# Sec. 7.1: Solve Linear Systems by Graphing

System of linear equations: consists of _____ or more linear equations in the same _____

Solution of a system of linear equations in two variables: an _____ pair that satisfies _____ equation in the system
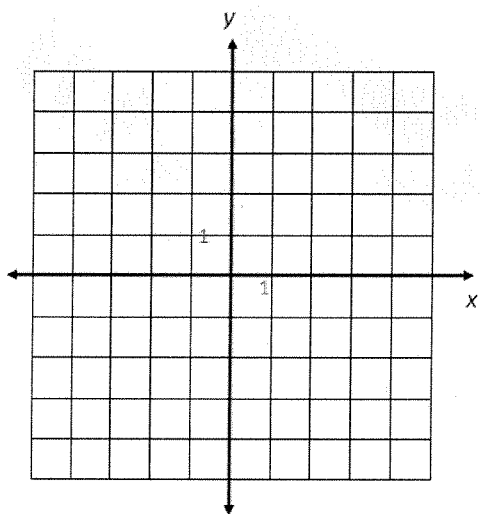
Consistent independent system: a linear system that has exactly _____ solution

- The lines are _____ (independent).
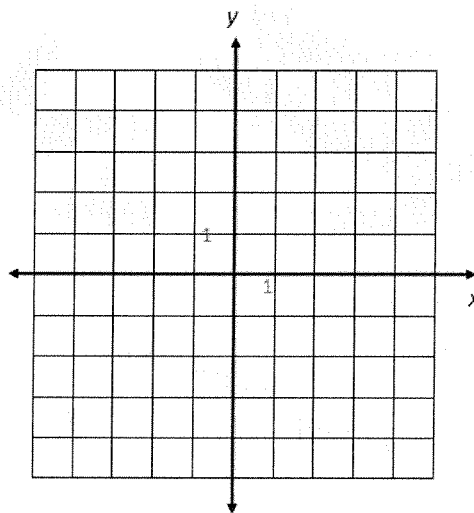- The lines _____ (are consistent).
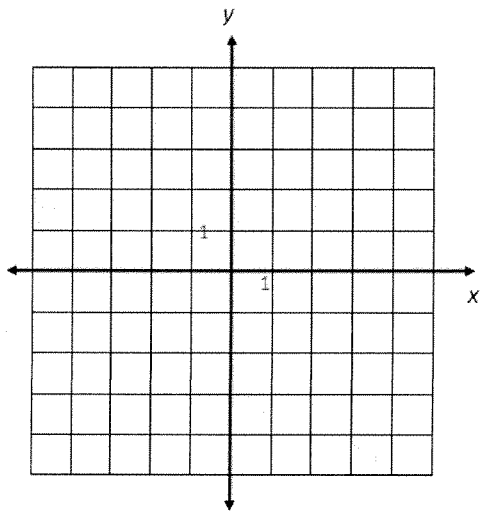
## Examples

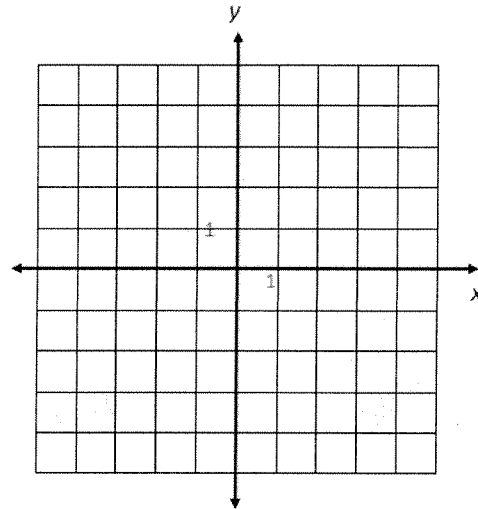Solve each system by graphing.

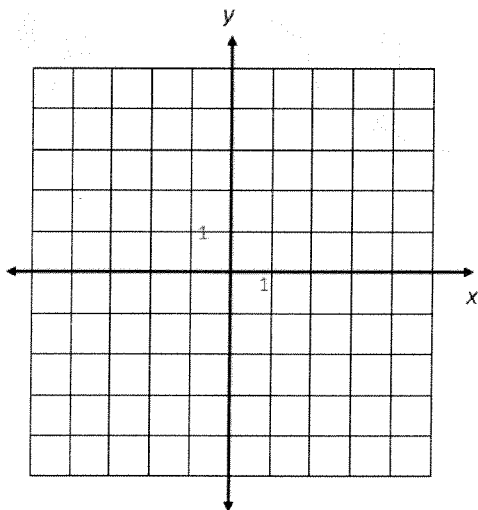| 1.  $y = 2x + 4$; $y = -x - 1$ | 2.  $y = -5x - 2$; $y = -5x + 3$ |
|---|---|
|  |  |

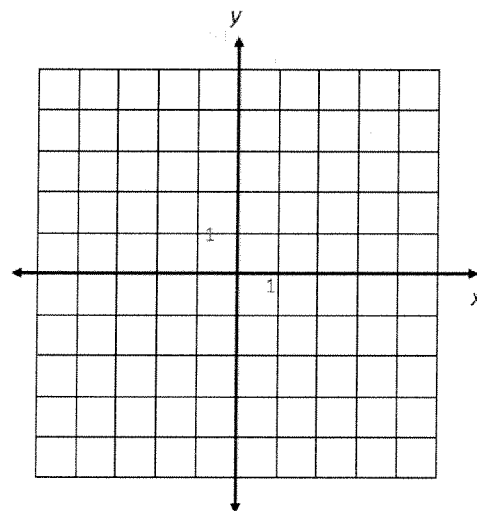3. $y = \dfrac{1}{4}x + 2$; $y = \dfrac{3}{2}x - 3$

4. $y = x + 4$; $18x + 3y = -9$

5. $y = 3x - 5$; $12x - 4y = 20$
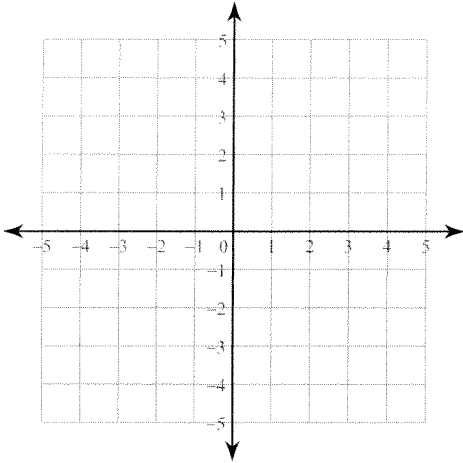
6. $1 - 2x = -y$; $8 = -2x - 2y$

Algebra I

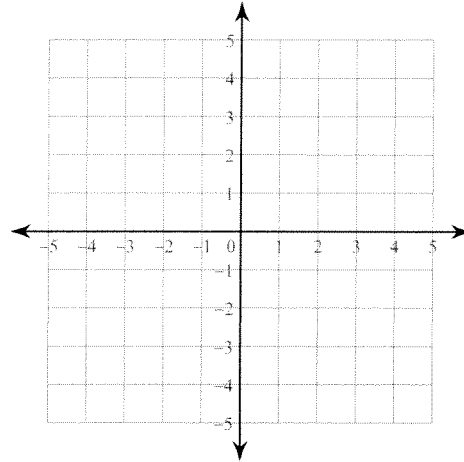# Sec. 7.1 Practice Problems

**Solve each system by graphing.**

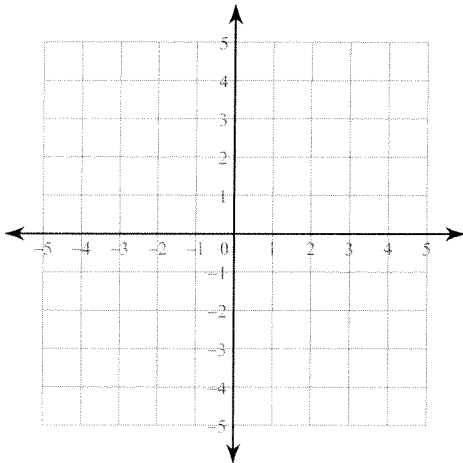1) $y = -\dfrac{1}{4}x + 1$

$y = -\dfrac{3}{2}x - 4$

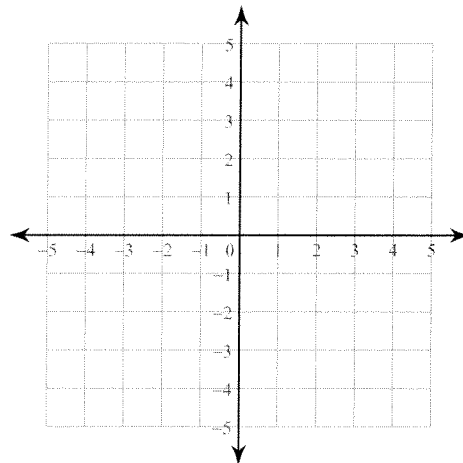2) $y = \dfrac{1}{3}x + 3$

$y = -x - 1$
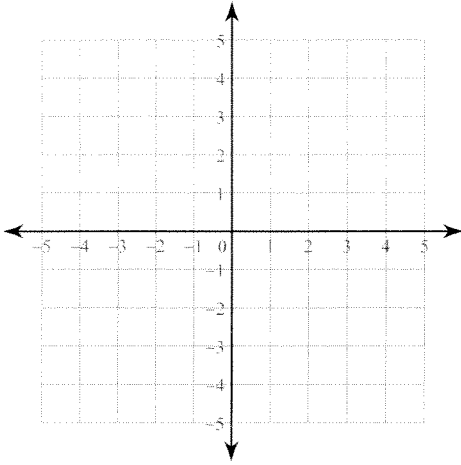
3) $y = \dfrac{3}{2}x - 4$

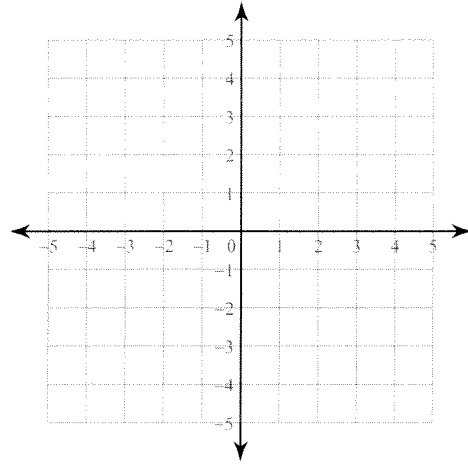$y = -\dfrac{5}{2}x + 4$

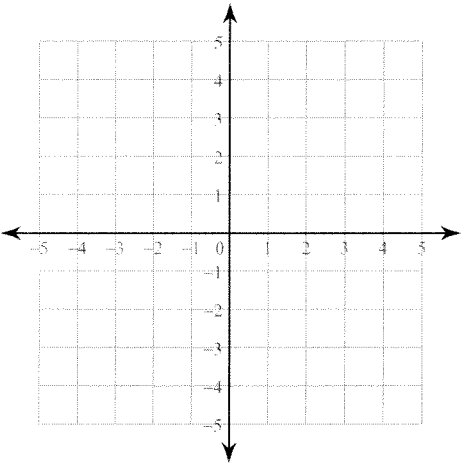4) $y = -2x + 2$

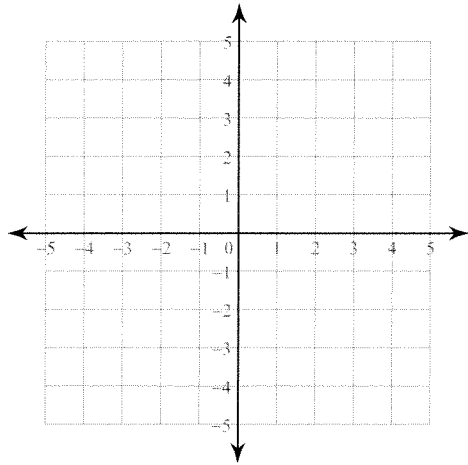$y = -\dfrac{2}{3}x - 2$

5) $y = 7x + 4$
   $y = x - 2$

6) $x + y = -4$
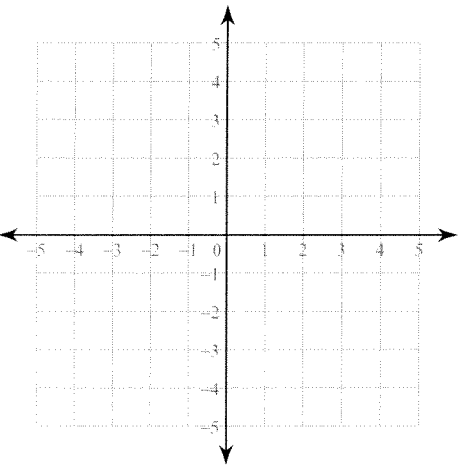   $2x - y = -2$

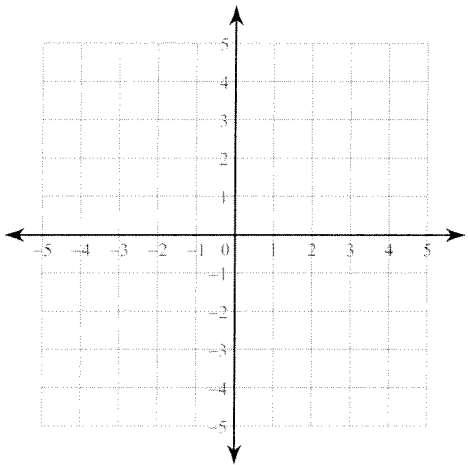7) $x - 3y = -9$
   $2x - y = 2$
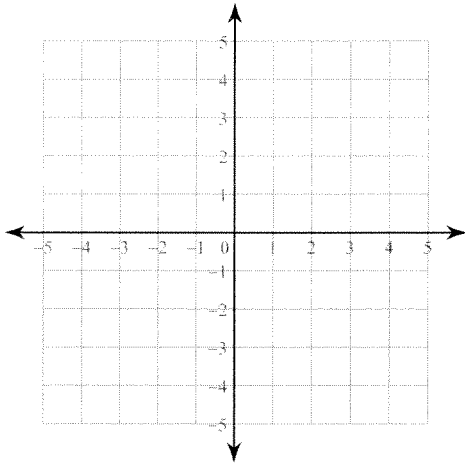
8) $3x - 2y = 6$
   $x - 2y = -2$
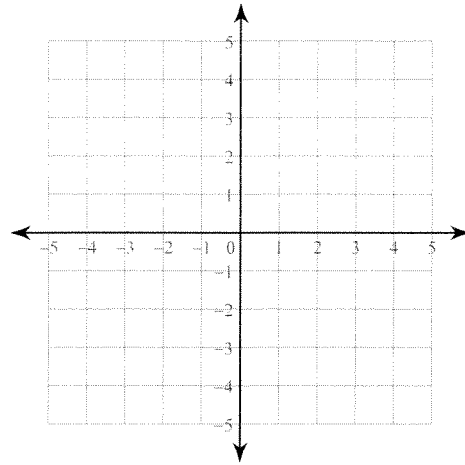
9) $3x - y = 4$
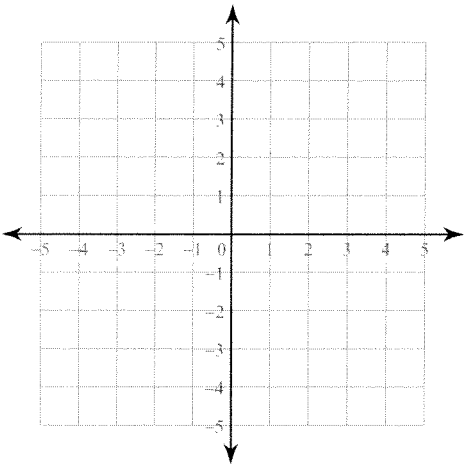   $x - 2y = -2$

10) $5x - y = 4$
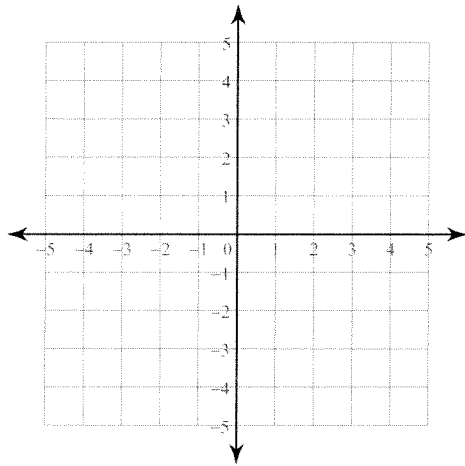    $2x + y = 3$

11) $-6 = x + 2y$
$-2x - 2 = -y$

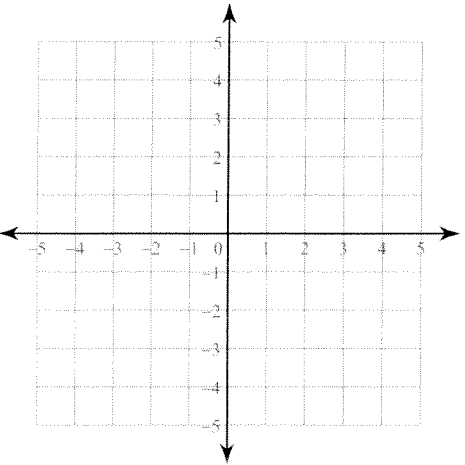12) $0 = -9y + 27 - 3x$
$-y - 1 = -x$
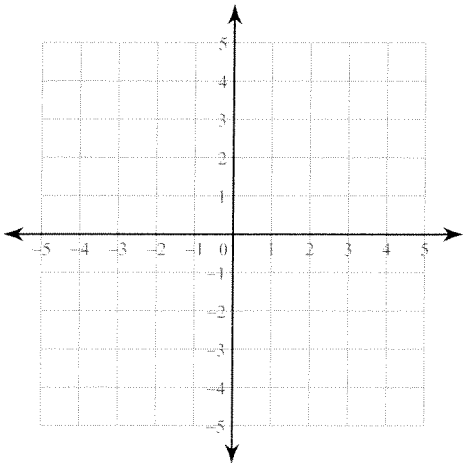
13) $3y + x + 6 = 0$
$0 = -2x - 6$

14) $4x = -6y - 12$
$-y = -3 + \dfrac{7}{3}x$

15) $-2x + 4y = -16$
$4 = 5x + 2y$

16) $0 = -4x - y - 2$
$6x = -12 + 3y$

17. Acme Gym charges $40 per month plus $3 per day that a member uses the gym. Biceps-R-Us charges $7 per day to use the gym, with no monthly membership fee. Write a system of equations to model this situation. Solve your system of equations by graphing. What does the solution tell you? Which gym would be less expensive if you went to the gym 5 times per month? What about if you went 15 times per month?

## Answers to Sec. 7.1 Practice Problems

1) $(-4, 2)$          2) $(-3, 2)$          3) $(2, -1)$          4) $(3, -4)$
5) $(-1, -3)$        6) $(-2, -2)$        7) $(3, 4)$           8) $(4, 3)$
9) $(2, 2)$           10) $(1, 1)$          11) $(-2, -2)$       12) $(3, 2)$
13) $(-3, -1)$       14) $(3, -4)$         15) $(2, -3)$         16) $(-1, 2)$

17) Acme: $y = 40 + 3x$; Biceps-R-Us: $y = 7x$
 Solution: (10, 70), which means that for 10 days of use, each gym costs $70. Biceps-R-Us would be less expensive for 5 uses per month; Acme would be less expensive for 15 uses per month.