 = 3(4 + x)$

$9 = 3(x - 3)$

$2(x + 3) = 8$

$5(x + 2) = 25$

$-3(1 + x) = 9$

$15 = -3(x + 6)$

$-6(x + 2) = 18$

$-4(x - 4) = -64$

$-2(x - 1) = 6$

$18 = -9(x - 7)$

$-6(x - 5) = 30$

$-2(x + 4) = -10$

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M8 - 10.6 - "$\frac{a}{b}(\frac{x}{c}+\frac{d}{e})=\frac{f}{g}$" Distributing WS

Solve for x by multiplying to both sides or distributing first

$\frac{1}{2}(x-2)=4$

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

$\frac{1}{2}(x-2)=6$

$\frac{1}{4}(x-3)=6$

$18=\frac{1}{3}(4+x)$

$9=3(x-3)$

$2(x+3)=8$

$5(x+2)=25$

$-3(1+x)=9$

$15=-3(x+6)$

$-6(x+2)=18$

$-4(x-4)=-64$

$-2(x-1)=6$

$18=-9(x-7)$

$-6(x-5)=30$

$-2(x+4)=-10$

This Section neeeds solutions
Some will come clean after add/subtract fractions
Maybe we have to tewch lcd before this
1st fact to int
Then frac to frac = int
Then frac to frac to frac

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M8 - 10.7 - "$ax + b = cx + d$" WS

Solve for x, by combining like terms by M10 − 10.1 and adding and subtracting ± ax to both sides

$x = 1 + 2$
$x = 3$

$x + x = 4$
$2x = 4$
$\frac{2x}{2} = \frac{4}{2}$
$x = 2$

$4 + 1 = 5x$
$5 = 5x$
$\frac{5}{5} = \frac{5x}{5}$
$1 = x$
$x = 1$

$3x + 3x = 4 + 8$
$6x = 12$
$\frac{6x}{6} = \frac{12}{6}$
$x = 2$

$2x = 4 + x$
$-x \quad -x$
$x = 4$

$2x = 4 + x$

$2x = 3 + x$

$2x = 5 + x$

$4x = 16 + 3x$

$4x = 12 + 3x$

$6x = 5x - 9$

$-3x = 18 - 4x$

$8x = -12 + 4x$

$10 + 4x = 9x$

$-33 + 3x = 14x$

$6 + 5x = 3x$

$4x + 3 = 3x - 2$

$6x + 2 = 5x - 6$

$3x - 4 = 2x - 9$

$7x + 5 = 2x + 5$

$6x + 4 = 2x + 12$

$5x - 3 = 3x - 1$

$2x + 1 + 3x = 2 + 4x$

M8 - 10.7 - "$ax + b = cx + d$" WS

Solve for x, by combining like terms by M10 − 10.1 and adding and subtracting ± ax to both sides

$2x + 3 = 4 + x$
$-x \quad -x$
$x + 3 = 4$
$-3 \quad -3$
$x = 1$

$2x + 4 + x = 13$
$3x + 4 = 13$
$-4 \quad -4$
$3x = 9$
$\frac{3x}{3} = \frac{9}{3}$
$x = 3$

$3x + 2 = 6 + x$

$2x - 8 = 4 - 4x$

$4x + 3 = 3x + 12$

$3x + 2 = 2x + 3$

$5x - 9 = -4x + 18$

$-2x - 1 = 4x + 2$

$5x - 2 = 4 - 3x$

$2x - 3 = 8x - 12$

$x - 5x + 3 = -9$

$5 - 2x + 3 = 2x$

$5x + 2x + 6 + 1 = 0$

$-3x = 2 + 11x - 6$

$4x - 5 + x = 7 - x$

M8 - 10.7 - "$a(bx + c) = e(d + x)$" WS

Solve for x, by combining like terms by $M10 - 10.1$ and adding and subtracting $\pm ax$ to both sides

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

$3x + 6 = 2x + 8$
$-2x \quad -2x$
$x + 6 = 8$
$-6 \quad -6$
$x = 2$

$3(x + 6) = 5(2 + x)$

$2(x + 10) = -4(x + 4)$

$6(x - 8) = 3(-x + 8)$

$-6(x - 10) = -4(5 - x)$

$3(3 + x) = 6(2x - 3)$

$3(4x - 6) = 2(1 - 4x)$

$-2(2x - 10) = -3(6 + 2x)$

i) $5(2x - 3) = -10(2x - 3)$

j) $-2(4x + 2) = -3(1 + 2x)$