

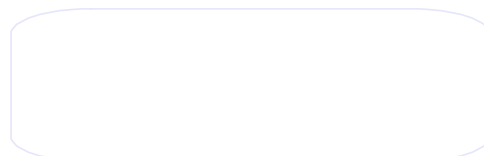
First: Fractions Skills Quiz

Today's Learning Goal(s):

By the end of the class, I will be able to:

- a) Solve a linear system using the method of substitution and check the answer.

Discuss:
missing quizzes...discuss/correct/return
SWYK 1.1 Monday
questions from previous homework?



Before we begin, are there any questions from last day's work?

MPM 2DI

1.2 Solve by Substitution (Day 1)

Date: Sept. 9/16

Concept

When substituting, we replace the variable with **brackets** and the value of the variable.

If $y = 3x + 10$, find "y" if:

a) $x = 2$

$$\begin{aligned} y &= 3(2) + 10 \\ &= 6 + 10 \\ &= 16 \end{aligned}$$

b) $x = 2y$

$$\begin{aligned} y &= 3(2y) + 10 \\ y &= 6y + 10 \\ y - 6y &= 10 \\ -5y &= 10 \\ \frac{-5y}{-5} &= \frac{10}{-5} \\ y &= -2 \end{aligned}$$

c) $x = 2y - 5$

$$\begin{aligned} y &= 3(2y - 5) + 10 \\ y &= 6y - 15 + 10 \\ y - 6y &= -5 \\ -5y &= -5 \\ \frac{-5y}{-5} &= \frac{-5}{-5} \\ y &= 1 \end{aligned}$$

The Method of Substitution

- 1) Isolate one variable in either equation.
- 2) Substitute your answer from step 1) into the other equation.
- 3) Solve the new equation.
- 4) Substitute your first answer (variable) into the original equation ①.
- 5) Check your answers (both variables) in the original equation ②.

Ex. 1 Solve the system by substitution:

$$3x - y = 18 \quad \text{①}$$

$$2x + 5y = -5 \quad \text{②}$$

Substitute in other equation.

Isolate y in ①

$$3x - y = 18 \rightarrow 3x - 18 = y$$

$$-y = -3x + 18$$

$$\frac{-y}{-1} = \frac{-3x}{-1} + \frac{18}{-1}$$

$$y = 3x - 18$$

$$2x + 5(3x - 18) = -5$$

$$2x + 15x - 90 = -5$$

$$17x = -5 + 90$$

$$17x = 85$$

$$\frac{17x}{17} = \frac{85}{17}$$

$$x = 5$$

Sub $x=5$ in ①

$$3(5) - y = 18$$

$$15 - y = 18$$

$$15 - 18 = y$$

$$-3 = y$$

Check $x=5, y=-3$ in ②

$$LS = 2x + 5y \quad RS = -5$$

$$= 2(5) + 5(-3)$$

$$= 10 - 15$$

$$= -5$$

$$\therefore LS = RS$$

$$\therefore x=5, y=-3$$

is correct.

$(5, -3)$ 📌

Ex. 2 Solve the system by substitution:

$$x - 2y = 7 \quad \textcircled{1}$$

$$\rightarrow x = 2y + 7$$

$$2x - 3y = 13 \quad \textcircled{2}$$

$$\rightarrow 2(2y + 7) - 3y = 13$$

$$4y + 14 - 3y = 13$$

$$y = 13 - 14$$

$$y = -1$$

Sub in ①

$$x - 2(-1) = 7$$

$$x + 2 = 7$$

$$x = 7 - 2$$

$$x = 5$$

check in ②

$$LS = 2x - 3y \quad RS = 13$$

$$= 2(5) - 3(-1)$$

$$= 10 + 3$$

$$= 13$$

$$\therefore LS = RS$$

$\therefore (5, -1)$ is correct.

Today's substitution practice:

p. 26 #1b, 2, 3, 4c*d, 5*a

*no checking is required

Make sure you read the comments column.
(on the unit outline)

#1b Variable is already isolated.

#2 Isolate a variable then stop.

Checks required for 1b, 3, 4d

Monday there is a quiz on graphing a line.

NOTE: I will not be handing out a copy of Monday's lesson,
but you may choose to print it out in advance.