## Practice Exercises

A. Find the specified term of each arithmetic sequence.

1. $2, 5, 8, \ldots$ $a_8$
2. $-11, -7, -3, \ldots$ $a_{23}$
3. $10, -2, -14, \ldots$ $a_{17}$
4. $y, x, 2x - y, \ldots$ $a_{10}$
5. $3, 3.25, 3.5, \ldots$ $a_{16}$

B. Find the specified term.

1. $18^{th}$ term of the arithmetic sequence if $a_1 = 25$ and $d = -2$.
2. $11^{th}$ term if $a_1 = -15$ and $d = 6$.
3. In the sequence 2, 6, 10,..., what term has a value of 106?
4. In the sequence 7, 4, 1,..., what term has a value of -296?
5. If $a_{11} = 110$ and $a_{28} = 280$, find $a_{21}$.
6. If $a_{10} = 14$ and $a_{37} = 122$, find $a_{25}$.

**Problem Set**

A. Find the specified term of each arithmetic sequence.

1. $3, 5, 7, \ldots \quad a_{21}$
2. $1.4, 4.5, 7.6, \ldots \quad a_{51}$
3. $x-2, 4x, 7x+2, \ldots \quad a_{12}$
4. $14, 6, -2, \ldots \quad a_{28}$
5. $5, -1, -7, \ldots \quad a_{18}$

B. Find the specified term.

1. $17^{th}$ term of the sequence if $a_8 = 5$ and $a_{21} = -60$.
2. $5^{th}$ term of the sequence if $a_{15} = 29$ and $a_{27} = 47$.
3. If $a_{24} = 85$ and $a_{28} = 100$, $a_1$=?
4. If $a_1 = -4$ and $a_{25} = -100$, $a_{101}$=?

## Problem Set

### A.

1. $3, 5, 7, \ldots a_{21}$

$a_1 = 3,\ n = 21,$

$d = 5 - 3 = 2$

$a_{21} = 3 + (21 - 1)(2)$

$a_{21} = 43$

2. $1.4, 4.5, 7.6, \ldots a_{51}$

$a_1 = 1.4,\ n = 51,$

$d = 4.5 - 1.4 = 3.1$

$a_n = a_1 + (n - 1)d$

$a_{51} = 1.4 + (51 - 1)(3.1)$

$a_{51} = 156.4$

3. $x - 2, 4x, 7x + 2, \ldots a_{12}$

$a_1 = x - 2,\ n = 12,$

$d = 4x - (x - 2)$

$d = 3x + 2$

$a_n = a_1 + (n - 1)d$

$a_{12} = x - 2 + (12 - 1)(3x + 2)$

$a_{12} = 34x + 20$

4. $14, 6, -2, \ldots a_{28}$

$a_1 = 14,\ n = 28,$

$d = 6 - 14 = -8$

$a_n = a_1 + (n - 1)d$

$a_{28} = 14 + (28 - 1)(-8)$

$a_{28} = -202$

5. $5, -1, -7, \ldots a_{18}$

$a_1 = 5,\ n = 18,$

$d = -1 - 5 = -6$

$a_n = a_1 + (n - 1)d$

$a_{18} = 5 + (18-1)(-6)$

$a_{18} = -97$

B.

1. $a_8 = 5,\ a_{21} = -60,$
$n = 17,\ a_{17} = ?$
$d = \dfrac{a_n - a_k}{n-k}$
$d = \dfrac{a_{21} - a_8}{21-8}$
$d = \dfrac{-60-5}{13}$
$d = -5$
$a_n = a_1 + (n-1)d$
$a_8 = a_1 + (8-1)(-5)$
$5 = a_1 - 35$
$a_1 = 40$
$a_n = a_1 + (n-1)d$
$a_{17} = 40 + (17-1)(-5)$
$a_{17} = -40$

2. $a_{15} = 29,\ a_{27} = 47,$
$n = 5,\ a_5 = ?$
$d = \dfrac{a_n - a_k}{n-k}$
$d = \dfrac{a_{27} - a_{15}}{27-15}$
$d = \dfrac{47-29}{12}$
$d = 1.5$
$a_n = a_1 + (n-1)d$
$a_{15} = a_1 + (15-1)(1.5)$
$29 = a_1 + 21$

$a_1 = 8$

$a_n = a_1 + (n-1)d$

$a_5 = 8 + (5-1)(1.5)$

$a_5 = 14$

3. $a_{24} = 85,\ a_{28} = 100,$

$n = 1,\ a_1 = ?$

$$d = \frac{a_n - a_k}{n-k}$$

$$d = \frac{a_{28} - a_{24}}{28-24}$$

$$d = \frac{100-85}{4}$$

$d = 3.75$

$a_n = a_1 + (n-1)d$

$a_{24} = a_1 + (24-1)(3.75)$

$85 = a_1 + 86.25$

$a_1 = -1.25$

4. $a_1 = -4,\ a_{25} = -100,$

$n = 101,\ a_{101} = ?$

$$d = \frac{a_n - a_k}{n-k}$$

$$d = \frac{a_{25} - a_1}{25-1}$$

$$d = \frac{-100-(-4)}{24}$$

$d = -4$

$a_n = a_1 + (n-1)d$

$a_{101} = -4 + (101-1)(-4)$

$a_{101} = -404$