Guide to:
Repeated change

maths Links

Explanation:

For repeated percentage change (compound interest or depreciation) over **n** years, use the multiplier formula: **Final Amount = Initial Amount × (multiplier)^{n}**.

For an **increase of r%**, the multiplier is **1 +** $\frac{r}{100}$ (e.g. +3.2% → **1.032**). For a **decrease of r%**, the multiplier is **1 −** $\frac{r}{100}$ (e.g. −12% → **0.88**). If the percentage rate changes from year to year, multiply by each year's multiplier in turn.

Example 1: £4500 is invested at **3.2%** compound interest per year for **4 years**. Work out the value of the investment after 4 years.

Solution:

Multiplier for +3.2% = 1 + 0.032 = **1.032**

Value = 4500×1.032^4

Value = £5104.243...

Answer: £5104.24 (to the nearest penny)

Example 2: A car bought for **£18,000** depreciates by **20%** in Year 1, then by **12%** per year for the next **2 years**. Find its value after 3 years.

Solution:

Year 1 multiplier = **0.80**; Years 2 & 3 multiplier = **0.88**

Value = $18{,}000 \times 0.80 \times 0.88^2$

Value = 14,400 × 0.7744 = £11,151.36

Answer: £11,151.36

Worksheets and other links					
Video Lesson on this topic	Video		**Maths4Everyone**	Qs	Ans
Ken Stafford (Past Paper Qs)	Qs	Ans	**E Classroom**	Qs	Ans
Maths Genie	Qs	Ans	**PMT (Edexcel)**	Qs	Ans
Naiker Maths	Qs	Ans	**PMT (AQA)**	Qs	Ans
Dr Austin Maths	Qs	Ans	**PMT (IGCSE)**	Qs	Ans

Questions by topic | **Past Papers** | **Maths worksheets**

Buy workbook | **Quizzes** | **More resources like this**

ken@mathslinks.co.uk