**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per.\_\_\_\_\_\_\_ Score:\_\_\_\_\_**

**U9 HW #4** *Systems of Equations in Real World*

At the county fair, you and your little sister play a game called Honey Money. In this game she covers herself in honey and you dig through some sawdust to find hidden money and stick as much of it to her as you can in 30 seconds. The fair directors have hidden only $1 bills and $5 bills in the sawdust. During the game your little sister counts as you put the bills on her. She doesn’t know the difference between $1 bills and $5 bills, but she knows that you put 16 bills on her total. You were busy counting up how much money you were going to make, and you came up with a total of $40. After the activity you put the all the money into a bag and your little sister takes it to show her friends and loses it. The fair directors find a bag of money, but say they can only give it to you if you can tell them how many $1 bills you had, and how many $5 bills you had.

What will you tell the fair directors so you can get your money back?

**Directions:** Solve this problem by graphing. Show your work in the space below. Then graph to the right.

1. Identify your variables:

1. Create a system of linear equations:
2. After you graph, verify your solution:

Write your response to the fair directors in a complete sentence on the lines provided.

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2. An online music club offers a membership for a one-time fee of $48 plus $1 per song to download. Non-members pay $2 per song to download.

|  |  |
| --- | --- |
| Number of Songs | Cost for Members |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
|  |  |
| Number of Songs | Cost for  Non-Members |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |

Say you download 4 songs each week (remembering that there are 52 weeks in a year), which plan would be cheaper.



1. Nettie’s Bargain Clothing is having a huge sale. All shirts are $3 each and all pants are $5 each. You go to the sale and buy twice as many shirts as pants and spend $66. The following system of equations models this situation where y = number of shirts and x = number of pants:

 $y=2x$

 $3y+5x=66$

* 1. Write in words what each of the equations in the system represents in the context.

$y=2x$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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$3y+5x=66$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* 1. Solve both equations for y (if necessary).
1. One equation in a system of linear equations is $y=-2x+4$.
	1. Write a second equation for the system so that the system has only **one solution**.
	2. Write a second equation for the system so that the system has **no solution**.
	3. Write a second equation for the system so that the system has **infinitely many solutions**.
2. State whether the following are solutions to the system:$\left\{\begin{array}{c}2x-3y=9\\-5x-3y=30\end{array}\right.$ **Show ALL work.**
	1. $\left(-3, -5\right)$ **b.** $\left(-6, 7\right)$ **c.** $\left(6, 1\right)$