## Unit 4 Systems Study Gaide

Match each graph with the appropriate solution.
$\qquad$ I. no solution
$\qquad$ II. infinite solutions
$\qquad$ III. one solution



Solve the following by graphing.

1. $y=3 x+4$
$3 x-y=0$

2. $y=x+6$
$y=2 x-7$

3. $3 x-y=1$
$x+y=3$

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


State whether the following systems have one solution, no solution, or infinitely many solutions.
5. $y=3 x+1$
$y=-3 x+7$
6. $y=3 x+1$
$y=x+1$
7. $x+y=8$
$2 x+2 y=16$
8. $x+y=-4$
$x+y=6$

Below is the graph for one of the equations in a system of two equations. The solution to the system is $(3,0)$. State whether each equation could be the
 other equation in the system.
9. $y=x-3$
10. $y=-3 x-6$
11. $y=1 / 2 x-2$
12. $x=3$
14. Sixty people attend a game night. Everyone chooses to play either checkers, a two-person game, or bridge, a card game that has four-players. All 60 people are playing either checkers or bridge.
a. Complete the table showing some possible combinations of the number of each type of game being .

| Checkers <br> $(x)$ | Bridge <br> $(y)$ |
| :---: | :---: |
| 2 |  |
|  | 1 |
| 30 |  |
|  | 10 |

b. There are 3 more games of bridge being played than games of checkers being played. Write a system of equations to represent this situation.
c. How many of each game are being played? Explain or show your reasoning.

15. Line $F$ is resented by the equation $y=2 x+1$. Line $G$ is shown on the graph to the right. If line $F$ is graphed on the same coordinate plane as line $G$, at what point would the two lines intersect?
16. A system of equations is shown below:


$$
\begin{aligned}
& y=5 x+10 \\
& y=10 x-5
\end{aligned}
$$

What is the value of $x+y$ ?
17. Line fgoes through the points $(8,1)$ and $(-1,7)$. Line g goes through the points $(1,3)$ and $(-2,3)$. What is the point of intersection of lines $f$ and $g$ ?

18. Line K goes through the points $(-5,3)$ and $(-2,1)$. Line $m$ goes through the points $(0,-3)$ and $(2,1)$. What is the point of intersection of lines $k$ and $m$ ?

19. James paid an initial fee of $\$ 6.00$ for a movie rental service. Each time he rents a movie he is charged $\$ 2.00$. Sarah uses a different movie rental service that charges based on the equation $y=3 x+4$, where $y$ is the total cost and $x$ is the number of movies rented. At what point are the prices of the two services the same?
20. Lyft charges $\$ 1.80$ plus $\$ 0.20$ a mile. Uber charges $\$ 2.10$ plus $\$ 0.15$ a mile. For what distance will the rides cost the same?

