

Arithmetic Mean – Day 3

Unit 6: Representations of Linear Relations

Find the missing term or terms in each arithmetic sequence.

<p>1. ..., -16, ____, -36, ...</p> $a_n = a_1 + (n-1) \cdot d$ $-36 = -16 + (3-1) \cdot d \quad a_2 = -16 - 10 = \boxed{-26}$ $\begin{array}{r} -36 = -16 + 2d \\ +16 \quad +16 \\ \hline -20 = 2d \\ \frac{-20}{2} = \frac{2d}{2} \\ \boxed{-10 = d} \end{array}$	<p>2. ..., 26, ____, 36, ...</p> $a_n = a_1 + (n-1) \cdot d$ $36 = 26 + (3-1) \cdot d \quad a_2 = 26 + 5 = \boxed{31}$ $\begin{array}{r} 36 = 26 + 2d \\ -26 \quad -26 \\ \hline 10 = 2d \\ \frac{10}{2} = \frac{2d}{2} \\ \boxed{5 = d} \end{array}$
<p>3. ..., -25, ____, ____, -10, ...</p> $a_n = a_1 + (n-1) \cdot d$ $-10 = -25 + (4-1) \cdot d \quad a_2 = -25 + 5 = \boxed{-20}$ $\begin{array}{r} -10 = -25 + 3d \\ +25 \quad +25 \\ \hline 15 = 3d \\ \frac{15}{3} = \frac{3d}{3} \\ \boxed{5 = d} \end{array}$	<p>4. ..., -19, ____, ____, 41, ...</p> $a_n = a_1 + (n-1) \cdot d$ $41 = -19 + (4-1) \cdot d \quad a_2 = -19 + 20 = \boxed{1}$ $\begin{array}{r} 41 = -19 + 3d \\ +19 \quad +19 \\ \hline 60 = 3d \\ \frac{60}{3} = \frac{3d}{3} \\ \boxed{20 = d} \end{array}$
<p>5. ..., 35, ____, ____, 635, ...</p> $a_n = a_1 + (n-1) \cdot d$ $635 = 35 + (4-1) \cdot d \quad a_2 = 35 + 200 = \boxed{235}$ $\begin{array}{r} 635 = 35 + 3d \\ -35 \quad -35 \\ \hline 600 = 3d \\ \frac{600}{3} = \frac{3d}{3} \\ \boxed{200 = d} \end{array}$	<p>6. ..., 40, ____, ____, 340, ...</p> $a_n = a_1 + (n-1) \cdot d$ $340 = 40 + (4-1) \cdot d \quad a_2 = 40 + 100 = \boxed{140}$ $\begin{array}{r} 340 = 40 + 3d \\ -40 \quad -40 \\ \hline 300 = 3d \\ \frac{300}{3} = \frac{3d}{3} \\ \boxed{100 = d} \end{array}$
<p>7. ..., -6, ____, ____, -86, ...</p> $a_n = a_1 + (n-1) \cdot d$ $-86 = -6 + (5-1) \cdot d \quad a_2 = -6 - 20 = \boxed{-26}$ $\begin{array}{r} -86 = -6 + 4d \\ +6 \quad +6 \\ \hline -80 = 4d \\ \frac{-80}{4} = \frac{4d}{4} \\ \boxed{-20 = d} \end{array}$ $a_3 = -26 - 20 = \boxed{-46}$ $a_4 = -46 - 20 = \boxed{-66}$	<p>8. ..., 18, ____, ____, -782, ...</p> $a_n = a_1 + (n-1) \cdot d$ $-782 = 18 + (5-1) \cdot d \quad a_2 = 18 - 200 = \boxed{-182}$ $\begin{array}{r} -782 = 18 + 4d \\ -18 \quad -18 \\ \hline -800 = 4d \\ \frac{-800}{4} = \frac{4d}{4} \\ \boxed{-200 = d} \end{array}$ $a_3 = -182 - 200 = \boxed{-382}$ $a_4 = -382 - 200 = \boxed{-582}$
<p>9. ..., -26, ____, ____, 94, ...</p> $a_n = a_1 + (n-1) \cdot d$ $94 = -26 + (5-1) \cdot d \quad a_2 = -26 + 30 = \boxed{4}$ $\begin{array}{r} 94 = -26 + 4d \\ +26 \quad +26 \\ \hline 120 = 4d \\ \frac{120}{4} = \frac{4d}{4} \\ \boxed{30 = d} \end{array}$ $a_3 = 4 + 30 = \boxed{34}$ $a_4 = 34 + 30 = \boxed{64}$	<p>10. ..., -9, ____, ____, 31, ...</p> $a_n = a_1 + (n-1) \cdot d$ $31 = -9 + (5-1) \cdot d \quad a_2 = -9 + 10 = \boxed{1}$ $\begin{array}{r} 31 = -9 + 4d \\ +9 \quad +9 \\ \hline 40 = 4d \\ \frac{40}{4} = \frac{4d}{4} \\ \boxed{10 = d} \end{array}$ $a_3 = 1 + 10 = \boxed{11}$ $a_4 = 11 + 10 = \boxed{21}$

11. ..., -34, ..., ..., 366, ...

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

$$366 = -34 + (5-1) \cdot d \quad a_2 = -34 + 100 = \boxed{66}$$

$$366 = -34 + 4d \quad a_3 = 66 + 100 = \boxed{166}$$

$$\begin{array}{r} 366 \\ +34 \\ \hline 400 \end{array} \quad \begin{array}{r} +34 \\ +34 \\ \hline 68 \end{array}$$

$$\frac{400}{4} = \frac{4d}{4} \quad a_4 = 166 + 100 = \boxed{266}$$

$$\boxed{100 = d}$$

12. ..., -5, ..., ..., -21, ...

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

$$-21 = -5 + (5-1) \cdot d \quad a_2 = -5 - 4 = \boxed{-9}$$

$$-21 = -5 + 4d \quad a_3 = -9 - 4 = \boxed{-13}$$

$$\begin{array}{r} -21 \\ +5 \\ \hline -16 \end{array} \quad \begin{array}{r} +5 \\ +5 \\ \hline 10 \end{array}$$

$$\frac{-16}{4} = \frac{4d}{4} \quad a_4 = -13 - 4 = \boxed{-17}$$

$$\boxed{-4 = d}$$

13. ..., -31, ..., ..., 119, ...

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

$$119 = -31 + (6-1) \cdot d \quad a_2 = -31 + 30 = \boxed{-1}$$

$$119 = -31 + 5d \quad a_3 = -1 + 30 = \boxed{29}$$

$$\begin{array}{r} 119 \\ +31 \\ \hline 150 \end{array} \quad \begin{array}{r} +31 \\ +31 \\ \hline 62 \end{array}$$

$$\frac{150}{5} = \frac{5d}{5} \quad a_4 = 29 + 30 = \boxed{59}$$

$$\boxed{30 = d} \quad a_5 = 59 + 30 = \boxed{89}$$

14. ..., -31, ..., ..., -81, ...

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

$$-81 = -31 + (6-1) \cdot d \quad a_2 = -31 - 10 = \boxed{-41}$$

$$-81 = -31 + 5d \quad a_3 = -41 - 10 = \boxed{-51}$$

$$\begin{array}{r} -81 \\ +31 \\ \hline -50 \end{array} \quad \begin{array}{r} +31 \\ +31 \\ \hline 62 \end{array}$$

$$\frac{-50}{5} = \frac{5d}{5} \quad a_4 = -51 - 10 = \boxed{-61}$$

$$\boxed{-10 = d} \quad a_5 = -61 - 10 = \boxed{-71}$$

15. ..., 19, ..., ..., 169, ...

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

$$169 = 19 + (6-1) \cdot d \quad a_2 = 19 + 30 = \boxed{49}$$

$$169 = 19 + 5d \quad a_3 = 49 + 30 = \boxed{79}$$

$$\begin{array}{r} 169 \\ -19 \\ \hline 150 \end{array} \quad \begin{array}{r} -19 \\ -19 \\ \hline -38 \end{array}$$

$$\frac{150}{5} = \frac{5d}{5} \quad a_4 = 79 + 30 = \boxed{109}$$

$$\boxed{30 = d} \quad a_5 = 109 + 30 = \boxed{139}$$

16. ..., -14, ..., ..., -34, ...

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

$$-34 = -14 + (6-1) \cdot d \quad a_2 = -14 - 4 = \boxed{-18}$$

$$-34 = -14 + 5d \quad a_3 = -18 - 4 = \boxed{-22}$$

$$\begin{array}{r} -34 \\ +14 \\ \hline -20 \end{array} \quad \begin{array}{r} +14 \\ +14 \\ \hline 28 \end{array}$$

$$\frac{-20}{5} = \frac{5d}{5} \quad a_4 = -22 - 4 = \boxed{-26}$$

$$\boxed{-4 = d} \quad a_5 = -26 - 4 = \boxed{-30}$$

17. ..., -14, ..., ..., -56, ...

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

$$-56 = -14 + (7-1) \cdot d \quad a_2 = -14 - 7 = \boxed{-21}$$

$$-56 = -14 + 6d \quad a_3 = -21 - 7 = \boxed{-28}$$

$$\begin{array}{r} -56 \\ +14 \\ \hline -42 \end{array} \quad \begin{array}{r} +14 \\ +14 \\ \hline 28 \end{array}$$

$$\frac{-42}{6} = \frac{6d}{6} \quad a_4 = -28 - 7 = \boxed{-35}$$

$$\boxed{-7 = d} \quad a_5 = -35 - 7 = \boxed{-42}$$

$$a_6 = -42 - 7 = \boxed{-49}$$

18. ..., 7, ..., ..., 61, ...

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

$$61 = 7 + (7-1) \cdot d \quad a_2 = 7 + 9 = \boxed{16}$$

$$61 = 7 + 6d \quad a_3 = 16 + 9 = \boxed{25}$$

$$\begin{array}{r} 61 \\ -7 \\ \hline 54 \end{array} \quad \begin{array}{r} -7 \\ -7 \\ \hline -14 \end{array}$$

$$\frac{54}{6} = \frac{6d}{6} \quad a_4 = 25 + 9 = \boxed{34}$$

$$\boxed{9 = d} \quad a_5 = 34 + 9 = \boxed{43}$$

$$a_6 = 43 + 9 = \boxed{52}$$

19. ..., -27, ..., ..., -147, ...

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

$$-147 = -27 + (7-1) \cdot d \quad a_2 = -27 - 20 = \boxed{-47}$$

$$-147 = -27 + 6d \quad a_3 = -47 - 20 = \boxed{-67}$$

$$\begin{array}{r} -147 \\ +27 \\ \hline -120 \end{array} \quad \begin{array}{r} +27 \\ +27 \\ \hline -54 \end{array}$$

$$\frac{-120}{6} = \frac{6d}{6} \quad a_4 = -67 - 20 = \boxed{-87}$$

$$\boxed{-20 = d} \quad a_5 = -87 - 20 = \boxed{-107}$$

$$a_6 = -107 - 20 = \boxed{-127}$$

20. ..., -6, ..., ..., 42, ...

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

$$42 = -6 + (7-1) \cdot d \quad a_2 = -6 + 8 = \boxed{2}$$

$$42 = -6 + 6d \quad a_3 = 2 + 8 = \boxed{10}$$

$$\begin{array}{r} 42 \\ +6 \\ \hline 48 \end{array} \quad \begin{array}{r} +6 \\ +6 \\ \hline 12 \end{array}$$

$$\frac{48}{6} = \frac{6d}{6} \quad a_4 = 10 + 8 = \boxed{18}$$

$$\boxed{8 = d} \quad a_5 = 18 + 8 = \boxed{26}$$

$$a_6 = 26 + 8 = \boxed{34}$$