Sequences and missing pieces

Today we will use our
- *Problem solving and equation solving skills with sequence problems*

Our main question "What am I missing?" $t_n = a + (n - 1)d$

1)   *In an arithmetic sequence $t_{95} = 648.2$ and $t_1 = 9$, what is the common difference?*

We know $a = 9$, $n = 95$ if $t_n = 648.2$ so: $648.2 = 9 + (95-1)d$
                                                                                      $639.2 = 94d$ $d = 6.8$

2)   *In an arithmetic sequence $t_{78} = 48.7$ and $t_{79} = 49.3$, what t_1?*

We know $n = 78$ if $t_n = 48.7$ and $d = 49.3-48.7$ so: $48.7 = a + (78 - 1)(0.6)$
                                                                                                          $48.7 = a + 46.2$ $a = 2.5$

3)   *How many terms? 12.8, 5, -2.8, … -541*

We know $a = 12.8$, $d = 5 - 12.8$ and $t_? =$ so: $-541 = 12.8 + (n -1)(-7.8)$
                                                                                            $-553.8 = -7.8(n-1)$
                                                                                            $71 = n - 1$ $n = 72$

4)   *In an arithmetic sequence $t_{96} = 606.8$ and $t_1 = 14$, what is t_{157}?*

We need 'd'
We know $a = 14$, $n = 96$ if $t_{96} = 606.8$ so: $606.8 = 14 + (96-1)d$
                                                                                            $592.8 = 95d$ $d = 6.24$
                                                                                            $t_{157} = 14 + (157 -1)(6.24)$ $t = 987.44$

5)   *Fit 5 terms between 9 and 450 so that an arithmetic sequence is formed*
(these are called arithmetic means)

9 ___ ___ ___ ___ ___ 450
so 450 is the 7th term $450 = 9 + (7-1)d$ $441 = 6d$ $d = 73.5$ now fill in blanks

9 82.5 156 229.5 303 376.5 450

This missing pieces lesson will play a big part in our next 2 sequences lessons 😊

Assignment = worksheet

Math 10 Arithmetic Sequences Missing Pieces (Day 3 Workshee)

1) In an arithmetic sequence t_{16} = 180 and the common difference is 5.8, find the first term.

2) In an arithmetic sequence t_7 = 434 and the common difference is -82, find the first term.

3) In an arithmetic sequence t_7 = 18 and t_1 = -66, find the common difference.

4) In an arithmetic sequence t_{64} = 4 and t_1 = 100, find the common difference.

5) How many terms are in the sequences below:

a) 10, 15,20, ….., 250

b) 1, 4, 7, ….,121

c) 40, 38, 36, …. -290

d) -11, -7, -3, …, 153

e) 3, 10.2, 17.4, …. 413.4

f) 90, 66, 42, ….. –1086

6)	In an arithmetic sequence $t_{12} = 66$ and the common difference is 7.8, find t_{30}.

7)	In an arithmetic sequence $t_{22} = 74$ and the common difference is 4.8, find t_{52}.

8)	In an arithmetic sequence $t_{11} = 68$ and $t_1 = -34$, find t_{100}.

9)	Fit 3 terms in-between 10 and 182 so that an arithmetic sequence is formed

10)	Fit 4 terms in-between 99 and 15 so that an arithmetic sequence is formed

11)	Fill in the blanks in the arithmetic sequences below

a)	_____ , _____ , 14, _____ , 26		b)	a)	_____ , 3, _____ , _____ , -18

12)	**Jar 1 contains 7 cookies, jar 2 contains 10 cookies, jar 3 contains 13 cookies …**

a)	How many cookies are in jar 39?		b)	Which jar contains 214 cookies?