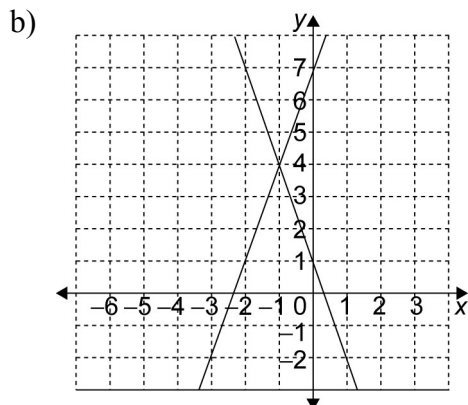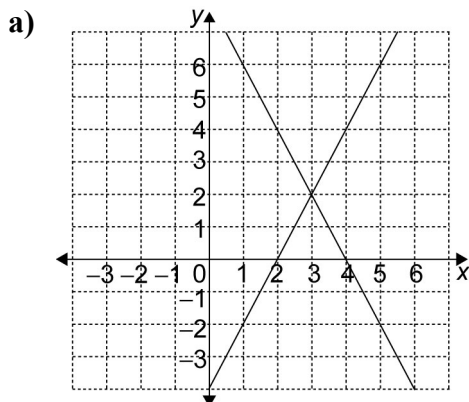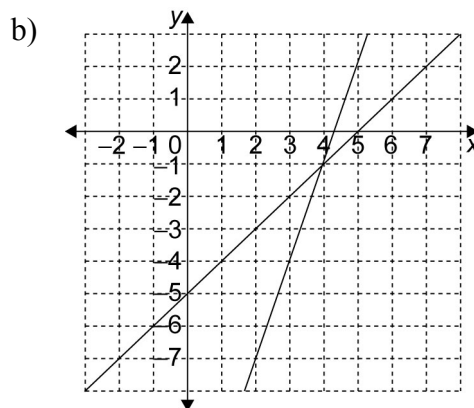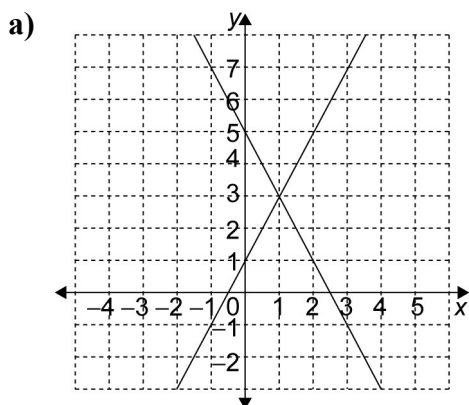# 6.7 Practice: Linear Systems

1. What are the coordinates of the point of intersection of each linear system?
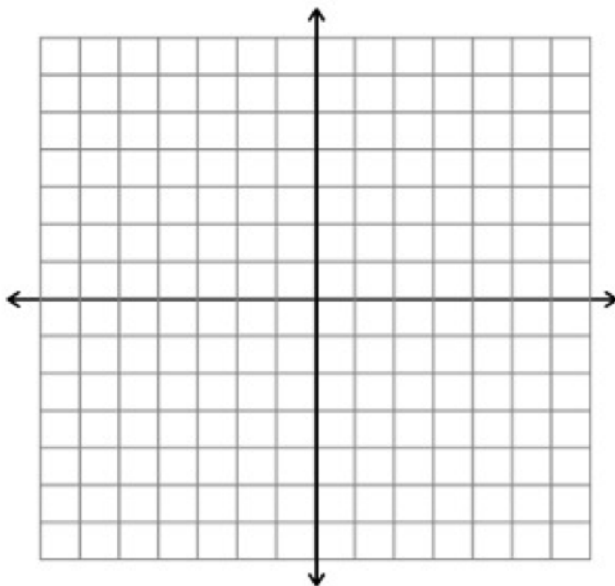
a)

b)

2. What is the solution to each linear system?
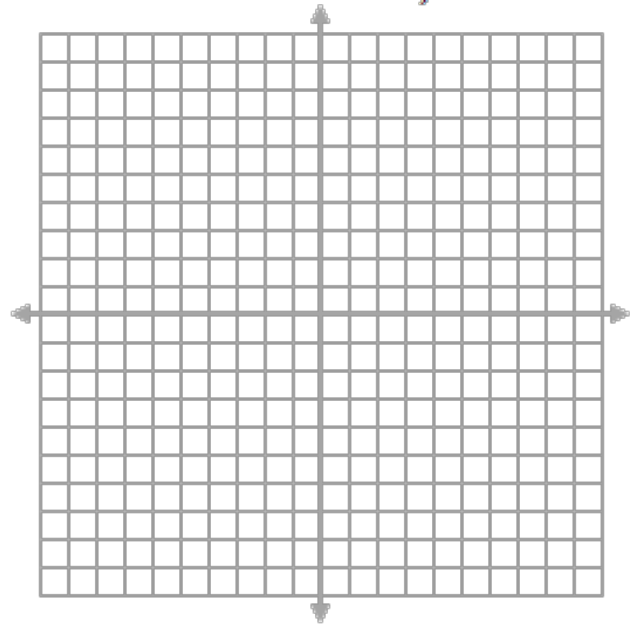
a)

b)

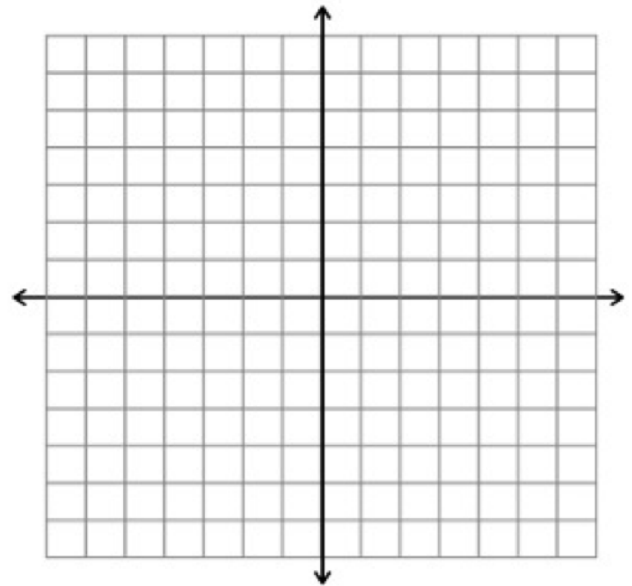3. Solve each linear system. Check your solution in both equations.
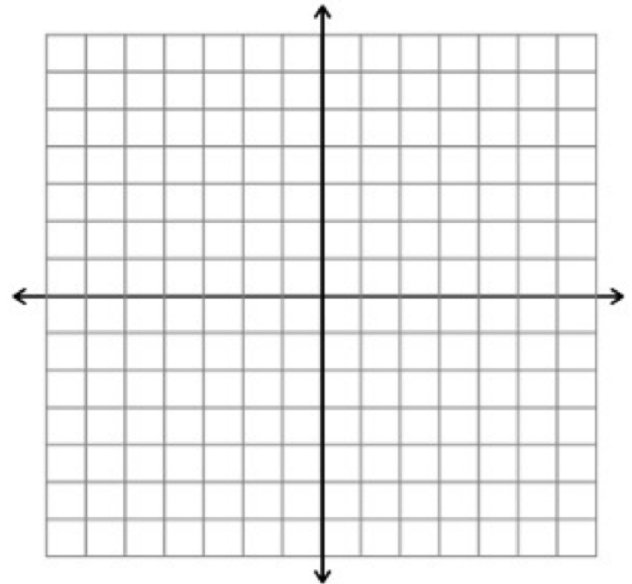
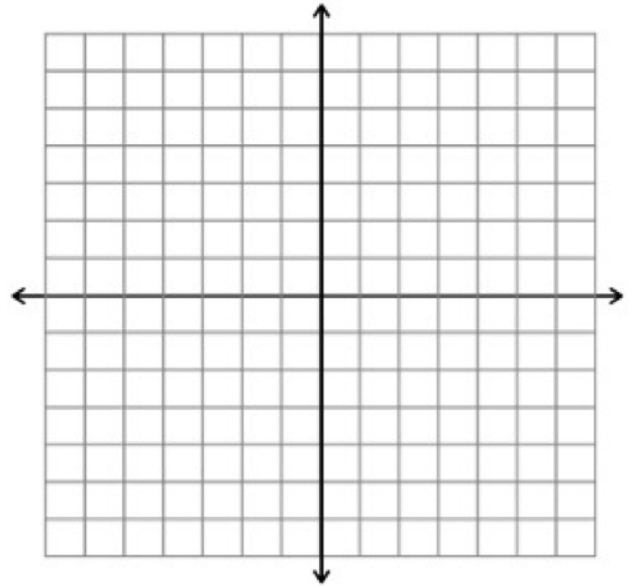**a)** $x + y = 4$ and $y = x$

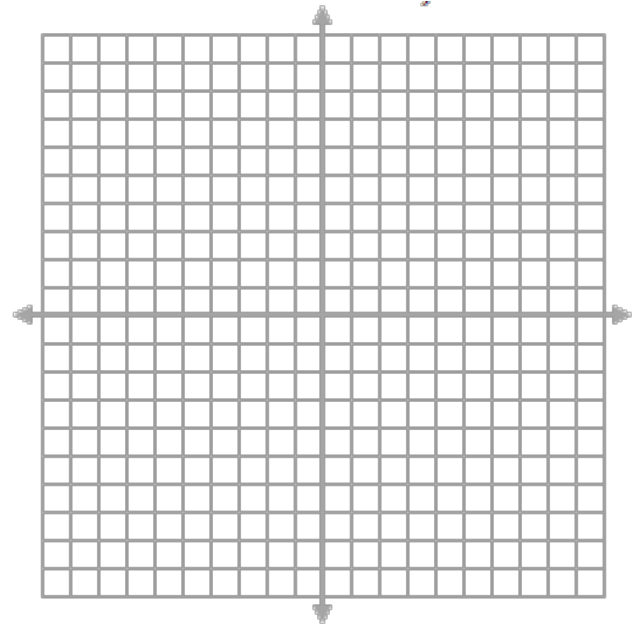**b)** $2x + y = 8$ and $y = 2x$

c) $3x + y = 1$ and $y = 3x + 7$

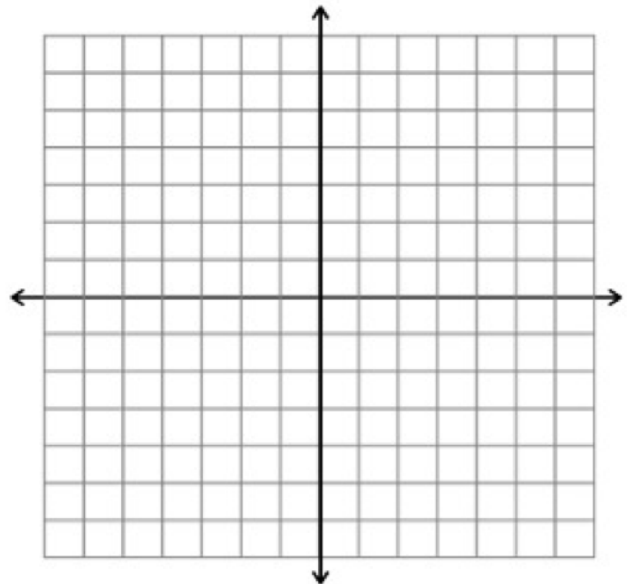**d)** $x + y = 3$ and $x - y = -1$

e) y = -x and y = x – 6

f) x-y = 8 and x+2y = 2

4. Which is the point of intersection for the linear system $y = 2x + 1$ and $y = 3x – 1$? Solve graphically and check algebraically.
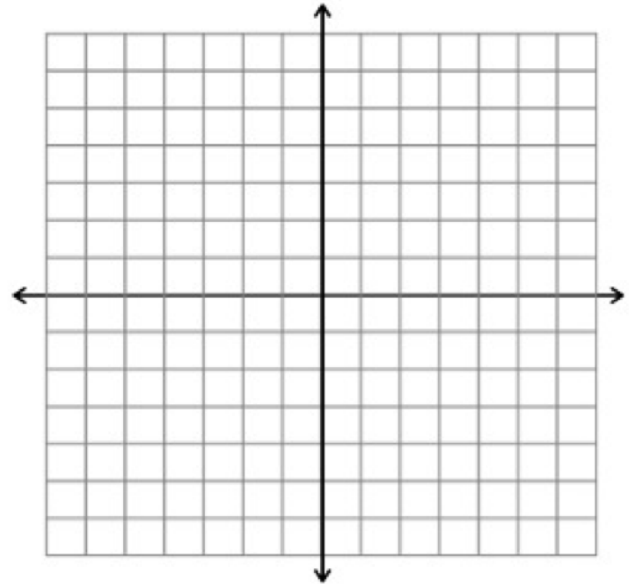
   A (2, 2)
   B (2, 5)
   C (5, 2)
   D (5, 5)

5. Which is the solution to the linear system? Solve graphically and check your answer algebraically.

$y = 2x - 2$ and $y = -\frac{1}{4}x + 7$?

   A (4, 1)
   B (4, –6)
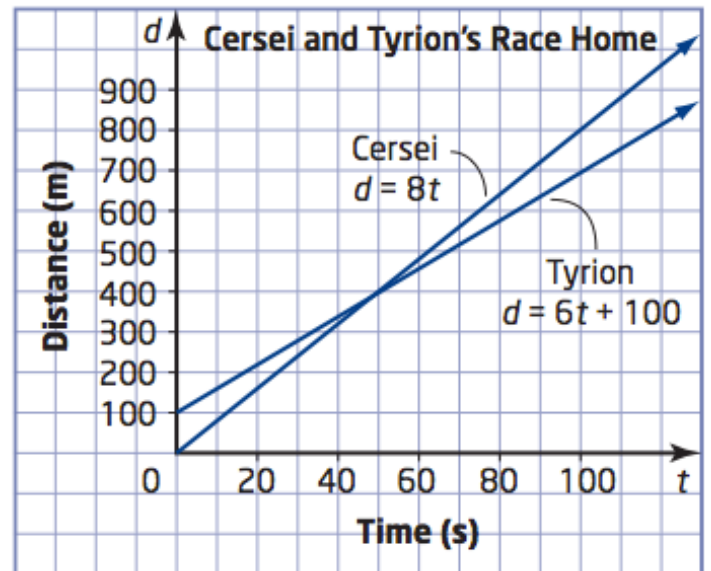   C (4, 6)
   D (4, –1)

6. Cersei and her brother Tyrion decide to race home. Cersei is a faster runner than Tyrion, so she gives him a head start. Their distance- time graphs are shown.

a) How much of a head start did Tyrion get?

b) How fast does Cersei run?

c) How fast does Tyrion run?

Cersei and Tyrion's Race Home

Cersei $d = 8t$

Tyrion $d = 6t + 100$

Distance (m)

Time (s)

d) For what length of race will each runner win? For what length of race will they tie?

e) Explain the significance of the solution of this linear system.

Answers

1. **a)** (3, 2) **b)** (−1, 4)
2. **a)** (1, 3) **b)** (4, −1)
3. **a)** (2, 2) **b)** (2, 4)
   c) (−1, 4) **d)** (1, 2)
   e) (3,-3) **f)** (6,-2)
4. B
5. C
6. a) 100 m b) 8m/s c) 6 m/s d) Cersei will win if the race longer than 400 m while Tyrion will win if the race is shorter than 400 m. If the race is 400 m, then they will tie e) The solution is (50,400). Cersei will catch Tyrion after 50 seconds at a distance of 400 m.