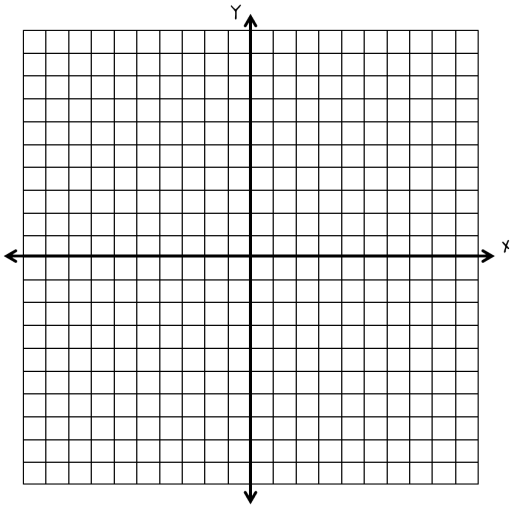
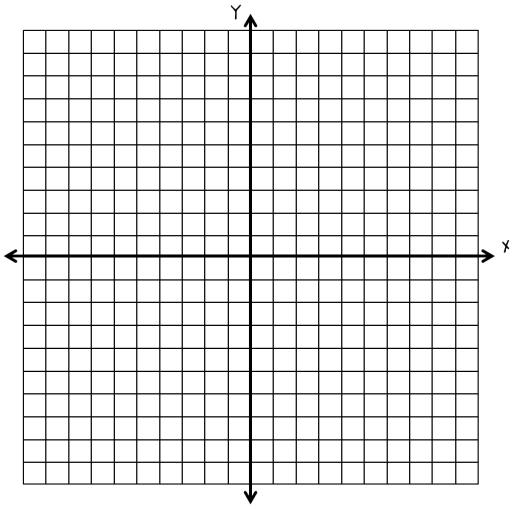
Unit 5: Linear Systems of Equations

I. Solve by graphing.

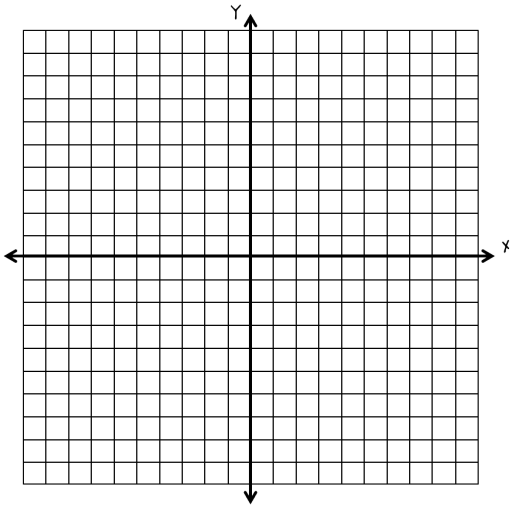
1. $\begin{aligned} x - y &= 4 \\ 2x + y &= 5 \end{aligned}$



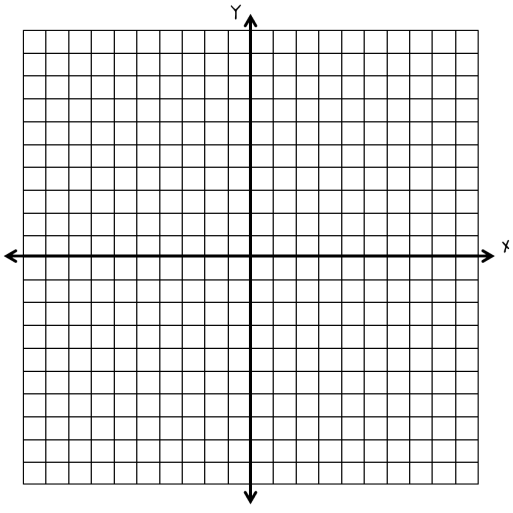
2. $\begin{aligned} y &= 4 \\ x - y &= 2 \end{aligned}$



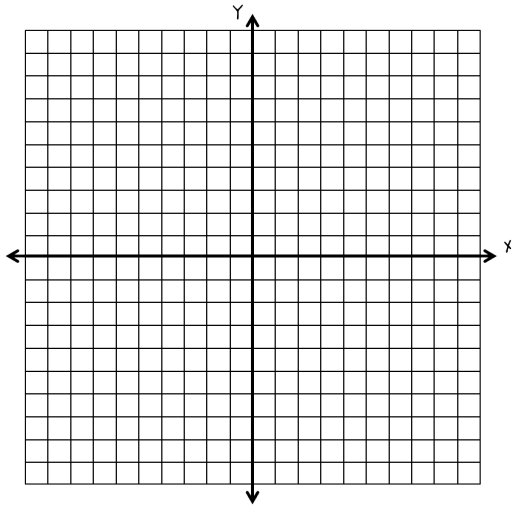
3. $\begin{aligned} x + 3y &= 6 \\ y &= -\frac{1}{3}x - 1 \end{aligned}$



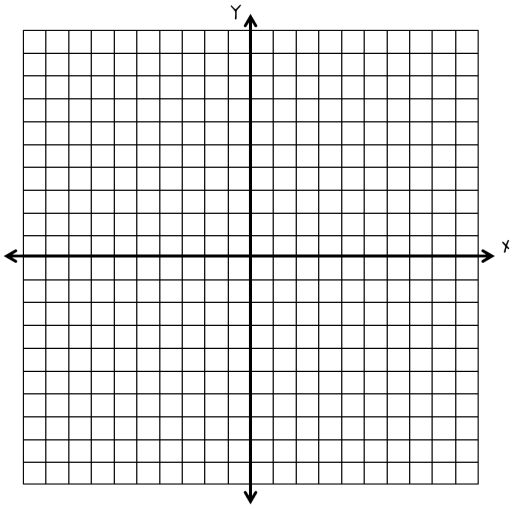
4. $\begin{aligned} x &= -2 \\ x - y &= -2 \end{aligned}$



5. $x - 2y = 4$
$3x - 6y = 12$



6. $x + y = 2$
$3x - 4y = -8$



II. Solve by substitution.

7. $y = 2$
$x = 12 - 3y$

8. $y = x$
$2x + 3y = 20$

9. $2x - 3y = 6$
$x = 3 - 2y$

10. $3x - y = 6$
$2y = 6x - 12$

III. Solve by elimination.

11. $x - y = 3$
$x + y = 7$

12. $3x + y = 8$
$3x - 2y = 2$

13. $2x + y = -2$
$4x + 3y = -6$

14. $3x + 2y = -4$
$2x - 3y = -7$

15. $4a + 3b = -24$
$5a - 2b = -7$

IV. Solve by using a system of equations.

16. The perimeter of a rectangle is 70 cm. The length of the rectangle is 5 more than twice the width. Find the dimensions of the rectangle.

17. The sum of two numbers is 78. The larger number is 10 less than 3 times the smaller. What are the numbers?

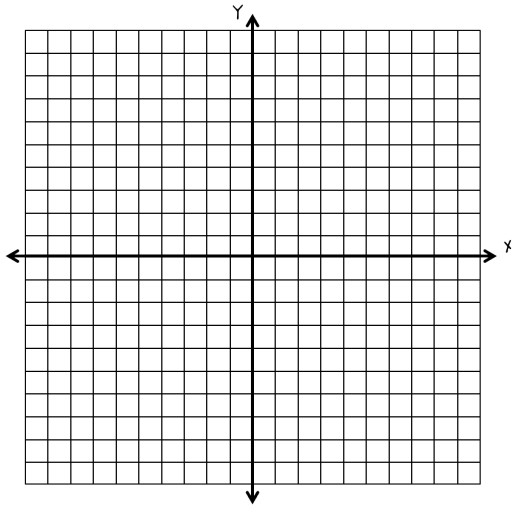
18. Old McDonald's Pig and Chicken Farm has 60 animals. These animals have 164 feet altogether. Find the number of pigs on the farm.

19. Jill is 6 years older than Jack. Eight years ago, she was 4 times as old him. How old are Jack and Jill now?

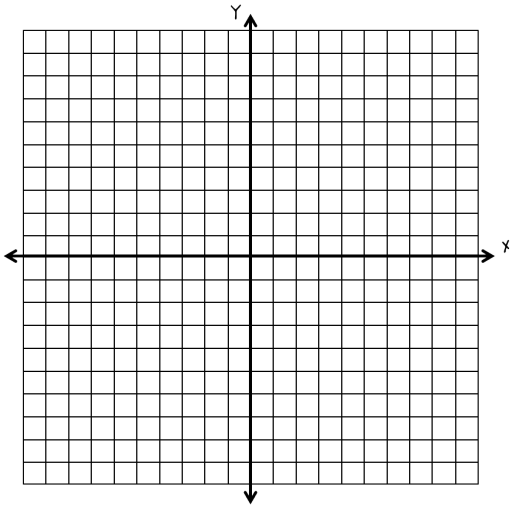
20. A ferry makes an 80 km trip down the river in 5 hours. The trip back against the current takes 8 hours. Find the speed of the ferry and the current.

V. Graph the systems of inequalities.

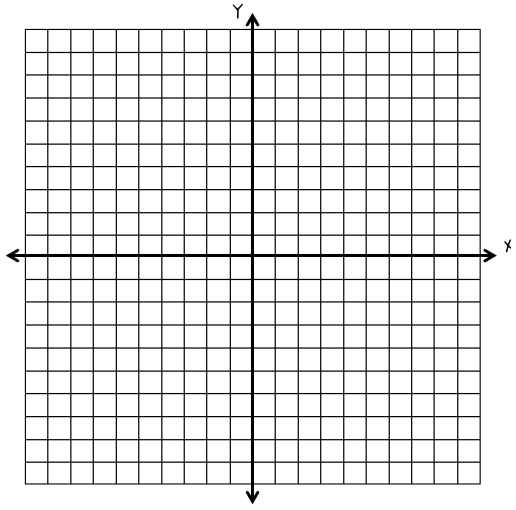
21. $x > 2$
$y \leq 4$



22. $x + y \geq 2$
$2x - y \leq 4$



23. $2x - y < 2$
$2x - y > 0$



24. $x + y \leq 6$
$2x + y \leq 8$
$x \geq 0$
$y \geq 0$