3.2 Percentages and percentage change

Name: _____ Class: _____ Date: _____ **Total: 23 marks**

KEY WORDS multiplier

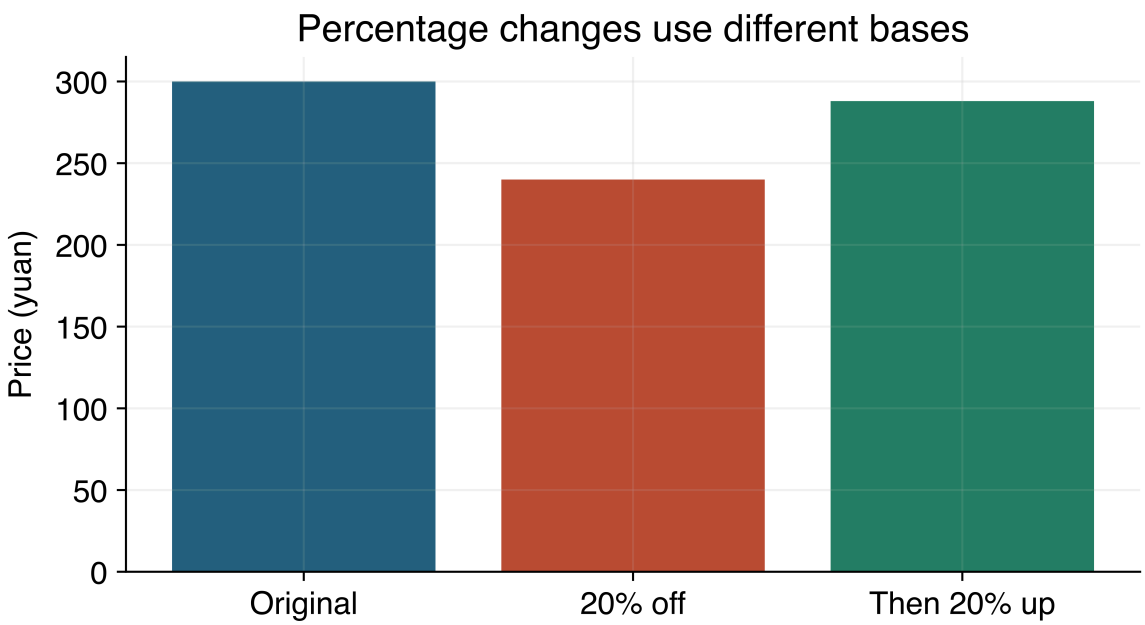
Percentages and percentage change

Objective

Use percentage multipliers, express and compare quantities as percentages, work above 100%, solve increase/decrease, original-value and simple-interest problems (row R9 across the tiers).

1 Key knowledge and worked examples

Multipliers. Increase $r\%$ is $\times(1+\frac{r}{100})$; decrease is $\times(1-\frac{r}{100})$; ORIGINAL VALUE divides the final by the multiplier: 2200 after a 12% fall means original $2200 \div 0.88 = 2500$ (the 2H June 2024 anchor, scaled: $2.2 \times 10^6 \div 0.88 = 2.5 \times 10^6$).



Original native-lesson illustration; labels belong to its worked example.

2 Practice

2.1 Find 35% of 240 [2]

2.2 Increase 65 by 20% [2]

2.3 A jumper priced £28 is reduced by 25%. Find the sale price. [2]

2.4 After a 10% rise a ticket costs £22. Find the original price. [3]

2.5 Express 84 as a percentage of 70. [2]

2.6 £500 is invested at 4% simple interest for 3 years. Find the total. [3]

3 Exam-style questions

3.1 *(Edexcel-style, 2H June 2024 Q2 adapted.)* The population of a town has decreased by 12%. The population is now 2.2×10^6. Work out the population before the decrease, giving your answer in standard form. [3]

3.2 *(Original.)* A quantity increases by 15% and is now 184. What was it? [3]

3.3 *(Original.)* A shop's profits rise 20% in 2023 and fall 10% in 2024. Overall, is the profit up or down on the start, and by what percentage? [3]

Solutions

2.1 $0.35 \times 240 = 84$.

2.2 $65 \times 1.2 = 78$.

2.3 $28 \times 0.75 = £21$.

2.4 $22 \div 1.1 = £20$.

2.5 $84 \div 70 = 1.2$, so 120%.

2.6 Interest $= 500 \times 0.04 \times 3 = £60$; total £560.

3.1 $2.2 \times 10^6 \div 0.88 = 2.5 \times 10^6$.

3.2 $184 \div 1.15 = 160$.

3.3 $\times 1.2 \times 0.9 = 1.08$: up 8% overall (never add $20 - 10$).

Local review guidance: the multiplier stated; exact values; reverse answers divide, not subtract. This is authored classroom guidance.