

### 4.3 PRACTICE

|  |  |   |   |
|--|--|---|---|
| $\begin{array}{r} \textcircled{1} \quad x + y = 2 \\ \quad x - y = 4 \\ \hline 2x = 6 \\ \quad \underline{2} \quad \underline{2} \\ x = 3 \end{array}$ | $\begin{array}{r} 3 + y = 2 \\ \quad -3 \quad -3 \\ \hline y = -1 \end{array}$ | $\begin{array}{r} \textcircled{2} \quad x + 2y = 3 \\ \quad x - y = 6 \\ \hline 3y = -3 \\ \quad \underline{3} \quad \underline{3} \\ y = -1 \end{array}$ | $\begin{array}{r} x + 2(-1) = 3 \\ x - 2 = 3 \\ \quad +2 \quad +2 \\ \hline x = 45 \end{array}$ |
| $(3, -1)$  |  | $(5, 1)$  |   |

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|---|---|--|---|
| $\begin{array}{r} \textcircled{3} \quad 2x - y = 4 \\ \quad 3x - y = 2 \\ \hline -x = 2 \\ \quad \underline{-1} \quad \underline{-1} \\ x = -2 \end{array}$ | $\begin{array}{r} 2(-2) - y = 4 \\ -4 - y = 4 \\ \quad +4 \quad +4 \\ \hline -y = 8 \\ \quad \underline{-1} \quad \underline{-1} \\ y = -8 \end{array}$ | $\begin{array}{r} \textcircled{4} \quad x - 2y = -2 \\ \quad -x + y = 3 \\ \hline -y = 1 \\ \quad \underline{-1} \quad \underline{-1} \\ y = -1 \end{array}$ | $\begin{array}{r} x - 2(-1) = -2 \\ x + 2 = -2 \\ \quad -2 \quad -2 \\ \hline x = -4 \end{array}$ |
| $(-2, -8)$  |   |  | $(-4, -1)$  |

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|--|---|--|---|
| $\begin{array}{r} \textcircled{5} \quad -x - 3y = -3 \\ \quad 2x + 3y = 5 \\ \hline x = 2 \end{array}$ | $\begin{array}{r} -2 - 3y = -3 \\ \quad +2 \quad +2 \\ \hline -3y = -1 \\ \quad \underline{-3} \quad \underline{-3} \\ y = \frac{1}{3} \end{array}$ | $\begin{array}{r} \textcircled{6} \quad x + 2y = -4 \\ \quad x + y = 2 \\ \hline y = -6 \end{array}$ | $\begin{array}{r} x + 2(-6) = -4 \\ x - 12 = -4 \\ \quad +12 \quad +12 \\ \hline x = 8 \end{array}$ |
| $(2, \frac{1}{3})$   |   | $(8, -6)$  |   |

|   |  |  |  |
|---|--|--|--|
| $\begin{array}{r} \textcircled{7} \quad 3x - 2y = 8 \\ \quad 2x - 2y = 5 \\ \hline x = 3 \end{array}$ | $\begin{array}{r} 3(3) - 2y = 8 \\ 9 - 2y = 8 \\ \quad -9 \quad -9 \\ \hline -2y = -1 \\ \quad \underline{-2} \quad \underline{-2} \\ y = \frac{1}{2} \end{array}$ | $\begin{array}{r} \textcircled{8} \quad x - 2y = 3 \\ \quad (2) \quad 3x - y = 2 \\ \hline x - 2y = 3 \\ 6x - 2y = 4 \\ \hline -5x = -1 \\ \quad \underline{-5} \quad \underline{-5} \\ x = \frac{1}{5} \end{array}$ | $\begin{array}{r} \frac{1}{5} - 2y = 3 \\ \quad -\frac{1}{5} \quad -\frac{1}{5} \\ \hline -2y = \frac{14}{5} \\ \quad \underline{-2} \quad \underline{-2} \\ y = -\frac{7}{5} \end{array}$ |
| $(3, \frac{1}{2})$  |  | $(\frac{1}{5}, -\frac{7}{5})$  |  |

|   |  |
|---|--|
| $\begin{array}{r} \textcircled{9} \quad 2x - 4y = -6 \\ \quad (2) \quad x - y = -1 \\ \hline 2x - 4y = -6 \\ \quad 2x - 2y = -2 \\ \hline -2y = -4 \\ \quad \underline{-2} \quad \underline{-2} \\ y = 2 \end{array}$ | $\begin{array}{r} 2(x) - 4(2) = -6 \\ 2x - 8 = -6 \\ \quad +8 \quad +8 \\ \hline 2x = 2 \\ \quad \underline{2} \quad \underline{2} \\ x = 1 \end{array}$ |
|   | $(1, 2)$   |

19)  $x - 3y = -7$       rearrange  $2x = 6y - 14$

$2x = 6y - 14$

$\underline{-6y \quad -6y}$

(2)  $x - 3y = -7$

$2x - 6y = -14$

$2x - 6y = -14$

$2x - 6y = -14$

$2x - 6y = -14$

$0 = 0$

**infinite solutions**

20)  $3x - 5y = -2$

$x + 3y = 4$

21)  $x + 2y = 6$

$x + 2y = 6$

(3)  $x + 3y = 4$

$x + 3(1) = 4$

$2x - 4y = -12$

$x + 2(3) = 6$

$3x - 5y = -2$

$\underline{-3 \quad -3}$

$2x + 4y = 12$

$x + 6 = 6$

$3x + 9y = 12$

$x = 1$

$2x - 4y = -12$

$\underline{-6 \quad -6}$

$\underline{-14y = -14}$

$\underline{\frac{8y = 24}{8 \quad 8}}$

$x = 0$

$\underline{-14 \quad -14}$

**(1, 1)**

$y = 3$

**(0, 3)**

$y = 1$

22)  $5x + y = 15$

rearrange  $3y = -15x + 6$

$3y = -15x + 6$

$\underline{+15x \quad +15x}$

(3)  $5x + y = 15$

$15x + 3y = 6$

$15x + 3y = 6$

$15x + 3y = 45$

$15x + 3y = 6$

$0 = 39$

**No solution**

23)  $3x = 4y - 5$

rearrange  $3x = 4y - 5$

rearrange  $12y = 9x + 15$

$12y = 9x + 15$

$\underline{-4y \quad -4y}$

$\underline{-9x \quad -9x}$

(3)  $3x - 4y = -5$

$3x - 4y = -5$

$-9x + 12y = 15$

$\underline{-9x + 12y = 15}$

$9x - 12y = -15$

$\underline{-9x + 12y = 15}$

$0 = 0$

**infinite solutions**

3.

$$\begin{array}{r}
 (24) \quad 3x - y = -2 \\
 -2x + 2y = 8 \\
 \hline
 6x - 2y = -4 \\
 -2x + 2y = 8 \\
 \hline
 4x = 4 \\
 \hline
 4 \quad 4 \\
 \hline
 x = 1
 \end{array}
 \qquad
 \begin{array}{r}
 3(1) - y = -2 \\
 3 - y = -2 \\
 -3 \quad -3 \\
 \hline
 -y = -5 \\
 -1 \quad -1 \\
 \hline
 y = 5
 \end{array}$$

$$(1, 5)$$

$$\begin{array}{r}
 (25) \quad x + 2y = -4 \\
 -3x + 2y = 4 \\
 \hline
 4x = -8 \\
 \hline
 4 \quad 4 \\
 \hline
 x = -2
 \end{array}
 \qquad
 \begin{array}{r}
 -2 + 2y = -4 \\
 +2 \quad +2 \\
 \hline
 2y = -2 \\
 2 \quad 2 \\
 \hline
 y = -1
 \end{array}$$

$$(-2, -1)$$

$$\begin{array}{r}
 (26) \quad x + y = -2 \\
 -x - y = 4 \\
 \hline
 0 = 2
 \end{array}$$

No solution

$$\begin{array}{r}
 (27) \quad 3x - 2y = -3 \\
 6y = 9x + 9 \\
 (3) \quad 3x - 2y = -3 \\
 -9x + 6y = 9 \\
 9x - 6y = -9 \\
 -9x + 6y = 9 \\
 \hline
 0 = 0
 \end{array}
 \qquad
 \begin{array}{r}
 \text{rearrange } 6y = 9x + 9 \\
 -9x \quad -9x \\
 \hline
 -9x + 6y = 9
 \end{array}$$

Infinite solutions

$$\begin{array}{r}
 (28) \quad (2) \quad -4x - 3y = 5 \\
 (3) \quad 3x - 2y = -8 \\
 -8x - 6y = 10 \\
 9x - 6y = -24 \\
 \hline
 -17x = 34 \\
 \hline
 -17 \quad -17 \\
 \hline
 x = -2
 \end{array}
 \qquad
 \begin{array}{r}
 -4(-2) - 3y = 5 \\
 8 - 3y = 5 \\
 -8 \quad -8 \\
 \hline
 -3y = -3 \\
 -3 \quad -3 \\
 \hline
 y = 1
 \end{array}$$

$$(-2, 1)$$

$$\textcircled{29} \quad (1) \quad x - 3y = 1$$

$$2x + 2y = 10$$

$$2x - 6y = 2$$

$$2x + 2y = 10$$

$$\begin{array}{r} -8y = -8 \\ \hline -8 \quad -8 \end{array}$$

$$y = 1$$

$$x - 3(1) = 1$$

$$x - 3 = 1$$

$$\begin{array}{r} +3 \quad +3 \\ \hline \end{array}$$

$$x = 4$$

$$\boxed{(4, 1)}$$

$$\textcircled{30} \quad -4x - 2y = 20$$

$$(2) \quad 2x + y = 19$$

$$-4x - 2y = 20$$

$$4x + 2y = 38$$

$$0 = 58$$

$\boxed{\text{No solution}}$