Solutions

2.1

- add: $2x = 14$, so $x = 7$
- $\boldsymbol{x = 7}$, $\boldsymbol{y = 3}$

2.2

- subtract: $(2x + y) - (x + y) = 11 - 7$, so $x = 4$
- $\boldsymbol{x = 4}$, $\boldsymbol{y = 3}$

2.3

- add: $4x = 16$, so $x = 4$
- $x - 2y = 0$ gives $y = 2$: $\boldsymbol{x = 4}$, $\boldsymbol{y = 2}$

2.4

- $3x + (2x - 1) = 14$, so $5x = 15$ and $x = 3$
- $y = 2 \times 3 - 1 = 5$: $\boldsymbol{x = 3}$, $\boldsymbol{y = 5}$

2.5

- make the y-coefficients equal: $\times 2$ gives $8x + 6y = 50$ and $\times 3$ gives $9x - 6y = 18$
- add: $17x = 68$, so $x = 4$
- $4 \times 4 + 3y = 25$, so $3y = 9$: $\boldsymbol{x = 4}$, $\boldsymbol{y = 3}$

3.1

- adding keeps both letters, so neither is eliminated; subtract instead, because the $2x$ terms match
- $(2x + 3y) - (2x - y) = 13 - 1$, so $4y = 12$ and $y = 3$
- $2x - 3 = 1$, so $\boldsymbol{x = 2}$, $\boldsymbol{y = 3}$

3.2

- pen p, ruler r: $3p + 2r = 23$ and $p + 4r = 21$
- double the first: $6p + 4r = 46$; subtract the second: $5p = 25$, so $p = 5$
- $5 + 4r = 21$, so $r = 4$: pen $\boldsymbol{¥5}$, ruler $\boldsymbol{¥4}$

3.3

- $3x - 4 = 8 - x$, so $4x = 12$ and $x = 3$
- $y = 8 - 3 = 5$: $\mathbf{P}(\boldsymbol{3}, \boldsymbol{5})$

3.4

- substitute: $x^2 + 2x + 3 = 6$, so $x^2 + 2x - 3 = 0$
- $(x + 3)(x - 1) = 0$, so $x = -3$ or $x = 1$
- $x = 1$: $y = 5$; $x = -3$: $y = -3$
- $(\boldsymbol{1}, \boldsymbol{5})$ and $(\boldsymbol{-3}, \boldsymbol{-3})$

3.5

- $y = 7 - x$, so $x^2 + (7 - x)^2 = 25$
- $2x^2 - 14x + 49 = 25$, so $x^2 - 7x + 12 = 0$
- $(x - 3)(x - 4) = 0$, so $x = 3$ or $x = 4$
- $(\boldsymbol{3}, \boldsymbol{4})$ and $(\boldsymbol{4}, \boldsymbol{3})$