MATH 120 Section 3.3 Future Value of an Annuity; Sinking Funds

Future Value of an Annuity

An <u>annuity</u> is a stream of periodic payments. If payments are made at the end of each time interval, then the annuity is called and <u>ordinary annuity</u>. The <u>future</u> <u>value of an annuity</u> is the sum of all payments plus all interest earned

$$FV = PMT \frac{(1 + \frac{r}{m})^{mt} - 1}{(\frac{r}{m})}$$

Sinking Fund: When an account is set up to accumulate

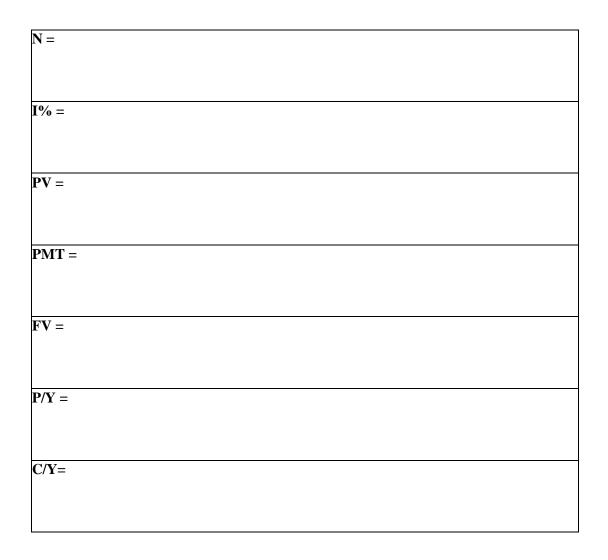
funds for a future obligation, the account is Sinking fund.

$$PMT = FV \frac{(\frac{r}{m})}{(1 + \frac{r}{m})^{mt} - 1}$$

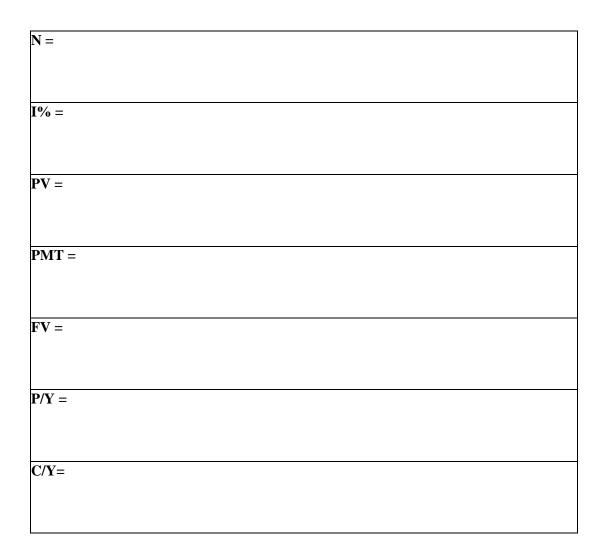
1. Recently, More Money 4U offered an annuity that pays 7.5% compounded monthly. If \$250 is deposited into this annuity every month, how much is in the account after 15 years? How much of this is interest?

N =	
нч —	
I% =	
PV =	
PMT =	
FV =	
P / Y =	
1/1 =	
C/Y=	
U/1=	

2. In order to accumulate enough money for a down payment on a house, a couple deposits \$1389 per month into an account paying 8% compounded monthly. If payments are made at the end of each period, how much money will be in the account in 8 years? How much interest was earned?



3. Acme Annuities recently offered an annuity that pays 3.3% compounded monthly. What equal monthly deposit should be made into this annuity in order to have \$500,000 in 40 years? How much of this amount is interest?



4. A company estimates that it will need \$199,000 in 5 years to replace a computer. If it establishes a sinking fund by making fixed monthly payments into an account paying 3.1% compounded monthly, how much should each payment be?

N =	
I% =	
1 % =	
PV =	
PMT =	
FV =	
P/Y =	
x / x =	
C/Y=	

5. Bob makes his first \$2500 deposit into an IRA earning 6.4% compounded annually on his 23rd birthday and his last \$2500 deposit on his 48th birthday (26 equal deposits in all). With no additional deposits, the money in the IRA continues to earn 6.4% interest compounded annually until Bob retires on his 64th birthday. How much is in the IRA when Bob retires?

