

## Bell Work

$$3x + 2y = 7 \quad \text{if } x = 3$$

$$3(3) + 2y = 7$$

$$9 + 2y = 7$$

$$\begin{array}{r} -9 \quad -9 \\ \hline \end{array}$$

$$2y = -2$$

$$y = -1$$

$$3) \frac{1}{2}x = 2y - 4 \quad x = 8$$

$$\frac{1}{2}(8) = 2y - 4$$

$$\begin{array}{r} 4 = 2y - 4 \\ +4 \quad +4 \\ \hline \end{array}$$

$$\frac{8}{2} = \frac{2y}{2}$$

$$4 = y$$

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## Notes:

## Substitution

## Steps

- 1) Solve one equation for one of the variables
- 2) Substitute the expression for the solved variable into the other equation. Solve for the other variable.
- 3) Substitute the known variable back into either original equation and solve.

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Ex.  $3x + 4y = 12$   $x = 5.6$

$2x + y = 10$

step 2  $\begin{array}{r} -2x \quad -2x \\ \hline y = -2x + 10 \end{array}$  step

$\rightarrow 3x + 4(-2x + 10) = 12$

$3x - 8x + 40 = 12$

$-5x + 40 = 12$

$\quad -40 \quad -40$

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$-5x = -28$

$\quad -5 \quad -5$

$x = 5.6$

$2x + y = 10$

$2(5.6) + y = 10$

$11.2 + y = 10$

$-11.2 \quad -11.2$

$y = -1.2$

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Cost of Lesson - L

Fee - F

$6L + F = 300$

$-(12L + F) = (480)$

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$-6L = -180$

$\quad -6 \quad -6$

$L = 30$

Piano Lessons

6 lessons 12

\$300 \$480

includes a 1-time fee

$6L + F = 300$

$6(30) + F = 300$

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$180 + F = 300$

$-180 \quad -180$

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$F = 120$

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## Elimination

Step 1) (optional)

Multiply 1 equation by a number  
So that the coefficients of a  
variable match.

2) Subtract one equation from the  
other to Eliminate one of the  
variables.

3) Solve for the remaining variable.

4) Plug answer into one of the  
Original Equations to solve  
for other variable.

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## Ex. of Elimination

$$\begin{array}{r}
 4(x + 3y = 8) \\
 4x + 12y = 32 \\
 -(4x + 2y = 4) \\
 \hline
 14y = 28 \\
 \frac{14y}{14} = \frac{28}{14} \\
 y = 2
 \end{array}$$

$$\begin{array}{r}
 x + 3(2) = 8 \\
 x + 6 = 8 \\
 -6 \quad -6 \\
 \hline
 x = 2
 \end{array}$$

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