

## Chapter 1 BLM Answers

### BLM 1-2 Chapter 1 Prerequisite Skills

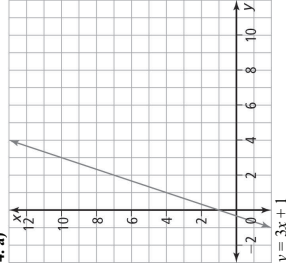
- Non-linear. Each increase in the value of  $r$  increases the value of  $A$  by a different amount.
- Linear. Each increase in the value of  $x$  increases the value of  $y$  by the same amount, 5.
- Non-linear. Each increase in the value of the first coordinate increases the value of the second coordinate by a different amount.
- Linear. The same increase in the value of the first coordinate (2) increases the value of the second coordinate by the same amount, 5.

Term Number	Value
1	9
2	16
3	23
4	30
5	37

- $y = 7t + 2$  c) 499 d)  $t = 19$

Term Number	Value
1	-4
2	-9
3	-14
4	-19
5	-24

- $y = -5t + 1$   
Substitute  $t = 3$ . The result should be -14.  
 $y = -5(3) + 1$   
 $y = -15 + 1$   
 $y = -14$
- 244 d)  $t = 18$



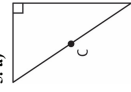
### BLM 1-10

- slope = 4,  $y$ -intercept = -1

$x$	$y$
0	-1
1	3
2	7
3	11
4	15
5	19

### Section 1.2

- arithmetic sequence,  $t_1 = 2, d = 2$   
not arithmetic sequence
- arithmetic,  $t_1 = 1, d = 3$
- arithmetic,  $t_1 = -6, d = 5$
- $t_n$  is the general term,  $t_1$  is the first term,  $n$  is the number of terms, and  $d$  is the common difference.  
b)  $t_{26} = 78$  c)  $t_1 = -5$  d)  $t_n = 2 + 4(n - 1)$
- $y = 6x$  b)  $y = 2x + 1$  c)  $y = 18 + 36x$
- $x = -\frac{13}{19}, y = \frac{28}{19}$



### Section 1.3

- arithmetic,  $t_1 = 2, d = 2$
- not arithmetic because you multiply by 2 to find each successive term
- arithmetic,  $t_1 = 5, d = -2$
- not arithmetic because you multiply by  $\frac{1}{2}$  to find each successive term
- $t_n = 3n - 9$  b)  $S_{10} = 75$
- 48 cm  $\times$  38.4 cm b)  $15 \text{ cm} \times 12 \text{ cm}$
- 3.56 b) 1.49 c) 1.51 d)  $s = 11.67$
- $r = 27$  b)  $r = 51.2$

### Section 1.4

- neither b) arithmetic c) geometric
- geometric c) arithmetic
- $r = -3, -54, 162, t_n = 2(-3)^{n-1}$
- $r = \frac{2}{3}, \frac{80}{81}, \frac{-160}{243}, t_n = 5\left(\frac{-2}{3}\right)^{n-1}$
- Solve  $2(7)^{n-1} = 4802$  to get  $n = 5$ .

### BLM 1-10 (continued)

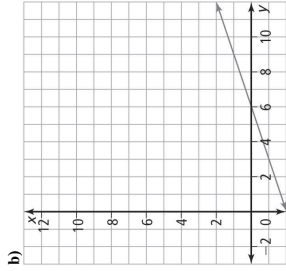
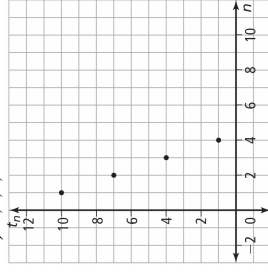
- $r = 5$  b)  $r = \frac{1}{6}$
- $t_1 = 7, r = 4, t_n = 7(4)^{n-1}$

### Section 1.5

- arithmetic,  $S_{18} = -\frac{45}{2}$  or -22.5
- geometric,  $S_{18} = 6.0$  c) arithmetic,  $S_{18} = 639$
- geometric,  $S_{18} = 3\ 145\ 716$
- $t_1 = 1, r = -\frac{1}{3}$  and  $n = 11$
- $t_n = 1\left(-\frac{1}{3}\right)^{n-1}$  c)  $S_{11} = 0.75$
- 6, 3,  $\frac{3}{2}, \frac{3}{4}, \frac{3}{8}$
- The length from A to G would be  $\frac{3}{16}$  cm or 0.1875 cm.
- 0.2 b) 0.23 c) 0.047
- $\frac{27}{25}$  b)  $\frac{343}{540}$
- 0.06 b) 0.02 c) 0.00

### BLM 1-4 Section 1.1 Extra Practice

- arithmetic;  $t_1 = 4, d = 3; 16, 19, 22$
- arithmetic;  $t_1 = 12, d = -5; -8, -13, -18$
- not arithmetic d) not arithmetic
- arithmetic;  $t_1 = x, d = 2; x + 8, x + 10, x + 12$
- $-5, -7, -9, -11$  b) 10, 9.5, 9, 8.5
- $3, 3 + x, 3 + 2x, 3 + 3x$  d)  $\frac{7}{3}, \frac{8}{3}, \frac{9}{3}$
- 10, 7, 4, 1



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

- $y = -2x + 6$  b)  $y = -3x - 9$  c)  $y = -\left(\frac{5}{6}\right)x + \frac{4}{3}$
- $y = 6x - 4$  e)  $y = 7x + 9$  f)  $y = 2x - \frac{3}{4}$
- 125 b) 1296 c)  $\frac{1}{16}$  or 0.0625 d)  $\frac{4}{9}$
- 2 b) 3 c)  $\frac{1}{3}$  d)  $-\frac{2}{3}$
- $\frac{1}{12x^4}$  b)  $\frac{t^3}{s^2}$  c)  $8t^4$  d)  $x^6y^3$

Number of 2-min Intervals	Amount of Protractium
0	1000
1	500
2	250
3	125
4	62.5
5	31.25

b) 12 min

### BLM 1-3 Chapter 1 Warm-Up

#### Section 1.1

- The first term is 2. The common difference is 2.
- The first term is 1. The common difference is 3.
- The first term is 5. The common difference is 6.
- $x = 13$  b)  $x = -29$
- $g(1) = -5$  b)  $g(0) = -11$  c)  $g(-3) = -29$
- $x = 19\frac{1}{2}$  b)  $x = 38$



2. a)  $7, -21, 63, -189$   
 b)  $-8, -4, -2, -1$   
 c)  $3, 1.8, 1.08, 0.648$   
 d)  $-4, 16, -64, 256$   
 3. a) 10 b) 14 c) 7 d) 12  
 4. a)  $t_n = 2(7)^{n-1}$  b)  $t_n = 6(-3)^{n-1}$   
 c)  $t_n = 7(4)^{n-1}$  d)  $t_n = 4096\left(\frac{1}{4}\right)^{n-1}$   
 5. a) 126, 882 b)  $\frac{4}{3}, 12, 36$  c)  $\pm 10, 20, \pm 40$   
 6. 4  
 7. a)  $t_1 = 9 \square 10^0, r = \pm 0.01,$   
 $t_n = (9 \square 10^0)(\pm 0.01)^{n-1}$   
 b)  $t_1 = -48, r = -6, t_n = (-48)(-6)^{n-1}$   
 c)  $t_1 = 1.75, r = \pm 2, t_n = (1.75)(\pm 2)^{n-1}$   
 d)  $t_1 = \pm 6, r = \pm 0.5, t_n = (6)(\pm 0.5)^{n-1}$   
 8. a)  $x = 2$  b)  $y = \frac{6}{10}$  or  $\frac{3}{5}$   
 9. 384  
 10. a) \$211,200, \$185,856, \$163,553  
 b)  $t_n = 240,000(0.88)^{n-1}, t_n =$  value of digger,  
 in dollars,  $n - 1 =$  years since purchase  
 c) \$98,082 d) 6 years

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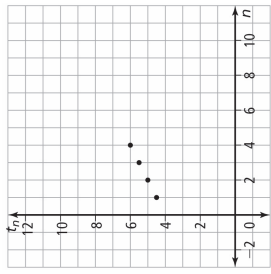
**BLM 1-7 Section 1.4 Extra Practice**

1. a) geometric series, the common ratio is 1.2  
 b) geometric series, the common ratio is  $-0.2$   
 c) geometric series, the common ratio is  $\frac{2}{5}$   
 d) not geometric, no common ratio  
 2. a)  $t_1 = 0.43, r = 0.01, S_8 = \frac{43}{99}$   
 b)  $t_1 = 5, r = -1, S_{10} = 0$   
 c)  $t_1 = -100, r = -0.5, S_7 = \frac{-1075}{16}$   
 3. a) 232.05 b)  $-4092$  c)  $\frac{-155}{16}$  d) 12,285  
 4. a) 531,440 b) 4095 c)  $\frac{3367}{128}$   
 5. a) 1.2 b) 3  
 6. a) 6 b) 9  
 7. 1916.25 8. 4  
 9. a) 10, 30, 90, 270 b) 12, 6, 3, 1.5  
 10. 94.2 m

**BLM 1-8 Section 1.5 Extra Practice**

1. a) convergent b) convergent c) convergent  
 d) divergent  
 2. a)  $-20$  b) 6 c) does not exist d)  $\frac{5}{4}$  e)  $24$  f)  $-\frac{8}{7}$

- b)  $4, \frac{1}{2}, 5, 5, \frac{1}{2}, 6$



4. a)  $t_n = 4n + 2; t_{50} = 202$  b)  $t_n = \frac{7}{2}n - 1; t_{50} = -21\frac{1}{2}$   
 5. a) 77 b) 26  
 6. a) 4,  $\frac{8}{3}, \frac{16}{9}, 16$  b)  $\frac{10}{3}, 8, \frac{16}{3}, 4, 2$   
 c) 20,  $\frac{14}{3}, \frac{8}{3}, \frac{2}{3}, \frac{1}{3}, -10$   
 7.  $t_1 = 12, t_n = 5n + 7, t_{40} = 207$   
 8. a)  $t_1 = -15, d = 4, t_n = 4n - 19$   
 b)  $t_1 = 93, d = -3, t_n = 96 - 3n$   
 9.  $x = \frac{10}{3}, \frac{25}{3}, 8, \frac{2}{3}$   
 10. a) 15, 18 b)  $t_n = 3n + 3$   
 c) 63 asterisks d) 41st diagram

**BLM 1-5 Section 1.2 Extra Practice**

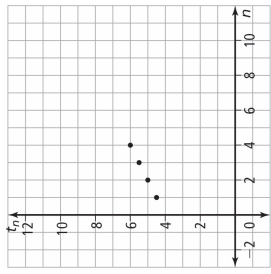
1. a)  $-936$  b) 232.5 c) 252.5 or  $252\frac{1}{2}$   
 2. a) 378 b) 0 c) 400x  
 3. a) 15 b) 25 c) 21  
 4. a)  $t_{12} = -41, S_{12} = -228$  b)  $t_{12} = \frac{47}{5}, S_{12} = 60$   
 5. a) 413 b)  $95\sqrt{3}$   
 6. 71,071 7. 2850 8.  $t_n = 8, t_6 = 40$   
 9. a)  $S_7 = 7, S_8 = 20, S_9 = 39, S_{10} = 64, S_{11} = 95$   
 b)  $t_1 = 7, t_2 = 13, t_3 = 19, t_4 = 25, t_5 = 31$   
 c)  $S_5 = 3(5^2 + 4(5)) = 95$   
 10.  $6 + 11 + 16 + \dots + t_{20} = \$1070$ . Therefore, the arithmetic series method pays more money.

**BLM 1-6 Section 1.3 Extra Practice**

1. a) geometric,  $r = 3, t_n = 11(3)^{n-1}$   
 b) not geometric c) geometric,  $r = 2, t_n = \frac{1}{3}(2)^{n-1}$   
 d) geometric,  $r = 0.4, t_n = (0.5)(0.4)^{n-1}$

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**BLM 1-6 Section 1.3 Extra Practice**

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 b) not geometric c) geometric,  $r = 2, t_n = \frac{1}{3}(2)^{n-1}$   
 d) geometric,  $r = 0.4, t_n = (0.5)(0.4)^{n-1}$

