Annuity Summary

These questions are worth of our attention. Don't ask, "Do I have to draw a timeline?" Ask yourself how badly you want to get the correct answers.

1. An amount of $5000 is invested at 4.8%/a compounded quarterly and is later to be withdrawn in 8 equal quarterly payments. If the first withdrawal is to be made two years after the investment date, what is the value of each withdrawal? (*This is called a <u>deferred annuity</u> – when there is a 'time-gap' before the annuity begins.*)

2. Mr. Kay wishes to invest while his earnings are high, so that he and Mrs. Kay can take a trip when he retires. He would like to have $10 000 when he turns 65. He decides to make 20 equal semi-annual payments into an annuity with the last payment on his 55th birthday. If the investment earns 8%/a compounded semi-annually, what is the amount of each payment?

3. A piano is advertised at a local store with a price of $200 down followed by six semi-annual payments of $250. If the interest that is being charged is 9%/a compounded monthly, what is the equivalent cash price?

4. On his 45th birthday, Mr. McDee invests $20 000 to be repaid to him in 20 semi-annual payments starting on his 55th birthday. If the money is invested at 4.9%/a compounded semi-annually, what is the value of these payments? How large would the payments be if he waited until his 60th birthday to begin collecting?

5. Mr. Jay and Mr. Cue both buy a new car every second year and pay an average of $4000 plus the trade-in vehicle.
   a) Mr. Jay borrows the money for his car and repays the loan in 24 monthly instalments,   starting the month after the car is purchased. If the money is borrowed at 1% per month on the unpaid balance, what are his monthly payments.
   b) Mr. Cue pays cash for his car and starts one month later to make monthly deposits into an account paying 1% per month, so that in 24 months he will have $4000 for the next new car. How much must he invest monthly?
   c) What is the difference in their total payments for the two years?

6. Mrs. Zed makes a series of 12 quarterly payments of $500 into an account which pays interest at 4.2% compounded monthly. What will the account be worth after the 12th payment has been made?

7. Mrs. Vee deposits $4500 on her 30th birthday, into an account which pays interest at 5.4%/a compounded monthly. Starting on her 60th birthday she begins making monthly withdrawals for the next 10 years. How much would each withdrawal be?

8. Mr. Ex deposits $1500 at the end of each year for ten years into a registered home ownership program that earns interest at 10%/a compounded quarterly. How much money will have accumulated in the plan at the end of the ten years?

9. Mrs. Why would like to be able to withdraw $450 at the end of every six months for the next 8 years. What amount would she have to invest today if interest is compounded monthly at 3.3%/a ?

10. A scholarship fund is being established at the local school. The school council would like to present an annual award of $500 to a deserving student. What amount, deposited today, would allow for this perpetuity (*an annuity that pays out a specified amount beginning on a fixed date and continuing forever*) if this amount is invested at 10% per annum compounded semi-annually?

Answers

1. $716.6279   2. $153.2627   3. $1485.9299   4. $2022.4654; $2576.3255

5.a) $188.2930   b) $148.2939   c)   Mr. Jay $4518.96; Mr. Cue, $3558.96

6. $6360.2213   7. $242.1447   8. $24 345.6098   9. $6277.0904   10. $4878.0488