Algebra 1 Workbook

Systems of equations

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TWO-STEP PROBLEMS

1. Why can't we solve this two-step problem?

   If $2(x-1)-3=9+x$, what is $y+2$?

2. If $5-2x=17$, what is $x-1$?

3. If $3(2-x)+5=-(4x-2)$, what is $(x/2)+1$?

4. If $2(x+y)-6=3$, what is $x+y-1$?

5. What went wrong in this solution?

   If $2x+3=7$, what is $x/3$?

   $$2x+3=7$$

   $$2x=4$$

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

6. If $a + 2b = 6 - a$ and $b = 1$, what is $a/2$?

SOLVING SYSTEMS WITH SUBSTITUTION

1. Find the unique solution to the system of equations.

$$-x + 2y = 6$$

$$3x = y - 10$$

2. What is the easiest variable to get by itself? Set up but do not solve the substitution.

$$2y - x = 7$$

$$3x = 9 - 18y$$

3. Find the unique solution to the system of equations.

$$-5x + y = 8$$

$$y = 3x - 8$$

4. Find the unique solution to the system of equations.

$$3 - y = 2x$$

$$-4x + 10 = 2y$$

5. What went wrong if a substitution was made in the system and the result was $2x - 2 - x = 7$?

$$y = x - 2$$

$$2y - x = 7$$

6. Find the unique solution to the system of equations.

$$5y = 6 - 2x$$

$$6x + 15y = 18$$

SOLVING SYSTEMS WITH ELIMINATION

1. What's the easiest way to set up the elimination method for the system of equations? Set up but do not solve the elimination.

$$6y - 3x = 8$$

$$x - 4y = 5$$

2. Find the unique solution to the system of equations.

$$2x - y = 5$$

$$-3x + y = 7$$

3. What went wrong if an elimination was done in the system and the result was $2y = 3$?

$$-4x + 3y = 7$$

$$-4x - y = 4$$

4. Find the unique solution to the system of equations.

$$x = 2y - 5$$

$-3x + 6y = 15$

5. Find the unique solution to the system of equations.

$4 - 2x = 6y$

$7 = x + 3y$

6. Find the unique solution to the system of equations.

$x = 2y - 8$

$3y = x + 5$

SOLVING SYSTEMS THREE WAYS

1. Explain why using the graphing method would make the system easy to solve.

$$y = 3x - 4$$

$$y - 3 = 2(x + 1)$$

2. Find the unique solution to the system of equations using the elimination method.

$$2y = x + 5$$

$$3x - 2y = 11$$

3. In words, describe the graphical solution to a system of equations.

4. Find the unique solution to the system of equations using the substitution method.

$$5y + x = 4$$

$$3y - 3x = 6$$

5. Explain why the elimination method is a good way to solve this particular system.

$$3y - 2x = 7$$

$$2x = 4 - 6y$$

6. Find the unique solution to the system of equations using the graphing method.

$$y - 2 = -(x + 1)$$

$$y = x + 1$$

SYSTEMS OF LINEAR INEQUALITIES

1. Graph the solution to the system of linear inequalities.

$$y > x + 1$$

$$y \leq 5 - x$$

2. Graph the solution to the system of linear inequalities.

$$2x + 2y \geq 4$$

$$y > -1$$

3. Graph the solution to the system of linear inequalities.

$$x + 3y + 3 \geq 0$$

$$3x + y + 1 \geq 0$$

4. Graph the solution to the system of linear inequalities.

$$y > 2x$$

$$x > 2y$$

5. Graph the solution to the system of linear inequalities.

$$2y + 3x \geq -4$$

$$x > y - 1$$

6. Graph the solution to the system of linear inequalities.

$$4x - 2y - 4 \geq 0$$

$$y \geq 2x - 2$$


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