

7. Code Words How many five-character code words are there if the first character is always a letter and the other characters are letters and/or digits?

10. Forming Committees A club has 45 members, and its membership committee has three members. How many different membership committees are possible?

35. Coin Toss A fair coin is tossed six times. Find the probability of the event “HHTHTT.”

In Exercises 47 and 48, find the first 6 terms and the 40th term of the sequence.

47. $a_n = \frac{n^2 - 1}{n + 1}$

48. $b_k = \frac{(-2)^k}{k + 1}$

In Exercises 55–62, the sequences are arithmetic or geometric. Find an explicit formula for the n th term. State the common difference or ratio.

55. 12, 9.5, 7, 4.5, ...

56. -5, -1, 3, 7, ...

57. 10, 12, 14.4, 17.28, ...

58. $\frac{1}{8}, -\frac{1}{4}, \frac{1}{2}, -1, \dots$

61. The fourth and ninth terms of a geometric sequence are -192 and $196,608$, respectively.

62. The third and eighth terms of an arithmetic sequence are 14 and -3.5 , respectively.

In Exercises 63–66, find the sum of the terms of the arithmetic sequence.

65. $2.5, -0.5, -3.5, \dots, -75.5$

In Exercises 67–70, find the sum of the terms of the geometric sequence.

69. $2, 6, 18, \dots, 39,366$

In Exercises 83–86, write the sum in sigma notation.

83. $-8 - 3 + 2 + \cdots + 92$

84. $4 - 8 + 16 - 32 + \cdots - 2048$

85. $1^2 + 3^2 + 5^2 + \cdots$

86. $1 + \frac{1}{2} + \frac{1}{2^2} + \frac{1}{2^3} + \cdots$

In Exercises 77–82, determine whether the geometric series converges. If it does, find its sum.

$$77. \sum_{j=1}^{\infty} 2\left(\frac{3}{4}\right)^j$$

$$78. \sum_{k=1}^{\infty} 2\left(-\frac{1}{3}\right)^k$$

$$79. \sum_{j=1}^{\infty} 4\left(-\frac{4}{3}\right)^j$$

$$80. \sum_{k=1}^{\infty} 5\left(\frac{6}{5}\right)^k$$

$$81. \sum_{k=1}^{\infty} 3(0.5)^k$$

$$82. \sum_{k=1}^{\infty} (1.2)^k$$