(18) $a_1 = 14.25, d = 0.15, n = 31$

$a_n = a_1 + (n-1)d$

$= 14.25 + (31-1)(0.15)$

$= 14.25 + 4.5$

$= 18.75$

1, 4, 7, 10, . . .

common difference = 3

Arithmetic Sequence

1, 3, 9, 27, 81 . . .

common ratio = 3

Geometric Sequence

n^{th} term of a Geometric Sequence

$$a_n = a_1 \cdot r^{n-1}$$

a_1 = 1st term

r = common ratio

n = number of the term

Find the next two terms

① 6, 12, 24, . . .

r = 2

48, 96

24 · 2 = 48

48 · 2 = 96

② $180, 60, 20, \ldots$ $\quad r = \frac{60}{180} = \frac{1}{3}$

$20 \cdot \frac{1}{3} = \frac{20}{3}$ $\quad \frac{20}{3}, \frac{20}{9}$

$\frac{20}{3} \cdot \frac{1}{3} = \frac{20}{9}$

(5) 80, 60, 45, ...

$r = \frac{60}{80} = \frac{3}{4}$

33.75, 25.3125

$\frac{45}{1} \cdot \frac{3}{4} = 33.75$

$33.75 \times \frac{3}{4} = 25.3125$

Find the 1st five terms

(7) $a_1 = \frac{1}{9}$, $r = 3$

$\frac{1}{9}, \frac{1}{3}, 1, 3, 9$

(8) $a_1 = 240$, $r = -\frac{3}{4}$

240, 180, 135, -101.25, 75.9375

Find the indicated term

(10) $a_1 = -10,\ r = 4,\ n = 2$

$a_n = a_1 \cdot r^{n-1}$

$a_n = -10 \cdot 4^{2-1}$

$a_n = -10 \cdot 4^1$

$a_n = -40$

(11) $a_1 = -6, r = \frac{-1}{2}, n = 8$

$a_n = a_1 \cdot r^{n-1}$

$a_n = -6 \cdot \left(\frac{-1}{2}\right)^{8-1}$

$a_n = -6 \cdot \left(\frac{-1}{2}\right)^{7}$

$a_n = \frac{3}{64}$

Writ an equation for the nth term

(16) 500, 350, 245, ...

$a_n = a_1 \cdot r^{n-1}$

$a_1 = 500$

$r = 0.7$

$a_n = 500 \cdot (0.7)^{n-1}$

$1, -4, 16, \ldots$

$a_n = a_1 \cdot r^{n-1}$

$a = 1$

$r = -4$

$a_n = 1 \cdot (-4)^{n-1}$

Find the geometric means

$5, \_\_\_, \_\_\_, \_\_\_, 405$

$a_n = a_1 \cdot r^{n-1}$

$405 = 5 \cdot r^{5-1}$

$\frac{405}{5} = \frac{5 \cdot r^4}{5}$

$81 = r^4$

$3 = r$