Changing assumptions and checking results

6 questions | 15 marks

Equivalent correct methods earn the corresponding marks.

1. A no-fee model gives 2640 dollars. A 25-dollar fee is charged only at the end. Find the adjusted result. [2 marks]

$2640 - 25 = 2615$.

Answer: 2615 dollars

2. Compare 1000 dollars compounded annually for 2 years at 3% and 4%. Find the difference. [3 marks]

$1000(1.04)^2 - 1000(1.03)^2 = 1081.6 - 1060.9 = 20.7$.

Answer: 20.70 dollars

3. Why is comparing final balances unfair if one model starts at 500 dollars and the other at 1000 dollars? [2 marks]

The larger starting amount alone may cause the larger final balance.

Answer: The initial contributions differ.

4. A calculation uses 5 instead of 0.05 as the decimal rate. What factor does it use instead of 1.05? [2 marks]

$1 + 5 = 6$, which means a 500% increase.

Answer: 6

5. A straight-line model gives an ordinary resale value of -80 dollars. What should be checked? [3 marks]

Restrict or revise the model rather than accepting an uninterpreted negative value.

Answer: Whether the time lies outside the useful domain of the model.

6. State two assumptions in a 10-year model using a constant 6% annual compound factor with no other terms. [3 marks]

The expression $P(1.06)^{10}$ contains only the principal and the same annual factor.

Answer: The rate stays 6%; there are no fees or extra transactions.