Sales and Markups

A discount takes a percent off, so you pay what is left: times 0.70 for 30 percent off. A markup adds on: times 1.45 for 45 percent. Working backward, ask percent of what.

1 THE VOCABULARY
Words we use

Discount, markdown the amount taken off.

Sale price what is left: times 1 minus the rate.

Markup what the store adds on: times 1 plus the rate.

Percent of what the whole the percent came from.

- Watch out for these.
- Multiplying by 0.30 for 30 percent off. That is the discount; the sale price is times 0.70.
- Adding the discount percent back onto the sale price. The percent was taken from the original.
- Mixing up markup and discount. Up adds, down takes away.
- Forgetting that 100 percent markup doubles the price.

2 THE METHOD
Up, down, and backward

1. TAKING OFF sale price = original times (1 minus the rate). 30 percent off: times 0.70.
2. ADDING ON selling price = cost times (1 plus the rate). 45 percent up: times 1.45.
3. BACKWARD ask percent of what. The sale price is the percent left; build up to 100 percent, or divide by the multiplier.
4. CHECK take the percent off the original and see if you land on the sale price.

WHY ONE MULTIPLIER
You pay all of the price minus the share taken off. 100 percent minus 30 percent is 70 percent, so one multiplication by 0.70 does both steps. That multiplier is the unit rate.



Elle, math-speak: A proportional relationship always multiplies by the same number, the unit rate.



Finn, plain English: Percent means out of 100. A percent is a unit rate for 100 instead of for 1: 30 percent means 30 for every 100.

3 THREE PROBLEMS
Down, up, and backward

$60 × 0.30 = $18 off; $60 × 0.70 = $42	a discount: pay what is left
$20 × 0.45 = $9 up; $20 × 1.45 = $29	a markup: add it on
60% = $12, so 10% = $2, so 100% = $20	the shirt: backward from the sale price
$12 × 1.40 = $16.80 is wrong	the 40 percent was of $20, not of $12

THE EXIT TICKET
$80 sneakers at 25 percent off: 80 times 0.75 is $60.

SAY IT OUT LOUD
Percent of what?