

Solutions to Sequences Practice Worksheet

① $6, 12, 18, 24, \dots$

Arithmetic

$d = 6$

② $6, 11, 17$

Neither

③ $2, 14, 98, 686, \dots$

Geometric

$r = 7$

④ $160, 80, 40, 20, \dots$

Geometric

$r = \frac{1}{2}$

⑤ $-40, -25, -10, 5, \dots$

Arithmetic

$d = 15$

⑥ $7, -21, 63, -189, \dots$

Geometric

$r = -3$

$$\textcircled{7} \quad -10, -4, 2, 8, 14, \dots$$

$$a_1 = -10$$

$$d = 6$$

$$a_n = -10 + (n-1)6$$

$$a_n = \underline{-10} + 6n - \underline{6}$$

$$a_n = 6n - 16$$

$$\textcircled{8} \quad 10, 8, 6, 4, \dots$$

$$a_1 = 10$$

$$d = -2$$

$$a_n = 10 + (n-1)(-2)$$

$$a_n = 10 - 2n + 2$$

$$a_n = -2n + 12$$

$$\textcircled{9} \quad 36, 31, 26, 21, \dots$$

$$a_1 = 36$$

$$d = -5$$

$$a_n = 36 + (n-1)(-5)$$

$$a_n = 36 - 5n + 5$$

$$a_n = -5n + 41$$

$$\textcircled{10} \quad a_n = -5n + 41$$

$$a_7 = -5(7) + 41 = -35 + 41 = \boxed{6}$$

$$a_{20} = -5(20) + 41 = -100 + 41 = \boxed{-59}$$

$$\textcircled{11} \quad 1, 3, 9, 27, \dots$$

$$a_1 = 1$$

$$r = 3$$

$$a_n = 1 \cdot (3)^{n-1}$$

$$\boxed{a_n = (3)^{n-1}}$$

$$\textcircled{12} \quad 12, 6, 3, 1.5, \dots$$

$$a_1 = 12$$

$$r = \frac{1}{2}$$

$$\boxed{a_n = 12 \cdot \left(\frac{1}{2}\right)^{n-1}}$$

$$\textcircled{13} \quad 9, \overset{x^{-\frac{1}{3}}}{-3}, \overset{x^{-\frac{1}{3}}}{1}, \overset{x^{-\frac{1}{3}}}{-\frac{1}{3}}, \dots$$

$$a_1 = 9$$

$$r = -\frac{1}{3}$$

$$a_n = 9 \cdot \left(-\frac{1}{3}\right)^{n-1}$$

$$\textcircled{14} \quad a_n = 9 \cdot \left(-\frac{1}{3}\right)^{n-1}$$

$$a_4 = 9 \cdot \left(-\frac{1}{3}\right)^3 = 9 \cdot -\frac{1}{27} = \boxed{-\frac{1}{3}}$$

$$a_{12} = 9 \cdot \left(-\frac{1}{3}\right)^{11} = 9 \cdot -\frac{1}{3}^{11} \\ = \boxed{-0.000051}$$