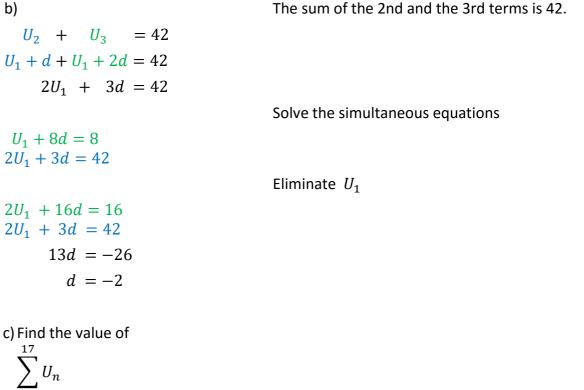
An arithmetic sequence has first term U_1 and common difference d. The sum of the first 17 terms is 136. a) Show that $U_1 + 8d = 8$ The sum of the 2nd and the 3rd terms is 42. b) Find *d*. The nth term of the sequence is U_n . c) Find the value of $\sum_{4}^{17} U_n$

The sum of the first 17 terms is 136.

a) $S_n = \frac{n}{2}(2U_1 + (n-1)d)$ $136 = \frac{17}{2}(2U_1 + (17 - 1)d)$ $136 = \frac{17}{2}(2U_1 + 16d)$ $136 = 17(U_1 + 8d)$ $\frac{136}{17} = U_1 + 8d$ $8 = U_1 + 8d$

b)



This is sum of the first 17 terms - sum of the first 3 terms

Sum of first 17 terms = 136

$$\sum_{1}^{17} U_n = 136$$

$$\sum_{1}^{3} U_n = U_1 + U_2 + U_3$$

Sum of first 3 terms = $U_1 + U_2 + U_3$ The sum of the 2nd and the 3rd terms is 42.

Sum of first 3 terms = $U_1 + 42$

Find U_1

$$8 = U_{1} + 8d$$

$$8 = U_{1} + 8(-2)$$

$$24 = U_{1}$$

Sum of first 3 terms = 24 + 42 = 66

$$\sum_{4}^{17} U_{n} = 136 - 66 = 70$$