Lesson 13.2

APPLICATION PROBLEMS

EXAMPLE

Oscar decides that he will save an extra €2 each week. He saves €6 the first week and €8 the next. $d = 2$ $u_1 = 6$ $u_2 = 8$

a) How much will he have saved on the 13th week? $n = 13$

b) On what week did he save €300? $\hookrightarrow u_n$

a) $u_n = u_1 + (n-1)d$

$u_{13} = 6 + 12(2)$

$= \boxed{\$30}$

b) $u_n = u_1 + (n-1)d$

$300 = 6 + (n-1)(2)$

$300 = 6 + 2n - 2$

$300 = 2n + 4$

$296 = 2n$

$148 = n$

$\boxed{148 \text{ weeks}}$

EXAMPLE

Oscar decides that he will save an extra €2 each week. He saves €6 the first week and €8 the next.

a) How much will he have saved over 13 weeks?

b) How long will it take him to save €300?

a) $S_n = \frac{13}{2}\left(2(6)+12(2)\right)$

$= 6.5(12+24)$

$= \boxed{\$234}$

b) $300 = \frac{n}{2}\left(2(6)+(n-1)(2)\right)$

$300 = \frac{n}{2}(12+2n-2)$

$300 = \frac{n}{2}(2n+10)$

$300 = \frac{2n^2+10n}{2}$

$300 = n^2+5n$

$0 = n^2+5n-300$

$n = 15$ **15 weeks**