Solving Systems of Equations Worksheet

Solve each system of equations.

1. $\begin{aligned} x - y &= -11 \\ 7x + 4y &= -22 \end{aligned}$

2. $\begin{aligned} y &= 7 - 3x \\ 2y + 6x &= 14 \end{aligned}$

3. $\begin{aligned} 22m - 19n &= 28 \\ 55m - 29n &= 107 \end{aligned}$

4. $\begin{aligned} 2c + 3d &= 2 \\ 4c - 9d &= -1 \end{aligned}$

5. $\begin{aligned} 4u - 3d &= 11 \\ 5u - 6d &= 9 \end{aligned}$

6. $\begin{aligned} 15d + 12t &= 8 \\ 10d + 8t &= 13 \end{aligned}$

7. $\begin{aligned} 24x - 56y &= 72 \\ -15x + 35y &= -45 \end{aligned}$

8. $\begin{aligned} 5x - 3y &= 22 \\ 6x - 7y &= 41 \end{aligned}$

9. $\begin{aligned} y - 2 &= \frac{1}{2}(x - 4) \\ 2x + y &= -6 \end{aligned}$

10. $\begin{aligned} \frac{3}{x} + \frac{6}{y} &= 1 \\ \frac{3}{x} + \frac{7}{y} &= 2 \end{aligned}$

11. $\begin{aligned} 9x - 2y &= 2\frac{1}{2} \\ 5x - 6y &= -3\frac{1}{2} \end{aligned}$

12. The sum of two numbers is 52. The difference of the same two numbers is 20. Find the numbers.

13. The difference between two numbers is 4. Three times the larger is two more than five times the smaller. Find the numbers.

14. Two sides of a triangle are equal. Each of the two equal sides is 5 inches more than the third side. The perimeter is 35 inches. Find the length of each side.

15. Partners in a business agree to take out two loans totaling $35,000. The yearly interest rates were 12% and 15% and the total yearly interest was $4,650. Find the amount of each loan.

16. A chemist has one solution that is 40% acid and a second that is 15% acid. How many grams of each should be used to obtain 40 grams of a solution that is 25% acid?

17. The sum of the digits of a two-digit number is 10. The tens digit is 4 more than the units digit. Find the number.

18. Are the three lines $3x + 2y = 4$, $5x - 2y = 0$, and $4x + 3y = 3$ concurrent? (That is, do they all intersect at the same point?)

19. Given ΔABC with vertices $A(8,5)$, $B(0,1)$ and $C(9,-2)$.
    a. Find the equation of $\overline{BC}$.
    b. Find the equation of the altitude from A to $\overline{BC}$.
    c. Find the point where this altitude intersects $\overline{BC}$.