

1. If Fred borrows \$500 for 2 years from a bank that charges 6% annual simple interest, how much interest will he owe at the end of the two years? How much (in total – interest + principal) will he pay to the bank at the end of the 2 years?
2. If Fred borrows \$3000 for 3 years from a bank that charges 5% annual simple interest, how much interest will he owe at the end of the three years? How much will Fred have to pay to the bank at the end of the three years?
3. Find the amount needed to pay off a simple interest loan of \$300 at 9% for $1\frac{1}{2}$ years.
4. Find the amount needed to pay off a simple interest loan of \$2000 at 10.5% for 3 years.
5. What amount needs to be invested today at 6% simple interest in order to have \$4000 in 2 years?
6. What amount needs to be invested today at 3.5% simple interest in order to have \$500 in 6 months?
7. Mary has \$2500 in a simple interest account paying 8.5%. She would like to have \$3000 for a down-payment on a new car. How long will it take Mary to have \$3000 in the account?
8. Charlie is due a tax refund of \$800. A tax service will give him the money two months early, but will charge \$50 up front to do so. What annual simple interest rate is the tax service charging him?
9. A late charge on a utility bill can be interpreted as an interest charge. If John's water bill is \$85 with a \$2.50 charge for being late, what annual simple interest rate is being charged if John pays the bill 2 weeks late?
10. A man used his motorcycle as collateral on a \$325 loan from a pawn shop for 3 months. The pawnshop charge was \$33. What annual simple interest rate does the pawnshop charge?
11. If \$5000 is invested in an account that pays 5% annual compounded interest, compare the amount in the account after 10 years if the interest is compounded:
 - a) Semiannually (twice a year)
 - b) Quarterly (four times a year)
 - c) Monthly (twelve times a year)
 - d) Daily (365 times a year)
12. You are saving for the down-payment on a house and plan to buy the house in 5 years. How much would you need to invest in an account that pays 4.5% compounded monthly in order to have \$10,000 for your down-payment?
13. Joe has inherited \$6,000 and would like to use the money for buying property. If he needs \$7,500 for the investment, how long would he have to wait to buy property if he invests the money in an account that pays 5.5% compounded weekly?
14. Susan invests \$2500 for 3 years in an account paying 3.5% annual interest compounded monthly. At the end of that time she moves the money to a different account that pays 4% annual interest

compounded quarterly, where it stays for an additional 2 years. What is the value of the account at the end of that time?

15. Robert invests \$500 in a 9-month Certificate of Deposit (CD) that pays 6.8% annual interest compounded monthly. At the end of the 9 months he moves the money plus the interest it has earned to another CD for 6 months that pays 7% compounded monthly. What is the value of the account at the end of the time?
16. Joel can choose between two different banks to invest his money. Bank A offers 5.9% interest compounded quarterly. Bank B offers 5.82% interest compounded monthly. Find the APY of each investment so that you can tell Joel in which bank it is better for him to invest.
17. To accumulate \$20,000 on your daughter's 18th birthday, how much must you invest on her second birthday in a CD paying 10% compounded quarterly?
18. To accumulate \$15,000 on your son's 20th birthday, how much must you invest on his 5th birthday in a CD paying 8.25% compounded daily?
19. Julia deposits \$75 at the end of each quarter for 20 years into an account paying 4.8% annual interest compounded quarterly.
 - a) How much is in the account at the end of 20 years?
 - b) How much did Julia actually contribute to the account?
 - c) How much interest did the account earn in those 20 years?
20. George deposits \$75 at the end of each quarter for 40 years into an account paying 4.8% annual interest compounded quarterly.
 - a) How much is in the account at the end of 40 years?
 - b) How much did George actually contribute to the account?
 - c) How much interest did the account earn in those 40 years?
21. Mr. and Mrs. Lopez have a new son and decide to start an account (sinking fund) for his college education. They decide to put \$100 into the account each month. The account pays 5% annual interest compounded monthly. They start this account when he is 2 years old. How much will be in the account when the child is 18 years old?
22. Mr. and Mrs. Lopez have a daughter and start an account for her when she is born. They decide to put \$120 into the account each month. Her account pays 4.5% compounded monthly. How much will be in the account when she is 18?
23. Sam makes a deal to pay \$400 a month for 3 years on a car loan at 7.2% annual interest compounded monthly to pay for a car.
 - a) What is the present value of the car?
 - b) How much will Sam make in payments for the car?
 - c) How much interest will he pay on the car loan?

24. Emma makes a deal to pay \$200 a month for 5 years on a car loan at 10.2% annual interest compounded monthly to pay for the car.
- What is the present value of the car?
 - How much will Emma make in payments for the car?
 - How much interest will she pay on the car loan?
25. A car dealer, figuring interest at 8.5% compounded monthly, offers to sell you a new car if you trade in your car which is worth \$6000 and agree to pay \$350 every month for the next three years.
- What is the cash value of the car today?
 - How much total interest would you pay with this deal?
26. Jeff and Theresa are buying a \$96,000 house and putting 25% down. The bank is offering a 20-year loan at 7.5% compounded monthly.
- What is the loan amount?
 - What will the monthly payment be?
 - What is the (approximate) total amount of interest paid during the term of the loan?
27. Margaret buys new stereo equipment for \$500. The store agrees to finance the purchase price for 4 months at 12% annual interest rate compounded monthly, with approximately equal payments at the end of each month. Her first 3 monthly payments will be \$128.14. The amount of the fourth payment will be \$128.14 or less (depending on the balance after the third payment).
28. A student buys a \$2400 computer. The price will be amortized at 15% annual interest compounded monthly, and repaid in 6 substantially equal monthly payments.
- What monthly payment is required?
 - Complete the amortization schedule below.
 - How much did the student actually pay for the computer (starting balance + sum of interest column)?

Solution

1. Interest: \$60 Total Payback: \$560
2. Interest: \$450 Total Payback: \$3,450
3. \$340.50
4. \$2630
5. \$3571
6. \$491
7. about 2.4 years
8. 37.50%
9. 76.47%
10. 40.62%
11. a) \$8193 b) \$8218 c) \$8235 d) \$824
12. \$7989
13. about 4 years
14. \$3006
15. \$545
16. APYA= 6.03% APYB= 5.98% Bank A is better to invest with.
17. \$4118
18. \$4352
19. a) \$9,980 b) \$6000 c) \$3,980
20. a) \$35,897 b) \$12,000 c) \$23,897
21. \$29,324
22. \$39,824
23. a) \$12,916 b) \$14,400 c) \$1,484
24. a) \$9,370 b) \$12,000 d) \$2,630
25. a) \$17,087 b) \$1,513
26. a) \$72,000 b) \$349 c) \$11,760
- 27.

Payment Number	Balance start of month	Amount of Payment	Interest due, at end of month	Principal due, at end of month	Balance after Payment
1	\$500	\$128.14	\$5	\$123.14	\$376.86
2	<i>\$376.86</i>	\$128.14	<i>\$3.77</i>	<i>\$124.37</i>	<i>\$252.49</i>
3	<i>\$252.49</i>	\$128.14	<i>\$2.52</i>	<i>\$125.62</i>	<i>\$126.87</i>
4	<i>\$126.87</i>	<i>\$128.14</i>	<i>\$1.27</i>	<i>\$126.87</i>	<i>\$0</i>

28. a) \$417.69

b)

Payment Number	Balance start of month	Amount of Payment	Interest due, at end of month	Principal due, at end of month	Balance after Payment
1	\$2400	<i>\$417.69</i>	<i>\$30</i>	<i>\$387.69</i>	<i>\$2012.31</i>
2	<i>\$2012.31</i>	<i>\$417.69</i>	<i>\$25.15</i>	<i>\$392.54</i>	<i>\$1619.77</i>
3	<i>\$1619.77</i>	<i>\$417.69</i>	<i>\$20.25</i>	<i>\$397.44</i>	<i>\$1222.33</i>
4	<i>\$1222.33</i>	<i>\$417.69</i>	<i>\$15.28</i>	<i>\$402.41</i>	<i>\$819.92</i>
5	<i>\$819.92</i>	<i>\$417.69</i>	<i>\$10.25</i>	<i>\$407.44</i>	<i>\$412.48</i>
6	<i>\$412.48</i>	<i>\$417.64</i>	<i>\$5.16</i>	<i>\$412.48</i>	<i>\$0</i>

c) \$2,506.09