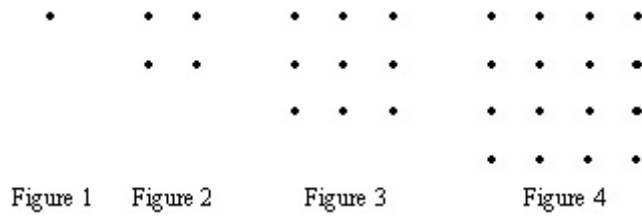


# Sequences

Arithmetic (Linear), Quadratic, Cubic

1. What type of function best models the sequence of dots shown below?



- (A) cubic
- (B) exponential
- (C) linear
- (D) quadratic

2. What type of function would best model this data?

$x$	-1	0	1	2	3
$y$	37	26	17	10	5

- (A) cubic
- (B) exponential
- (C) linear
- (D) quadratic

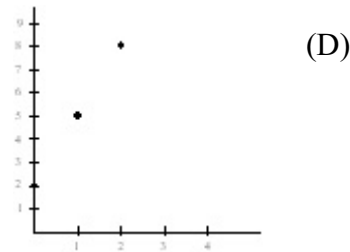
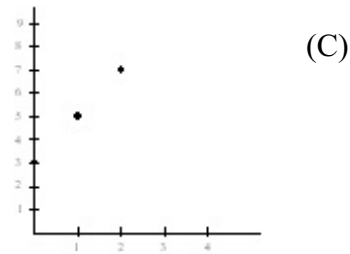
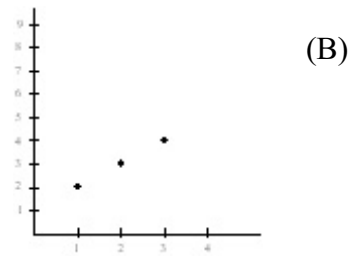
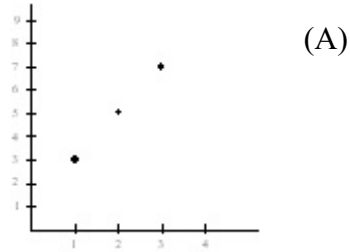
3. Which describes the sequence  $\{1, -1, -3, -5, -7, \dots\}$ ?

- (A)  $t_n = -2n - 3$
- (B)  $t_n = -2n + 1$
- (C)  $t_n = -2n + 3$
- (D)  $t_n = -2n - 1$

4. Which function represents the sequence  $\{10, 15, 20, 25, \dots\}$ ?

- (A)  $t_n = 5n$
- (B)  $t_n = 5n + 5$
- (C)  $t_n = 5n + 10$
- (D)  $t_n = 5^n$

5. The common difference between terms in a linear sequence,  $t_n$ , is 2. If  $t_1 = 3$ , which best illustrates the graph of  $t_n$ ?



6. What type of function would best model the data in this table?

$x$	2	4	6	8
$y$	9	10	11	12

- (A) cubic  
(B) exponential  
(C) linear  
(D) quadratic
7. Which set of data could be modeled by a quadratic function?

(A) 

$x$	0	1	2	3
$y$	1	2	4	8

(B) 

$x$	-1	0	1	2
$y$	1	0	1	4

(C) 

$x$	1	2	3	4
$y$	6	8	10	12

(D) 

$x$	2	4	6	8
$y$	1	1	1	1

8. The graph of a sequence is shown. What is the common difference between successive terms?

- (A)  $\frac{1}{2}$   
(B) 2  
(C) 3  
(D) 6

9. What is the value of  $d_2$  for the quadratic sequence given by  $t_n = 0.5n^2 - 3n + 2$ ?

- (A)  $\frac{1}{2}$
- (B) 1
- (C)  $\frac{3}{2}$
- (D) 2

10. For the given table of values, which represents  $t_n$ ?

$n$	1	2	3	4	5
$t_n$	10	19	28	37	46

- (A)  $t_n = 9n + 19$
  - (B)  $t_n = 10n + 1$
  - (C)  $t_n = 9n + 1$
  - (D)  $t_n = -9n + 19$
11. Which graph represents a quadratic relationship?

(A)

(B)

(C)

(D)

12. Which represents a quadratic relationship?

(A)

(B)

(C)

(D)

13. What is the second level difference for the quadratic relation illustrated in the table?

- (A) 0  
 (B) 2  
 (C) 3  
 (D) 4

$x$	-1	0	1	2
$y$	0	-1	2	9

14. Which represents a quadratic relationship?

- (A) 

$x$	0	1	2	3	4
$y$	6	7	8	9	10
- (B) 

$x$	0	2	4	6	8
$y$	2	5	14	29	50
- (C) 

$x$	0	1	2	3	4
$y$	1	3	9	27	81
- (D) 

$x$	0	2	4	6	8
$y$	0	2	16	54	128

15. For the sequence shown, what is  $t_n$ ?

$$\left\{1, \frac{1}{2}, 2, \frac{1}{2}, 3, \dots\right\}$$

- (A)  $t_n = \frac{1}{2}n - \frac{1}{2}$   
 (B)  $t_n = \frac{3}{2}n - \frac{1}{2}$   
 (C)  $t_n = \frac{3}{2}n + \frac{1}{2}$   
 (D)  $t_n = \frac{1}{2}n + \frac{1}{2}$

16. What type of function is illustrated by the graph shown?

- (A) cubic  
 (B) exponential  
 (C) linear  
 (D) quadratic

17. Which rule describes the sequence  $\{-4, -9, -14, -19, -24, \dots\}$  where  $n \in \mathbb{N}$ ?

- (A)  $t_n = -5n - 9$
- (B)  $t_n = -5n - 1$
- (C)  $t_n = -5n + 1$
- (D)  $t_n = -5n + 9$

18. What is the value of  $D_2$  for the sequence generated by  $t_n = 4n^2 - 7n + 2$ ?

- (A) 2
- (B) 4
- (C) 6
- (D) 8

19. What type of sequence is  $\{-5, 1, 25, 79, 175, 325, \dots\}$ ?

- (A) linear
- (B) quadratic
- (C) exponential
- (D) cubic

20. Which type of sequence is generated by the pattern shown?

- (A) arithmetic
- (B) cubic
- (C) geometric
- (D) quadratic

21. If  $t_n = 2n^2 + 3n - 1$ , what is the value of  $t_3$ ?

- (A) 14
- (B) 20
- (C) 26
- (D) 44

22. Which formula generates the sequence represented by the graph shown?

(A)  $t_n = -2n + 10$

(B)  $t_n = -n + 10$

(C)  $t_n = -n + 8$

(D)  $t_n = -2n + 8$

23. Which represents a quadratic relationship?

(A) 

$x$	1	2	3	4	5
$y$	13	21	29	37	45

(B) 

$x$	2	3	4	5	6
$y$	4	6	12	22	36

(C) 

$x$	1	2	3	4	5
$y$	5	10	20	40	80

(D) 

$x$	2	4	6	8	10
$y$	8	64	216	512	1000

24. Which type of sequence is illustrated by  $\{4, 2, 7, 21, 46, 84\}$ ?

- (A) arithmetic
- (B) cubic
- (C) geometric
- (D) quadratic

25. Which function describes the sequence  $\{-8, -11, -14, -17, -20, \dots\}$ ?

(A)  $t_n = -3n - 8$

(B)  $t_n = 3n - 11$

(C)  $t_n = -3n - 5$

(D)  $t_n = -8n - 3$

26. If  $t_n = 2n - 3$ , for what value of 'n' is  $t_n = 5$ ?

(A) -1

(B) 1

(C) 4

(D) 7

27. Which represents a quadratic relationship?

(A) 

x	1	2	3	4	5
y	4	7	12	19	28

(B) 

x	3	4	5	6	7
y	-2	1	4	7	10

(C) 

x	1	2	3	4	5
y	2	8	32	128	512

(D) 

x	2	4	6	8	10
y	8	64	216	512	1000

Answers Sequences

- |              |              |
|--------------|--------------|
| 1. <b>D</b>  | 23. <b>B</b> |
| 2. <b>D</b>  | 24. <b>B</b> |
| 3. <b>C</b>  | 25. <b>C</b> |
| 4. <b>B</b>  | 26. <b>C</b> |
| 5. <b>A</b>  | 27. <b>A</b> |
| 6. <b>C</b>  |              |
| 7. <b>B</b>  |              |
| 8. <b>D</b>  |              |
| 9. <b>B</b>  |              |
| 10. <b>C</b> |              |
| 11. <b>C</b> |              |
| 12. <b>D</b> |              |
| 13. <b>D</b> |              |
| 14. <b>B</b> |              |
| 15. <b>D</b> |              |
| 16. <b>D</b> |              |
| 17. <b>C</b> |              |
| 18. <b>D</b> |              |
| 19. <b>D</b> |              |
| 20. <b>D</b> |              |
| 21. <b>C</b> |              |
| 22. <b>A</b> |              |

