

$$\{ \dots, 1^2 \} \cup \{ \dots, 9^2 \} \rightarrow \{ \omega, \dots, 6^2 \} \cup \{ \omega, \dots, 1^2 \}$$

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$$\frac{11 + 6\omega}{2} = \boxed{73}$$

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$$\{1, 2, 3\} \cup \{4, \dots, 12\} \cup \{13, \dots, 24\} \cup \{25, \dots, 36\} \cup \{37, \dots, 48\}$$

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$$\frac{363 + 121}{2} = \boxed{242}$$

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$$\frac{4}{1} + a + \frac{2}{2} + \frac{2}{2} + \frac{1+a}{2} + \frac{4}{2} + \frac{0}{2} + \frac{2+a}{2} + \frac{1}{2} + \frac{-2}{2}$$

$$S_6 = 4 + 1 + a + 2 + 2 + 1 + a + 4 + 0 + 2 + a + 1 - 2 = 19 \Rightarrow 22 + 2a = 19 \Rightarrow 2a = -3 \Rightarrow a = -1$$

$$\frac{0}{2} + \frac{0}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} \rightarrow 0 + 0 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 = \boxed{8}$$

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$$x n^2 + y n + z$$

$$x = \frac{1}{V_0} \times (-14) = -0.12$$

$$\left. \begin{aligned} n=0 & \rightarrow -0.12 \times 2\omega + \omega x + z = 14 \Rightarrow -\omega + \omega x + z = 14 \\ n=1 & \rightarrow -0.12 \times 49 + 7\omega x + z = 17/2 \Rightarrow -9/1 + 7\omega x + z = 17/2 \end{aligned} \right\} \Rightarrow -4/1 + 2\omega x = 3/2$$

$$\Rightarrow y = 1 \Rightarrow y = 2 \Rightarrow -\omega + \omega(2) + z = 14 \Rightarrow -\omega + 2\omega + z = 14 \Rightarrow \omega + z = 14 \Rightarrow z = -1$$

$$\rightarrow a_n = -0.12n^2 + 2n - 1 \Rightarrow \frac{a_n}{a_1} = \frac{-0.12n^2 + 2n - 1}{-0.12 + 2 - 1} = \frac{12n^2 - 20n + 1}{1} = \boxed{12n^2 - 20n + 1}$$

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$$\left. \begin{aligned} a_r &= a'_r \Rightarrow a + rd = a' + d' \\ a_1 &= a'_1 \Rightarrow a + d = a' + d' \end{aligned} \right\} \Rightarrow rd = \omega d' \Rightarrow d' = \frac{rd}{\omega}$$

$$a'_0 = a' + 9d' = 0 \Rightarrow a' = -9d'$$

$$\frac{a'_0}{d} = \frac{a' + 14d'}{d} = \frac{-9d' + 14d'}{d} = \frac{5d'}{d} = \frac{\omega(\frac{rd}{\omega})}{d} = \frac{rd}{d} = \boxed{r}$$

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$$a, b, c \rightarrow a, a+da+rd$$

$$b = \frac{a}{r}, \frac{c}{r} \rightarrow d+a, \frac{a}{r}, \frac{a+rd}{r}$$

$$\frac{a^r}{r} = \frac{a^r + rda + rd^r}{r} \Rightarrow a^r = a^r + rda + rd^r \Rightarrow rda + rd^r = 0 \Rightarrow rda = -rd^r \Rightarrow ra = -rd$$

$$\Rightarrow a = \frac{-rd}{r} \Rightarrow d = \frac{-ra}{r}$$

$$r \left| \frac{-ra}{r} \right| = \boxed{ra}$$

$$a, b, c \rightarrow a, aq, aq^r \rightarrow r, ra, c \rightarrow raq, ra, aq^r$$

$$rb = a + c \Rightarrow ra = raq + aq^r \Rightarrow r = ra + q^r \Rightarrow q^r + ra - r = 0 \Rightarrow q = 1, -r \Rightarrow q = r$$

$$\frac{aq}{q^r} = \frac{aq^r}{aq^d} = q^r = r = \boxed{qr}$$

$$\frac{aq^d}{a^r q^r} + \frac{aq}{a^r} = \frac{q^r}{a^r} + \frac{q}{a} = r$$

$$\frac{aq^r + a^r q}{a^r} = r \Rightarrow aq(q+a) = ra^r \Rightarrow q(q+a) = ra^r \Rightarrow q^r + aq = ra^r \Rightarrow a^r = \frac{q^r + aq}{r}$$

$$\Rightarrow aq = ra^r - q^r \quad \frac{a^r}{aq} = \frac{\frac{q^r + aq}{r}}{\frac{ra^r - q^r}{r}} = \frac{q^r + aq}{ra^r - q^r}$$

$$\sqrt{a^r} = a^r \Rightarrow \sqrt{aq^r} = aq^r \Rightarrow aq^r = a^r q^r \Rightarrow aq = 1 \Rightarrow a = \frac{1}{q}$$

$$a_d = rV \Rightarrow aq^r = rV \Rightarrow \frac{1}{q} \cdot q^r = rV \Rightarrow q^r = rV \Rightarrow q = r \Rightarrow a = \frac{1}{r}$$

$$\left| \frac{1}{r} - \frac{1}{r} \right| = \left| \frac{r}{r} - \frac{r}{r} \right| = \left| -\frac{1}{r} \right| = \boxed{\frac{1}{r}}$$