ANSWER PRESENTATION TOOL

30. Solve the system using elimination.

$$\begin{cases} 3x + y = 7 & \text{Equation 1} \\ -2x - y = 9 & \text{Equation 2} \end{cases}$$

There is no need to change coefficients because the variable y differs only in sign.

$$3x + y = 7$$
$$-2x - y = 9$$
$$x = 16$$

So, $x = 16$. Now, back-substitute $x = 16$ into one of the original equations of the system that contains the variable x. By back-substituting $x = 16$ into Equation 1, you can solve for y.

$$3x + y = 7$$
$$3(16) + y = 7$$
$$48 + y = 7$$
$$y = -41$$

So, the solution is $x = 16$ and $y = -41$.

31. *Sample answer:* The terms are in the same respective positions, but multiplying Equation 2 by 2 results in a pair of like terms with same coefficients. Thus, subtracting results in an equation in one variable.

$$\begin{array}{lll} 4x - 6y = 2 & & 4x - 6y = 2 \\ 2x - 3y = 1 & \text{Multiply by 2.} & \underline{4x - 6y = 2} \\ & & 0 = 0 \end{array}$$

Since $0 = 0$ is a true statement, there are infinitely many solutions.

32. Solve the system using substitution.

$$\begin{cases} 2x + 2y = 3 & \text{Equation 1} \\ x = 4y - 1 & \text{Equation 2} \end{cases}$$

Substitute $4y - 1$ from Equation 2 for x into Equation 1 and solve the resulting single-variable equation for y.

$$\begin{aligned} 2x + 2y &= 3 \\ 2(4y - 1) + 2y &= 3 \\ 8y - 2 + 2y &= 3 \\ 10y - 2 &= 3 \\ 10y &= 5 \\ y &= \tfrac{1}{2} \end{aligned}$$

Finally, you can solve for x by back-substituting $y = \frac{1}{2}$ into the equation $x = 4y - 1$.

$$\begin{aligned} x &= 4y - 1 \\ x &= 4\left(\tfrac{1}{2}\right) - 1 \\ x &= 2 - 1 \\ x &= 1 \end{aligned}$$

So, the solution is $x = 1$ and $y = \frac{1}{2}$.

33. *Sample answer:* The terms are in the same respective positions with a pair of like terms with same coefficients. Thus, subtracting will result in an equation in one variable.

$$\begin{aligned} y &= x - 4 \\ y &= -4x + 6 \\ \hline 0 &= 5x - 10 \\ -5x &= -10 \\ x &= 2 \\ y &= x - 4 \\ y &= 2 - 4 \\ y &= -2 \end{aligned}$$

So, the solution is $(2, -2)$.

34. Equation 1: (0, 1) and (1, −1)

$$m = \frac{-1 - 1}{1 - 0} = -2$$

$$y = -2x + 1$$

Since the shading is below the line and the line is dashed, the inequality is $y < -2x + 1$.

Equation 2: (0, −2) and (3, −1)

$$m = \frac{-1 - (-2)}{3 - 0} = \frac{1}{3}$$

$$y = \frac{1}{3}x - 2$$

Since the shading is above the line and the line is solid, the inequality is $y \geq \frac{1}{3}x - 2$.

The system of inequalities is: $y < -2x + 1$

$$y \geq \frac{1}{3}x - 2$$

35.

$$z = 4y + 2x + 8$$

$$z - 4y = 2x + 8$$

$$z - 4y - 8 = 2x$$

$$\frac{z - 4y - 8}{2} = \frac{2x}{2}$$

$$\frac{1}{2}z - 2y - 4 = x$$

The solved literal equation is $x = \frac{1}{2}z - 2y - 4$.

36. $x \cdot 25 = 14$

$25x = 14$

$x = 0.56$

So, 14 is 56% of 25.

41. $(x^2 + 2x + 16) + (4x^2 - 7x - 18)$

$= x^2 + 2x + 16 + 4x^2 - 7x - 18$

$= 5x^2 - 5x - 2$

42. $(-5n^3 + n^2 - 12n) - (6n^2 + 4n - 13)$

$= -5n^3 + n^2 - 12n - 6n^2 - 4n + 13$

$= -5n^3 - 5n^2 - 16n + 13$

44. $x = 0.34 \cdot 50$

$x = 17$

So, 17 is 34% of 50.

45. A translation 3 units up is a vertical translation that adds 3 to each output value.

$g(x) = f(x) + 3$

$= (2x + 1) + 3$

$= 2x + 4$

The transformed function is $g(x) = 2x + 4$.

46. A vertical shrink by a factor of $\frac{1}{2}$ multiplies each output value by $\frac{1}{2}$.

$$g(x) = \frac{1}{2}f(x)$$
$$= \frac{1}{2}\left(-3|x-4|\right)$$
$$= -\frac{3}{2}|x-4|$$

The transformed function is $g(x) = -\frac{3}{2}|x-4|$.