

**FINANCES (USING TECHNOLOGY) REVIEW**  
**MCR 3U**

1. Mary wants to have \$20 000 in 10 years. What does she need to put in the bank today at 8%/a compounded quarterly to achieve this?

N=	10
IY=	8
PV=	-9057.81
PMT=	
FV=	20000
P/Y=	4
C/Y=	4
PMT:	<input type="checkbox"/> END <input checked="" type="checkbox"/> BEGIN

not an annuity → no reg. PMT.

∴ she needs to put \$9057.81 in the bank today.

2. If Melissa deposits \$100 every week into an account paying 4.2%/a compounded weekly, how much interest would she have earned after 7 years?

N=	52 × 7 = 364
IY=	4.2
PV=	0
PMT=	-100
FV=	42296.39
P/Y=	52
C/Y=	52
PMT:	<input type="checkbox"/> END <input checked="" type="checkbox"/> BEGIN

annuity ✓ reg. payment

$$I = A - P$$

$$= 42296.39 - (100 \times 364)$$

$$= 5896.39$$

∴ she will have \$42296.39 after 7 years.

3. (TIPS) Mr. Gagnier makes monthly payments on a \$72 000 mortgage amortized over 25 years at 11.25%/a for 5 years. After 2 years, he decides to increase his monthly payment by \$100 and at the end of the fourth year; he is able to make an extra payment towards the balance of \$2000.
- What is the balance at the end of 5 years?
  - By how long has the amortization been shortened by at this point?

N=	25 × 12 = 300
IY=	11.25
PV=	72000
PMT=	-805.42
FV=	0
P/Y=	12
C/Y=	12
PMT:	<input type="checkbox"/> END <input checked="" type="checkbox"/> BEGIN

after 2 years

$$\text{bal}(24) = 70778.99$$

N=	24
IY=	11.25
PV=	70778.99
PMT=	-805.42
FV=	0
P/Y=	12
C/Y=	12
PMT:	<input type="checkbox"/> END <input checked="" type="checkbox"/> BEGIN

$$70778.99 - 2000 = 68778.99$$

inc. monthly PMT by 100 at that pt.  $(705.42 + 100 = 805.42)$

another 2 years

N=	24
IY=	11.25
PV=	68778.99
PMT=	-805.42
FV=	0
P/Y=	12
C/Y=	12
PMT:	<input type="checkbox"/> END <input checked="" type="checkbox"/> BEGIN

$$66588.49 - 2000.00 = 64588.49$$

N=	12
IY=	11.25
PV=	64588.49
PMT=	-805.42
FV=	0
P/Y=	12
C/Y=	12
PMT:	<input type="checkbox"/> END <input checked="" type="checkbox"/> BEGIN

another 1 year.

$$64588.49 \rightarrow 61891.77$$

how much left?

N=	
IY=	11.25
PV=	61891.77
PMT=	-805.42
FV=	0
P/Y=	12
C/Y=	12
PMT:	<input type="checkbox"/> END <input checked="" type="checkbox"/> BEGIN

$$\rightarrow 133.51$$

∴ 134 payments left.

N=	
IY=	
PV=	
PMT=	
FV=	
P/Y=	
C/Y=	
PMT:	<input type="checkbox"/> END <input checked="" type="checkbox"/> BEGIN

∴ balance after 5 years is \$61891.77.

Originally 300 payments.  
after 5 years, 240 payments

$$\begin{aligned} &\therefore 240 - 134 \\ &= 106 \end{aligned}$$

$$\therefore 106 \div 12 = 8.83 \text{ years shortened}$$