Math 230 **HW 5** Name _____

5.1 Simple and Compound Interest ----------

Find the simple interest. Assume a 360–day year. Round results to the nearest cent.

1) $10,656 at 1.8% for 5 months

Find the maturity value and the amount of simple interest earned. Round to the nearest cent.

2) $8120 at 4.5% for 11 months

Solve the problem.

3) If $4000 earned simple interest of $149.33 in 7 months, what was the simple interest rate?

Find the compound amount for the deposit. Round to the nearest cent.

4) $16,000 at 7% compounded annually for 15 years

Find the amount of compound interest earned.

5) $8000 at 5.5% compounded monthly for 5 years

Find the interest rate for each deposit and compound amount.

6) $8000 accumulating to $11,102.76, compounded quarterly for 6 years.

Find the effective rate corresponding to the given nominal rate. Round to the nearest hundredth.

7) 3% compounded quarterly

Using either logarithms or trail-and-error (try a bunch of investment times) to find the time it takes to double an investment.

8) $6000 deposited at 5% compounded quarterly, to reach at least $15,400.

Solve the problem.

9) Barbara knows that she will need to buy a new car in 6 years. The car will cost $15,000 by then. How much should she invest now at 5%, compounded quarterly, so that she will have enough to buy a new car?

5.2 Annuities ----------

Find the future value of the ordinary annuity. Interest is compounded annually, unless otherwise indicated.

10) R = $7,500, i = 5.5% interest compounded semiannually for 2 years

Determine the interest rate needed to accumulate the following amounts in a sinking fund, with monthly payments as given.

11) Accumulate $178,000, monthly payments of $600 over 17 years.

Find the periodic payment that will amount to the given sum under the given conditions.

12) S = $71,000, interest is 4% compounded annually, payments made at the end of each year for 5 years

Find the amount of each payment to be made into a sinking fund so that enough will be present to accumulate the following amount. Payments are made at the end of each period. The interest rate given is per period.

13) \$79,000; money earns 5% compounded quarterly for $3\frac{1}{4}$ years

Find the future value of the annuity due. Assume that interest is compounded annually, unless otherwise indicated.

14) Payments of \$500 made at the beginning of each year for 12 years at 6% compounded annually

Solve the problem. Round to the nearest cent.

15) Lou has an account with \$10,000 which pays 9% interest compounded annually. If to that account, Lou deposits \$5000 at the end of each year for 2 years, find out the amount in the account after the last deposit.

Solve the problem.

16) Which of the following investments is larger?

A) $800 is deposited monthly for 20 years and earns 5.5% interest compounded monthly.

B) $24,000 is deposited annually for 10 years and earns 5.5% interest compounded annually.

5.3 Amortization ----------

Find the present value of the ordinary annuity.

17) Payments of $540 made annually for 13 years at 6% compounded annually

Find the lump sum deposited today that will yield the same total amount as this yearly payment made at the end of each year for 20 years at the given interest rate, compounded annually.

18) $10,900 at 4%

Find the payment necessary to amortize the loan.

19) $90,000; 8% compounded annually; 10 annual payments

Find the monthly house payment necessary to amortize the following loan.

20) $561,000 at 7.1% for 15 years

Solve the problem.

21) In order to purchase a home, a family borrows $65,000 at an annual interest rate of 7.97%, to be paid back over a 20 year period in equal monthly payments. What is their monthly payment?

Prepare an amortization schedule showing the first four payments for the loan.

22) Mary finances $150,000 towards the purchase of a new home through a 20–year mortgage. The interest rate applied to the monthly unpaid balance is 7%

Payment Number	Amount of Payment	Interest for Period	Portion to Principal	Principal at End of Period
1				
2				
3				
4				

Provide an appropriate response.

23) State your case to show that when it comes to funding an annuity for retirement, it is important to start at as young an age as you can. Support your answer by means of an example.

Answer Key
Testname: MATH230_LIAL_HW5

1) $79.92
2) $8454.95; $334.95
3) 6.4%
4) $44,144.50
5) $2525.63
6) 5.5%
7) 3.03%
8) 19 years
9) $11,132.96
10) $31,260.34
11) 4.17%
12) $13,108.53
13) $5634.36
14) $8941.07
15) $22,331.00
16) A
17) $4780.45
18) $148,134.56
19) $13,412.62
20) $5073.84
21) $542.47
22)

Payment Number	Amount of Payment	Interest for Period	Portion to Principal	Principal at End of Period
1	1162.95	875.00	287.95	149,712.05
2	1162.95	873.32	289.63	149,422.42
3	1162.95	871.63	291.32	149,131.10
4	1162.95	869.93	293.02	148,838.08

23) Examples will vary. The effects of compounding interest make it important to start early.