1) The first and last terms in each arithmetic series are given. Determine the sum of the series.

a) $a = \frac{1}{2}$ and $t_8 = 4$

b) $a = 11$ and $t_{20} = 101$

2) Determine the sum of the arithmetic series -1+2+5+...+164.

3) The 15th term in an arithmetic sequence is 43 and the sum of the first 15 terms of the series is 120. Determine the first three terms of the sequence.

4) A toy car is rolling down an inclined track and picking up speed as it goes. The car travels 4 cm in the first second, 8 cm in the second second, 12 cm in the next second, and so on. Determine the total distance travelled by the car in 30 seconds.

5) For each geometric series, determine the values of a and r. Then, determine the indicated sum.

a) S_8 for $2 + 6 + 18 + \cdots$

b) S_{10} for $24 - 12 + 6 - \cdots$

6) Determine the sum of the geometric series $\frac{1}{3} + \frac{2}{9} + \frac{4}{27} + \frac{8}{81} + \cdots + \frac{128}{6561}$

7) Determine the sum of the geometric series $5 - 15 + 45 - \cdots + 3645$

8) The sum of $4 + 12 + 36 + 108 + \cdots + t_n$ is 4372. How many terms are in this series?

9) The third term of a geometric series is 24 and the fourth term is 36. Determine the sum of the first 10 terms.

Answers

1) a) 18 **b)** 1120

2) 4564

3) -27, -22, -17

4) 1860 cm

5) a) $S_8 = 6560$ **b)** $S_{10} = \frac{1023}{64}$

6) $S_8 = \frac{6305}{6561}$

7) $S_7 = 2735$

8) 7 terms

9) $S_{10} = \frac{58025}{48}$