

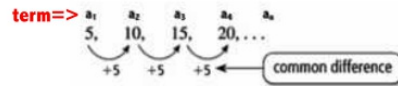
4.6 Arithmetic Sequences

Sequences **a Set of numbers that continues in a pattern.**

Term **the "placement" of specific number in a sequence**

Arithmetic Sequences **a number pattern that is being "added"**
 add a pos. number or add a negative number

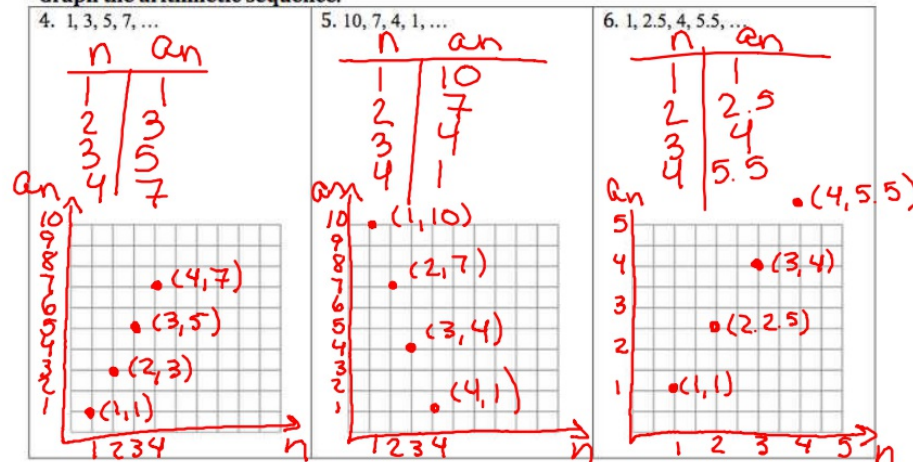
Common Difference **the number that is being added to the next term**



State the first term, and the common difference. Then, write the next three terms of the arithmetic sequence.

<p>1. 4, 8, 15, 22, ...</p> <p>$a_1 = 1$ $d = 7$</p> <p>a_5) a_6) a_7</p> <p>29) 36) 43</p>	<p>2. 20, 14, 8, 2, ...</p> <p>$a_1 = 20$ $d = -6$</p> <p>a_5) a_6) a_7</p> <p>-4) -10) -16</p>	<p>3. $\frac{1}{4}, \frac{5}{4}, \frac{9}{4}, \frac{13}{4}, \dots$</p> <p>$a_1 = \frac{1}{4}$ $d = \frac{4}{4} = 1$</p> <p>a_5) a_6) a_7</p> <p>$\frac{17}{4}$) $\frac{21}{4}$) $\frac{25}{4}$</p>
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Graph the arithmetic sequence.



Determine if the sequence is arithmetic. Explain.

<p>7.</p> <p>Not arithmetic No common difference</p>	<p>8. 20, 30, 40, 50,...</p> <p>arithmetic $d=10$</p>	<p>9.</p> <p>arithmetic $d=-3$</p>	<p>10. 48, 24, 12, 6,...</p> <p>$\times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$</p> <p>Not arithmetic mult $\frac{1}{2}$</p>
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$a_n = a_1 + (n-1)d$

Write an equation for the nth term of the arithmetic sequence. Then find a_{10} .

<p>11. -11, -9, -7, -5,...</p> <p>$a_1 = -11$ $d = 2$</p> <p>$a_n = -11 + (n-1)(2)$</p> <p>$a_n = -11 + 2n - 2$</p> <p>$a_n = 2n - 13$ ← rule</p> <p>$a_{10} = 2(10) - 13$ $a_{10} = 7$</p>	<p>12. 16.3, 14.8, 13.3, 11.8,...</p> <p>$a_1 = 16.3$ $d = -1.5$</p> <p>$a_n = 16.3 + (n-1)(-1.5)$</p> <p>$a_n = 16.3 - 1.5n + 1.5$</p> <p>$a_n = -1.5n + 17.8$ ← rule</p> <p>$a_{10} = -1.5(10) + 17.8$</p> <p>$a_{10} = 2.8$</p>
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15. In an auditorium, the first row of seats has 30 seats. Each row behind the first row has 4 more seats than the row in front of it. How many seats are in the 25th row?

<p>n a_n</p> <tr><td>1</td><td>30</td></tr> <tr><td>2</td><td>34</td></tr> <tr><td>3</td><td>38</td></tr> <tr><td>4</td><td>42</td></tr>	1	30	2	34	3	38	4	42	<p>$a_1 = 30$ $d = 4$</p> <p>$a_n = 30 + (n-1)(4)$</p> <p>$a_n = 30 + 4n - 4$</p> <p>$a_n = 4n + 26$</p> <p>$a_{25} = 4(25) + 26$</p> <p>$a_{25} = 126$ seats</p>
1	30								
2	34								
3	38								
4	42								