BOARD OF STUDIES
NEW SOUTH WALES

(a) $574.20 \times 0.1 = \$57.42$.

(b) $S = V_0(1-r)^n$

$S = 42000(1-0.15)^4$

Salvage ~~S~~ = \$ 21924.26 (2dp). (after 4 yrs.)

(c) i, Rosetta had a larger sum as she had been depositing money for double the period of Derek. Hence she recieved the compound intrest over a ~~larger~~ large amount of time.

ii, $A = M\left[\frac{(1+r)^n - 1}{r}\right]$ $r = 0.06 \div 12 = 0.005$ per month.
$D = n = 20 \times 12 = 240$ payments
$R = n = 35 \times 12 = 420$ payments.

(*) Amounts in 2005.

* Derek = $A = 400\left[\frac{(1.005)^{240} - 1}{0.005}\right]$

$A = \$184816.3581$.

* Rosetta = $A = 200\left[\frac{(1.005)^{420} - 1}{0.005}\right]$ amounts after further 5 years.

$A = \$284942.0597$

~~(*) Derek = 184816.36 (2dp) = \$1632~~

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Rosetta Derek

2001 = 200903 − 116327 = 84576 = difference between in 2001

2006 = 284942 − 184816 = 100126. = difference between in 2006

∴ The diffrence between the investments will continue to grow larger.

(d) i, 0.0052 is used because the intrest is compounded monthly. $\frac{6.24\%}{1000} = 0.0625 \div 12\text{months} = 0.0052.$

ii, $A = 69684 \times 0.0052 = \$362.3568$

$\therefore A = \$362.40$ (1dp)

$B = 69684 + 362.40 - 680$

$\therefore B = \$69366.40$

iii, ① $680 \times \left[\frac{(1.0052)^{120} - 1}{0.0052(1.0052)^{120}}\right] \doteq \$60590.101$

② $680 \times \left[\frac{(1.0052)^{n} - 1}{0.0052(1.0052)^{n}}\right] \doteq 70000$

$n = 160 \quad = 73738.5.$

$n = 155 \quad = 72240.2$

$n = 140 \quad = 67504.9.$

$n = 145 \quad = 69124.49$

∴ 145 is a more reasonable value for n.