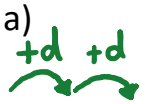
In an arithmetic sequence, the **first term** is 4 and the **third term** is 16.
a) Find the common difference
b) Find the 8th term
c) Find the sum of the first 8 terms

a)



$4\ ,U_2\ ,16$

first term is 4
third term is 16

There are 2 differences

$16 = 4 + 2d$

$12 = 2d$

$6 = d$

b)

Find the 8th term

$U_8 = U_1 + 7d$

$U_8 = 4 + 7 \times 6$

$U_8 = 4 + 42$

$U_8 = 46$

c)

Find the sum of the first 8 terms

$S_n = \frac{n}{2}(2U_1 + (n-1)d)$

$S_8 = \frac{8}{2}(2 \times 4 + (8-1) \times 6)$

$S_8 = 4(8 + 7 \times 6)$

$S_8 = 4(8 + 42)$

$S_8 = 4(50)$

$S_8 = 200$

Or you could use this formula

$S_n = \frac{n}{2}(U_1 + U_n)$

$S_8 = \frac{8}{2}(U_1 + U_8)$

$S_8 = 4(4 + 46)$

$S_8 = 4(50)$

$S_8 = 200$