Name: _____

MA111
Ch. 10 Exam (practice)
2012-10-08

# Part I: Matching

_____ Percentage increase formula

_____ Compound interest formula

_____ Installment loan formula

_____ Present value of 20 years worth of monthly payments of \$100 at 5% monthly interest

_____ Future value of \$100 after one period of 5% and three periods of 20% interest

_____ Present value of three monthly payments of \$100 at 5% monthly interest

_____ Future value of three monthly payments of \$100 at 5% monthly interest

(1) $N = A(1 + p)$, $N$ is new value, $A$ is the old value, $p$ is percentage as a decimal

(2) $F = P(1+p)^T$, $F$ is future value, $P$ is present value, $p$ is periodic interest rate, $T$ is number of periods

(3) $P = Mq\frac{1-q^T}{1-q}$, $P$ is present value, $M$ is periodic payment, $p$ is periodic interest rate, $T$ is number of periods, $q = 1/(1 + p)$ helps discount future payments into the present

(4) $\$100(1/1.05)\frac{1-(1/1.05)^{240}}{1-(1/1.05)}$

(5) $\$100(1.05)(1.2)^3$

(6) $\$100/(1.05) + \$100/(1.05)^2 + \$100/(1.05)^3$

(7) $\$100(1.05)^2 + \$100(1.05) + \$100$

Percentage Increase

1. If \$300 is increased by 25%, what is the result?

2. If \$300 is decreased by 12%, what is the result?

3. If \$300 is increased by 10%, and the result is increased by 10%, what is the final result?

4. If \$300 is increased by 2%, the result is decreased by 3%, and that result is increased by 4%, what is the final result?

5. Which is the smaller number: (a) \$300 or (b) the result of first increasing \$200 by 50%, and then decreasing the result by 50%?

Compound interest

1. How much does one pay back a year later, if one borrows \$300 at 1.5% per month interest?

2. How much can one borrow today at 1.5% per month interest, if one is willing to repay \$500 two years from now?

3. If one borrows at 19% per month interest (crazy), how many months until the debt has doubled?

4. If one borrows \$300 and repays \$336 a month later, what is the monthly interest rate?

5. Which is the smaller number: (a) The amount to repay a \$300 debt a year later at 2% per month interest, (b) The amount to repay a \$300 debt a year later at 0.5% per week interest (assuming 52 weeks in a year)?

Amortized loans

1. How much do you owe after 6 months if you borrow \$300 at 1.3% per month interest and pay back \$50 at the end of every month (a total of \$300)?

2. How much can you borrow now at 1% per month if you are willing to pay back \$50 every month for a year?

3. How much should you pay back every month if you want to borrow \$500 now at 1% per month and be done paying it back after 7 months?

4. Which is the smaller amount: (a) \$50 per month for a year, or (b) the monthly payment to repay a \$500 at 3% per month interest in a year.