Growth/decay factors

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

1. Write the multiplier for a 6% increase. [2 marks]

$1 + 6/100 = 1.06$.

Answer: 1.06

2. Write the multiplier for a 23% decrease. [2 marks]

$1 - 23/100 = 0.77$.

Answer: 0.77

3. Increase 800 by 5% for each of 2 periods. [2 marks]

$800(1.05)^2 = 882$.

Answer: 882

4. Reduce 600 by 10% for each of 3 periods. [2 marks]

$600(0.9)^3 = 437.4$.

Answer: 437.4

5. A model is $V = 900(0.92)^t$ with t in years. State the annual percentage change. [2 marks]

$1 - 0.92 = 0.08$.

Answer: 8% decrease

6. A bacteria model triples every 2 hours from 20 units. Write a model using hours t and find the value at $t = 6$. [3 marks]

There are $t/2$ growth periods. At 6 hours there are 3 periods: $20 \times 27 = 540$.

Answer: $N = 20 \times 3^{t/2}$; 540 units.