Compound Interest - Problem Solving

Here is the formula used to calculate compound interest:

Compound Interest

$$A = P(1 + r)^n$$

Where:
- A = the final amount
- P = the original investment
- r = the % rate (in decimal form)
- n = the number of times the interest is applied

Section A — *Finding the Time Period*

1) £1,000 is invested in a savings account that gives 3% compound interest per annum. After x years, there is £1,159.27 in the account.

   Calculate the value of x, the number of years that the money has been in the account for.

2) £1,000 is invested in a savings account that gives 2.4% compound interest per annum.

   After x years, there is £1,208.93 in the account. Calculate the value of x, the number of years that the money has been in the account for.

3) £3,600 is invested in a savings account that gives 2.4% compound interest per annum.

   After x years, there is £3,865.47 in the account. Calculate the value of x, the number of years that the money has been in the account for.

4) £2,300 is invested in a savings account that gives 4% compound interest for the first year and 0.8% per annum for each year after that.

   After x years, there is £2,469.47 in the account. Calculate the value of x, the number of years that the money has been in the account for.

Section B — *Finding the Initial Investment*

1) Some money is invested for 3 years in a savings account. The account earns 3% per annum compound interest.

   After 3 years, there is £1,365.91 in the bank account. Calculate the how much was invested.

2) Some money is invested for 3 years in a savings account. The account earns 3.5% per annum compound interest.

   After 3 years, there is £2,993.54 in the bank account. Calculate the how much was invested.

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3) Some money is invested for 7 years in a savings account. The account earns 3.5% per annum compound interest.

After 7 years, there is £3,142.53 in the bank account. Calculate the how much was invested.

4) Some money is invested for 5 years in a savings account. The account earns 2.1% compound interest in the first year and 1.2% per annum compound interest for each year after that.

After 5 years, there is £6,029.15 in the bank account. Calculate the how much was invested.

Section C *Finding the Percentage Interest*

1) £1,000 is invested in a savings account that gives x% compound interest per annum. After 2 years, there is £1,081.60 in the account.

Calculate the value of x, the value of the interest in %.

2) £3,000 is invested in a savings account that gives x% compound interest per annum. After 2 years, there is £3,090.68 in the account.

Calculate the value of x, the value of the interest in %.

3) £14,500 is invested in a savings account that gives x% compound interest per annum. After 3 years, there is £15,478.21 in the account.

Calculate the value of x, the value of the interest in %.

4) £7,240 is invested in a savings account that gives 3.2% compound interest for the first year and x% compound interest per annum each of the following years.

After 6 years, there is £7,814.01 in the account. Calculate the value of x, the value of the interest in %.