1. First find the next term in the sequence and then state whether it is an arithmetic sequence and why.

a)
$$1, 2, 4, 7, 11, 10$$

Arithmetic? - Yes or No
Why? does not go up by
a constant amount
c) -2, 4, 10, 16, a
Arithmetic? - Yes or No
Why? Increase by
constant rate $\rightarrow d = 10$
Why? does not go up by a
constant rate $\rightarrow d = 10$

2. Write the first four terms of the sequence, starting with n = 1.



3. Write a rule for the following arithmetic sequences and then find the 75th term.

a) 5, 12, 19, 26, ... 7 $a_{n} = 5 + 7(n-1)$ d = -a $a_{n} = 34 - b(n-1)$ = 5 + 7(n-1) d = -a $a_{n} = 34 - b(n-1)$ = 34 - b(n-1) $a_{1} = 34$ = 34 - b(n-1) = 34 - b(n-1) $a_{1} = 34 - b(n-1)$ $a_{1} = 34 - b(n-1)$ $a_{2} = -b(n+3)$ $a_{2} = -b(n+3)$ $a_{3} = -b(n+3)$ $a_{3} = -b(n+3)$ 4. Write a rule for each arithmetic sequence given the following information.

a)
$$a_1 = -5$$

 $d = 4$
b) $a_3 = 18$
 $d = -2$
a) $a_1 = -5$
 $d = 4$
b) $a_3 = 18$
 $d = -2$
a) write nue.
 $= -5 + 4n - 4$
 $18 = a_1 + (-a)(3-1)$
 $a_n = aa - a(n-1)$
 $a_n = aa - a(n-1)$
 $18 = a_1 - 4$
 $= aa - an + a$
 $a_n = -an + a + 4$
 $a_n = -an + a + 4$
 $a_n = -an + a + 4$

c)
$$a_{1} = 3$$
, $d = 3$
d) $a_{0} = 34$ $d = 3$
(1) Find d
d) $a_{0} = 46$
(2) Find d
d) $\frac{440 - 34}{10 - 10} = \frac{13}{4} = 3$
(3) Write rule $a_{0} = 3 + 3(0 - 1)$
(3) Write rule $a_{0} = 3 + 3(0 - 1)$
(4) $\frac{440 - 34}{10 - 10} = \frac{13}{4} = 3$
(3) $34 = a_{1} + 3(4 - 1)$
(4) $\frac{34}{10} = a_{1} + 15$
(5) $a_{1} = a_{1} + 15$
(6) $a_{1} = a_{1}$
(7) $a_{2} = a_{1}$
(7) $a_{2} = a_{1}$
(8) Write rule $a_{0} = 3 + 3(0 - 1)$
(9) $a_{1} = 30 + 10$

5. After knee surgery, your trainer tells you to return to your jogging program slowly. He suggests jogging for 10 minutes the day after your treatment. Each day thereafter, he suggests that you increase that time by 2 minutes.

10,12,14,16,...

a. Is this an arithmetic sequence? Explain your answer.

b. What is the first term (a₁)?

c. What is the common difference (d)?



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d. What is the rule that represents the number of minutes you would jog n days after his first visit?

$$a_{n} = 10 + a(n-1)$$

= 10 + an - 2
 $a_{n} = a_{n} + 8$

e. For how many minutes will you jog on the 9th day after your treatment? Show calculations.

$$Q_q = \lambda(q) + 8$$

= [ale minutes]

f. What is your total jogging time for the first 6 days after your visit to the trainer?

Sum
$$q_{u} = \lambda(u) + 8$$

= λu

 $S_{le} = le\left(\frac{10+a0}{a}\right)$

g. What is the total time you will jog in the first 9 days after your treatment? Use a formula.

$$n=9$$

$$a_{1}=10$$

$$S_{q}=9\left(\frac{10+310}{2}\right)$$

$$a_{q}=20$$

$$=117 \text{ minutes}$$

h) Write part g in sigma notation (Σ).



$$\frac{q}{2}$$
 dn+8

6. Evaluate – use a formula.

a)
$$4+7+10+13+...$$
 (sum of first 50 terms)
 $n = 50$
 $a_1 = 4$
 $a_{50} = 4+3(50-1) = 151$
 $\int_{50} = 50\left(\frac{4+151}{a}\right)$
 $= 3875$
2. Determine the seating capacity of an auditorium with 30 rows of seats if there are 20 seats in the first row 22 tests in the first row 23 tests in the second row. 24 seats in the first row and so on



8. A company offers a job with a starting salary of \$32,500 with an annual raise of \$2,500. How much in total salary compensation will be paid over the first six years?

Sum
$$n = 10$$

 $a_1 = 3a, 500$
 $a_{1e} = 3a, 500 + 4500(e-1) = 45,000 = 3a, 500$