Compound Interest and Depreciation

1 Compound Interest

1. Find the compound interest earned on the following investments, working it out step by step, or using the compound interest formula.

   (a) €500 for 2 years at 7%

   (b) €300 for 3 years at 4%

   (c) €900 for 4 years at 3.5%

   (d) €600 for 3 years at 3%

   (e) €1,400 for 4 years at 5%

   (f) €1,900 for 2 years at 6%

   (g) €250 for 5 years at 5.5%

2. €3,500 was invested in an account for 3 years. If the compound interest rate for the first two years was 2%, and was 3% for the third year, find the value of the investment at the end of the third year.

3. €18,000 was borrowed for 2 years. The rate of interest for the first year was 5% and for the second year was 8%. How much is owed after two years, if no repayments have been made?

4. Tim borrowed €5,000 from the bank at an interest rate of 3% per year. If he paid back 3,000 after the first year, how much does Tim owe at the end of the second year?

5. €3,500 was borrowed for 3 years, at an interest rate of 4.5% per annum. After year one, the borrower repaid 1,000. After year two the borrower repaid another €1,000. How much was still owed at the end of year three?

6. €25,000 was borrowed for four years. The rate of interest for the first two years was 3.5% and was reduced to 2.5% for the third and fourth year. How much was owed after four year, if no repayments had been made?

7. (a) A sum of money is invested into an account with an interest rate of 6% per annum. If the value of the investment is €5,830 after one year, how much was the original investment?

(b) What sum of money, invested into an account paying 5% interest per annum, will amount to €578.81 after 3 years?

(c) A sum of money was invested for 4 years, with a compound interest rate of 3.5% per year. If the value of the investment after four years was €15,491.56 how much was the original investment?

(d) A sum of money was invested 2.5% per annum compound interest. If it amounts to €1,184.58 after 3 years, what was the value of the original investment?

(e) What sum of money should be invested for 5 years, with an interest rate of 4% per year, to have a final amount of €7908.24?

8. (a) An investment of €10,000 amounts to €10,500 after one year. What was the rate of interest?

(b) If €400 amounts to €414 after one year, what was the interest rate?

(c) An investment of €1,500 amounts to €1,548.75 after one year. What was the rate of interest?

9. €9,000 is invested into an account for 3 years. The interest rate for the first year is 4% and for the second year 5%.

(a) Find the value of the investment after two years.

(b) At the end of the third year the, the money invested amounted to €10,515.96. Calculate the rate of interest for the third year.

10. John borrows €25,000 for two years.The interest rate for the first year is 11% per annum. He repays €10,000 after one year. If the amount owed at the end of the second year is €19,525, find the rate of interest for the second year.

11. A rugby club borrowed €2,500,000 to build a new stadium. The rate of interest for the first year was 6% and the rate for the second year was 8%. At the end of year one €350,000 is repaid. Calculate the amount owing at the end of the second year.

12. Three years ago an unknown amount was lodged into a credit union savings account. One year ago €2500 was withdrawn from the account leaving the balance at €8,736. If the interest rate on the account is, and has always been, 6%, calculate:

- The amount originally lodged into the account.
- The current balance in the account.

2 Depreciation

13. A van originally costs €18,000. It's value depreciates in value by 14% per year. What is the value if the van after 3 years?

14. A tractor depreciates by 30% a year. If the tractor is bought for €85,000, what will it be worth after 2 years.

15. A truck depreciates at 25% per annum. If it is worth €42,187.50 after 2 years, what was it's value when new?

16. A car depreciates at 15% per year. If it is worth €7,830 after 4 years, what was it's value when new?

17. A machine worth €150,000 was worth €125,000 after one year. What was the rate of depreciation? (Give your answer as a percentage.)

18. A new motorbike was bought for €17,500. It decreases in value by 19% in the first year. If its value at the end of the second year was €10,000, by what percentage did its value decrease during the second year?