

3.2.1 Percent

Name: _____ Class: _____ Date: _____

KEY WORDS multiplier

<!-- Session 2 native-skill companion -->

Objective

Practise percent within the labelled native lessons. Public original tasks; locally authored answer guidance.

1 Key knowledge and worked examples

■ Percentages, ratio and proportional reasoning · Foundation

A p% increase has multiplier $1 + \frac{p}{100}$; a decrease has multiplier $1 - \frac{p}{100}$. Reverse a percentage by dividing by the multiplier. In a ratio, first find the total number of parts.

$$P_{\text{new}} = P_{\text{old}} \left(1 + \frac{r}{100} \right)$$

Let the original price be P. The model is sale price=0.8P. Hence $P = \frac{240}{0.8} = 300$. A later 20% increase gives $240 \times 1.2 = 288$, so the two changes do not cancel.

A percentage uses a stated base. Subtracting the percentages loses that base. For compound change, multiply the multipliers; do not add the percentages.

Use percentage multipliers and divide a total into ratio parts. This Foundation/Core lesson uses linear proportional contexts, not the advanced regression methods.

■ Percentages, ratio and proportional reasoning · Higher

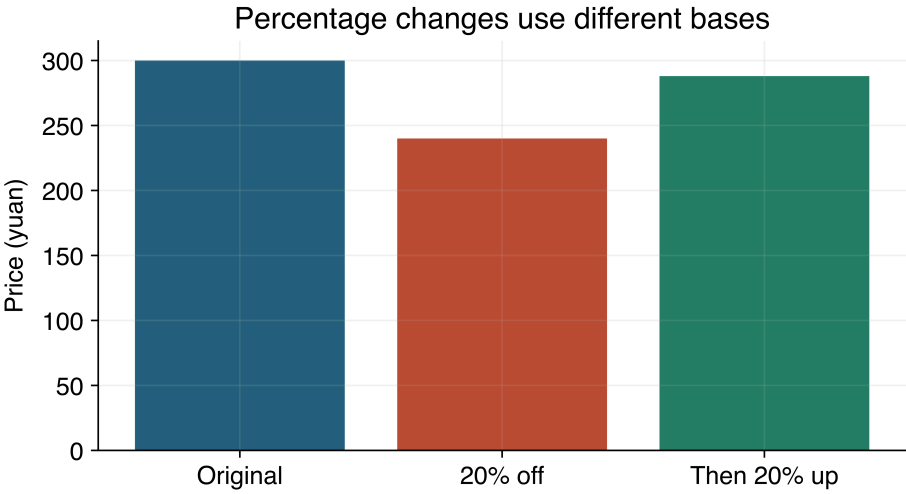
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For direct proportion use $y=kx$; for inverse proportion use $y=\frac{k}{x}$. Calculate k from a known pair before using a new value. State what you held constant.



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

2 Practice

2.1 (Foundation) A price of 80 rises by 15%. Find the new price.

2.2 (Foundation) A 25% discount leaves a price of 90. Find the original price.

2.3 (Foundation) Share 84 in the ratio 2:5. Find the larger share.

3 Exam-style questions

3.1 Decide whether this claim is true. Justify with a concrete calculation or counterexample: A 20% decrease followed by a 20% increase restores the starting price.

Solutions

2.1 Multiply by 1.15: $80 \times 1.15 = 92$.

2.2 The sale price is 75% of the original: $90 / 0.75 = 120$.

2.3 There are seven ratio parts. The larger share is $84 \times 5/7 = 60$.

3.1 False. Starting at 100 gives 80 after the decrease and 96 after the increase. The overall multiplier is $0.8 \times 1.2 = 0.96$, a 4% decrease.

Local review guidance: show the chosen method; give the checked result; explain the condition or failed shortcut. This is authored classroom guidance.