One Change After Another

RP17-V1 · storyboard · RP17 Successive percent changes. Read each picture with its sentences.

Picture 1

A price rises by 20%, then the new price rises by 25%. By what percent has it risen altogether?

$$\times 1.2 \quad \text{then} \quad \times 1.25$$ one for each change

$$1.2 \times 1.25 = 1.5$$

$$\boxed{\times 1.5 \;\rightarrow\; \text{a } 50\% \text{ rise}}$$

1. A price rises by 20 percent, then the new price rises by 25 percent.
2. By what percent has it risen altogether?
3. One multiplier for each change: times 1.2, then times 1.25.
4. Multiply them: 1.2 times 1.25 is 1.5.
5. Times 1.5 is a 50 percent rise.

Picture 2

Trap $+20\%$ then $+25\%$

$\times$ $+45\%$

✓ $+50\%$

6. Watch for the trap: adding the percents.
7. The 25 percent is of the new, bigger price, so the rise is 50 percent, not 45.

Picture 3

A price falls by 50%, then rises by 50%. How does it compare with the start?

$$0.5 \times 1.5 = 0.75$$

$$\boxed{\times 0.75 \rightarrow 25\% \text{ lower}}$$

8. A price falls by 50 percent, then rises by 50 percent.
9. How does it compare with the start?
10. Times 0.5, then times 1.5: 0.5 times 1.5 is 0.75.
11. So the price ends 25 percent lower than at the start.

Picture 4

Trap -50% then $+50\%$

$\times$ back to the start

✓ 25% lower

Undo a change

undo $\times 1.5$ with $\times \frac{2}{3}$

12. Watch for the trap: thinking a 50 percent rise undoes a 50 percent fall.
13. The rise is of a smaller price, so it doesn't undo the fall.
14. To undo times 1.5, multiply by 1 over 1.5, that is two thirds: a cut of one third.