

EXAMPLES 5 and 6

on p. 797
for Exs. 45–58

USING SUMMATION NOTATION Find the sum of the series.

45. $\sum_{i=1}^6 2i$

46. $\sum_{i=1}^5 7i$

47. $\sum_{n=0}^4 n^3$

48. $\sum_{k=1}^4 3k^2$

49. $\sum_{k=3}^6 (5k - 2)$

50. $\sum_{n=1}^5 (n^2 - 1)$

51. $\sum_{i=1}^8 \frac{2}{i}$

52. $\sum_{k=1}^6 \frac{k}{k+1}$

53. $\sum_{i=1}^{35} 1$

54. $\sum_{n=1}^{16} n$

55. $\sum_{i=1}^{25} i$

56. $\sum_{n=1}^{18} n^2$

57. **ERROR ANALYSIS** Describe and correct the error in finding the sum of the series.

$\sum_{i=0}^5 (2i + 3) = 5 + 7 + 9 + 11 + 13 = 45$

58. **TAKS REASONING** What is the sum of the series $\sum_{i=1}^{20} i$?

(A) 20

(B) 210

(C) 420

(D) 2870

REVIEW LOGIC

For help with counterexamples see p. 1002.

CHALLENGE Tell whether the statement about summation notation is *true* or *false*. If the statement is true, prove it. If the statement is false, give a counterexample.

59. $\sum_{i=1}^n ka_i = k \sum_{i=1}^n a_i$

60. $\sum_{i=1}^n (a_i + b_i) = \sum_{i=1}^n a_i + \sum_{i=1}^n b_i$

61. $\sum_{i=1}^n a_i b_i = \left(\sum_{i=1}^n a_i \right) \left(\sum_{i=1}^n b_i \right)$

62. $\sum_{i=1}^n (a_i)^k = \left(\sum_{i=1}^n a_i \right)^k$

PROBLEM SOLVING

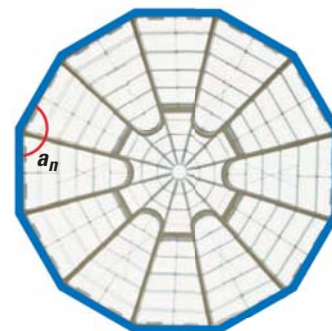
EXAMPLES 3 and 6

on pp. 795–797
for Exs. 63–64

63. **GEOMETRY** For a regular n -sided polygon ($n \geq 3$), the measure a_n of an interior angle is given by this formula:

$$a_n = \frac{180(n - 2)}{n}$$

Write the first five terms of the sequence. Write a rule for the sequence giving the total measure T_n of the interior angles in each regular n -sided polygon. Use the rule to find the total measure of the angles in the Guggenheim Museum skylight, which is a regular dodecagon.



Guggenheim Museum Skylight

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64. **TAKS REASONING** You want to save \$500 for a school trip. You begin by saving a penny on the first day. You plan to save an additional penny each day after that. For example, you will save 2 pennies on the second day, 3 pennies on the third day, and so on. How much money will you have saved after 100 days? How many days must you save to have saved \$500? *Explain* how you used a series to find your answer.

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